

Two Days International Conference

MMPhysioCon 2026

**TRANSFORMING PHYSIOTHERAPY:
EMBRACING EDUCATION, INNOVATION & RESEARCH**

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Transforming Physiotherapy: Embracing Education, Innovation & Research

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SCIENTIFIC PROGRAMME

Schedule Day - 1
23rd January 2026

Time	Event		Venue
08:30 AM - 09:00 AM	Registration		Main Auditorium
09:00 AM- 09:30 AM	Breakfast		Main Auditorium
09:30 AM - 11:00 AM	Inaugural Ceremony		Main Auditorium
Oration 1			
Time	Topic	Speaker	Venue
11:00 AM - 11:25 AM	Integrating Technology in Movement Analysis	Prof. (Dr.) Anchit Gugnani	Main Auditorium
Oration 2			
Time	Topic	Speaker	Venue
11:26 AM - 11:50 AM	Integrating Sports Psychology into Injury Recovery	Dr. Garry Kaun	Main Auditorium
Oration 3			
Time	Topic	Speaker	Venue
11:51 AM - 12:15 PM	Atlas and Vertigo: The Cervicogenic Connection	Dr. Supreet Bindra	Main Auditorium
Oration 4			
Time	Topic	Speaker	Venue
12:16 PM - 12:40 PM	Unseen Cognitive Sequelae After Stroke: The Hidden Drivers of Functional Recovery	Dr. Anjali Tiwari	Main Auditorium
Oration 5			
Time	Topic	Speaker	Venue
12:41 PM - 01:15 PM	Recent Advances in Physiotherapy Management of Parkinson's Disease	Prof. (Dr.) Jaspreet Kaur	Main Auditorium
Lunch Break (01:16 PM - 02:30 PM)			
Oration 6			
Time	Topic	Speaker	Venue
02:31 PM - 02:55 PM	Bridging the Gap between Classroom and Clinic: A New Era in Physiotherapy Education	Dr. Rakesh Krishna Kovala	Main Auditorium
Oration 7			
Time	Topic	Speaker	Venue
02:56 PM - 03:20 PM	Why Do Physiotherapists Fabricate and Falsify Research? A Needs Analysis	Prof. (Dr.) Asir John	Main Auditorium
Oration 8			
Time	Topic	Speaker	Venue
03:21 PM - 03:45 PM	Scope of epidemiological Studies in Physiotherapy	Dr. Kashish Grover	Main Auditorium
Oration 9			
Time	Topic	Speaker	Venue
03:46 PM - 04:10 PM	Traditional Mudgar in Modern Injury Rehabilitation	Mr. Sudhir Verma	Main Auditorium
04:10 PM - 04:30 PM	High Tea		Main Auditorium
Cultural Evening 04:30 PM to 07:00 PM			

Schedule Day - 2

24th January 2026

Oration 10			
Time	Topic	Speaker	Venue
09:15 AM – 09:40 AM	Gait Re-education in Stroke: An Evidence Based Physiotherapeutic Approach	Dr. Jaspreet Vij	Main Auditorium
Oration 11			
Time	Topic	Speaker	Venue
09:41 AM – 10:05 AM	Exercise –Induced Hypoalgesia: Bridging Research and Clinical Practice in Pain Management	Dr. Priyanka Rana	Main Auditorium
Breakfast (10:06 AM to 10:35 AM)			
Oration 12			
Time	Topic	Speaker	Venue
10:35 AM– 11:00 AM	Physiotherapy- The Right Hand in Palliative Care	Dr. Harihara Prakash	Main Auditorium
Oration 13			
Time	Topic	Speaker	Venue
11:00 AM – 11:25 AM	Reimagining Physical Experience: How XR Technologies are Transforming the next generation of Physical Education	Dr. Naoki Suzuki	Main Auditorium
Oration 14			
Time	Topic	Speaker	Venue
11:26 AM – 11:50 AM	Tracking and Training: Role of Wearables in Cardiovascular Rehabilitation	Dr. Hina Vaish	Main Auditorium
Oration 15			
Time	Topic	Speaker	Venue
11:51 AM – 12:15 PM	New Innovations in Diabetic Wound Management	Dr. A P S Suri	Main Auditorium
Oration 16			
Time	Topic	Speaker	Venue
12:16 PM – 12:40 PM	Rewiring the Brain: Neuroplasticity and Virtual Reality in Stroke and Neurological Rehabilitation	Dr. Somya Prasad	Main Auditorium
Oration 17			
Time	Topic	Speaker	Venue
12:40 PM – 01:05 PM	Technology-Enabled Rehabilitation: Shaping the Future of Physiotherapy Practice in Spinal Cord Injury	Prof. (Dr.) Chitra Kataria	Main Auditorium
Oration 18			
Time	Topic	Speaker	Venue
01:06 PM –01:30 PM	Backward Walking – In Rehabilitation	Dr. Astha Jain	Main Auditorium
Lunch Break (01:30 PM – 02:30 PM)			
Time	Event	Venue	
02:30 PM – 04:30 PM	Valedictory	Main Auditorium	
04:30 PM –05:00 PM	High Tea	Main Auditorium	

PLATFORM PRESENTATIONS

Platform Presentation (PhD category)		
Abstract ID	Date/ Time	Venue
PhD 001- PhD 020	23/01/2025 11:00 AM to 01:00 PM	Room 1, Skill & Simulation Lab
PhD 021 - PhD 055	23/01/2025 02:01 PM to 04:00 PM	Room 1, Skill & Simulation Lab
Platform Presentation (PG category)		
PG 001- PG 015	23/01/2025 11:00 AM to 01:00 PM	Room 2, Skill & Simulation Lab
PG 016 –PG-030	23/01/2025 11:00 AM to 01:00 PM	Room 2, Skill & Simulation Lab
PG 031 - PG 045	23/01/2025 02:00 AM to 04:30 PM	Room 2, Skill & Simulation Lab
PG 046 – PG 060	23/01/2025 02:00 AM to 04:30 PM	Room 3, Skill & Simulation Lab
PG 061 –PG 065	24/01/2025 09:00 AM to 10:00 AM	Room 1, Skill & Simulation Lab
PG 066 - PG 070	24/01/2025 09:00 AM to 10:00 AM	Room 2, Skill & Simulation Lab
PG 071 – PG 075	24/01/2025 09:00 AM to 10:00 AM	Room 3, Skill & Simulation Lab
PG 076 – PG 090	24/01/2025 10:30 AM to 12:30 PM	Room 1, Skill & Simulation Lab
PG 091 –PG 105	24/01/2025 10:30 AM to 12:30 PM	Room 2, Skill & Simulation Lab
PG 106 – PG 120	24/01/2025 10:30 AM to 12:30 PM	Room 3, Skill & Simulation Lab
PG-121 - PG135	24/01/2025 12:30 AM to 02:00 PM	Room 1, Skill & Simulation Lab
PG 136 – PG 150	24/01/2025 12:30 AM to 02:00 PM	Room 2, Skill & Simulation Lab
Platform Presentation (UG category)		
UG 001- UG 020	23/01/2025 11:00 AM to 01:30 PM	Room 1, First Floor, Deptt. of Gen. Medicine
UG 021 - UG 040	23/01/2025 11:00 AM to 01:30 PM	Room 2, First Floor, Deptt. of Gen. Medicine
UG 041 – UG 060	23/01/2025 02:00 AM to 04:30 PM	Room 1, First Floor, Deptt. of Gen. Medicine
UG 061 – UG 080	23/01/2025 02:00 AM to 04:30 PM	Room 2, First Floor, Deptt. of Gen. Medicine
UG 081 - UG 090	24/01/2025 09:00 AM to 10:00 AM	Room 1, First Floor, Deptt. of Gen. Medicine
UG 091 – UG 100	24/01/2025 09:00 AM to 10:00 AM	Room 2, First Floor, Deptt. of Gen. Medicine
UG 101 – UG 115	24/01/2025 10:30 AM to 12:30 PM	Room 1, First Floor, Deptt. of Gen. Medicine
UG 116 –UG 130	24/01/2025 10:30 AM to 12:30 PM	Room 2, First Floor, Deptt. of Gen. Medicine
UG 131 – UG 145	24/01/2025 12:30 AM to 02:00 PM	Room 1, First Floor, Deptt. of Gen. Medicine
UG-146 - UG160	24/01/2025 12:30 AM to 02:00 PM	Room 2, First Floor, Deptt. of Gen. Medicine
UG 161 – UG 175	24/01/2025 12:30 AM to 02:00 PM	Room 3, Skill & Simulation Lab

MAHARISHI MARKANDESHWAR (DEEMED TO BE UNIVERSITY)

MULLANA-AMBALA, HARYANA (INDIA), 133-207

(Established under Section 3 of the UGC Act, 1956)

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Dr. TARSEM GARG
CHANCELLOR



9 December 2025

Message

I am delighted to share that the Maharishi Markandeshwar Institute of Physiotherapy & Rehabilitation, a constituent Institute of MM (Deemed to be University), is organizing a two-day International Conference **“MMPhysioCon-2026”** scheduled to be held on **23-24 January 2026** with the theme of **“Transforming Physiotherapy: Embracing Education, Innovation & Research”** which truly captures the essence of progress in the field and aligns with our vision of fostering excellence in healthcare education and professional practice.

This International Conference will serve as a valuable platform for distinguished experts, researchers, practitioners and students to engage in insightful discussions, exchange innovative ideas and present impactful research. Such academic initiatives play a crucial role in enhancing global understanding, strengthening professional competencies and inspiring the young generation of physiotherapy professionals.

I congratulate the organizing team for their dedicated efforts and extend my heartfelt best wishes to them for the grand success of the **MMPhysioCon-2026**. May this Conference pave the way for new collaborations, meaningful learning and continued advancement in the domain of physiotherapy.

(TARSEM GARG)

Maharishi Markandeshwar Trust

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DR. VISHAL GARG,
SECRETARY



09 December 2025

MESSAGE

It gives me great pleasure to announce that the Maharishi Markandeshwar Institute of Physiotherapy & Rehabilitation, a constituent Institute of MM (Deemed to be University), is hosting a two-day International Conference **"MMPhysioCon-2026"** on **23-24 January 2026** with the theme of **"Transforming Physiotherapy: Embracing Education, Innovation & Research"** reflects our unwavering commitment to promoting academic excellence, professional growth and research-driven advancements in the field of physiotherapy.

This Conference will bring together eminent scholars, clinicians, innovators and students from across the globe to share their expertise, showcase emerging trends and engage in collaborative discussions that will shape the future of physiotherapy practice and education. Such initiatives highlight our dedication to nurturing a culture of innovation and continuous learning within the MM Group.

I commend the Organizing Committee for their hard work and vision and also extend my warmest wishes for the successful conduct of **MMPhysioCon-2026**. May this international event serve as an inspiring platform that fosters new ideas, strengthens global partnerships and contributes meaningfully to the advancement of physiotherapy.


(VISHAL GARG)

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DR. MEENAKSHI GARG,
TRUSTEE

09 December 2025

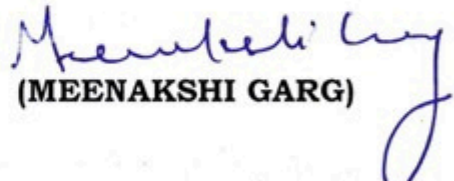


MESSAGE

I am pleased to share that the MM Institute of Physiotherapy & Rehabilitation, a constituent Institute of Maharishi Markandeshwar (Deemed to be University), is hosting a two-day International Conference **"MMPhysioCon-2026"** scheduled for **23-24 January 2026**. The Conference theme **"Transforming Physiotherapy: Embracing Education, Innovation & Research"** truly reflects the progressive vision of the institute and its dedication to advancing healthcare education and professional excellence.

This international event will bring together distinguished academicians, researchers, clinicians and students to exchange ideas, present innovative research and engage in meaningful discourse on the future of physiotherapy. Such initiatives play an essential role in strengthening academic collaboration, promoting innovation and inspiring the next generation of physiotherapy professionals.

I appreciate the efforts of the Organizing Committee and extend my best wishes for the successful conduct of **MMPhysioCon-2026**. May this Conference serve as a significant milestone in fostering growth, global engagement and continued excellence in the field of physiotherapy.


(MEENAKSHI GARG)

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DR. L.C. GUPTA,
MANAGING DIRECTOR



09 December 2025

MESSAGE

It gives me immense pleasure to announce that the MM Institute of Physiotherapy & Rehabilitation, a constituent Institute of Maharishi Markandeshwar (Deemed to be University), is hosting a two-day International Conference **"MMPhysioCon-2026"** on **23-24 January 2026**. The theme for this prestigious Conference **"Transforming Physiotherapy: Embracing Education, Innovation & Research"** reflects our commitment to advancing global standards in physiotherapy education, clinical practice and scientific exploration.

This international platform will bring together renowned academicians, researchers, clinicians and students from across the world to share knowledge, present ground breaking research and engage in meaningful dialogue on the evolving landscape of physiotherapy. I am confident that this Conference will inspire innovative thinking, foster collaborative learning and would contribute significantly to its growth and would further transform the physiotherapy as a rare tool of treatment.

I extend my best wishes to the Organizing Committee and all participants for the grand success of the **MMPhysioCon-2026**. May this Conference serve as a milestone in promoting excellence, innovation and research-driven practice in physiotherapy.

(L.C. GUPTA)

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MESSAGE

It is a great pleasure to know that a two-day International Conference, **“Transforming Physiotherapy: Embracing Education, Innovation & Research”** is being hosted at Maharishi Markandeshwar (Deemed to be University), Mullana-Ambala (Haryana), India during 23-24th January, 2026.

This event also plans to organize some expert talks, scientific presentations, a hackathon, and two pre-conference workshops along with cultural celebrations, creating a vibrant platform for physiotherapy professionals to connect, innovate, and inspire. As physiotherapy continues to evolve as a discipline, MMPhysioCon-2026 offers a vital opportunity for sharing cutting-edge insights, fostering collaborations, and advancing practices that enhance patient care and outcomes.

I hereby congratulate Dr. Manu Goyal and his dedicated organizing committee for curating a program that pushes boundaries in education, research, and practice. May MMPhysioCon-2026 spark meaningful exchanges, foster partnerships, and ignite passion for transforming patient care!

Best wishes for a successful and enriching **MMPhysioCon-2026!**

Prof. H.K. Sharma

Vice Chancellor

Maharishi Markandeshwar (Deemed to be University)

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MESSAGE

It gives me great pleasure to extend my warm greetings and best wishes to the Organizing Committee, faculty members, researchers, clinicians, and participants of the *Two-Day International Conference "MMPhysioCon-2026"*, themed **"Transforming Physiotherapy: Embracing Education, Innovation & Research"**, scheduled on **23rd and 24th January 2026**, organized by the *Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation (MMIPR)* in collaboration with *IQAC and the R & D Cell, MMDU*.

Physiotherapy plays a vital role in modern healthcare through prevention, rehabilitation, and evidence-based practice. This conference provides an excellent platform for knowledge exchange, research dissemination, and discussion on innovative approaches that will strengthen education, clinical practice, and research in physiotherapy.

I sincerely appreciate the efforts of the organizing team for their dedication in planning this international academic event. I am confident that the scientific deliberations and interactions during MMPhysioCon-2026 will inspire meaningful collaborations and contribute significantly to the advancement of physiotherapy and rehabilitation sciences.

I wish the conference grand success and all participants a productive and enriching academic experience.

With warm regards and best wishes,

Prof. (Dr.) B. Sridhar Reddy

Pro Vice-Chancellor

Maharishi Markandeshwar (Deemed to be University), Mullana-Ambala

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Prof. (Dr.) Sumit Mittal

It gives me great pleasure to know that the **M.M. Institute of Physiotherapy and Rehabilitation** in collaboration with **IQAC** and **R&D Cell**, MM(DU) is organizing a Two-Day International Conference **"MMPhysioCon-2026"** on **Transforming Physiotherapy: Embracing Education, Innovation & Research** from **23rd - 24th January 2026**.

Physiotherapy plays a vital role in modern healthcare by enhancing functional outcomes, promoting preventive care, and improving quality of life. The theme of the conference aptly highlights the importance of integrating **education, innovation, and research** to address emerging challenges and advancements in the profession.

This conference provides an excellent platform for academicians, clinicians, researchers, and students to share knowledge, present research findings, and engage in meaningful academic discourse. The diverse **academic sessions, workshops, and scientific presentations** will significantly contribute to professional growth and collaborative learning.

I congratulate the **organizing committee** for their dedicated efforts and wish the conference a grand success. I extend my best wishes to all participants for a productive and enriching academic experience.


Dr. Sumit Mittal
Registrar



डॉ०. यज्ञा उन्मेष शुक्ला, (पीएच.डी)
अध्यक्ष, एन सी ए एच पी

Dr.Yagna Unmesh Shukla,(Ph.D)
Chairperson, NCAHP



सत्यमेव जयते

राष्ट्रीय सहबद्ध और स्वास्थ्य
देख-रेख वृत्ति आयोग
स्वास्थ्य एवं परिवार कल्याण मंत्रालय
भारत सरकार
Government of India
Ministry of Health & Family Welfare
National Commission
for Allied and Healthcare Professions



Message

It is a profound privilege to extend my heartfelt greetings on the occasion of the Two-Days International Conference 'MMPhysioCon 2026' themed 'Transforming Physiotherapy: Embracing Education, Innovation & Research'.

This platform dedicated to advancing physiotherapy through cutting-edge education, innovative practices, and ground breaking research. In an era where emerging trends such as artificial intelligence-driven rehabilitation, tele-rehabilitation, wearable technologies, virtual reality applications, and personalized data-driven therapies are revolutionizing patient care, events like this are essential for fostering collaboration and knowledge exchange.

These innovations, alongside a growing emphasis on neurological rehabilitation, preventive care, and hybrid models blending in-clinic and remote interventions, hold immense potential to enhance accessibility and effective treatment outcomes, .

I commend the Maharishi Markandeshwar Institute of Physiotherapy & Rehabilitation for organizing this landmark event. Your efforts will undoubtedly inspire the next generation of physiotherapists and contribute significantly to the profession's growth.

Wishing all participants insightful deliberations, fruitful collaborations, and a highly successful conference.

Best wishes,

Dr. Yagna Unmesh Shukla(PhD)

Chairperson

National Commission of Allied & Healthcare Professions (NCAHP)

2nd Floor, Office of NCAHP, Academic Block, NIHFw Campus, Baba Gang Nath Marg, Munirka,
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डा. मधुसूदन पाल

वैज्ञानिक-जी

Dr. Madhusudan Pai
Scientist - G



सत्यमेव जयते



एवं सर्वम सर्वकार की ओर

भारत सरकार, रक्षा मंत्रालय

रक्षा अनुसंधान तथा विकास संगठन

रक्षा शरीरकिया एवं सम्बद्ध विज्ञान संस्थान (डिपस)

लखनऊ रोड, तिमरपुर, दिल्ली-110 054

Government of India, Ministry of Defence

Defence Research & Development Organisation

Defence Institute of Physiology & Allied Sciences (DIPAS)

Lucknow Road, Timarpur, Delhi-110054

Dated / दिनांक 10 Jan 2026



MMPhysioCon 2026

23-24 Jan 2026

Message from Chief Guest

It is a matter of great pleasure and honour to be a part of MMPhysioCon 2026, organized by the Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation, MMDU, Mullana. The theme of the conference "Transforming Physiotherapy: Embracing Education, Innovation and Research", is extremely exciting and reflects the progressive vision of the organizers in aligning physiotherapy with global standards of evidence-based practice, interdisciplinary collaboration, and technological advancement. The scientific deliberations, expert talks, pre-conference workshops hackathon and ideathon, as well as cultural events, together create a vibrant platform for holistic professional growth.

Physiotherapy today stands at the forefront of healthcare delivery, not only in rehabilitation but also in prevention, performance enhancement, and community health promotion. The emphasis of this conference on original research, innovative clinical practices, and emerging technologies underscores the commitment to improving patient outcomes and strengthening the role of physiotherapists within multidisciplinary teams.

I was glad to know that the participants got the opportunity to publish their selected work in an ISBN-bearing abstract book and reputed indexed journals. This will undoubtedly motivate their young minds and shall make them seasoned professionals who can contribute high-quality research. Such initiatives nurture a culture of inquiry, critical thinking, and ethical scholarship that is essential for the advancement of the profession.

It is heartening to see MMPhysioCon 2026 is bringing together eminent national and international speakers, academic leaders, and clinicians, thereby fostering meaningful dialogue and long-term collaborations. On this occasion, I extend my warm congratulations to the entire organizing committee, faculty, and student volunteers of MMIPR and MMDU for their dedication and tireless & meticulous efforts in conceptualizing and executing this conference. Best wishes are conveyed to all presenters and attendees for insightful discussions, fruitful networking, and impactful outcomes that will contribute to the transformation of physiotherapy education and practice in India and beyond.

I wish MMPhysioCon 2026 to be a landmark event that may ignites new ideas, strengthens collaborations, and paves the way for innovative, patient-centered physiotherapy care for the years to come.

Best wishes

Madhusudan Pai



Message

I am pleased to convey my best wishes to the Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation (MMIPR), Maharishi Markandeshwar (Deemed to be University), Mullana, for organizing the Two-Day International Conference MMPhysioCon-2026, scheduled on 23rd and 24th January 2026.

The conference theme, “Transforming Physiotherapy: Embracing Education, Innovation and Research,” aptly reflects the evolving landscape of physiotherapy. The profession today stands at a crucial juncture where academic excellence, research integration, and clinical innovation must progress in harmony to meet the growing demands of modern healthcare systems as Physiotherapy practice and education in India are poised to undergo a significant transformational shift in the coming years,

MMIPR plays a pivotal role in strengthening professional dialogue, promoting evidence-based practice, and encouraging young researchers and clinicians to engage in meaningful scholarly pursuits. Such platforms not only enhance professional competence but also contribute to the long-term advancement of physiotherapy as a scientific discipline.

I commend the organizing committee for their initiative and dedication in hosting this international event and am confident that the deliberations will yield valuable insights and foster enduring academic collaborations.

I wish the conference every success and extend my sincere good wishes to all delegates for a rewarding and intellectually stimulating experience.

With best regards,

Dr. A. G. K. Sinha

BPT, MSPT, PhD (Sports Medicine & Physiotherapy)

Former Editor-in-Chief, PJIAP

Professor & Former Head, Department of Physiotherapy

Former Dean, Faculty of Medicine

Punjabi University, Patiala, Punjab, India



MESSAGE

It is my pleasure and privilege to be associated with MMPhysioCon-2026, organized by the Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation (MMIPR), Maharishi Markandeshwar Deemed to be University, Mullana.

Such conferences provide best opportunities to the students and professionals including practitioners, academicians, researchers and administrators, to share and discuss their experiences for continuous learning and professional development. This is extremely important in view of the changing health care needs of the world and for providing best solutions for the effective healthcare delivery to our fellow citizens. The events of this stature play a vital role in advancing Physiotherapy Education, Clinical Practice, research and Professional Growth in India.

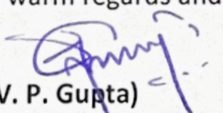
The conference theme, **"Transforming Physiotherapy: Embracing Education, Innovation and Research,"** is highly relevant in today's evolving healthcare environment and the new regulatory standards being introduced in field of Physiotherapy. Physiotherapy has become an integral component of the modern health care including preventive healthcare, critical care, cardiovascular and pulmonary care, sports sciences, community-based healthcare services etc. and has progressed well beyond traditional methods. I believe that MMPhysioCon-2026 shall have scintillating environment for discussion on evidence-based practice, innovation, and interdisciplinary collaboration, which are essential for delivering quality patient care.

The focus on research presentations, ISBN-based abstract publications, workshops, hackathons, and ideathons reflects the organizers' commitment to fostering scientific inquiry, innovation, and a strong research culture among students and professionals. I am sure that this conference shall contribute meaningfully to professional standardization, skill enhancement, and ethical practices.

The participation of distinguished National and International experts shall provide an invaluable opportunity for knowledge exchange, capacity building, and development of global perspectives in physiotherapy education and practice. I commend and congratulate the organizing committee, faculty members, and student volunteers of MMIPR, MM (DU) for their dedicated efforts in conceptualizing and executing this conference with vision and commitment.

I extend my best wishes to all Delegates, Speakers and Participants for a scientifically enriching and professionally rewarding experience during this conference.

With warm regards and best wishes again,


(Dr. V. P. Gupta)

Former Chief Physiotherapist (CTVS), AIIMS, New Delhi;

Member- Delhi Council for Physiotherapy and Occupational Therapy;

Member, Task Force & Central Physiotherapy Professional Council – NCAHP, Government of India;

Consultant Physiotherapist/Senior Manager- CTVS team, Fortis Escort Heart Institute, New Delhi



MESSAGE

It gives me immense pride and a deep sense of privilege to be associated with MMPhysiocon 2026, being organized by the Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation (MMIPR), Maharishi Markandeshwar University (MMU). I have had the honour of sharing over two decades of professional and personal association with MMU, during which I have closely witnessed its remarkable and sustained growth across all dimensions. MMU has consistently achieved new heights in the field of Physiotherapy education, maintaining high academic, clinical, and ethical standards. The institution has emerged as one of the leading centres for physiotherapy education and research in India.

I sincerely admire the vision and unwavering support of the MMU administration, especially founder & Hon'ble Chancellor of the Maharishi Markandeshwar Trust and its associated universities, Shri Tarsem Garg Ji, his family, and the Trustees, whose continuous encouragement has significantly strengthened academic excellence, clinical services, and research in physiotherapy. Their dedicated efforts have played a pivotal role in establishing MMIPR as a pioneer institution in the country.

I would also like to appreciate Dr. Manu Goyal, an excellent team leader, for taking proactive and commendable steps in organizing such academic conferences and seminars, thereby fostering a culture of learning, collaboration, and professional growth.

I also extend my heartfelt best wishes to the esteemed faculty members and enthusiastic students of MMU Physio. May this academic event inspire meaningful learning, innovative thinking, and professional excellence, and may the students continue to grow as compassionate, skilled, and ethical physiotherapy professionals who bring pride to the institution and the profession.

Prof. (Dr.) Narkeesh Arumugam

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Message

I congratulate the Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation (MMIPR) for organizing a very valuable two-day conference on Transforming Physiotherapy: Embracing Education, Innovation & Research on 23-24 January 2026, in collaboration with IQAC and the R & D cell.

The conference will encompass expert talks, presentations, and an ideathon, providing an opportunity for researchers from different disciplines to learn and share cutting-edge research in the field of physiotherapy.

Physiotherapy research and innovation practices explore new treatments, validate existing methods, and integrate technologies such as AI, VR, and robotics to improve patient outcomes. It covers various areas like chronic pain, post-surgery rehab, musculoskeletal disorders (back pain, shoulder issues), neurological conditions, and many more. I am sure one of the outcomes of the conference will be to address evidence-based practice through publications, databases and collaborative studies to advance clinical care.

MMIPR is one of the leading departments of MM(DU) in nurturing outcome-based research and innovation. Various stakeholders will benefit from this event. Moreover, researchers also have the opportunity to earn an award during the conference. I wish great luck to this upcoming conference.

Prof Adesh K Saini
Director, R&D Cell, MM(DU)

MAHARISHI MARKANDESHWAR (DEEMED TO BE UNIVERSITY)
MULLANA-AMBALA, HARYANA (INDIA) - 133207
(Established under Section 3 of the UGC Act, 1956)
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Message

It gives me immense pleasure to extend my warm greetings on the occasion of the two-day International Conference, “MMPhysioCon-2026”, organized by the MMIPR, MM(DU), centered on the theme “Transforming Physiotherapy: Embracing Education, Innovation & Research.”

In the present era of rapid advancements in healthcare, physiotherapy plays a pivotal role in improving quality of life through evidence-based practice, technological integration, and interdisciplinary collaboration. The chosen theme aptly reflects the need to strengthen education, foster

innovation, and promote high-quality research to address emerging challenges in rehabilitation and patient care.

Such international conferences provide an excellent platform for academicians, clinicians, researchers, and students to exchange ideas, share research outcomes, and explore innovative practices that contribute to professional growth and societal well-being. I am confident that MMPhysioCon-2026 will stimulate meaningful discussions, encourage collaborative research, and inspire young professionals to pursue excellence in the field of physiotherapy.

I congratulate the organizing committee, faculty members, and students for their dedicated efforts in planning this academic event and wish the conference every success.

With best wishes,

A handwritten signature in blue ink, appearing to read 'Tarun Gulati', with a horizontal line underneath.

Prof. (Dr.) Tarun Gulati
Director
Internal Quality Assurance Cell (IQAC)
MM(DU), Mullana

M.M. Institute of Physiotherapy & Rehabilitation **Maharishi Markandeshwar (Deemed to be University)**

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MESSAGE

I extend my deepest gratitude to the visionary management and esteemed higher authorities of Maharishi Markandeshwar (Deemed to be University) for their unwavering support and guidance in organizing this landmark academic event.

It is a profound honour and delight to welcome our distinguished speakers, delegates, academicians, researchers, clinicians and students to MMPhysioCon 2026.

Envisioned as a vibrant platform, the conference unites global experts to exchange knowledge, showcase innovations, and explore cutting-edge advancements in physiotherapy and allied health sciences. In today's fast-evolving healthcare landscape, such forums are vital for fostering evidence-based practice, interdisciplinary collaboration, and research-driven clinical excellence.

The overwhelming enthusiasm and participation from the physiotherapy community underscore our collective dedication to elevating the profession through education, research, and innovation. MMPhysioCon 2026 exemplifies our commitment to empowering healthcare professionals via meaningful academic discourse, networking, and collaborative growth.

My sincere thanks go to our keynote speakers, invited experts, session chairs, organizing committee, faculty, staff, and student volunteers for their tireless dedication. I am equally grateful to all participants and delegates, whose contributions enrich this scientific gathering.

I am confident that the discussions and interactions over these two days will expand horizons, spark innovation, and propel physiotherapy forward—ultimately enhancing patient care and societal well-being.

Warm Regards,
Prof. (Dr.) Manu Goyal
Organizing Chairman, MMPhysioCon 2026

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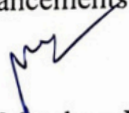
Message

I on behalf of organizing committee welcome you all to 1st International Conference 'MMPhysioCon-2026' at Maharishi Markandeshwar (Deemed to be University), Mullana-Ambala...!

The Indian Physiotherapy is over 70 years old now. From the glorious past Physiotherapy stands at the threshold of a remarkable transformation. The theme ***"Transforming Physiotherapy: Embracing Innovation, Education and Research"***. It highlights the dynamic evolution of physiotherapy by integrated cutting edge technology such as AI-driven diagnostics, wearable devices, tele-rehabilitation, and virtual reality, progressive educational practices like updating curricula to include latest evidence-based practices, technological skills, interdisciplinary collaboration, high quality patient centric research to validate new interventions and bridging the gap between research findings and clinical practice to enhance evidence-based physiotherapy. Together, these forces inspire us to elevate the standards of physiotherapy, delivering hope and healing to countless lives. Let us unite in this mission to shape a brighter, healthier future through dedication, curiosity, and compassion.

No words can explain the sense of gratitude I bear for the management and esteemed higher authorities of MM Trust spear headed by Hon'ble Chancellor Sh. Tarsem Garg Ji, who had been instrumental in providing all out moral, physical infrastructure, human resources and pecuniary support. I will also remain indebted to Prof. (Dr.) Manu Goyal, Principal MMIPR for his valuable guidance and support. I extend my sincere thanks to the organizing committee, staff members, and volunteers for their tireless efforts and unwavering dedication.

I express my special and sincere thanks to all delegates, speakers, and sponsors for their generous participation and invaluable support. Their presence will surely ignite enthusiasm among young physiotherapists to research, keep themselves updated with recent advancements to enrich knowledge and practical skills.


Dr. Mandeep K Jangra
Organizing Secretary, MMPhysioCon-2026

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PhD-001: Recent Advancements in Assistive Devices for children with Duchenne Muscular Dystrophy: A Scoping Review

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ABSTRACT

Duchenne muscular dystrophy is typically marked by a rapid progression of muscle weakening in early childhood, loss of functional mobility, and growing reliance on assistive technology. Significant strides in robotics, powered mobility aids, smart orthotics, and sensor-enabled devices have significantly expanded the options available to support children with Duchenne Muscular Dystrophy (DMD) in achieving greater independence and participation. Evidence on developing technologies can still be found scattered across various fields such as engineering, rehabilitation, and medicine. The objective of this scoping study included mapping current developments in assistive technology for children with DMD, summarizing new trends, and identifying research gaps. Studies were comprehensively searched in PubMed, Scopus, and PEDro for articles published between 2021 and 2025. The search terms combined descriptors associated with DMD, pediatric populations, and assistive technologies, such as robotic exoskeletons, powered wheelchairs, dynamic arm supports, smart orthosis, and wearable robotics. After reviewing 1,029 records, 20 eligible studies were identified, with 8 using exoskeleton or robotic devices, 4 employing gait exoskeleton, 2 utilizing virtual reality, 5 incorporating wearable sensor systems or digital biomarkers, and 1 utilizing an orthotic device. Recent developments highlight the importance of user-centric, lightweight, and increasingly intelligent devices including prototypes of pediatric robotic exoskeletons with enhanced actuators and control methods, next-generation powered wheelchairs with adjustable interfaces, soft wearable exoskeletons, and intelligent orthotics that incorporate sensors for posture, fatigue, and movement assistance. Majority of studies conducted were feasibility, pilot, or design-validation studies, with a limited number of clinical trials. Assistive technology innovation for children with DMD is accelerating, driven by advances in robotics, soft materials, and human-centered design. While promising, research remains early-stage and requires rigorous clinical evaluation, larger pediatric trials, and long-term usability testing to enable clinical translation.

Keywords: Assistive Devices, Muscular Dystrophy, Mobility aid

PhD-002: Mapping Contemporary Chest Physiotherapy Approaches in Paediatric Pneumonia: A Scoping Review of Evidence and Efficacy

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ABSTRACT

Chest physiotherapy (CPT) is widely used as an adjunctive intervention in the management of paediatric pneumonia to facilitate airway clearance and support respiratory recovery. However, the wide variation in techniques, delivery parameters and outcome measures has limited the development of consistent, evidence-based clinical guidance. In recent years, the increasing use of device-based airway-clearance modalities has further highlighted the need for an updated synthesis of contemporary CPT practices. This scoping review aimed to map chest physiotherapy approaches used in children with pneumonia over the past decade, summarize reported clinical outcomes and safety findings, and identify gaps to guide future research. Following PRISMA-ScR and Joanna Briggs Institute recommendations, a comprehensive search of PubMed, MEDLINE, Embase and grey literature was conducted for studies published between 2016 and 2025. Eligible studies included children aged 0–18 years diagnosed with pneumonia who received manual, active or device-based CPT. Of the 78 studies eligible for full-text review, all 78 studies involving more than 7,500 children were finally included. Manual chest physiotherapy techniques, including percussion, vibration and postural drainage, were reported in 32 studies, active breathing and exercise-based approaches in 18 studies, and device-based airway-clearance modalities in 28 studies. Among device-based interventions, positive expiratory pressure, oscillatory positive expiratory pressure and high-frequency chest wall oscillation demonstrated the most consistent benefits, including improved oxygenation, enhanced secretion clearance and reduced length of hospital stay. Treatment duration varied considerably, ranging from single daily sessions of 10–20 minutes to multiple daily sessions over 5–14 days. Manual techniques showed modest and variable effects, while active breathing approaches were mainly effective in older, cooperative children. Across studies, CPT was generally safe, with reported adverse events limited to transient oxygen desaturation, mild fatigue or discomfort. Overall, CPT remains a supportive component of paediatric pneumonia care, with device-based modalities showing the strongest evidence, although methodological heterogeneity and limited high-quality trials restrict definitive recommendations.

Keywords: Chest wall oscillations, Length of stay, Postural drainage, Pneumonia, Vibration.

PhD-003: Physiotherapy Interventions Following Robotic-Assisted Total Knee Arthroplasty: A Scoping Review

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ABSTRACT

Robotic-assisted total knee arthroplasty (rTKA) has gained prominence for its precision in component alignment and soft tissue balancing. However, optimal physiotherapy protocols specific to rTKA remain unclear. This scoping review evaluates the effectiveness of physiotherapy interventions following rTKA on functional outcomes, pain, and recovery trajectories. A comprehensive search was conducted across PubMed, Embase, Cochrane Library, and PEDro databases from inception to January 2025. Studies examining physiotherapy interventions after rTKA in adults were included. Primary outcomes included ROM, Numeric Rating Scale (NRS), Knee Society Score (KSS), 12-Item Short Form Survey scale, sEMG and 4-m walking test. Two independent reviewers conducted screening, data extraction, and quality assessment using the PEDro scale for RCTs and Newcastle-Ottawa Scale for observational studies. A comprehensive search of PubMed, DOAJ, and Embase from 2020 to 2025 identified 91 records; after screening and removal of duplicates, two studies met the inclusion criteria. One observational study investigated outcomes following NAVIO-assisted TKA combined with an intensive 14-session rehabilitation program, demonstrating significant improvements in Knee Society Score, pain reduction, and knee flexion at 1 and 3 months compared with conventional TKA. One interventional study evaluated early postoperative quadriceps activation and gait mechanics after MAKO-assisted TKA, revealing marked asymmetry in muscle activation and reduced sagittal-plane range of motion in the operated limb at four weeks, particularly among females, despite completion of a standardized rehabilitation program. Across both studies, physiotherapy contributed to improved short- and mid-term functional outcomes after rTKA; however, heterogeneity in rehabilitation protocols and limited sample sizes restrict generalizability. Current evidence highlights the importance of early, intensive, and targeted physiotherapy to address deficits unique to robotic-assisted procedures, but standardized guidelines remain lacking. High-quality randomized controlled trials are needed to determine optimal postoperative rehabilitation strategies for this growing surgical population.

Keywords: Robotic-assisted surgery, Total knee arthroplasty, Physiotherapy, Rehabilitation, Scoping review, Functional outcomes

PhD-004: Evaluate the Impact of multi modular Physical Therapy Advancement after Cesarean Childbirth: A scoping Review

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ABSTRACT

Caesarean a surgical intervention used to deliver a baby by creating incisions in the abdominal and uterine walls of the mother. C-section poses short-term (acute pain and limited mobility) and long-term (adhesions in the scar, lumbar pain & intestinal obstruction). The aim of the study is to evaluate to offer a thorough overview of the most recent studies on physical therapy and electro modalities for cesarean section. The data was searched from databases including PubMed, PEDro and SCIENCE DIRECT from 2015 to 2025 using search term cesarean section, physical therapy & electrotherapy modalities. Only randomized controlled trial (RCT) studies written in English language were included in search parameters. This review has followed PRISMA-Scr guidelines. PEDro scale was used to evaluate the study quality. A total of 124 articles were obtained of which 6 RCTs were included. On the PEDro scale, methodological quality falls between 5 and 8. In them, the most used therapy was electro modalities, kinesio taping, soft tissue mobilization, and core strengthening exercises were all included in the intervention. Post natal structure program included TENS, LASER therapy help in decreasing pain. In the majority of studies, the intervention groups reported better scar control, increased mobility, decreased pain, and improved quality of life. Exercise programs promote improved mobility, functional independence, and recovery, while pre-operative education and guided exercises decrease discomfort and minimize hospital stays.

Keywords: Caesarean, Physical therapy, Acute pain, Functional Independence, Hospital stays.

PhD-05: Biomechanical and Motor Control Alterations in Lower Crossed Syndrome: Implications for Assessment and Rehabilitation

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ABSTRACT

Lower Crossed Syndrome (LCS) is a postural dysfunction characterized by tight hip flexors and lumbar extensors with weak abdominal and gluteal musculature, leading to anterior pelvic tilt, exaggerated lumbar lordosis, altered lumbopelvic mechanics, pain, and functional limitations. Understanding the biomechanical and motor control alterations associated with LCS is essential for developing effective assessment and rehabilitation strategies. This narrative review synthesizes evidence from randomized controlled trials (RCTs) examining biomechanical alignment and motor control changes in adults with clinically diagnosed LCS. Electronic searches were conducted in PubMed, Scopus, PEDro, and Google Scholar for studies published between 2015 and 2025. A total of 312 records were identified, and 11 RCTs met the inclusion criteria based on intervention relevance and reported outcomes. Evidence consistently demonstrated increased lumbar lordosis, anterior pelvic tilt, and altered lumbopelvic–hip alignment during static and dynamic postures in individuals with LCS. Corrective exercise interventions, including lumbar stabilization, Egoscue-based exercises, Pilates programs, muscle energy techniques, and structured stretching–strengthening protocols, resulted in significant improvements in postural stability, muscle length balance, pain reduction, functional performance, and neuromuscular control. Improvements in upper and lower extremity function further suggest enhanced motor coordination following targeted rehabilitation. Related corrective and neurodynamic approaches in similar lumbopelvic dysfunctions also supported favorable changes in spinal alignment and functional outcomes. Overall, LCS is associated with measurable biomechanical and motor control deficits that respond positively to individualized, mechanism-based exercise interventions. Objective assessment of lumbopelvic alignment, postural stability, and motor control should be integral to clinical evaluation, while rehabilitation should focus on targeted corrective strategies addressing underlying muscle imbalance and movement dysfunction.

Keywords: Lower Crossed Syndrome; Postural Balance; Muscle Imbalance; Motor Control; Exercise Therapy

PhD-06: Physiotherapy Interventions in Migraine Headache: A Systematic Review of Randomized Controlled Trials

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ABSTRACT

Migraine headache is a worldwide disabling problem commonly associated with neck pain and other symptoms, having a significant negative influence on people's quality of life and productivity. Medicines remain a mainstay for the management, but non-pharmacological management, including Physiotherapy interventions, is recommended as an alternative treatment option to reduce migraine headaches. The current review provides an updated discussion on the effectiveness of various Physiotherapy interventions in alleviating headache parameters, as well as what is supported by current scientific evidence about physical therapies for migraine headaches, and the gaps that may still exist in our understanding of these interventions. For the present review, a comprehensive literature search was conducted in PubMed, MEDLINE, and the Cochrane Library for randomized controlled trials that performed physiotherapy interventions for treating migraine headaches, published between 2015 and 2025, with a score of 6 or higher on the PEDro Scale. A total of 645 studies were identified in the database over the past 10 years, of which 15 were selected based on the inclusion and exclusion criteria. Pooled analyses found various Physiotherapy interventions effective in reducing headache parameters, as in study which found Physiotherapy including structured exercise, and relaxation techniques are effective, safe, and non-invasive interventions for managing acute migraines even among pregnant women with $p < 0.005$ but still, the literature found no standardized physiotherapy protocol to manage migraine headache. The management of Migraine, especially that associated with neck pain, should include physiotherapy and may also benefit from relaxation training, manual therapy, and multimodal care; however, the evaluated RCTs employed a variety of methodologies. Therefore, any conclusion requires future, well-structured RCTs on physiotherapy for Migraine.

Keywords: quality of life, neck pain, migraine disorders, headache, Physiotherapy

PhD-07: Effect of Cognitive Behavioural Therapy on Pain, Disability, Kinesiophobia and Quality of Life on Chronic Non-Specific Back Pain: The Systematic Review

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ABSTRACT

Chronic non-specific low back pain is a long-lasting, multifactorial condition that restricts function, is reinforced by maladaptive beliefs and fear of movement, and contributes substantially to global disability and socioeconomic burden. This systematic review, conducted according to PRISMA 2020 guidelines, evaluated the effects of Cognitive Behavioural Therapy (CBT) on pain, disability, kinesiophobia, and quality of life in adults with chronic non-specific low back pain. A comprehensive search of PubMed, Scopus, Pedro, and the Cochrane Library, supplemented by manual screening, yielded 266,572 records; after removing duplicates and applying eligibility criteria, 10 studies were included. All 10 reported pain outcomes, nine assessed disability (Oswestry Disability Index or Roland–Morris Disability Questionnaire), six evaluated kinesiophobia or fear-avoidance beliefs (Tampa Scale for Kinesiophobia or Fear-Avoidance Beliefs Questionnaire), and three measured health-related quality of life. CBT protocols varied in format (individual vs group), delivery mode (in-person vstelehealth), duration (4–12 weeks), and orientation (standard CBT, graded activity or exposure, nurse-delivered CBT, or cognitive functional therapy combined with exercise). Overall, CBT consistently reduced pain and disability, improved coping and participation in daily activities, and, in several trials, lowered kinesiophobia and enhanced quality of life. Despite some heterogeneity and methodological limitations, current evidence supports CBT as an important component of multidisciplinary management for chronic non-specific low back pain.

Keywords: Chronic non-specific low back pain; Cognitive behavioral therapy; Chronic pain; Disability; Kinesiophobia; Quality of life

PhD-08: Multidimensional effect of Manual Therapy Combined with pain neuroscience based Sensorimotor retraining among chronic neck pain patients: A literature review

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ABSTRACT

Chronic neck pain often limits movement causes headaches, and affects sensorimotor control. Traditional therapy mainly focuses on joint and muscle mechanics. The neuroscience based Sensorimotor approach focuses on educating patients that pain is not solely a consequence of tissue injury, but a complex process involving CNS sensitization. Literature suggests that combining manual therapy with sensorimotor retraining can improve outcomes by engaging both muscles and the nervous system on cervical range of motion, disability index, and joint-position sense. To evaluate the evidence of multidimensional effect of manual therapy combined with pain neuroscience based Sensorimotor retraining among chronic neck pain patients. Published articles in last 5 years (between 2020 and 2025) and randomised control trials, case studies were included. PubMed, EBSCOhost, CENTRAL of the Cochrane library, Physiotherapy Evidence Based database (PEDro) and science direct are used in literature search. Keywords are used to search was chronic pain, neck pain, sensorimotor, neurosciences, musculoskeletal manipulations. Interventions included manual therapy combined with pain neuroscience based sensorimotor retrainingwas included.Outcomes measured was pain, cervical range of motion, disability index, and joint-position sense. Five articles were included in this review. This literature review suggests that multidimensional effect of manual therapy combined with pain neuroscience based Sensorimotor retraining significantly reducing pain, improved joint-position sense, and disability. According to results, studies concluded that combining manual therapy with sensorimotor retraining is an effective, evidence-supported approach for chronic neck pain. It targets both muscle and nervous system mechanisms and enhances functional outcome.

Keywords: Chronic pain, headaches, musculoskeletal manipulations, nervous system, range of motion, sensorimotor control.

PhD-09: From Neural Modulation to Functional Gains: Efficacy of Galvanic Vestibular Stimulation on Posture and Balance in Stroke Rehabilitation

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ABSTRACT

Stroke causes damage to the brain tissue leading to a variety of functional impairments in post stroke survivors. Posture and balance dysfunction are most common impairments after stroke. The impairment to the vestibular system may result in affecting the body balance, thus causing motor incoordination. Therefore, addressing these dysfunctions are crucial in stroke rehabilitation. Although a wide range of rehabilitation techniques has been explored in stroke recovery, Galvanic Vestibular Stimulation (GVS) remains relatively under-investigated. The aim of this review was to determine the efficacy of GVS in posture and balance parameters following stroke. A comprehensive literature search was carried out using databases such as Scopus, PubMed and Web of Science from 2010 to 2025. Initially, 371 articles were found. After removal of duplicates and screening of abstracts and titles, 15 articles were found, out of which 5 were found suitable for the review. Significant difference in weightbearing in patients with right hemisphere lesion was observed in one study, on applying GVS ipsilaterally reduced asymmetry in weightbearing compared with that by no stimulation and the contralateral GVS. Optokinetic and GVS application in one study significantly reduced the post-stroke postural asymmetry but GVS demonstrating more beneficial effect on body weight distribution and orientation of body. Postural stability improved during GVS sessions that were significantly associated with the better motor function of affected lower limb as explained in one study. Another study demonstrated significant change in visual vertical perception and standing posture after GVS which varied according to the side of lesion and stimulation polarity. Neuromodulation and balance related cortical reorganization was indicated in a spectroscopy study when GVS was applied to stroke patients and healthy individuals. The findings of the review suggested improvement in postural stability, decreased body sway, improved visual and vertical perception and a reduction in weight bearing asymmetry in stroke patients. This review highlighted the role of GVS as in innovative tool but lack of evidences creating a huge research gap for area under study for the future scope of study.

Keywords: Galvanic vestibular stimulation, Posture, Balance, Stroke

PhD-010: Enhancing Knee Osteoarthritis Prediction: A Multifactorial Model with Metabolic, Mechanical and Radiographic Markers: A Study Protocol

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ABSTRACT

Introduction: Osteoarthritis (OA) is a highly prevalent chronic musculoskeletal disorder commonly diagnosed using clinical and radiographic assessments. However, these conventional methods may not adequately detect early disease or underlying molecular mechanisms. Emerging evidence suggests that metabolic, mechanical, and radiographic markers contribute significantly to disease onset and progression. Early identification of individuals at high risk of OA is essential for timely intervention and prevention.

Aim: This study aims to develop and validate a knee osteoarthritis prediction model incorporating metabolic, mechanical, and radiographic markers to improve prediction accuracy and reliability.

Materials and Methods: A cross-sectional study will be conducted among adults aged 45–70 years with symptomatic, radiographically confirmed unilateral or bilateral knee OA. Participants will be recruited from the outpatient department using purposive sampling. Demographic and anthropometric data will be recorded. Metabolic markers (lipid profile, HbA1c), mechanical markers (tibial torsion, Q-angle), and radiographic features (Kellgren–Lawrence grade) will be documented.

Results: Pearson correlation coefficient (r) or Spearman Rank correlation coefficient (ρ) will be used to find the correlation. Stepwise multiple regression analysis will be done to find the best predictor variables for dependent variable.

Conclusion: This model could serve as a clinical tool for identifying individuals at risk and guiding early intervention to mitigate the burden of knee OA.

Keywords: Osteoarthritis, Knee, Lipids, Glycated Hemoglobin, Biomarkers

PhD-011: Clinical Effectiveness of Kinesio Taping on Pain, Swelling, Proprioception, Deformity and Quality of Life in Individuals with Hemophilia: A Systematic Review

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ABSTRACT

Hemophilia leads to frequent joint/muscle resulting bleeds hemophilic arthropathy (HA), chronic pain, swelling, proprioceptive disorders, deformity, as well as reduced quality of life (QoL). Kinesio taping (KT) is emerging as an adjunctive physiotherapy in hemophilia, and there is no synthesis on core outcomes. The purpose of the study is to conduct a systematic review of the RCTs that evaluate the superiority of KT as the only intervention or with physiotherapy, compared with non-KT controls, in the management of pain, swelling, proprioception, deformity, functioning, and health-related QoL in patients with hemophilia. PRISMA 2020-conformant review, searched PubMed, Web of Science, Scopus, PEDro, Cochrane Library (inception -December 2025) was found to identify RCTs in hemophilia A/B. Eligible: KT vs. non-KT. Primary: pain, swelling, proprioception, deformity, QoL; secondary: functional, independence. Quality was measured by PEDro scale, Cochrane RoB 2 measured bias. Heterogeneity/small trials Narrative synthesis. There were four RCTs (n=128 males, 1040 years; primarily moderate-severe hemophilia A) that covered low back pain, acute hematomas, knee problems and HA, among adolescents. KT was 2 days 13 weeks, frequently with exercise/CO2 laser. KT reduced pain in all experiments, improved functioning (FISH, HJHS, 6MWT) in three and accelerated hematoma clearance (ultrasound) in one. No proprioception/QoL data. PEDro: 5–7/10 (moderate quality). RoB 2. low randomization bias; three with some concerns (intervention deviations, measurement); impossible, performance likely in pain. Finding of moderate quality of small RCTs puts KT as potentially useful in short-term pain relief, functional improvements and hematoma in hemophilia. Limitations: small samples, heterogeneity, lack of results. Require bigger multicenter blinded-assessor RCTs in which standardized KT, core sets proprioception, QoL, bleeds, joints are used in rehabilitation guidelines.

Keywords: kinesio taping, hemophilia, hemophilic arthropathy, QoL.

PhD-012: Effectiveness of Physiotherapy Strategies on Balance, Gait Performance, and Functional Capacity in Sarcopenic Older Adults: A Systematic Review

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ABSTRACT

Sarcopenia is defined as age-related gradual deterioration of muscle mass, strength and physical capability, leading to notable difficulties in gait, balance, increasing fall risk and consequential decline in functional independence among older adults. Gait and balance training enhances the functional capacity of individuals with sarcopenia. To systematically review and synthesize the evidence regarding the effectiveness of physiotherapeutic interventions in improving gait, balance and functional independence among individuals with sarcopenia. Electronic databases (e.g PubMed, Scopus, Web of science, PEDRO) were searched for randomized controlled trials, quasi-experimental studies, and controlled clinical trials published between 2015 and 2025 investigating physiotherapy-based interventions targeting gait, balance and functional independence in sarcopenic adults using the keywords. After screening 56 articles, eight randomized controlled trials met the eligibility criteria and were included in this review; these studies investigated exercise therapy, resistance training, balance training, multimodal interventions, and physiotherapist-guided functional training. Outcomes of interest were gait speed, gait parameters, postural stability, balance tests (e.g., TUG, Berg Balance Scale), muscle strength, physical performance and activity of daily life. Risk of bias was assessed using ROBIS (Risk of Bias In Systematic reviews) tools, and findings were synthesized qualitatively. Most included studies demonstrated that physiotherapeutic interventions—particularly progressive resistance training, multicomponent exercise programs, and task-oriented balance training lead to significant improvements in gait speed, dynamic balance, lower-limb strength, and activity of daily life in individuals with sarcopenia. Multimodal interventions combining strength, balance, and functional mobility training showed the greatest overall benefits. Physiotherapeutic interventions, especially those integrating resistance and balance training, are effective in enhancing gait, balance and activity of daily life in patients with sarcopenia.

Keywords: Sarcopenia, Older Adults, Rehabilitation, Balance, Gait, Physiotherapy

PhD-013: Effectiveness of Sensorimotor Training on Pain, Cervical Joint Position Sense, Range of Motion, Balance and Disability in Text Neck Syndrome: A Systematic Review

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ABSTRACT

Prolonged use of smartphones and other digital devices can cause text neck syndrome, which is linked to neck pain, altered cervical joint position sense (JPS), and reduced range of motion (ROM), impaired balance, and functional impairment. As a focused rehabilitation technique, sensorimotor training—which includes neck stabilization, proprioceptive training, virtual reality (VR)-based therapies, postural reeducation, and complementing neuromuscular approaches—has drawn interest. To systematically review and synthesize evidence on the effectiveness of sensorimotorbased interventions on pain, cervical joint position sense, range of motion, balance, and disability in individuals with text neck syndrome or closely related nonspecific neck pain with forward head posture. Following PRISMA principles, a systematic review was carried out. Included were randomized controlled trials (RCTs) that assessed sensorimotor, proprioceptive, stabilization, VR-assisted, or posture-oriented therapies for people with text neck syndrome or chronic/non-specific neck pain with forward head posture. The outcomes of interest included cervical joint position sensation, cervical range of motion, balance, posture, muscle function, and impairment. Between 2018 and 2025, nine qualifying trials were published. Sensorimotor-oriented therapies showed moderate to strong improvements in pain relief, cervical proprioception, and range of motion, postural alignment, and disability when compared to conventional therapy alone. Interventions involving virtual reality, proprioceptive neuromuscular facilitation, and neck stabilization exercises showed superior outcomes for joint position sense and functional impairment. The evidence for balance results was sparse but positive. A successful rehabilitation strategy for text neck syndrome is sensorimotor training, which is especially useful for enhancing pain, proprioception, posture, and impairment. Additional advantages might result from integrating multimodal and VR-based sensorimotor techniques. It is advised to conduct more excellent studies with a particular focus on balance and long-term results.

Keywords: PRISMA, virtual reality, cervical proprioception, text neck syndrome, sensorimotor training, neck pain, neck stabilization

PhD-014: Physiotherapy as a Metabolic–Hormonal Modulator in PCOS: A Contemporary Review of Exercise-Based Therapeutic Strategies

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ABSTRACT

Polycystic Ovary Syndrome (PCOS) is a multifactorial endocrine–metabolic disorder characterized by insulin resistance, hyperandrogenism, chronic low-grade inflammation, and neuroendocrine dysregulation, leading to reproductive, metabolic, and psychosocial consequences. While pharmacological and dietary interventions remain central to PCOS management, growing evidence positions physiotherapy-led exercise interventions as potent metabolic–hormonal modulators rather than merely adjunct lifestyle measures. This contemporary review synthesizes emerging evidence on exercise-based therapeutic strategies in PCOS, emphasizing their mechanistic influence on insulin sensitivity, adipokine signaling, hypothalamic–pituitary–ovarian axis regulation, inflammatory cytokine modulation, and autonomic balance. Aerobic training, resistance exercise, high-intensity interval training, mind–body practices, and targeted core and pelvic interventions demonstrate differential yet synergistic effects on glycemic control, androgen levels, menstrual regularity, body composition, and psychological well-being. Neurophysiological adaptations mediated through myokine release, mitochondrial biogenesis, and vagal tone enhancement further highlight the systemic impact of physiotherapy interventions. The review also addresses individualized exercise prescription based on phenotypic variability, obesity status, and cardiometabolic risk, underscoring the role of physiotherapists in interdisciplinary PCOS care. By reframing physiotherapy as a metabolic–endocrine regulatory modality, this review advocates for structured, evidence-based exercise protocols as a cornerstone in comprehensive PCOS management, with implications for long-term disease modification and women’s health optimization.

Keywords: Polycystic Ovary Syndrome; Physiotherapy; Exercise Therapy; Metabolic Modulation; Hormonal Regulation; Insulin Resistance; Myokines; Hypothalamic–Pituitary–Ovarian Axis; Inflammation; Women’s Health Rehabilitation

PhD-015: Effect of Transcutaneous Electrical Nerve Stimulation (TENS) in managing Somatosensory symptoms in individuals with Chronic Cervical Radiculopathy: A Systematic Review

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ABSTRACT

Chronic cervical radiculopathy is typically characterised by somatosensory symptoms, such as numbness, tingling, paresthesia, and pain, in a dermatomal distribution. Electrotherapy, such as TENS, is a conservative treatment method. Nevertheless, there is still no clear evidence of the particular impact of TENS on somatosensory symptoms (other than pain intensity) among this group of people. The present review aimed to conduct a methodical literature review on the impact of TENS on somatosensory symptoms in individuals with Chronic Cervical Radiculopathy. Databases including PubMed, EMBASE, CINAHL, and PEDro were searched until 2025 for randomised controlled trials (RCTs) or quasi-experimental studies with adults having Chronic Cervical Radiculopathy, using TENS as an intervention, and measuring somatosensory symptoms (e.g., numbness, tingling, sensory nerve root symptoms). Fifteen studies were included in the study after a thorough literature review. TENS parameters (frequency, intensity, and duration) and comparators (traction, interferential therapy, microcurrent, and neural mobilisation) as well as outcome measures (pain, neck disability index, and somatosensory symptom scores) varied across studies. There is some evidence to suggest that TENS can decrease somatosensory symptoms when combined with other interventions (e.g., neural mobilisation), but the evidence is less convincing when used alone. TENS has the potential to be utilised as part of a comprehensive treatment intervention for somatosensory symptoms of chronic cervical radiculopathy; however, there are no high-quality RCTs that focus on somatosensory outcomes. Hence, TENS appears to be an option for health professionals to investigate in addition to other therapies; however, caution is advised due to the limited data available.

Keywords: TENS, pain measurement, paresthesia, neural mobilization, radiculopathy

PhD-016: Exploring the Physical, Psychological, Nutritional, and Social Drivers of Health in Indian School-Aged Children: A Review

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ABSTRACT

This review examines recent empirical and review-level evidence on how physical, psychological, nutritional, and social factors influence the health of school-aged children across India. The aim is to synthesize multidimensional determinants that shape health outcomes and identify gaps in existing research. Materials and methods involved literature searches of peer-reviewed articles published in the last 5 years, focusing on Indian school-aged children (ages 5–18), covering aspects such as anthropometric/nutritional status, dietary patterns, physical activity and fitness, mental wellbeing, and socio-ecological context including family and community influences. show a complex pattern: under nutrition and thinness remain highly prevalent among rural and underprivileged children (in a study from rural Karnataka nearly 45.3% were underweight and 43% thin) while other groups, especially in urban and higher socioeconomic strata, are showing increasing trends of unhealthy dietary patterns, sedentary behaviour, and risk of overweight or cardio metabolic risk factors. Psychological and social determinants play a crucial role: family food environment, parental (including fathers') involvement, peer influence, school context, and broader community/market forces shape children's eating behaviours and activity habits. Dietary diversity and hygiene practices, together with socio-economic conditions and maternal/parental education levels, strongly predict under nutrition, stunting, and anaemia among adolescents. The interplay of these domains suggests that health outcomes cannot be understood by looking at nutrition alone; rather, physical activity, psychological, familial, and social contexts significantly modulate risk and resilience. In conclusion, a holistic, multidimensional understanding is essential: policies and interventions should address not just dietary insufficiency, but also promote active lifestyles, supportive family and school environments, and adequate nutrition education. Further research is needed, especially longitudinal and mixed-methods studies, to unravel causal pathways and design context-specific interventions.

Keywords: Indian school-going children, nutrition, physical activity, social determinants, family environment, under nutrition.

PhD-017: Cortical Modulation Through Anodal tDCS in Chronic Low Back Pain: Insights from recent studies

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ABSTRACT

Chronic low back pain is a pain which remains from last three months, affecting nearly 60% to 80% of the population throughout their life. CLBP has been shown to have a significant impact in day to day activities leading to disabilities. tDCS is non-invasive brain stimulation technique which has extensively researched on the management of chronic pain. Despite its clinical importance, studies remain predominantly limited by its diversity in physiological effects, different population groups and study designs. This literature review aimed to identify the prevail literature on tDCS studies for CLBP reducing pain and disability through cortical activation in the past five years. A comprehensive literature search was conducted across PubMed, Web of Science, PEDro and Scopus for the relevant studies published between 2020 and 2025 using Boolean terms such as “chronic low back pain”, “tDCS”, “non-invasive brain stimulation”, “pain” and “Motor cortex”. A total no of studies 30 studies were initially identified; however, after screening titles and eliminating duplicates only fifteen studies met the inclusion criteria. Included studies are those examining tDCS with interventions focused randomized control trial (RCT) and reviewing based on the available data. Several studies also highlighted a positive association between posture and neurophysiological outcomes. Overall, findings from the last five years indicate that tDCS is effective intervention for reducing pain due to variability in study designs and standard protocols with CLBP patients. In conclusion, it is advised to do more extensive research using established protocols and planned trials essential to clarify the physiological potential of tDCS for CLBP, particularly in conjunction with other interventions.

Keywords: Chronic low back pain, tDCS, Physiology, motor excitability.

PhD-018: Effect of Blood Flow Restriction on Athletes after ACL Reconstruction: A Scoping Review

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ABSTRACT

ACL injury is most occurring amongst all knee injuries, followed by ACL reconstruction in athletes. Rehabilitation of ACLR is essential for the athletes to attain pre-injury level. Occlusion therapy along with the traditional exercises is appearing as an intervention for the athletes post ACLR rehabilitation. This study aims to find the scope of BFRT and its benefits for rehabilitation of ACLR in addition to pre-existing training protocol for the athletes. PCC framework was used to define the eligibility criteria for the studies. The literature was reviewed upto October 7th, 2025 from Cochrane Library, Pubmed, Web of Science, Embase and SportsDiscus databases. RCTs, case series and cohort studies involving post ACLR athletes that contrasted BFRT with the traditional protocol were included. The data was synthesised according to PRISMA-ScR guidelines. The quality of included studies was examined by PEDro scale. Total 840 studies appeared initially. De-duplication was done in Mendeley. 201 athletes (15 - 40 years) were included from 7 studies which met the eligibility criteria. While all 5 RCTs showed enhanced speed of recovery with BFRT group, two of them acclaimed improvement with BFR while the other three acclaimed no difference. One case series resulted in positive effect while one cohort study had no effect of BFRT group. The study suggests promising results of BFRT iACLR rehabilitation. Due to diversity of outcomes and protocols in the included studies, further research with a uniform intervention shall justify the use of BFRT in post ACLR rehabilitation athletes.

Keywords: Blood flow restriction, Anterior cruciate ligament reconstruction, ACL rehabilitation

PhD-019: Development, Validation and Feasibility Testing of a Comprehensive Rehabilitation Programme for Postural Stability and Balance in individuals with Parkinson's Disease: A Study Protocol

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ABSTRACT

Introduction: Parkinson's disease (PD) is a progressive neurodegenerative disorder marked by tremor, rigidity, bradykinesia and postural instability. Balance and postural control deficits are highly disabling, increasing fall risk, limiting mobility and reducing independence. These impairments respond poorly to drugs or surgery, emphasizing rehabilitation. Despite evidence supporting physiotherapy, standardized and clinically feasible programs targeting postural stability and balance remain lacking.

Aim: To develop, validate, and evaluate the feasibility of a comprehensive physiotherapy rehabilitation programme to improve postural stability and balance in individuals with Parkinson's disease and to assess its preliminary effectiveness compared with standard physiotherapy care.

Materials and Methods: This two-phase study protocol will be conducted at a tertiary care hospital over two years. Phase I involves development of the rehabilitation programme through literature review, patient interviews and expert consultation, followed by content validation using the Delphi method with ten experts. Content validity will be quantified using item-level and scale-level Content Validity Index (CVI). Phase II comprises a randomized controlled feasibility trial in which eligible individuals with PD will be allocated to an experimental group receiving the newly developed protocol or a control group receiving standard physiotherapy. Outcomes will be assessed pre- and post-intervention using the Biodex Balance System (postural stability, limits of stability, BESS, fall risk), Mini-BESTest, Unified Parkinson's Disease Rating Scale–Part III (UPDRS III), and the Timed Up and Go (TUG) test.

Results: Content validity will be determined using CVI values. Data analysis will be performed using the Wilcoxon signed-rank test or paired t-test for within-group comparisons and the Mann–Whitney U-test or independent t-test for between-group comparisons. Statistical significance will be set at $p < 0.05$.

Conclusion: This study is expected to produce a validated and feasible rehabilitation programme with potential to reduce falls, enhance functional independence and improve quality of life in individuals with Parkinson's disease.

Keywords: Parkinson's Disease, Postural Stability, Balance, Physiotherapy, Rehabilitation, Feasibility Study.

PhD-020: A Review on Advanced Physiotherapy Approaches for Cervical Spondylosis

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ABSTRACT

Cervical spondylosis (CS) is a degenerative disorder of the cervical spine commonly encountered in physiotherapy practice. It is caused by gradual changes in the structure of the spine, such as degeneration of the inter vertebral discs, formation of osteophytes, and spondylotic abnormalities. These changes put pressure on the nerves is called neural compression and functional impairment. Despite its high prevalence, there remains limited consensus regarding the optimal non-operative physio-therapeutic management of cervical spondylosis. Existing evidence of low to intermediate quality suggests that several physio-therapeutic methods reduce pain and improve functional of outcomes. Existing evidence of low to intermediate quality suggests that several physio-therapeutic methods reduce pain and improve functional of outcomes. The purpose of this review is to assess advanced physiotherapy techniques in the management of cervical spondylosis. This review literature search is conducted using electronic databases including PubMed, Google Scholar, and Research Gate. And this search is conducted over a four-month period from July 2025 to October 2025." This search studies investigating advanced physiotherapy management for cervical spondylosis. Forty articles are initially screened, and Thirteen are included based on predefined inclusion criteria. The selected studies are analyzed to determine the clinical efficacy of various physio-therapeutic interventions in reducing pain and improving cervical mobility. The review concludes that multiple advanced physio-therapeutic interventions—including cervical traction, specific yoga asanas, virtual reality–based training, manual therapy, craniosacral therapy, acupuncture targeting seven specific acupoints, percutaneous neuromuscular electrical stimulation, thunder-fire moxibustion, deep cervical flexor muscle training, ergonomic latex pillow use, dynamic exercises, the Saunders traction device, and high-intensity laser therapy—demonstrate significant effectiveness in reducing pain intensity and enhancing cervical range of motion in patients with cervical spondylosis.

Keywords: Electrical Stimulation, Pain, Spondylosis, Laser therapy

PhD-021: The Impact of Attention on Learning Outcomes in Students: A Narrative Review

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ABSTRACT

Attention is a critical cognitive function that directly affects students' academic performance, learning efficiency, and overall educational experience. This narrative review consolidates findings from a wide range of recent studies published between 2015 and 2025, sourced from PubMed, Google Scholar, and Science Direct. It encompasses case reports, clinical studies, clinical trials, comparative studies, controlled clinical trials, and randomized controlled trials, all available in English and reporting full-text data, ensuring methodological rigor and relevance. The initial search yielded 24,130 studies, of which 16,112 remained after applying inclusion criteria. Following title and abstract screening, 13 studies were selected for final analysis. The review was conducted in accordance with the SANRA (Scale for the Assessment of Narrative Review Articles) guidelines. The review examines the multifaceted nature of attention, focusing on sustained attention, selective attention, and executive attention, and their roles in classroom learning and academic achievement. Research consistently demonstrates that deficits in attention, particularly among students with neurodevelopmental disorders such as ADHD, are strongly linked to lower grades, reduced classroom engagement, and difficulties in information processing. Environmental factors—including classroom distractions, digital device usage, and teaching methodologies—significantly influence students' attention spans and focus. Internal factors such as sleep quality, stress levels, and mental health also play a crucial role in attentional capacity. Evidence-based strategies to enhance attention in students are explored, including mindfulness-based interventions, cognitive training programs, structured classroom routines, and tailored educational support. These approaches have shown promise in improving attentional control and academic outcomes. The review emphasizes the need for multidisciplinary collaboration between educators, psychologists, and healthcare professionals to address attention-related challenges effectively. It also calls for further research into longitudinal effects and the development of personalized interventions to support diverse student populations.

Keywords: Attention, learning, students, academic performance, cognition

PhD-022: Assessment of Physical Performance in Children with Balance and Coordination Impairments: A Structured Narrative Review

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ABSTRACT

Balance and coordination impairments are commonly observed in children with neurodevelopmental, neuromuscular, and sensory integration disorders, leading to limitations in functional mobility, participation, and daily activities. Accurate physical performance assessment is essential for early identification, individualized intervention planning, and monitoring of rehabilitation outcomes. To narratively review and synthesize existing physical performance assessment tools used to evaluate balance and coordination impairments in children, with a focus on their clinical characteristics and psychometric properties. A narrative review of published literature was conducted in which twenty studies were included, examining commonly used pediatric balance and coordination assessment tools. Tools were analyzed based on assessment domains, age applicability, scoring systems, reliability, validity, responsiveness, feasibility, and clinical utility. The review identified substantial variability among available assessment tools in terms of conceptual frameworks, psychometric strength, and functional relevance. While several instruments demonstrated acceptable reliability and validity, limitations were noted regarding ecological validity, examiner dependency, cultural adaptability, and availability of normative data across diverse pediatric populations. Functional task representation and sensitivity to change were inconsistent across tools. Current physical performance assessment tools for balance and coordination impairments in children demonstrate important strengths but also notable methodological and clinical gaps. There is a clear need for standardized, child-friendly, and culturally adaptable assessment instruments supported by robust psychometric validation. This review provides guidance for clinicians and researchers in selecting appropriate tools and highlights key considerations for future assessment tool development in pediatric rehabilitation.

Keywords: Pediatric balance assessment, Coordination impairments, Physical performance evaluation, Neurodevelopmental disorders, Psychometric properties

PhD-023: High-Intensity Functional Training in Comparison with Low-Intensity Functional Training on Cognitive, balance and functional ability in individuals with cognitive Impairment: a Clinical Trial Protocol

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ABSTRACT

Introduction: The worldwide prevalence of cognitive impairment in people aged 50 years and older is more than 15%. Cognitive impairment is also associated with a higher risk of falls, disability, and reduced independence. Motor decline and cognitive issues are closely interrelated and often lead to increased dependency. Exercise interventions such as High-Intensity Functional Training (HIFT) and Low-Intensity Functional Training (LIFT) have shown promising results in improving both cognitive and physical functions. Cognitive impairment often leads to reduced balance, gait issues and functional decline. While LIFT is commonly used, its effects are limited. HIFT involves high-intensity functional movements that may provide greater physical and cognitive benefits, but direct comparisons with LIFT are scarce. Therefore, this study aims to identify which intervention more effectively improves cognitive-motor performance.

Aim: To compare the effects of HIFT and LIFT on cognition, balance, and functional ability in individuals with cognitive impairment. **Materials and Method:** This randomized clinical trial will include 50 individuals aged 55–75 years with cognitive impairment (MoCA score 18–25), recruited from the outpatient physiotherapy department of T.D.T.R. D.A.V. Institute of Physiotherapy and Rehabilitation, Yamunanagar. Participants with Borg RPE ≤ 13 and resting BP $< 160/100$ mmHg will be randomly assigned to Group A (HIFT) or Group B (LIFT). Both groups will train for 8 weeks, three sessions per week. Outcomes—MoCA, Berg Balance Scale, and Functional Independence Measure—will be assessed at baseline, 4 weeks, and 8 weeks.

Results: Data normality will be tested using the Kolmogorov–Smirnov test. Descriptive statistics and appropriate parametric or non-parametric tests will be used for within- and between-group comparisons.

Conclusion: Any one intervention HIFT or LIFT can be better in improving cognition, balance, and functional ability in individuals with cognitive impairment.

Keywords: Middle Aged, Accidental Falls, High-Intensity Interval Training, Activities of Daily Living, Cognition, Cognitive Dysfunction, Exercise Therapy

PhD- 024: A Physiotherapeutic Approach Using Pelvic Floor and Core Muscle Training along with Transcutaneous Electrical Nerve Stimulation for Enhancing Quality of Life in Perimenopausal Women

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ABSTRACT

Introduction: Perimenopause is a transitional phase leading to menopause, characterized by declining ovarian function and fluctuating levels of estrogen and progesterone. These hormonal changes play a significant role in the development of various physical and psychological symptoms, such as low back pain, musculoskeletal discomfort, hot flashes, fatigue, mood disturbances, and sleep disorders. Collectively, these symptoms can substantially impair daily functioning and overall quality of life.

Aim: To evaluate the effectiveness of a physiotherapeutic intervention comprising pelvic floor and core muscle training combined with transcutaneous electrical nerve stimulation (TENS) for enhancing the quality of life in perimenopausal women.

Material and Methods: This experimental pilot study included 24 female participants and was conducted in the Department of Physiotherapy at Shri Mahant Indresh Hospital, Dehradun. The study assessed perimenopausal symptoms, pelvic floor muscle weakness, pelvic and low back pain, perineal laxity, urinary incontinence, and quality of life before and after the physiotherapy intervention. Outcome measures included the Menopausal Rating Scale, Modified Oxford Grading Scale, Visual Analogue Scale for low back and pelvic pain, ICIQ-UI SF, and WHOQOL-BREF. Participants underwent a physiotherapy intervention consisting of pelvic floor and core muscle training, along with TENS.

Results: The findings indicate that consistent pelvic floor and core muscle training combined with TENS resulted in significant improvements in muscle strength, along with noticeable reductions in low back pain, pelvic pain, and urinary incontinence. Participants also demonstrated meaningful enhancements in overall quality of life following the intervention.

Conclusion: The study demonstrated progressive improvements in pelvic floor muscle strength, as evidenced by increased Modified Oxford Grading Scale scores, accompanied by reductions in menopausal symptom severity, back and pelvic pain, and urinary incontinence. Improvements in quality of life were consistently observed across outcome measures. The inverse relationship between increased muscle strength and reduced symptom severity highlights the effectiveness of integrating pelvic floor and core muscle training with TENS as a physiotherapeutic approach for managing perimenopausal symptoms and enhancing quality of life.

Keywords: Pelvic floor muscle training, Core muscle training, Physiotherapy intervention, Perimenopausal women

PhD-025: Association of Post-Stroke Cognitive Impairment and Role of Physiotherapy in Modulating Blood Biomarkers: A Systematic Review

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ABSTRACT

Post-stroke cognitive impairment (PSCI) is a prevalent and debilitating consequence of stroke that negatively impacts functional recovery, rehabilitation engagement, and quality of life. In addition to focal brain injury, post-stroke cognitive impairment (PSCI) is progressively recognized to encompass systemic biological processes, including inflammation, disrupted neurotrophic signaling, oxidative stress, and metabolic dysregulation. Blood-derived biomarkers indicative of these processes have surfaced as prospective measures of cognitive susceptibility and recuperation. Physiotherapy, especially exercise-based rehabilitation, may affect these metabolic pathways; however, the data connecting physiotherapy-induced biomarker modulation to cognitive results is inconsistent. This systematic review aimed to examine the association between PSCI and blood biomarkers, and to evaluate the role of physiotherapy in modulating these biomarkers in relation to cognitive outcomes following stroke. A thorough literature review was performed throughout PubMed/MEDLINE, Scopus, Web of Science, and Google Scholar from the beginning of the databases to August 2025. Manual reference screening was conducted as well. A total of 65 records were found. After screening titles, abstracts, and full texts according to established qualifying criteria, 14 papers were incorporated into the qualitative synthesis. Randomized controlled trials were evaluated with the Cochrane Risk of Bias 2 tool, whereas the observational study was appraised using the Newcastle–Ottawa Scale. The studies assessed aerobic exercise, resistance training, high-intensity interval training, dual-task training, and hybrid exercise-cognitive therapies. The evaluated biomarkers encompassed inflammatory markers (C-reactive protein, interleukin-6), neurotrophic factors (brain-derived neurotrophic factor, insulin-like growth factor-1), as well as indicators of oxidative stress and autonomic modulation. Physiotherapy therapies were typically linked to positive alterations in certain blood biomarkers and enhancements in cognitive performance, despite significant variability among interventions and end measures. Current research indicates a possible correlation between physiotherapy, regulation of blood biomarkers, and cognitive outcomes post-stroke; however, the reliability of this evidence is low to moderate. Additional extensive, biomarker-directed randomized trials utilizing standardized cognitive and biological outcome metrics are necessary.

Keywords: Post-stroke cognitive impairment; Physiotherapy; Exercise rehabilitation; Blood biomarkers; Neuroplasticity; Systematic review.

PhD-026: Efficacy of Pulsed Electromagnetic field alongwith Core Strengthening Exercises in Primary Dysmenorrhea: A Case Report

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ABSTRACT

Primary dysmenorrhea (PD) is the presence of painful cramps of uterine origin that occur during menstruation. The prevalence of PD has been reported to be between 40% and 90% of female adolescents and 10-20% of young adult females. Besides pain, nausea, vomiting, fatigue, back pain, headaches, dizziness and diarrhoea are the secondary symptoms of PD. The aim of this study is to explore the role of a combined physiotherapeutic approach consisting of pulsed electromagnetic field therapy and core strengthening exercises in reducing menstrual pain in primary dysmenorrhea. This case report presents a 20 year young female diagnosed with primary dysmenorrhea who experienced recurrent severe menstrual pain accompanied by reduced functional tolerance during menstruation. Pain, quality of life and degree of dysmenorrhea were the outcome measures. All the outcome measures were measured and assessed before and after the intervention. Following the intervention, the patient demonstrated a substantial reduction in pain intensity and notable improvement in functional performance during menstruation. Mean pain score decreased from 9 to 3, WaLIDD score reduced from 11 to 6 and the mean quality of life score was improved from 49 to 60. The treatment was well tolerated, and no adverse events were reported throughout the intervention period. It can be concluded that Pulsed electromagnetic field alongwith core strengthening exercises is effective in reducing pain, severity of dysmenorrhea and improve quality of life in a female with primary dysmenorrhea.

Keywords: Primary dysmenorrhea, Pulsed electromagnetic field, Exercises

PhD-027: Effects of different exercises on clinical outcomes in patients with Cervical Spondylosis: A Pilot Study

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ABSTRACT

Introduction: Cervical Spondylosis (CS) is one of the most prevalent musculoskeletal conditions among the elderly, with increasing prevalence.

Aim: To assess the feasibility of implementing sensorimotor exercises and motor control exercises in patients with cervical spondylosis and to explore their preliminary effects on pain, neck disability, neck range of motion, and proprioception.

Materials and Methods: A pilot study was conducted on 60 participants diagnosed with cervical spondylosis aged 40–60 and randomly assigned into four equal groups (n = 15). Group A received conventional treatment only, Group B received sensorimotor exercises, Group C received motor control exercises, and Group D received combined treatment of all groups. The study outcomes were pressure pain threshold, neck disability index, range of motion, and joint position error test for neck function measured at 3 time points, i.e., at baseline, 6th week, and 8th week.

Results: Group D showed the greatest reduction in pain, neck disability, range of motion, and proprioception, followed by both Groups B and C. All interventions were effective in improving the neck pain and function when compared to baseline ($p < 0.000$). However, overall neck function was significantly improved in group D ($p = 0.001$), neck disability index (NDI) ($p = 0.001$), joint position error (JPE) ($p = 0.001$), and range of motion ($p = 0.001$), followed by both groups B and C.

Conclusion: This study concluded that the combination exercises group appears to be more effective than other groups in the early reduction of pain, neck disability, and neck range of motion, and in improving proprioception in patients with cervical spondylosis. It will be useful for physios who deal with cervical spondylosis patients; they can assess and accordingly devise treatment protocols for the benefit of the patient, providing early relief in addition to usual rehab approaches.

Keywords: Neck, Spondylosis, Motor control exercises, Sensorimotor Exercises, Neck isometric Exercises.

PhD-028: Leap Motion Based Training Versus Task Oriented Training on Motor Functions in Hemiplegic Hand: A Study Protocol

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ABSTRACT

Introduction: After a stroke, hand weakness and poor control often limit daily activities. While task-oriented training is effective, but it can sometimes feel repetitive and less engaging, whereas Leap Motion technology offers a more engaging and interactive approach to improve hand recovery.

Aim: The purpose of this study is to explore how Leap Motion training compares with Task-oriented training in helping stroke survivors to regain movement and function in their hemiplegic hand.

Materials and Methods: A total of 40 stroke patients of Brunnstrom hand recovery stage 4 and above will be recruited for this randomized clinical trial according to inclusion and exclusion criteria. Participants will be randomly allocated into two groups using a computer-generated randomization method. Group 1 will undergo Leap Motion-based training, while Group 2 will receive task-oriented training for hemiplegic hand rehabilitation. Pre- and post-intervention assessments will be conducted using the Fugl-Meyer Assessment for the Upper Extremity (wrist and hand subscale), the Sollerman Hand Function Test, the Action Research Arm Test, and the Nine-Hole Peg Test. Each intervention will consist of 40-minute sessions administered five days per week for four consecutive weeks.

Results: Normality will be found by using Shapiro-wilk test. If the data will found to be normally distributed, parametric test will be used. For within group paired t-test will be used. For between group, Independent t-test will be used for analysis. If the data will not found to be normally distributed, then non-parametric tests i.e. Wilcoxon Signed rank test will be used for within group and Mann-Whitney U test will be used for between group analyses.

Conclusion: This study will provide evidence on whether Leap Motion training can be as effective as, or superior to, task oriented training in restoring functional hand use in stroke survivors.

Keywords: stroke, Task oriented training, Leap motion, Hand Rehabilitation

PhD-029: A Scoping Review on the Influence of Aerobic Exercise Training on Hemodynamic Parameters in Pulmonary Arterial Hypertension

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ABSTRACT

Pulmonary arterial hypertension (PAH) is a progressive cardiopulmonary disorder characterized by elevated pulmonary vascular resistance, right ventricular overload, and marked limitation in exercise tolerance. Exercise training has recently emerged as a promising adjunct to pharmacological therapy; however, its specific influence on hemodynamic parameters remains incompletely defined. This scoping review aims to map and synthesize existing evidence on the effects of structured exercise interventions on hemodynamic outcomes in individuals with PAH. Literature search was performed using search strategy on PubMed, Scopus and Pedro databases during 2015-2025. A total 3079 articles were found via database searching out of which only 25 studies were relevant meeting the inclusion criteria. Through systematic analysis of these trials, supervised aerobic and interval training programs demonstrate safety and efficacy by enhancing exercise tolerance, peak oxygen uptake, and patient-reported outcomes. While some studies observe reductions in mean pulmonary artery pressure and pulmonary vascular resistance, hemodynamic responses vary widely, underscoring the importance of individualized exercise prescriptions. All of the evaluated trials showed favorable or neutral hemodynamic effects from aerobic exercise training in patients with pulmonary arterial hypertension. Exercise regimens under supervision greatly increased cardiac output and cardiac index, and several studies found a decrease in pulmonary vascular resistance. Increased exercise capacity (6-minute walk distance and peak VO_2) coincided with improvements in hemodynamics. Despite these encouraging findings, limitations include small cohorts, methodological disparities, and inconsistent training protocols. Large-scale, rigorously designed trials are essential to optimize exercise regimens and clarify underlying mechanisms. Integrating tailored exercise rehabilitation into standard PAH management represents a promising strategy to improve survival, functional status, and overall patient well-being, marking a paradigm shift toward comprehensive multidisciplinary care.

Keywords: Pulmonary arterial hypertension, exercise training, hemodynamics

PhD-030: A Systematic Review on the Efficacy of Mulligan Mobilization on Pain in Patients with Mechanical Neck Pain

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ABSTRACT

Mechanical neck pain (MNP) is a common condition that causes pain and limits movement in the cervical area. It is mostly caused by mechanical factors such as muscle strain, ligament sprain, bad posture, or overuse. This illness impacts a significant segment of the adult population, with global prevalence rates estimated to be between 30% and 50%. MNP is the second most frequent musculoskeletal problem, after low back pain. This highlights the importance of public health and quality of life. People who sit for long periods, have sedentary lifestyles, or repeatedly perform the same neck movements are more likely to develop this ailment. This is a big problem for middle-aged adults and office workers. Persistent neck discomfort, stiffness, limited range of motion (ROM), and muscle spasms are the main symptoms of MNP. These symptoms are often accompanied by headaches that start at the base of the skull. Mulligan mobilisation, especially sustained natural apophyseal glides (SNAGs), is a manual therapy technique that has been suggested as a potential intervention for alleviating symptoms associated with mechanical neck pain. This systematic review aims to evaluate the efficacy of Mulligan Mobilisation on pain reduction in Mechanical Neck Pain patients. We conducted a systematic review to assess the efficacy of Mulligan mobilization on pain reduction. Pain intensity (NPRS) is the primary outcome measure. The quality of included studies is assessed by the PEDro Rating scale. Risk of bias is assessed using the Cochrane Collaboration tool for risk of bias. All included RCTs reported a significant reduction in pain intensity (NPRS) following Mulligan mobilization (SNAGs) compared to the control group. NPRS showed greater improvement in the experimental group.

Keywords: Neck pain, Range of motion, quality of life, sprains and strains, posture

PhD-031: Systematic review for the efficacy of thoracic spinal manual therapy on pulmonary functions

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ABSTRACT

Optimal pulmonary function (PF) plays a critical role in providing oxygen to adequately meet the bioenergetic demands of the metabolic tissues that support physical activity. Declines in PF are observed with age and can have a negative impact on physical activity. Thoracic spinal manual therapy (TSMT) encompasses a range of treatment techniques that target the musculoskeletal system, soft tissues of the thoracic spine, which increases thoracic spinal mobility. These include joint manipulation and mobilization, soft tissue mobilization, etc and has been suggested as a potential intervention for improving pulmonary functions in individuals. This systematic review aims to evaluate the effectiveness of Thoracic Spinal Manual Therapy (TSMT) on pulmonary functions. This systematic review is conducted to assess the effect of thoracic spinal manual therapy on pulmonary functions. Mean changes in FVC (Forced Vital Capacity) is the primary outcome measure. Quality of the included studies was assessed by PEDro Rating scale. Risk of bias was assessed by Cochrane collaboration tool of risk of bias. All included RCTs reported a significant improvement in the pulmonary functions as compared to the control group. Spinal manual therapy is effective in improving pulmonary functions.

Keywords: Vital capacity, musculoskeletal manipulations, health care

PhD-032: Effect of High-Intensity Laser Therapy on Knee Pain, Function and Range of Motion in a Knee Osteoarthritic Postmenopausal Woman with Type 2 Diabetes: A Case Report

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ABSTRACT

Knee Osteoarthritis is a common degenerative joint disease, and it becomes more difficult to manage in post-menopausal women with type 2 diabetes because of the change in pain perception, tissue healing, and functional impairment. High-Intensity Laser Therapy (HILT) has also become a non-invasive modality that has the potential to possess analgesic and anti-inflammatory effects due to deep tissue penetration and photobiomodulation. The case report explains the benefits of administering High-Intensity Laser Therapy on knee pain, function, and Range of Motion (ROM) in a knee osteoarthritic postmenopausal type 2 diabetic female. A postmenopausal female of 61 years with a history of diabetes, type 2, and radiographically verified right knee osteoarthritis (Kellgren & Lawrence grade II) complained of chronic knee pain, stiffness, and functional impairment. The patient was treated with High-Intensity Laser Therapy around the affected knee over the periarticular area with the Zimmer® system applied via non-contact scanning method, three sessions per week for three weeks. The pain intensity was assessed by Visual Analogue Scale (VAS), functional status by Knee Injury and Osteoarthritis Outcome Score (KOOS) and knee joint ROM by goniometer. The patient reported a clinically substantial decrease in pain from a VAS score of 7 to 4 points, with an improvement in KOOS score from 41.6 to 67.4 points and an increase in knee flexion ROM from 1050 to 1200 post-intervention, with no adverse effects. The results indicate that High-Intensity Laser Therapy can be used as a safe and effective alternative to the conservative physiotherapy treatment of knee osteoarthritis in type 2 diabetic postmenopausal women. Future research is justified to verify these findings.

Keywords: Female, Diabetes Mellitus Type 2, Osteoarthritis, Pain, Postmenopause

Phd-033: Exploring the synergy between Pulsed Electromagnetic Field and Ayurvedic Dosha functions (Vata, Pitta, Kapha): A Scoping Review

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ABSTRACT

Pulsed Electromagnetic Field (PEMF) therapy is a non-invasive biophysical modality increasingly used in rehabilitation medicine for musculoskeletal, neurological, and systemic disorders. Ayurveda, the classical Indian system of medicine, conceptualizes health through the balance of three regulatory principles—Vata, Pitta, and Kapha. Each dosha governs specific domains of physiology: Vāta (movement, circulation, nervous activity), Pitta (digestion, metabolism, thermoregulation, inflammatory balance), and Kapha (structure, stability, immunity, fluid balance). This scoping review synthesizes evidence from biomedical studies on PEMF and maps outcomes into Ayurvedic dosha functions. Results demonstrate that PEMF modulates ion channels, neuronal excitability, and circulation, aligning strongly with Vāta functions. It influences lipid metabolism, oxidative stress, and cytokine regulation, supporting Pitta's roles in metabolic and inflammatory balance. Furthermore, PEMF enhances osteogenesis, bone healing, and tissue repair, resonating with Kapha functions of structure and cohesion. Despite promising overlaps there is still gaps that include heterogeneity of PEMF protocols, limited clinical endpoints, and absence of interdisciplinary trials. We conclude that PEMF therapy may represent a modern adjunct capable of balancing dosha functions and propose integrative trial designs that combine biomedical markers with Ayurvedic assessments.

Keywords: Ayurveda, Dosha, Integrative Medicine, Kapha, Vata, Physiotherapy, Pitta, Pulsed Electromagnetic Field (PEMF)

PhD-034: Role of Peak Expiratory Flow Rate in Detecting Obstructive Pulmonary Diseases: A Literature Review

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ABSTRACT

Peak Expiratory Flow Rate, or PEFr, is an important metric for monitoring and controlling lung health. PEFr plays a crucial role in respiratory care by providing information about its physiological base, influencing factors, improvements, and diagnostic accuracy, contributing to a deeper understanding of its significance in the comprehensive management of respiratory conditions. PEFr values are influenced by various factors, including anthropometric parameters like age, gender, height, and overall health status. A search protocol was conducted using the online databases PubMed, CENTRAL, Scopus and others. Articles were required to meet the following criteria to be included in this review: PEFr as a part of intervention, include at least one article related to effect of PEFr in childhood obesity, include quantitative outcomes, and to be published in English in a peer-reviewed journal. A total of N=39 articles were included in this review. This literature review aims to evaluate the efficacy of PEFr as a predictive tool for obstructive lung disease by analyzing existing studies on its sensitivity, specificity, and overall utility in clinical practice

Keywords: PEFr, Anthropometry parameters, Lung health

PhD-035: Immersive virtual reality and boxing performance: a preliminary review

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ABSTRACT

Virtual Reality is being used extensively in rehabilitation with proven outcomes. The advent of VR systems in the realm of sports training is relatively recent, but is gaining popularity. Studies in other sports indicate positive outcomes in terms of conditioning, skill acquisition and other parameters. The aim of this review was to provide a preliminary synthesis of original research studies pertaining to immersive VR boxing games and other training systems. Following a registered protocol (PROSPERO CRD420251114909), English language experimental and quasiexperimental studies were evaluated, involving adult amateur boxers or participants engaging in boxing or boxing activities/ exercises. Comparators included conventional boxing training, traditional high intensity circuit training, nonVR control conditions or alternative VR configurations. The main databases searched were CLIB - The Cochrane Library, PubMed, SCI - Science Citation Index and Scopus, as well as identification of other studies by looking through all the articles that cite the papers included in the review ("snowballing"), reference list checking and searching conference proceedings with no restrictions of date of publishing. A total of 24 published studies were retrieved and data was synthesised narratively. After the identification and evaluation of published studies, it was found that VR boxing training in amateur or recreational populations was typically delivered as short adjunctive exergaming sessions, with improved balance and agility as an adjunct to conventional training. Prototype systems demonstrated feasibility for capturing punch rate, reaction time and posture, although longitudinal performance and bout outcomes were rarely reported. In conclusion, Immersive VR boxing appears to be a feasible, engaging adjunct to conventional training that may enhance balance, agility and selected perceptual-motor skills, but evidence on punch force, transfer to real bouts and other performance parameters of boxing is limited, which emphasises the need for high quality randomized trials with standardized boxing specific outcomes.

Keywords: Boxing; Virtual Reality; Computer Simulation; Boxing; Performance

PhD-036: Effectiveness of Functional Electrical Stimulation on Functional Abilities at Different Recovery Stages in Individuals with Post-Stroke Hemiparesis: A Systematic Review

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ABSTRACT

Stroke is one of the leading causes of disability among adults worldwide. Common post-stroke complications such as motor weakness, poor motor control, and spasticity often result in significant functional limitations and long-term disability in the affected extremities. Functional Electrical Stimulation (FES), is frequently used as an adjunctive therapy to enhance functional abilities in individuals with post-stroke hemiparesis. However, the stage of recovery at which functional electrical stimulation is most effective for individuals with post-stroke hemiparesis has not yet been clearly established. The aim of this systematic review was to identify the recovery stages at which functional electrical stimulation is most effective. The literature search was conducted using electronic databases, including Scopus, PubMed, PEDro, and Google Scholar, to identify relevant studies published between January 2006 and November 2025. This review included only randomized controlled trials (RCTs). The search was performed using keywords such as functional electrical stimulation, hemiparesis, stroke, acute, sub-acute and chronic stage and functional electrical stimulation in the management of hemiplegia. The methodological quality of the included RCTs was evaluated using the PEDro scale. Electronic database searches yielded 796 studies, of which 16 randomized controlled trials met the eligibility criteria and were included in this review. The results demonstrate substantial evidence supporting the effectiveness of functional electrical stimulation (FES) along with task oriented activities in improving motor functions and functional abilities of upper and lower extremities. FES appears to be more beneficial when implemented within the first year after stroke, contributing to enhanced functional abilities and performance in activities of daily living.

Keywords: Functional electrical stimulation, hemiparesis, stroke, and functional abilities, hemiplegia, acute, sub-acute and chronic stage

PhD-037: Impact of Dynamic Neuromuscular Stabilization exercises on pain, disability, mental health, and quality of life in postmenopausal women with lumbopelvic pain

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ABSTRACT

Introduction: Chronic lumbopelvic discomfort with unknown etiology affects 70.4% of women in India. The fluctuation of estrogen, especially after menopause, increases bone resorption, pain perception, and body weight, thereby altering body biomechanics, resulting in lumbopelvic pain. The Dynamic Neuromuscular Stabilization (DNS) technique focuses on breathing patterns, controlling intra-abdominal pressure, and integrating deep bracing muscles. Its palliative use in lumbopelvic pain post menopause has yet to be ascertained.

Aim: This study aimed to assess the effectiveness of the DNS exercise program on the lumbar and pelvic pain in postmenopausal women.

Materials and Methods: Forty postmenopausal women, aged 40–55, with chronic lumbopelvic pain diagnosed as per the prediction model of lumbopelvic pain risk factors, were recruited and then randomly assigned to two equal groups. The experimental group did DNS exercises for 8 weeks (20 minutes a day, three times a week). The control group received general lifestyle advice, including menopause specific precautions, general mobility recommendations, and dietary guidelines. Measurements were taken for both groups pre and post intervention: Pain (NPRS), Disability (Oswestry Disability Index), Mental health (Fear-Avoidance Beliefs Questionnaire), and Quality of life (Menopausal Quality of Life Questionnaire).

Results: The pain intensity between the control and the experimental group participants was found to be significantly different ($p < 0.001$) at the end of 8 weeks, thereby ascertaining the significance of treating such patients with DNS therapy. Disability scores from baseline were statistically significant, along with mental health. The experimental group had an improved quality of life that significantly differed from the control group, presenting no change.

Conclusion: DNS exercises enhance dynamic postural control and appear to be an effective therapeutic approach for alleviating chronic lumbopelvic pain in postmenopausal women. By improving neuromuscular control and breathing patterns, DNS can positively affect both the physical and psychological components of chronic pain.

Keywords: Chronic lumbopelvic pain, Dynamic Neuromuscular Stabilization exercise, Menopause, Women's health.

PhD-038: Multisystem Physiological Effects of Menopause on Musculoskeletal, Cardiovascular, and Vasomotor Function: A Physiotherapy-Oriented Narrative Review

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ABSTRACT

Menopause is a significant endocrine milestone associated with estrogen deficiency and widespread physiological adaptations affecting musculoskeletal integrity, cardiovascular health, and thermoregulatory control. These changes contribute to reduced physical function, elevated cardiometabolic risk, and distressing vasomotor symptoms, ultimately impacting quality of life. Physiotherapy-based exercise interventions are increasingly advocated as first-line non-pharmacological management plan; however, consolidated evidence from randomized controlled trials (RCTs) remains essential for evidence-based clinical decision-making. To review randomized controlled trials evaluating the effects of physiotherapy-based exercise interventions on musculoskeletal, cardiovascular, and vasomotor changes in menopausal women to manage these multisystem effects. A narrative review of randomized controlled trials published between 2010 and 2025 was conducted using PubMed, Scopus, and PEDro databases. The initial database search yielded 186 records. After removal of duplicates and screening of titles and abstracts, 64 full-text articles were assessed for eligibility. Following application of predefined inclusion and exclusion criteria, 38 randomized controlled trials involving peri- and postmenopausal women were included in the final review. Studies evaluating physiotherapy-based interventions with reported musculoskeletal, cardiovascular, or vasomotor outcomes were included, while trials focusing solely on pharmacological management were excluded. The included RCTs consistently demonstrated that resistance and weight-bearing exercise programs improved muscle strength, physical function, and bone-related outcomes in postmenopausal women. Aerobic exercise interventions were associated with significant improvements in cardiorespiratory fitness, blood pressure regulation, and overall cardiovascular risk profiles. Additionally, several trials reported a clinically meaningful reduction in the frequency and severity of vasomotor symptoms following regular aerobic or mind-body exercise interventions, suggesting enhanced autonomic and thermoregulatory adaptation. Evidence from randomized controlled trials supports the role of physiotherapy-based exercise interventions in mitigating musculoskeletal decline, reducing cardiovascular risk, and alleviating vasomotor symptoms associated with menopause. An integrated, evidence-based physiotherapy approach is essential for optimizing functional health and improving quality of life in menopausal women.

Keywords: Menopause, Physiotherapy, Exercise therapy, Musculoskeletal health, Cardiovascular function, Vasomotor symptoms

PhD-039: Biomechanical Alterations Associated with Sacroiliac Joint Dysfunction: A Narrative Review

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ABSTRACT

Sacroiliac (SI) joint dysfunction represents a complex source of lumbopelvic pain, characterized by disturbances in load transmission, altered pelvic kinematics, and impaired force closure mechanisms. There are several biomechanical contributors, potentially modifying joint congruency and neuromuscular control within the lumbopelvic region. This narrative review synthesizes evidence derived from clinical trials evaluating biomechanical alterations in individuals with SI joint dysfunction and examining the therapeutic influence of manipulative interventions. Across the included trials, interventions targeting sacral alignment—such as high-velocity low-amplitude manipulation and muscle energy techniques—were associated with statistically and clinically meaningful reductions in pain and disability when compared with control or comparator interventions. Several studies additionally demonstrated favorable changes in biomechanical parameters, including pelvic symmetry, sacral mobility, and lumbopelvic coordination, suggesting partial restoration of normal kinematic patterns. Nevertheless, heterogeneity in diagnostic approaches for biomechanical assessment methods, and intervention protocols constrains the synthesis of definitive mechanistic conclusions. In summary, evidence from experimental designs supports the biomechanical plausibility and clinical utility of manipulative interventions in addressing SI joint dysfunction. Future investigations employing standardized diagnostic criteria, objective biomechanical outcome measures, and extended follow-up periods are required to elucidate long-term biomechanical adaptations and optimize intervention strategies.

Keywords: Sacroiliac joint dysfunction, Biomechanics; Manipulative therapy, High-velocity low-amplitude manipulation, Physiotherapy interventions

Ph.D-40: Role of Artificial Intelligence in Revolutionizing Injury Prevention and Rehabilitation Monitoring to Reduce Re-Injury Risk in Athletes patients.

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ABSTRACT

Artificial Intelligence (AI) is transforming sports medicine by revolutionizing injury prevention and rehabilitation monitoring for athletes recovering from orthopaedic procedures like ACL reconstruction or rotator cuff repairs, re-injury risk is a critical concern due to biomechanical imbalances and improper movement patterns. Traditional clinical methods often fail to detect subtle inefficiencies; however, AI-driven motion analysis utilizing machine learning, computer vision, and wearables offers a sophisticated platform for evidence-based decision-making to optimize recovery. The primary objective of this research is to evaluate the transformative potential of AI-driven movement analysis in predicting and preventing re-injury risk during post-orthopaedic rehabilitation. It specifically explores the integration of advanced technologies to enable precise, real-time biomechanical assessments and personalized therapy adjustments. This study examines the application of multimodal data sources, including wearable sensors (IMUs), computer vision systems, and electronic health records. Advanced AI algorithms, such as neural networks and decision trees, are used to process complex datasets comprising joint kinematics, muscle activation patterns, and training loads. The research also highlights the use of real-time feedback mechanisms like smart insoles and AI-powered balance boards to monitor functional recovery. AI systems successfully detect micro-level deviations, such as gait asymmetry exceeding 10–15%, which significantly increases lower-limb re-injury risk. Predictive modeling integrating heart rate variability (HRV) and muscle fatigue has identified a 40% likelihood of re-injury in high-risk athletes. Furthermore, AI-guided personalized rehabilitation programs have been shown to reduce re-injury rates by 25% to 30% and accelerate recovery times by approximately 15% compared to standardized protocols. AI-driven movement analysis represents a paradigm shift in orthopaedic physiotherapy by providing proactive, personalized care. While challenges regarding data standardization and computational efficiency remain, the integration of emerging technologies like Federated Learning, Explainable AI (XAI), and Virtual Reality (VR) promises to further enhance both physical and cognitive recovery outcomes for athletes.

Keywords: Artificial Intelligence, Motion Analysis, Orthopaedic procedures, Re-injury Prediction, Biomechanics, Wearable Sensors, Kinematics,

PhD-041: Comparison of Cognitive Functional Therapy and Neuromuscular Training on Cognitive function, Kinesiophobia and functional recovery in Individuals with Chronic Non-Specific Low Back Pain

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ABSTRACT

Introduction: Chronic Non-Specific Low Back Pain (CNSLBP) constitutes 85–90% of low back pain cases, with rising prevalence in India. Its chronicity leads not only to physical disability, it leads to significant psychosocial and cognitive impairments, adversely affecting quality of life. Cognitive Functional Therapy (CFT) targets maladaptive beliefs, pain behaviours, and lifestyle factors, while Neuromuscular Training (NMT) emphasizes spinal stability, proprioception, and functional recovery. Although both interventions are evidence-based, no Indian randomized controlled trial has yet compared their effects on cognitive function, kinesiophobia, and functional outcomes in CNSLBP.

Aim: To compare the effectiveness of CFT and NMT, each combined with conventional physiotherapy and conventional Physiotherapy alone, on cognitive function, kinesiophobia, and functional recovery in patients with CNSLBP.

Materials & Methods: A pre-test–post-test control group study will be conducted at a low back pain clinic in Kolkata. Adults aged 25–55 years with CNSLBP (>12 weeks) will be randomly allocated to three groups: CFT plus conventional physiotherapy, NMT plus conventional physiotherapy, and conventional physiotherapy alone. Interventions will be delivered over 8 weeks. Outcomes—Oswestry Disability Index, Tampa Scale for Kinesiophobia (TSK-11), Fear-Avoidance Beliefs Questionnaire, Cognitive Behaviour Questionnaire, and Numerical Pain Rating Scale—will be assessed at baseline, week 4, and week 8.

Results: Data normality will be tested using the Shapiro–Wilk test. Within-group changes across time (baseline, week 4, week 8) will be analyzed using repeated-measures ANOVA for parametric data and the Friedman test for non-parametric data. Between-group comparisons will be performed using two-way mixed ANOVA (Group × Time) with Bonferroni-adjusted post hoc analysis, while non-parametric comparisons will use the Kruskal–Wallis test with Dunn–Bonferroni correction.

Conclusion: This study will compare CFT and NMT in the Indian context, addressing both biomechanical and psychosocial aspects of CNSLBP. The findings may guide culturally relevant, multidimensional, patient-centred physiotherapy practice.

Keywords: Chronic Non-Specific Low Back; CFT; NMT; Conventional Physiotherapy; Cognitive Function

PhD-042: Effects of Exercise-Induced Hypoalgesia on Pain Threshold and Sensitivity: A systematic review

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ABSTRACT

Pain is a universal human experience characterized by considerable inter-individual variability in both threshold and tolerance. Chronic pain conditions significantly diminish quality of life, often leading to activity avoidance and functional impairment. Exercise-induced hypoalgesia (EIH) has gained attention as a promising therapeutic approach capable of modulating central pain processing through activation of descending inhibitory pathways and attenuation of central sensitization. Despite growing interest, the relationship between exercise interventions and pressure pain threshold (PPT) remains not fully understood. Therefore, the aim of this study is to synthesize evidence from randomized controlled trials examining the effects of exercise-induced hypoalgesia on pain threshold and sensitivity in healthy adult populations, with specific emphasis on pressure pain threshold (PPT) and conditioned pain modulation (CPM) as primary outcome measures. This systematic review protocol was registered in PROSPERO (CRD420251164195), and the search was conducted in PubMed, CINAHL, Embase, and Scopus for randomized controlled trials involving healthy adults (≥18 years). Studies included structured exercise interventions such as aerobic, resistance, isometric, or interval training and reported quantitative sensory testing outcomes. Two reviewers independently screened articles, extracted data, and assessed risk of bias using the Cochrane RoB-2 tool, with consensus resolution. Preliminary data analysis was performed to examine trends in outcome measures. In this study, five randomized trials met the eligibility criteria. Exercise type and intensity varied across studies. Most interventions increased pressure pain threshold (PPT) and improved conditioned pain modulation (CPM) responses, showing short-term reductions in pain sensitivity after exercise. Higher-intensity and interval-based exercise generally produced stronger effects than lower-intensity protocols. In conclusion, exercise appears to produce short-term hypoalgesic effects in healthy adults, particularly when higher-intensity protocols are used. Standardized testing procedures, larger sample sizes, and comparison of exercise parameters are recommended to guide clinical application and future research.

Keywords: Hypoalgesia, Pain sensitivity, Exercise-induced hypoalgesia, Conditioned pain modulation, Pressure pain threshold.

PhD-043: Effect of blood flow restriction training with short foot exercises on muscle activation and balance in flexible flatfeet: A pilot randomised control trial

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ABSTRACT

Introduction: Flexible flatfoot is commonly associated with altered foot muscle activation and impaired balance, which may increase the risk of injury and functional limitations. Short foot exercises are widely used to enhance intrinsic foot muscle function, while blood flow restriction training has emerged as a novel method to amplify neuromuscular adaptations at low exercise loads.

Aim: This study aimed to assess the combined impact of Blood Flow Restriction training (BFRT) and Short Foot Exercises (SFE) on Abductor Hallucis (AbdH) muscle activation via surface Electromyography (sEMG) and dynamic balance using Limits of Stability (LOS).

Materials and Methods: A single-blinded randomized control trial with 20 participants (8 males, 12 females) having flexible flat feet aged 18-25 years were randomly assigned to either the study (n=10) or control (n=10) group. The study group performed SFE with BFRT, while the control group performed only SFE, three alternate days a week for four weeks. Muscle activation of the AbdH and dynamic balance were measured post-intervention. The significance level was set at $p < 0.05$.

Results: Wilcoxon test yielded a significant increase in activation of AbdH for study group right ($p = 0.005$), left ($p = 0.007$) and in the control group; right ($p = 0.005$), left ($p = 0.005$) post 4 weeks. The study group demonstrated significant improvements ($p < 0.05$) in Maximal Excursion (MXE) for all directions, while Reaction Time (RT) showed no significant improvement. Movement Velocity (MVL) improved in all except for 2 directions, Endpoint Excursion (EPE) improved in 5 out of 8 directions and Directional Control (DCL) significantly improved in 3 directions. The control group showed improvement for MXE in all directions except "right" direction. RT significantly improved in 3 directions, while MVL, EPE and DCL improved in 2 directions.

Conclusion: BFRT is a novel technique which can be used for strength training of intrinsic foot muscles and to improve dynamic balance.

Keywords: Short foot exercises, surface electromyography, Limits of stability, Pneumatic cuff, Abductor hallucis.

PhD-044: Impact of Oblique sling training on Agility, Dynamic Balance and Performance in Amateur Badminton Players: An Experimental Study

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ABSTRACT

Introduction: Badminton is a fast-paced, multidirectional sport that recruits multiplanar muscles and fascial structure, for efficient force transfer across the kinetic chain. Core stability, particularly through integrated myofascial systems such as the oblique slings, plays a crucial role in facilitating rotational movements, directional changes, and postural control. While traditional core strengthening is commonly used in training, effectiveness of targeted oblique sling muscle training on badminton performance parameters remains unclear.

Aim: To evaluate the effects of anterior oblique sling muscle training as compared to traditional core strengthening on agility, dynamic balance, and sports performance in amateur badminton players.

Materials and Methods: Sixty amateur badminton players aged 18–40 years were recruited and randomly allocated into: Group A (experimental group) who underwent an oblique sling exercise program, while Group B (control group) performed traditional core strengthening exercises. Both interventions were conducted for six weeks, three sessions per week. Outcome measures included agility assessed using the Modified SEMO agility test, dynamic balance evaluated with the Y-Balance Test, and sports performance measured using a shuttle placement test. Data were analyzed using non-parametric statistics, with the Wilcoxon signed-rank test for within-group comparisons and the Mann–Whitney U test for between-group comparisons.

Results: Within group analysis showed improvements in both the groups in agility, dynamic balance, and sports performance following the intervention ($p < 0.05$). However, between-group analysis revealed significantly greater improvements in agility and dynamic balance in the oblique sling training group compared to the control group ($p < 0.05$). Improvements in sports performance were comparable between the two groups.

Conclusion: Oblique sling muscle training is more effective than traditional core strengthening in enhancing agility and dynamic balance in amateur badminton players. Incorporating sling-based functional training into conditioning programs may improve movement efficiency and reduce injury risk in badminton athletes.

Keywords: Badminton, Agility, Core Strength, Postural Balance, Myofascial Slings

PhD-045: Effect of Transcutaneous Dorsal Penile Nerve Stimulation on Overactive Bladder In SCI Survivors on Urodynamics Study

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ABSTRACT

Introduction: Spinal Cord Injury (SCI) refers to the damage to the neural elements of the spinal cord due to traumatic or non-traumatic lesions which lead to dysfunction in various aspects of human functioning and participation. Out of them, Neurogenic detrusor overactivity is the most challenging medical complication which leads to impair a person health and reduced quality of life.

Aim: To determine the changes in sensation of bladder filling and pressure of detrusor in Spinal Cord Injury through application of Transcutaneous Dorsal Penile nerve stimulation (TDPNS) in SCI survivors on UDS as outcome measure.

Material and Methods: The trial was registered with the clinical trial registry of India (CTRI/2022/05/042431). Subjects (N=5) participated in study where TDPNS received for 4 weeks consecutively. Urodynamics was performed at the baseline (Day 0) and post intervention (Day 30) & Parameters included were Bladder filled, Detrusor Pressure, Vesicle Pressure at first sensation, normal desire & strong desire of urination.

Results: The results showed that pre & post valued were significant for bladder filled during normal desire and strong desire ($p < 0.05$) & t value were 2.863 & 2.192 for normal desire and strong desire respectively but p value were non-significant for detrusor pressure and vesicle pressure at first sensation, normal desire & strong desire ($p > 0.05$).

Conclusion: The study concluded that participants having significant changes in bladder filling sensation during normal desire and strong desire of urination, there was also significant improvement in bladder volume but there were non-significant changes in the pressure of detrusor and vesicle. The researcher also observed that there were changes in the sensation of bladder filling during normal desire of urination as per participants. The participants felt the pressure of urination and perform CIC to empty the bladder after that. Also, there was positive behavior seen in the participants and care giver regarding the bladder recovery.

Keywords: Dorsal Penile Nerve Stimulation, Overactive bladder, Spinal Cord Injury, first sensation, Normal desire, Strong desire.

PhD-046: Environmental Trigger Factors in Parkinson's Disease: A Systematic Review

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ABSTRACT

Parkinson's Disease (PD) is a progressive neuro-degenerative disorder primarily characterized by bradykinesia, resting tremor, rigidity and postural instability, together with a wide range of non-motor symptoms. The global rise in Parkinson's Disease prevalence emphasizes the importance of understanding key trigger factors responsible for this rise in order to develop effective preventive and management strategies. The systematic review was aimed to synthesize existing evidence on environmental trigger factors associated with the onset and progression of Parkinson's Disease. The objective was to identify key environmental exposures—such as pesticides, heavy metals, rural living, well water consumption, smoking and air pollution that contribute to PD pathogenesis. A comprehensive literature search in accordance with the PRISMA guidelines (2020) was conducted across Scopus, Embase, Cochrane Library, PubMed and Web of Sciences databases. The review included systematic reviews studies involving human participants diagnosed with PD, published between January 2016 and August 2025, sourced from international databases. Studies focusing on genetic or medication-induced parkinsonism were excluded. Keywords used for searching included “Parkinson's Disease”, “environmental factors”, “risk factors” and “environmental triggers”. The eligible systematic reviews were screened independently. 15 systematic reviews were included and thoroughly reviewed. The literature highlighted strong and consistent associations between PD and long-term pesticide exposure including pesticides like Organophosphates and Rotenoid, herbicides like Paraquat, rural living, well-water consumption, and exposure to heavy metals such as lead and manganese. Moderate association were report for air pollution and occupational solvent exposure. Differences in exposure assessment methods, and outcome definitions limited direct comparisons across studies, reinforcing the need for careful interpretation of these findings. Environmental exposures, particularly pesticides and heavy metals, are significant modifiable triggers in PD development. The review emphasized the need for awareness campaigns about environment related factors which will help mitigate PD risk and promote preventive initiatives.

Keywords: Parkinson's Disease, environmental factors, environmental triggers and risk factors

PhD-047: The Combined Effect of Transcranial Direct Current Stimulation (tDCS) along with SaeboFlex Orthosis on paretic hand in a Stroke survivor: A CASE STUDY

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ABSTRACT

Stroke frequently causes profound hand paresis, disrupting daily function in most survivors. tDCS delivers central input to enhance cortical excitability and neuroplasticity, while SaeboFlex provides peripheral mechanical input for assisted grasp and finger extension. Integrating these targets both central and peripheral pathways to optimize acute motor recovery. A 40-year-old male diagnosed with ischemic stroke on 10th November 2025 in the right middle cerebral artery territory exhibited left side paresis with no cognitive impairment. Upper limb was affected more compared to lower limb. Outcomes measure used includes Fugl-Meyer upper extremity score (FMA-UE), Chedoke Arm and Hand Inventory (CAHAI) and Stroke Impact Scale score (SIS). Intervention involved multichannel tDCS (1.2 mA, 20 minutes over C3 and C4) for central input, paired with SaeboFlex orthosis for peripheral mechanical input during task-oriented hand training, for 30 sessions. Results indicated enhanced hand function. Pre-post intervention assessment was done on Day 0 and Day 30 using FMA-UE: 58 to 115, CAHAI: 0 to 50, SIS: 10% to 60%. Anodal tDCS at M1 (C3) induced neuronal excitability via membrane depolarization, enhancing corticospinal drive to the paretic hand. SaeboFlex provided proprioceptive input reinforcing spinal-supraspinal circuits. This synergy promotes use-dependent neuroplastic changes, as supported by meta-analytic evidence on the combined use of tDCS and physical therapy, although limitations inherent to single-case designs highlight the need for sham-controlled trials. The integration of central stimulation via tDCS with peripheral mechanical input from SaeboFlex led to significant improvement in hand function in acute stroke, supporting the effectiveness of combined strategies in neuro-rehabilitation.

Keywords: tDCS, SaeboFlex, stroke hand rehabilitation

PhD-048: Correlation of Anthropometric Variables with Functional Movement and Performance Parameters in Competitive Volleyball Players

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ABSTRACT

Introduction: Anthropometric measurements like height, weight, body mass index (BMI), and body fat percentage are commonly acknowledged as significant factors affecting athletic performance. In volleyball, a discipline that requires explosive power, agility, speed, and well-coordinated movement patterns, these physical traits may impact both functional movement efficiency and overall performance.

Aim: The aim of this study was to investigate the relationship between anthropometric characteristics and functional movement screening (FMS) scores in competitive volleyball players as well as specific performance metrics like speed, agility, vertical leap, and dynamic balance.

Materials and Methods: A cross-sectional study was undertaken on ninety-two district-level volleyball players (male and female) aged 18 to 25 years. Anthropometric measurements included height, weight, BMI, and body fat percentage. The Functional Movement Screen was used to measure functional movement. Sprint speed, agility, vertical leap height, and dynamic balance were the performance parameters tested. The link between anthropometric factors, FMS scores, and performance measures was analyzed using Pearson's correlation coefficient. Statistical significance was determined at $p < 0.05$.

Results: Body fat percentage had a significant negative connection with sprint performance ($r = -0.318$, $p = 0.002$) and agility ($r = -0.358$, $p < 0.001$), indicating lower performance with higher fat levels. FMS ratings had substantial negative relationships with body weight and BMI, indicating that athletes with larger body mass had lower movement quality. There were no statistically significant associations found between anthropometric factors and vertical jump performance or dynamic balance.

Conclusion: The findings indicate that body fat percentage is an important anthropometric factor impacting speed and agility in competitive volleyball players, although height appears to have no effect on functional mobility or performance outcomes. These findings emphasize the need of adjusting body composition in volleyball players to improve athletic performance and movement efficiency.

Keywords: Volleyball, Anthropometry, Functional Movement Screen, Agility, Body Fat Percentage

PhD-049: Efficacy of Graston Technique and Proprioceptive Neuromuscular Facilitation in Combination with Deep Cervical Flexor Training in Cervicogenic Headache patients: A Randomized Controlled Trial

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ABSTRACT

Introduction: Cervicogenic headache (CGH) is a secondary headache disease caused by cervical spine dysfunction. It is commonly associated with decreased neuromuscular regulation of the deep cervical flexor (DCF) muscles. Even while DCF training is considered a critical intervention in the treatment of CGH, more study is needed to identify the additional benefits of integrating it with specific manual or neuromuscular techniques.

Aim: To determine the efficacy of the GT combined with DCF training, PNF combined with DCF training, and DCF training alone in reducing pain, disability, and functional limitations in people with cervicogenic headache.

Materials and Methods: A single-blind randomized controlled trial was conducted on 51 cervicogenic headache patients aged 25 to 40 years old. Participants were randomly assigned to three groups: Group A: GT with DCF training; Group B: PNF with DCF training; and Group C: DCF training alone. All interventions were administered three times a week for four weeks. The following outcome measures were used: the Numeric Pain Rating Scale (NPRS), Cervical Flexion-Rotation Test (CFRT), Headache Impact Test-6 (HIT-6), Neck Disability Index (NDI), and headache frequency. Outcomes were evaluated at the baseline and post-intervention stages.

Results: The three groups showed significant reductions in pain intensity, headache-related impairment, cervical mobility, and headache frequency ($p < 0.05$). However, Group A had significantly greater improvements than Groups B and C across all outcome measures, whereas Group B demonstrated superior outcomes compared to Group C.

Conclusion: The inclusion of the Graston Technique or Proprioceptive Neuromuscular Facilitation to deep cervical flexor training improves clinical outcomes in patients with cervicogenic headache. The Graston Technique, along with deep cervical flexor training, appears to be the most effective intervention, supporting a multimodal approach for CGH management.

Keywords: Cervicogenic Headache, Deep Cervical Flexor Training, Graston Technique, Proprioceptive Neuromuscular Facilitation, Physiotherapy

PhD-050: A Cross- sectional study on the relationship between core strength, agility and dynamic postural control in recreational basketball players

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ABSTRACT

Introduction: Basketball is a fast-paced, physically demanding team sport that involves high-intensity movements and relies heavily on core muscle strength, agility, speed, and dynamic posture control and balance. Effective performance in basketball requires well-developed agility and dynamic postural control skills. However, recreational (non-elite) players generally demonstrate lower levels of agility and dynamic postural control compared to elite basketball players.

Aim: The aim of this study was to examine the relationship between core muscle strength and agility as well as dynamic postural control among recreational (non-elite) basketball players.

Material and methods: A cross-sectional study was conducted on recreational (non-elite) basketball players using convenience sampling. Thirty-six healthy male recreational basketball players aged 18–28 years, with a minimum of two years of playing experience, were included in the study. Core stability was assessed using McGill's Core Endurance Test, agility was evaluated with the Agility T-Test, and dynamic balance was measured using the Lower Quarter Y-Balance Test.

Results: The results demonstrated a statistically significant positive correlation between core stability and performance measures. The left side bridge and extension components of core stability showed a positive association with agility ($r = 0.35$, $p < 0.05$; $r = 0.33$, $p = 0.005$). Additionally, the flexion component of core stability was positively correlated with dynamic balance of both lower extremities ($r = 0.33$, $p < 0.05$).

Conclusion: The findings of the present study indicate that core strength has a significant association with both agility and dynamic postural control in recreational (non-elite) basketball players.

Keywords: Agility, Basketball, Core stability, Dynamic Balance, Recreational (non-elite) players.

PhD-051: Role of Sensory Retraining in Enhancing Motor Recovery After Stroke: A Scoping Review

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ABSTRACT

Sensory impairment is a common yet often under-addressed consequence of stroke, significantly influencing motor performance, balance, coordination, and functional independence. While conventional stroke rehabilitation has traditionally emphasized motor strengthening and task-oriented training, growing evidence suggests that recovery is strongly mediated by the integrity of sensory processing and sensorimotor integration. This scoping review aimed to map the existing literature on sensory retraining in stroke rehabilitation, identify commonly used sensory-based interventions, summarize reported outcomes, and highlight gaps for future research. A comprehensive literature search was conducted across electronic databases including PubMed, Scopus, PEDro, and Google Scholar for studies published in English up to 2025. Eligible studies included randomized controlled trials, quasi-experimental studies, observational studies, and relevant reviews that investigated sensory retraining interventions in adult stroke survivors. The reviewed literature demonstrated a wide range of sensory retraining approaches, including tactile discrimination training, proprioceptive retraining, sensory stimulation, mirror therapy, and task-specific sensory-motor integration exercises. Reported improvements in motor performance and functional outcomes ranged from approximately 10–35%, depending on the type, intensity, and duration of sensory-based interventions. Balance and postural control measures demonstrated improvements of nearly 15–40%, particularly when proprioceptive and tactile discrimination training were integrated with task-oriented activities. Studies assessing somatosensory function reported gains ranging from 20–45% in tactile discrimination, joint position sense, and sensory awareness. Neurophysiological outcomes, including measures of cortical excitability and somatosensory representation, showed favorable changes in approximately 25–50% of participants across experimental studies. Overall, the findings indicate that sensory retraining plays a crucial role in optimizing stroke recovery and should be considered a core component of neurorehabilitation rather than an adjunct to motor training. Future research should focus on standardizing sensory retraining protocols, determining optimal timing and dosage, and strengthening the quality of evidence to support clinical implementation.

Keywords: Stroke recovery, Sensory-based interventions, Motor recovery, Post-stroke rehabilitation, Neuroplasticity

PhD-052: Non-surgical Treatment Approaches in Adolescents with Idiopathic Scoliosis: A Systematic Review

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Adolescent idiopathic scoliosis (AIS) is a three-dimensional spinal deformity that may adversely affect spinal alignment, quality of life, and pulmonary functions. Conservative management, including bracing and scoliosis-specific exercises, represents the cornerstone of non-surgical treatment. To systematically review literature published between 2015 and 2025 evaluating non-surgical treatment strategies for AIS, with particular emphasis on spinal outcomes and pulmonary function. A systematic search was conducted across PubMed, Scopus, Cochrane CENTRAL, and PEDro databases for studies published from January 2015 to October 2025. Only Randomized controlled trials, assessing conservative interventions in adolescents with idiopathic scoliosis were included. Primary outcomes were Cobb angle progression and pulmonary function parameters, including forced vital capacity (FVC) and forced expiratory volume in one second (FEV₂). Secondary outcomes included trunk rotation, health-related quality of life, and respiratory muscle performance. Risk of bias was assessed using the Cochrane RoB-2 tool. Eighteen studies which were randomized controlled trials; met the inclusion criteria. Strong evidence supported the effectiveness of bracing in preventing curve progression. Moderate-quality evidence demonstrated that scoliosis-specific exercise programs, such as Schroth and SEAS, improved spinal alignment, trunk asymmetry, and quality of life. Limited to moderate evidence suggested that conservative interventions; particularly exercise-based programs incorporating respiratory components were associated with maintenance or modest improvement in pulmonary function, especially in patients with thoracic curves. Non-surgical management remains effective for controlling curve progression in AIS. While bracing primarily targets structural correction, scoliosis-specific exercises appear to provide additional functional benefits, including favourable effects on pulmonary parameters. Further high-quality research focusing on long-term respiratory outcomes is warranted.

Keywords: Adolescent idiopathic scoliosis (AIS), Schroth, SEAS, quality of life and pulmonary function

PhD-053: Physiotherapy as a Neuro-Metabolic Modulator in Niemann–Pick Disease Type C: Reframing Rehabilitation in a Rare Neurodegenerative Disorder

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ABSTRACT

Niemann–Pick Disease Type C (NPC) is a rare, progressive lysosomal storage disorder characterized by impaired intracellular lipid trafficking, leading to multisystem neurodegeneration, cerebellar ataxia, dystonia, vertical supranuclear gaze palsy, and cognitive decline. Therapeutic approaches have traditionally centered on pharmacological disease modification, with rehabilitation often relegated to supportive care. This contemporary review advances a novel paradigm positioning physiotherapy as a biologically active modulator capable of influencing neuro-metabolic resilience in NPC. Drawing on emerging evidence from neuroplasticity, mechanobiology, and mitochondrial physiology, the review explores how targeted exercise and sensorimotor interventions may attenuate functional decline by enhancing synaptic efficiency, promoting neurotrophic signaling, optimizing oxidative metabolism, and preserving motor unit integrity. Task-specific gait training, balance-oriented cerebellar stimulation, respiratory physiotherapy, and adaptive resistance exercises are examined for their potential to counteract motor deterioration and secondary deconditioning. Innovative concepts such as activity-induced lysosomal stress adaptation, exercise-mediated autophagy signaling, and neuromuscular compensatory plasticity are discussed as mechanistic underpinnings of rehabilitation benefit in NPC. By reframing physiotherapy from compensatory intervention to disease-responsive neuromodulation, this review highlights the need for early, phenotype-tailored, and progression-sensitive rehabilitation strategies. Integrating physiotherapy into the core management of NPC may not only improve functional outcomes and quality of life but also contribute to slowing the trajectory of neurodegeneration in this rare and devastating disorder.

Keywords: Niemann–Pick Disease Type C; Rare Neurodegenerative Disorders; Physiotherapy; Neuro-Metabolic Modulation; Exercise-Induced Neuroplasticity; Lysosomal Dysfunction; Mitochondrial Adaptation; Cerebellar Ataxia; Neurorehabilitation; Orphan Diseases

PG-001: Addressing Smartphone-Related Hand Impairments Through Median Nerve Mobilization: A Case Report

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ABSTRACT

Excessive smartphone use has become increasingly associated with upper limb musculoskeletal impairments, particularly in young adults who rely heavily on mobile devices activities. Continuous and repetitive mechanical stress on the hand and wrist can contribute to reduced grip strength, pinch strength, and reduced median nerve conduction velocity. These functional impairments may lead to discomfort, weakness, and limitations in daily tasks, emphasizing the need for early identification and effective physiotherapeutic interventions. This case study aimed to evaluate the effectiveness of median nerve mobilization in improving hand function in a 27-year-old male who presented with the complaints of progressive hand weakness, tingling and discomfort linked to prolonged smartphone use. A 4-weeks intervention including median nerve mobilization (ULTT1) for 4 times per week was given. Outcome measures included hand grip strength, pinch strength, and median nerve conduction velocity assessed before and after the intervention. The results demonstrated significant improvements across all parameters. Hand grip strength increased from 32 kg to 45 kg, indicating enhanced muscular performance. Pinch strength showed a substantial rise from 11 lbs to 25 lbs, reflecting improved fine motor control. Additionally, median nerve conduction velocity increased from 51.15 m/s to 52 m/s, suggesting improved neural function. Conclusion that These findings indicate that median nerve mobilization may be an effective physiotherapeutic approach for individuals experiencing upper limb dysfunction due to excessive smartphone use. Although the results are promising, further studies involving larger sample sizes are recommended to establish the generalizability and long-term benefits of this intervention

Keywords: Median nerve mobilization, smartphone overuse, hand grip strength, nerve conduction, physiotherapy.

PG-002: Sports Physiotherapy Approaches for Injury Prevention and Performance Optimization in Wheelchair Athletes: A Narrative Review

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ABSTRACT

Wheelchair athletes constitute a wide diverse and rapidly rising group of people with specific physiological and biomechanical needs making them more prone to overuse injuries. As more competitive opportunities open up for adapted athletes, sports physiotherapy's role in reducing injury risk and improving performance has become increasingly crucial. Implementing evidence-based interventions that address propulsion mechanics, muscular endurance, abdominal stability and cardiopulmonary fitness aids in supporting every level of wheelchair athletes. This narrative review seeks to highlight modern sports physiotherapy approaches for injury prevention and performance enhancement in wheelchair athletes in adaptive sports. Literature from January 2016 to October 2025 was searched and extracted from PubMed, Pedro, EBSCO and google scholar database using keyword such as wheelchair athletes, sports physiotherapy, injury prevention and performance optimization. A total of 9 studies were included in the final review after evaluation of 347 studies based on predetermined inclusion and exclusion criteria along with elimination of duplicates, non-English studies and grey literature. Result of reviewed studies stated Disability-specific training programs consistently demonstrated significant functional and injury-reduction outcomes ($p < 0.05$). Targeted interventions such as Theraband strengthening and load-management strategies yielded greater effect sizes, reducing shoulder pain and injury incidence by ~25–40%. Other study stated that Theraband strengthening resulted in significantly greater improvements in wheelchair propulsion compared with mat exercises (15-m sprint: $F = 125.24$, $p < 0.001$; 50-m propulsion: $F = 21.14$, $p < 0.001$), demonstrating superior training effectiveness. Another researcher found that the core-training group showed significant improvements in core strength, core endurance, and sitting balance ($P < 0.05$) after training. Furthermore, Aerobic interventions like arm cranking and wheelchair training showed benefits in increased aerobic threshold and peak aerobic capacity. In conclusion, wheelchair athletes' injury prevention and performance are successfully improved by sports physiotherapy-based multimodal training methods.

Keywords: Wheelchair athletes, sports physiotherapy, injury prevention, performance optimization

PG-003: Aquatic Therapy in Autism: A Narrative Review of its Benefits on Sensory Regulation, Balance, and Emotional Well-being

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ABSTRACT

Aquatic therapy (AT) with properties like buoyancy, hydrostatic pressure and multisensory input to create a supportive, graded environment for children with autism spectrum disorder (ASD). This narrative review synthesizes evidence of the studies published since 2020–2025 assessing AT effects on sensory regulation, balance and emotional well-being in autistic children and adolescents. A targeted search databases used were PubMed, Google Scholar and Pedro in order to identify primary studies meeting inclusion criteria (published 2020–2025, participants with ASD outcomes addressing sensory processing, postural control or emotional/behavioral status). From these searches five manuscripts matched criteria and were critically appraised. Across the included studies, Aquatic therapy was associated with improvements in sensory-related behaviors and parent-reported regulation, reductions in some stereotypic behaviors and gains in gross motor control and balance. Some of the study reported positive effects on gross motor skills and stereotyped behaviors in aquatic programs improving overall body function and ADLs. One randomized crossover pilot study found hydrotherapy produced favorable changes in behaviors linked to mental health and well-being lead to better emotional stability, participation in tasks, reduced agitation and responded more positively to the environmental demands. The findings also highlighted that the aquatic interventions boost children's confidence and capability in the water while also enhanced the specific functional skills. Aquatic therapy enhanced social competence and quality of life following structured aquatic intervention. The current evidence suggests that aquatic therapy could positively influence sensory processing, balance, and emotional stability in children with autism. Although the findings were encouraging, variability in study methods and limited participant numbers called for more robust, well-designed research to establish consistent guidelines and long-term effects.

Keywords: Autism spectrum disorder, Aquatic Therapy, Child, Postural balance, Stereotyped behavior

PG-004: Additive Effect of Pain Neuroscience Education with Core Strengthening on Balance and Fall Risk in Post-Menopausal Women - A Study Randomized Clinical Trial Protocol

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Background: Menopause leads to estrogen decline, resulting in impaired neuromuscular control, reduced postural stability, and increased fall risk in post-menopausal women. Core strengthening enhances trunk stability and functional balance, while Pain Neuroscience Education (PNE) targets maladaptive pain beliefs, fear of movement, and catastrophizing. Evidence on the combined effect of PNE with core strengthening on balance and fall risk is limited.

Objective: To determine the additive effect of PNE alongside core strengthening exercises on balance, fall risk, and related psychosocial factors in post-menopausal women.

Methods: A two-group pre-test/post-test study will recruit 128 post-menopausal women meeting specific inclusion criteria. Participants will be randomized into:

Group A: Core strengthening program (3 sessions/week for 4 weeks) combined with a 20-minute PNE micro-dose session.

Group B: Conventional physiotherapy exercises.

Outcome measures include Berg Balance Scale, Y Balance Test, Timed Up and Go Test, Fall Efficacy Scale, McGill Torso Test, Pain Catastrophizing Scale, and Tampa Scale of Kinesiophobia. Pre- and post-intervention scores will be compared using appropriate statistical tests.

Results (Expected): It is anticipated that Group A will show greater improvements in static and dynamic balance, reduced fall risk, enhanced core strength, and reduced fear-avoidance and pain catastrophizing compared to Group B.

Conclusion: Integrating PNE with core strengthening may offer a superior biopsychosocial approach to improving balance and reducing fall risk in post-menopausal women. Findings may support the inclusion of PNE as a complementary component in physiotherapy protocols for fall prevention.

Keywords: Pain neuroscience education, core strengthening, post-menopausal women, balance improvement, fall risk reduction

PG-005: Hindi Translation, Content Validation and Reliability Testing of Trunk Impairment Scale 2.0 (TIS 2.0) in Patients with Post Stroke Hemiplegia – A pilot study

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ABSTRACT

INTRODUCTION: For stroke survivors, trunk control is essential for preserving balance and carrying out useful movements. A standardized instrument called the Trunk Impairment Scale 2.0 (TIS 2.0) evaluates trunk coordination and dynamic seated balance. However, there isn't authorized Hindi version available for clinical use among Indian patients who speak Hindi. To assess the content validity and reliability of the Hindi version of TIS 2.0 in people with post-stroke hemiplegia, this study translated and culturally adapted it.

AIM: To translate the Trunk Impairment Scale 2.0 into Hindi, validate its content by expert evaluation and assess its test-retest reliability in hemiplegic patients who have had a stroke.

Material and Methods: There were two stages of the investigation. The English TIS 2.0 was translated both forward and backward in Phase I using the translation standards provided by Beaton et al. To determine the Item-Content Validity Index (I-CVI) and Scale-Content Validity Index (S-CVI), ten rehabilitation specialists assessed item relevance. Twelve individuals with post-stroke hemiplegia underwent reliability testing in Phase II. Every individual was evaluated twice, and the findings were correlated. Internal consistency and test-retest reliability were assessed using Cronbach's alpha and the Intraclass Correlation Coefficient (ICC), respectively.

Results: Excellent content validity was shown by I-CVI values ranging from 0.9 to 1.0 and S-CVI (average) of 0.98. With Cronbach's alpha = 0.987 and ICC = 0.987 (95% CI 0.955 – 0.996; $p < 0.001$), the Hindi TIS 2.0 demonstrated excellent reliability.

Conclusion: For evaluating trunk control in post-stroke hemiplegic patients, the Hindi version of TIS 2.0 shows outstanding content validity and reliability, and it can be utilized with confidence for clinical and research reasons in Hindi-speaking populations.

Keywords: Stroke, Postural Balance, Validity, Reliability, Hemiplegia

PG-006: A Hermeneutic Phenomenological Case Study on Stroke Survivors' Lived Experiences of Physiotherapy-Based Rehabilitation in Rural Community Settings

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ABSTRACT

Stroke survivors living in rural areas frequently encounter distinct barriers towards taking and participating in physiotherapy rehabilitation. This case study investigates the personal experiences of these individuals during their physiotherapy rehabilitation in rural settings, aiming to understand the significance they attach to their recovery processes and engagements with healthcare systems. Employing a Hermeneutic Phenomenological methodology, the study interprets how participants perceive their physical transformations, therapy sessions, and reintegration into community life after a stroke. Information was gathered via detailed, in-person interviews with stroke survivors who took physiotherapy in their recovery. These discussions took place in familiar community environments to enable genuine expression of experiences shaped by local surroundings and cultural influences. Extra field notes and detailed analysis of the narratives collected. The research followed the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines to maintain transparency, methodological rigor, and researcher reflexivity. Interpretive analysis revealed key themes highlighting the complex aspects of rural rehabilitation, such as challenges in maintaining consistent care, emotional and social adaptations to life after stroke, the importance of strong therapist-patient bonds, and the determination and resourcefulness shown by survivors. These personal narratives exposed not just pathways to physical restoration but also some aspects of emotional healing, rebuilding self-identity, and fostering a sense of community connection. The findings indicate that physiotherapy rehabilitation in rural areas is primarily influenced by local factors like access issues, cultural norms, and limited resources. Understanding these experiences can help healthcare professionals, and caregivers to construct more customized, culturally relevant, and long-lasting stroke rehabilitation solutions in rural and distant places.

Keywords: Stroke, Stroke Rehabilitation, Hermeneutics, Qualitative Research, Physical Therapy Modalities.

PG-007: Effect of Nordic Walking on Pulmonary Function, Functional Capacity and Quality of Life Among COPD Individuals: A Study Protocol

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ABSTRACT

INTRODUCTION: Chronic Obstructive Pulmonary Disease (COPD) is a progressive pulmonary condition that reduces functional capacity and significantly affects the quality of life. Patients frequently limit their physical activity whenever the condition becomes severe, resulting in negative impacts on their ability for physical activity and causing severe dyspnea. However, physical activity and exercise are essential for managing COPD, as they can improve exercise capacity, endurance, and overall well-being. There is an exercise known as Nordic walking that provides cardiovascular benefits without causing any distress. This exercise is performed with two specially designed poles, that has shown advancement in the intervention of COPD. This exercise helps to enhance peak oxygen consumption (VO₂ max.), endurance, and functional capacity by engaging both upper and lower limbs.

AIM: The purpose of conducting this study is to investigate how Nordic walking impacts the pulmonary function, functional capacity, and quality of life of individuals with COPD.

METHOD: A randomized controlled trial will be conducted with the participants who have been diagnosed with COPD and will be allocated by random allocation method to put them into intervention and control groups. Throughout a period of 6 weeks, the intervention group will have participants who undergo supervised Nordic Walking 3 sessions a week, and participants in the control group will continue living their daily life routine and following breathing exercises.

DISCUSSION: Nordic walking is hypothesized to improve pulmonary function, functional capacity, and quality of life in individuals with COPD. This study is designed to investigate these potential effects and provide evidence to support its inclusion in pulmonary rehabilitation programs.

TRIAL REGISTRATION: ClinicalTrials.gov identifier: CTRI/2025/09/095386, registered on 27/09/2025

Keywords: Quality of life, Nordic walking, Exercise tolerance, pulmonary disease

PG - 008: Effect of Vestibular Rehabilitation and Gaze Stabilization Exercises in individuals with Motion Sickness: A Pilot Randomized Controlled Trial

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ABSTRACT

Introduction: Motion sickness, affecting approximately 28% in the general population, results from sensory conflict between visual and vestibular inputs, leading to dizziness, nausea, and imbalance. Although vestibular rehabilitation (VR) and Gaze stabilization Exercises (GSE) show potential benefits, evidence on their combined effect remains limited, and standardized protocols are lacking.

Aim: To determine the effect of vestibular rehabilitation and gaze stabilization exercises in individuals with motion sickness.

Methods: Participants meeting the inclusion and exclusion criteria were randomly allocated into three groups using computer-generated randomization. Over a six-week intervention period, Group 1 received vestibular rehabilitation, gaze stabilization exercises, and conventional treatment Group 2 received vestibular rehabilitation with conventional treatment and Group 3 received conventional treatment alone. Outcome measures included the Motion Sickness Quotient, Motion Sickness Assessment Questionnaire, and Vestibular Rehabilitation Benefits Questionnaire, assessed at baseline and post-intervention. Data was analysed using SPSS v25 software. Normality was tested using Shapiro wilk test. Wilcoxon – signed rank test were used for within- and Krusal – wallis test were used for between-group comparisons. Significance was set at $p < 0.05$.

Results: All groups demonstrated improvement following the intervention. However, Group 1 showed the greatest reduction in motion sickness severity compared to the other groups.

Conclusion: Combined vestibular rehabilitation and gaze stabilization exercises were effective in reducing motion sickness symptoms compared to conventional therapy. The pilot findings support the feasibility and adequate sample size estimation ($n = 12$) for future large-scale RCTs.

Keywords: Motion sickness, vestibular system, head movements, gaze stabilization exercises

PG-009: Efficacy of Bhramari Pranayama on BODE Index and Chest Expansion in Asymptomatic Young Smokers: A Study Protocol

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ABSTRACT

Introduction: Cigarette smoking, even among asymptomatic young individuals, leads to early subclinical changes in pulmonary function and chest wall mobility, which may progress to chronic obstructive pulmonary disease (COPD). Non-pharmacological interventions like Bhramari Pranayama-a yogic breathing technique have shown potential in improving respiratory mechanics, autonomic regulation, and lung function. However, its specific effect on the BODE index and chest expansion in asymptomatic smokers remains unexplored.

Aim: To evaluate the efficacy of Bhramari Pranayama on the BODE index and chest expansion among asymptomatic young smokers.

Methods: A randomized, clinical trial study will be conducted with participants meeting specific inclusion criteria. Subjects will be randomly assigned to the experimental group and the Conventional group. The experimental group will receive Bhramari Pranayama along with Conventional Breathing Exercises 15-20 minutes per day, four days a week. The Conventional group will receive Breathing Exercises 15-20 minutes per day, four days a week. Both groups will undergo treatment for four weeks along with a follow up after two weeks after post intervention assessments. Pre- and post-intervention assessments will include BODE Index parameters (BMI, FEV1% AND Exercise Capacity) and Chest Expansion using measurement Tape.

Results: Data normality will be tested using the Shapiro–Wilk test (samples less than 50) or Kolmogorov–Smirnov test (samples more than 50). For within-group comparisons, if data are normally distributed, a paired t-test will be applied; if not, the Wilcoxon Signed-Rank Test will be used. For between-group comparisons, if data are normally distributed, an independent t-test will be used; if non-normal, the Mann–Whitney U Test will be applied. Statistical significance will be set at $p < 0.05$.

Conclusion: This study protocol aims to investigate the preventive and rehabilitative potential of Bhramari Pranayama among young smokers, supporting its role as an adjunctive strategy for early respiratory health preservation and risk reduction.

Keywords: Smokers, Exercise, Cigarette, Chronic Pulmonary Disease, Breathing

PG-010: Correlation of Reaction Time and Eye-Hand Coordination in Forward Head Posture among College-Bound Students

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ABSTRACT

Background: Forward head posture (FHP) has become increasingly common among college-going students due to excessive screen exposure and poor ergonomic habits. Although postural deviations are known to influence neuromuscular efficiency, the specific relationship between FHP, reaction time, and eye–hand coordination in young adults remains insufficiently explored.

Objective: This study investigated the correlation between forward head posture, reaction time, and eye–hand coordination among college students, and evaluated the suitability of the dataset for future larger-scale research.

Methods: 20 students (10 males, 10 females; aged 18–25 years) participated in this cross-sectional study. FHP was quantified using the craniovertebral angle (CVA). Reaction time was assessed using computerized dynamic testing, Alternate hand wall toss test (AHWTT) and Ruller drop test (right and left reaction time averages). Eye–hand coordination was interpreted through the symmetry and consistency of bilateral reaction responses.

Results: Age showed no significant association with CVA, AHWTT, or bilateral Ruller drop test ($p > 0.05$). CVA demonstrated a moderate significant correlation with AHWTT ($r = 0.460$, $p = 0.041$), indicating that greater FHP was linked to prolonged postural reaction time. AHWTT showed significant negative correlations with right and left reaction times ($r = -0.496$, $p = 0.026$; $r = -0.549$, $p = 0.012$), suggesting delayed posture-related responses were associated with slower eye–hand coordination. A strong positive correlation existed between right and left reaction times ($r = 0.779$, $p < 0.001$), indicating high bilateral motor symmetry.

Conclusion: Forward head posture demonstrates meaningful associations with reaction time and eye–hand coordination in college students. These findings highlight the need for postural awareness and corrective interventions to optimize neuromuscular performance and prevent posture-related dysfunction.

Keywords: Forward Head Posture, Reaction Time, Eye-Hand Coordination, Postural Assessment, Craniovertebral Angle

PG-011: A Pilot Study on the Efficacy of Sacroiliac Joint Mobilization on Pain and Disability in Patients with Lumbar Prolapsed Intervertebral Disc

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ABSTRACT

Introduction: Lumbar Prolapse Intervertebral Disc (PIVD) is a common cause of low back pain and frequently occurs alongside sacroiliac joint (SIJ) dysfunction, seen in nearly one-third of affected individuals. Although SIJ mobilization shows potential benefits, its effectiveness and safety in PIVD patients remain uncertain, underscoring the need for preliminary evaluation.

Aims & Objective: To find the efficacy of SIJ mobilization on pain and disability in patients with lumbar PIVD.

Materials and Methods: This study was designed as a single-group pre-test/post-test pilot quasi-experimental investigation. Twelve participants were recruited (both genders, aged 30–50 years) with acute, unilateral lumbar PIVD. Individuals with chronic PIVD, disc extrusions, or sequestrations were excluded. All participants received SIJ mobilization using a postero-anterior and sacral nutation technique, along with a structured core muscle strengthening program. Pre- and post-intervention outcome assessments were conducted using the Visual Analogue Scale (VAS) and the Oswestry Disability Index (ODI).

Results: Data normality was assessed using the Shapiro–Wilk test. The VAS data were normally distributed ($p = 0.644$); therefore, paired t-tests were used to analyze within-group differences. The ODI data were not normally distributed ($p = 0.011$), so the Wilcoxon Signed-Rank test was applied. The findings showed that both outcomes demonstrated statistically significant improvements following the intervention, and a large effect size was found for VAS (1.199) with a statistical power of 0.97, indicating a strong and detectable treatment effect in pain reduction. In contrast, the effect size for ODI was 0.28 with a power of 0.14, suggesting a small effect and insufficient power to detect meaningful changes in disability within this pilot sample.

Conclusion: SIJ mobilization combined with core strengthening produced meaningful pain reduction in patients with acute unilateral lumbar PIVD, though disability changes were minimal. These findings highlight the need for further research with larger samples to better clarify functional outcomes.

Keywords: Intervertebral Disc, Low Back Pain, Prolapse, Sacroiliac Joint, Visual Analogue Scale.

PG-012: Effect of High Intensity Laser Therapy on Post Stroke Hemiplegic Shoulder Pain: A Systematic Review Protocol

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ABSTRACT

One of the most prevalent and functionally limiting post-stroke consequences is hemiplegic shoulder pain (HSP), which limits upper-limb recovery, lengthens rehabilitation, and lowers quality of life. The photothermal, photomechanical, and photochemical effects of High-Intensity Laser Therapy (HILT) have drawn interest as a possible supplementary technique that could aid in tissue repair and pain relief. There are few randomized controlled trials (RCTs) assessing the efficacy of HILT for post-stroke HSP, despite its growing clinical use. This emphasizes the necessity of doing a thorough and methodical analysis of the existing literature. The aim of this systematic review protocol is to assess and summarize the current clinical data about the impact of HILT on pain, shoulder function, and disability in people with post-stroke hemiplegic shoulder pain, as well as to pinpoint any gaps that need more research. In accordance with PRISMA-P guidelines, a systematic search will be conducted in PubMed and Scopus for studies published between 2015 and 2025. The search strategy will use Boolean operators combined with keywords such as “High-Intensity Laser Therapy,” “Hemiplegia,” “Stroke,” and “Shoulder Pain.” Only RCTs comparing HILT with conventional therapy will be included. Two independent reviewers will screen studies, extract data, and assess risk of bias using the Cochrane Risk of Bias tool. Discrepancies will be resolved through discussion or consultation with a third reviewer. A qualitative synthesis will be completed, and a meta-analysis will be performed if data are sufficiently homogeneous. This systematic protocol aims to analyse existing RCTs to evaluate the clinical effectiveness of HILT for hemiplegic shoulder pain. It will systematically assess outcomes, identify gaps related to long-term effects, optimal dosage, and comparative interventions, and highlight methodological strengths and limitations. The protocol ultimately intends to provide a structured foundation for evidence synthesis to guide future research directions and support standardized clinical practice.

Keywords: Hemiplegia; Laser Therapy; Stroke; Shoulder Pain.

PG-013: A Literature Review on the Reliability of Various Assessment Methods and Rehabilitation Measures for Glenohumeral Internal Rotation Deficit (GIRD)

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ABSTRACT

A common shoulder impairment seen in overhead athletes and non-athletic populations, Glenohumeral Internal Rotation Deficit (GIRD) is linked to altered shoulder biomechanics, pain, and an increased risk of injury. Variability in assessment methods and heterogeneity in rehabilitation strategies pose a challenge to consistent clinical management of GIRD. The purpose of this review of the literature was to compile data regarding the efficacy of GIRD rehabilitation strategies and the validity of widely used assessment techniques. PubMed, Scopus, Web of Science, and Google Scholar databases were used to find peer-reviewed articles published in the last ten years. For the qualitative synthesis, a total of 14 articles about GIRD rehabilitation interventions and assessment reliability were included. Goniometric and inclinometric measurements of shoulder internal rotation show moderate results, according to the reviewed literature. The reviewed literature shows that when standardised positioning, scapular stabilisation, and consistent protocols are used, goniometric and inclinometric measurements of shoulder internal rotation exhibit moderate to excellent intra- and inter-rater reliability. The clinical applicability of emerging techniques, such as sport-specific testing positions and remote or video-based assessments, is supported by their high reliability and low measurement error. Posterior shoulder stretching, especially cross-body stretching, has been shown to be a successful intervention for increasing internal rotation range of motion in rehabilitation. Combining stretching with manual therapy, soft-tissue techniques, and posterior joint mobilisation yields additional benefits. Sleeper stretches; scapular stabilisation exercises, neuromuscular re-education, and kinetic chain-based interventions all help to improve functional outcomes, pain relief, and range of motion. For the effective management of GIRD, the literature generally supports the use of trustworthy, standardised assessment methods and a multimodal rehabilitation approach. Variability in protocols and outcome measures, however, emphasises the need for more high-calibre research to develop optimal rehabilitation guidelines and standardised assessment criteria.

Keywords: Glenohumeral Internal Rotation Deficit; Hand Behind Back Test; Overhead Athletes; Functional Mobility; Posterior Shoulder Tightness

PG-014: Kinesio-Taping in the management of Pain, Impaired Balance, and Abnormal Spinal Posture in Individuals with Lower Cross Syndrome: A Pilot Randomized Clinical Trial

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ABSTRACT

Introduction: Lower Cross Syndrome (LCS) is a postural disorder characterized by tight hip flexors and lumbar extensors, leading to impaired spinal posture and low back pain. Kinesio-taping is commonly used as an adjunct intervention to reduce pain, enhance muscle activation, and support postural correction.

Aim: To determine the effect of Kinesio-taping on pain, balance, and spinal posture in individuals with LCS.

Materials and Methods: A pilot randomized controlled trial was conducted after ethical approval (MMDU/IEC-3089). Twenty-four participants aged 20–50 years with clinically diagnosed LCS were randomly allocated to experimental and control groups. Outcome measures included pain intensity (Numeric Pain Rating Scale), balance (Berg Balance Scale), and spinal posture (REEDCO Postural Scale). Both groups received a structured exercise program consisting of iliopsoas stretching and strengthening of the gluteus medius and core muscles (8 repetitions, 3 sets). The experimental group additionally received therapeutic Kinesio-taping applied to the erector spinae and quadratus lumborum muscles, while the control group received sham taping. Interventions were administered three times per week for four weeks. Outcomes were assessed at baseline and post-intervention.

Results: Shapiro–Wilk testing indicated non-normal data distribution ($p < 0.05$). Within-group analysis using the Wilcoxon signed-rank test demonstrated significant improvements in pain and posture in both groups ($p < 0.05$), while balance improved significantly only in the experimental group. Between-group comparisons using the Mann–Whitney U test showed greater reductions in pain (4.75 ± 0.754 vs. 1.59 ± 1.165) and superior improvements in spinal posture (38.50 ± 13.028 vs. 12.58 ± 10.059) in the experimental group ($p < 0.05$). No significant between-group difference was observed for balance ($p > 0.05$).

Conclusion: Kinesio-taping combined with exercise appears more effective than exercise alone in improving pain and spinal posture in individuals with LCS, supporting progression to a larger trial.

Keywords: Kinesio Taping, Pain, Posture, Lordosis, Exercise program.

PG-015: “Effect of Balance-Oriented Exercise Interventions on Gait, Function, and Quality of Life in Knee Osteoarthritis: A Literature Review”

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ABSTRACT

Knee osteoarthritis (OA) is a prevalent degenerative joint disorder that leads to pain, reduced mobility, postural instability, and impaired gait. Balance impairment is a key but often under-addressed contributor to functional disability and reduced quality of life in individuals with knee OA. Balance-oriented exercise interventions have recently gained attention as an effective component of conservative management. To evaluate the effects of balance-oriented exercise interventions on gait performance, functional mobility, and quality of life in individuals with knee osteoarthritis, a comprehensive review of published randomized controlled trials, clinical studies, and review articles was conducted using major databases such as PubMed, Web of Science, and PEDro. Through a thorough examination of existing literature from January 2020 to October 2025, 15 studies that included balance training—such as proprioceptive exercises, neuromuscular training, perturbation training, and game-based balance programs—in adults with knee OA were included. Outcomes reviewed included gait parameters, functional scores, pain levels, and quality-of-life measures. Across the included studies, balance-oriented interventions demonstrated consistent improvements in postural control, dynamic stability, and gait characteristics, including stride length and walking speed. Functional mobility outcomes such as the Timed Up and Go (TUG), WOMAC, and KOOS scores showed significant enhancement. Participants also reported reductions in pain and disability, leading to measurable improvements in overall quality of life. Balance-oriented exercise interventions are effective in improving gait performance, functional status, and quality of life in individuals with knee osteoarthritis. Integrating balance training into routine physiotherapy protocols provides substantial benefits and should be considered an essential component of conservative management.

Keywords: Knee osteoarthritis, balance training, functional mobility, quality of life, rehabilitation

PG-016: Graded Motor Imagery in Fibromyalgia Syndrome: A Narrative Review

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ABSTRACT

Fibromyalgia Syndrome (FMS) is a chronic pain condition characterized by widespread pain, fatigue, cognitive disturbances, and reduced functional capacity. Evidence suggests that individuals with FMS exhibit altered body schema, impaired motor imagery ability, and enhanced central sensitization, contributing to pain persistence, movement-related fear, and dysfunctional sensorimotor integration. This narrative review aims to summarise current evidence on the effectiveness of Graded Motor Imagery (GMI), a neurocognitive physiotherapy intervention targeting cortical reorganization, sensorimotor integration, and movement-related fear, in the management of FMS. A comprehensive literature search was conducted using PubMed/MEDLINE, Google Scholar, and the Physiotherapy Evidence Database (PEDro), focusing on studies evaluating GMI or motor imagery-based rehabilitation in fibromyalgia. The search identified three primary clinical trials directly investigating GMI or motor imagery interventions in FMS: one pilot study, one four-arm randomized controlled trial (RCT) combining motor imagery with pain neuroscience education, and one multicomponent RCT incorporating GMI. Additionally, six RCTs on GMI in other chronic pain conditions were reviewed to provide context. The pilot study reported improved anxiety and coping with motor imagery-based rehabilitation compared to conventional exercise. The four-arm RCT found significant pain reduction across groups, with motor imagery enhancing body awareness and imagery ability. The multicomponent RCT demonstrated significant improvements in pain intensity, fibromyalgia impact, catastrophizing, kinesiophobia, and sleep quality in the GMI plus education group. Despite promising outcomes, the available studies remain limited by small sample sizes, short follow-ups, and varied intervention protocols. GMI shows potential as an effective adjunctive therapy for FMS by addressing neuroplastic and sensorimotor dysfunctions. However, further large-scale, high-quality RCTs are warranted to standardize GMI protocols and validate its long-term clinical efficacy in fibromyalgia management.

Keywords: Chronic Pain, Cognitive Rehabilitation, Fibromyalgia Syndrome, Graded Motor Imagery, Kinesiophobia

PG-017: Role of dynamic cupping therapy on trigger points in calf muscles: A case report

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ABSTRACT

Latent myofascial trigger points are frequently present in healthy individuals and may contribute to localized tenderness and altered muscle performance. Dynamic cupping therapy combines negative pressure with movement and is believed to enhance microcirculation, tissue mobility, and pain modulation. This case report determines the immediate effect of dynamic cupping therapy on a latent trigger point in the calf muscle of a healthy individual. A young healthy adult with a latent myofascial trigger points in the medial & lateral gastrocnemius muscle and soleus muscle was assessed using pressure pain threshold (PPT) measured with a digital pressure algometer. Dynamic cupping therapy was applied for 10 minutes, including an initial static application followed by longitudinal gliding of the cup along the muscle fibres with the knee in extended and flexed positions. PPT was reassessed immediately after the intervention. An immediate increase in PPT was observed, indicating a reduction in trigger point sensitivity following dynamic cupping therapy. No adverse effects were reported. This case highlights the potential immediate hypoalgesic effect of dynamic cupping therapy on latent calf trigger points in healthy individual and supports its clinical feasibility. Further controlled studies with larger samples are recommended to confirm these findings.

Keywords: Trigger point, Cupping, Gastrocnemius, Soleus.

PG-018: Effect of LASER Therapy in Myogenic Temporomandibular Joint Disorder: A Systematic Review.

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ABSTRACT

Myogenic temporomandibular disorder (TMD) presents with masticatory muscle pain, restricted mouth opening and functional limitation. Laser therapy has gained attention due to its deeper tissue penetration and potential enhancement of neuromuscular recovery and analgesic effects. It has been proposed as an effective non-invasive modality. However, evidence from randomized controlled trials (RCTs) remains inconsistent. This systematic review of RCTs evaluated the effectiveness of Laser Therapy in reducing pain and improving mandibular function in patients with Myogenic TMD. A systematic search was performed in PubMed, Cochrane Library, and PEDro up to November 2025. Search terms included “myogenic temporomandibular disorder,” “laser therapy,” “LLLT,” “HILT,” and “randomized controlled trial.” Inclusion criteria were RCTs, full-text availability, adult participants diagnosed with myogenic TMD, and comparison between laser therapy and placebo/sham/standard therapy. A total of 312 records were identified. After removing duplicates, 251 articles were screened. 216 articles were excluded at screening. 35 full-text articles were assessed, of which 30 were excluded for reasons including: non-RCT design (n=12), non-myogenic TMD (n=9), inadequate laser protocol (n=4), no control group (n=3), and duplicate population (n=2). Five RCTs met the inclusion criteria. Data extracted included laser parameters, outcomes (pain, mouth opening, function), and follow-up results. LLLT showed significant within-group reductions in pain but inconsistent between-group superiority. Functional improvements and increased maximum mouth opening were observed in some studies. The HILT RCT demonstrated significant and sustained improvements in pain, mandibular mobility, and jaw function scores compared to placebo up to 12 weeks. This study concluded that laser therapy is beneficial for managing myogenic TMD, particularly for short-term pain relief. HILT demonstrated more consistent and long-lasting improvements than LLLT. However, heterogeneity in laser parameters, protocols, and methodology limits comparability, highlighting the need for well-designed RCTs with standardized procedures and longer follow-up.

Keywords: Myogenic temporomandibular disorder, Low-level laser therapy, High-intensity laser therapy, RCT, Jaw function, Pain.

PG-019: Joint Mobilization for Enhancing Muscle Activation and Reducing Functional Limitation in Knee Osteoarthritis: A Review

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ABSTRACT

As the Knee Osteoarthritis advances, individuals mostly experience difficulty in walking, climbing stairs, and performing daily activities. Pain and restricted joint motion can also inhibit normal Quadriceps activation, reduce the stability and contribute to altered movement patterns. Joint Mobilization has gained attention as a Manual Therapy aimed at reducing discomfort and improving Range of Motion. This review examines the role of Mobilization in improving Muscle Activation and Functional Ability in individual with Knee Osteoarthritis. A focused search of PubMed, Scopus, PEDro, and ScienceDirect for studies published between 2015 and 2025 identified five randomized controlled trials meeting the inclusion criteria. Across these studies, Mobilization consistently demonstrated reduction in pain and stiffness, along with improvements in joint Range of Motion and overall Functional tasks such as walking, performing day to day activities and climbing stairs. Several trials also reported enhanced Quadriceps recruitment and improved proprioceptive control. Although encouraging, current evidence is limited by small sample sizes and short follow-up periods. More rigorous research is required to clarify long-term effects of Mobilization. Nevertheless, existing findings support Joint Mobilization as an effective intervention for improving mobility and functional performance in individual with Knee Osteoarthritis. Joint Mobilization has gained attention as a Manual Therapy technique aimed at improving joint mobility, reducing discomfort, and supporting better neuromuscular function.

Keywords- Knee Osteoarthritis, Tibiofemoral Joint Mobilization, Range of Motion, Functional Performance.

PG-020: ICF Model-Based Rehabilitation Program Among Patients with Stroke: A Review

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ABSTRACT

The International Classification of Functioning, Disability and Health (ICF) provide a biopsychosocial framework. It is a holistic approach for post-stroke rehabilitation by integrating body functions, activity limitations, participation restrictions, and contextual factors. This review gathered recent evidence on ICF-based rehabilitation programs and described the interventions commonly incorporated within these models. Various studies demonstrated that ICF-guided rehabilitation leads to better activity performance, greater participation, and improved community reintegration compared with impairment-only approaches. Effective programs typically include ICF-linked goal setting, task-oriented functional training, ADL retraining, gait and balance training, upper-limb task-specific practice, cognitive-communication therapy, and environmental modification strategies. Multidisciplinary interventions such as home-based environmental enrichment, caregiver-supported participation training, community mobility practice, and context-specific problem-solving therapy are consistently associated with meaningful functional gains. Novel interventions aligned with ICF principles such as virtual-reality assisted task practice, gamified rehabilitation platforms, robot-assisted functional training, and telerehabilitation with activity-monitoring, showed promising results for enhancing motivation, dosage, and participation. Across several trials, programs that integrate survivor-caregiver dyadic goal setting, contextual barrier reduction, and intensive task-specific training demonstrate the largest improvements in real-world functioning. Despite these advances, challenges remain in operationalizing ICF core sets, achieving team-wide consistency and standardizing ICF-linked outcome reporting. Furthermore, trials are needed to identify cost-effective delivery models and long-term effects. Overall, current evidence supports ICF-based rehabilitation as a comprehensive, patient-centered paradigm that enhances recovery across impairment, activity, and participation domains.

Keywords: Stroke rehabilitation, Motivation, Caregivers, Cost-Benefit Analysis, Patient-Centered Care.

PG-021: Evaluation of Clinical and Functional Efficacy of Autologous PRP Injection Combined With Adjuvant Dry Needling in Chronic or Recurrent Idiopathic Lateral Epicondylitis – A Cohort Study

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ABSTRACT

Introduction: Lateral epicondylitis is marked by chronic degeneration of the common extensor tendon at the lateral epicondyle of the humerus. This study assessed clinical and functional outcomes following autologous platelet-rich plasma (PRP) injection combined with adjuvant dry needling in chronic or recurrent idiopathic tennis elbow.

Materials and Methods: The study was carried out over a period of 18 months at Maharaja Agrasen Medical College, Agroha, in 35 patients of age 18 years and above with lateral epicondylitis for more than 3 months and already managed with brace, analgesics, and various physiotherapy modalities & with or without local injections. The patients were injected with a single dose of PRP with adjuvant dry needling. Assessment of the clinical and functional outcomes was done by the PRTEE (Patient-Rated Tennis Elbow Evaluation) score at the end of 4th week, 12th week and 24th week

Results: The majority were male (mean age 42.6 ± 4.8 years), with predominant right-side involvement and an average pain duration of 12.2 months. Mean PRTEE pain scores significantly decreased from 40.6 to 5.4 ($p < 0.001$), and functional scores from 40.2 to 4.1 ($p < 0.001$) over 24 weeks.

Conclusion: Autologous PRP with adjuvant dry needling shows significant therapeutic benefit in managing chronic or recurrent idiopathic lateral epicondylitis. Marked improvement in clinical and functional outcomes was observed with no major post-procedural complications.

Keywords: Lateral epicondylitis, PRP, Dry Needling, PRTEE score, Myofascial Trigger Points (MTrPs)

PG-022: Tactile Discrimination Training for Tactile Acuity and Somatosensory Integration Among Patients with Non-Specific Chronic Neck Pain: A Review

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ABSTRACT

Chronic neck pain is a prevalent and persistent musculoskeletal condition that is increasingly understood to involve not only structural and biomechanical impairments but also significant disturbances in somatosensory processing. Reduced tactile acuity and distorted sensory discrimination in these individuals reflect maladaptive neuroplastic changes in the primary somatosensory cortex. These alterations contribute to persistent pain, diminished perceptual clarity, and impaired sensorimotor integration. Despite the growing interest in neuroplasticity-based rehabilitation, limited evidence has been synthesized regarding the specific role of TDT in improving sensory acuity and pain outcomes in chronic neck pain. This review examined the effectiveness of TDT and its impact on tactile acuity, pain intensity, and functional outcome. A comprehensive search of PubMed, Scopus, Web of Science, PEDro, and Google Scholar identified studies published from 2020 to 2025 using Boolean operators: “tactile acuity AND chronic neck pain,” “tactile discrimination training OR sensory discrimination,” and “neuroplasticity AND somatosensory training.” A total of 28 articles were initially identified, of which 9 met the inclusion criteria, comprising randomized controlled trials, quasi-experimental studies, and sensory training interventions in adults with chronic neck pain. TDT interventions commonly included graded two-point discrimination tasks, localization training, and stimulus-differentiation exercises delivered 3–5 times per week over 3–6 weeks. Across the included studies, TDT demonstrated meaningful improvements in tactile acuity (mean improvement 2.1 ± 0.8 mm, $p < 0.01$), reductions in pain intensity (mean change -1.8 ± 0.5 on NRS, $p < 0.001$), and moderate improvements in disability scores (NDI mean change -5.4 ± 1.6 , $p = 0.02$). Studies have consistently reported enhanced sensory clarity, improved discrimination thresholds, and favorable cortical reorganization effects following TDT. While the findings indicate promising outcomes, variability in training duration, techniques, and sample sizes limits direct generalizability. Overall, TDT is a cost-effective, noninvasive, neuroplasticity-driven approach that enhances somatosensory function and reduces pain in chronic neck pain. Further high-quality trials are required to standardize protocols and validate long-term clinical effectiveness.

Keywords: Chronic Neck Pain, Sensorimotor cortex, Neck Pain, Neuronal plasticity

PG-023: Neuromuscular Activation Deficits in Knee Osteoarthritis and the Role of Facilitation Techniques: A Narrative Review

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ABSTRACT

Knee osteoarthritis (KOA) is characterized not only by degenerative joint changes but also by significant neuromuscular activation deficits, including quadriceps inhibition, delayed muscle onset, impaired proprioception and altered motor control. These deficits contribute to pain, gait abnormalities, reduced balance, and functional limitations. Recent literature suggests that arthrogenic muscle inhibition (AMI), altered sensory input from damaged mechanoreceptors, and maladaptive central motor reorganization are key mechanisms underlying these neuromuscular impairments. This narrative review aims to synthesize current evidence on neuromuscular activation deficits in KOA and evaluate the potential role of facilitation techniques including Neuromuscular Joint Facilitation (NJF), Proprioceptive Neuromuscular Facilitation (PNF), perturbation training, and neuromuscular re-education in improving pain, balance, and functional outcomes.

Evidence was identified from peer-reviewed studies focusing on neuromuscular activation, AMI, proprioceptive impairment, lower limb motor control deficits, and interventions based on facilitation or neuromuscular training in KOA. Key sources include findings on quadriceps AMI, altered proprioception, delayed hamstring-quadriceps co-activation patterns, and studies examining PNF, NJF, and neuromuscular training for KOA rehabilitation.

Literature indicates that KOA patients display consistent neuromuscular activation deficits including reduced voluntary quadriceps activation, impaired sensorimotor control, decreased proprioception and compromised dynamic stability. These deficits significantly contribute to pain and gait dysfunction. Facilitation based intervention particularly NJF and PNF have been shown to enhance muscle activation, restore synergistic movement patterns, and improve proprioceptive feedback. Neuromuscular training programs targeting balance and perturbation improve postural control and reduce functional instability. Emerging evidence suggests that facilitation techniques can attenuate AMI, improve motor recruitment, and enhance functional capacity in KOA.

Neuromuscular activation deficits represent a critical but often under-recognized component of KOA. Facilitation techniques offer promising therapeutic benefits by improving muscle activation, proprioception, balance, and functional performance. Incorporating these techniques into conventional rehabilitation may provide more comprehensive and effective management for KOA patients.

Keywords: Osteoarthritis, Knee, pain, Proprioception, Postural balance

PG-024: Effect of nutritional strategies on enhancing sports performance. A Narrative Review.

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ABSTRACT

Introduction: Nutrition is a critical determinant of athletic success, influencing energy availability, recovery, adaptation to training, and overall physiological efficiency. Optimized nutritional strategies-ranging from macronutrient planning to hydration and supplementation-play a significant role in improving both acute performance and long-term training outcomes. Despite growing evidence, athletes often lack individualized or evidence-based dietary guidance.

Aim: To evaluate the effect of evidence-based nutritional strategies on enhancing sports performance across endurance, strength, and team-sport athletes.

Materials and Methods: This narrative review examined articles published in the last two decades from databases including PubMed, Scopus, and Google Scholar. Studies assessing macronutrient periodization, hydration practices, micronutrient status, and ergogenic aids in athletic populations were included. Keywords related to sports performance, nutrition, and supplementation were used. Data were synthesized to identify common findings, consensus recommendations, and gaps in current knowledge.

Results: Findings indicate that carbohydrate periodization enhances endurance capacity, delays fatigue, and improves glycogen resynthesis. Adequate protein intake, particularly spaced evenly throughout the day, contributes to muscle repair, hypertrophy, and improved recovery in strength-trained and mixed-sport athletes. Hydration strategies with appropriate electrolyte intake significantly support thermoregulation and cognitive performance. Micronutrients such as iron, vitamin D, and antioxidants are essential for oxygen transport, bone health, and recovery, with deficiencies leading to measurable performance declines. Evidence-based ergogenic aids such as creatine, caffeine, beta-alanine, and dietary nitrates demonstrate consistent improvements in strength, power, and endurance when used appropriately.

Conclusion: Nutritional strategies play a substantial role in enhancing sports performance by supporting metabolic demands, recovery, and training adaptations. Personalized, sport-specific nutrition plans integrated with training schedules offer the greatest performance benefits. Continued research is required to refine guidelines and address individual variability in nutrient response.

Keywords: Athletic Performance, Sports Nutrition, Dietary Supplements, Energy Metabolism, Nutritional Physiological Phenomena

PG-025: Effect of Auditory Exercises on postural control and co-ordination among individuals with Benign Paroxysmal Positional Vertigo: A Case Series

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ABSTRACT

Benign Paroxysmal Positional Vertigo (BPPV) causes brief vertigo episodes triggered by head movements, which can impair postural control and coordination. While canalith repositioning maneuvers remain the primary treatment, auditory-based exercises might help with sensory integration and balance rehabilitation, though research in this area is limited. The aim of this case series was to estimate the impact of a structured auditory exercise program on postural control and coordination in individuals with BPPV. Five individuals aged 30 to 50 years with posterior canal BPPV were included. Following the standard canalith repositioning maneuver, all participants went through a four-week auditory training program (30 minutes per day, five days per week) that included auditory attention tasks, spatial sound localization, and dual-task auditory-motor coordination exercises. Pre and post-intervention assessments included the Mini-BESTest, that mainly assessed dynamic postural control and balance performance, the Visual Vertigo Analogue Scale (VVAS) measures the severity of visual dizziness, the Dizziness Handicap Inventory (DHI) to determine how much dizziness interferes with daily life, and the Tandem Gait Test to assess balance and coordination while walking in a straight line. The data were evaluated using statistical methods based on normality. The results showed a continuous trend of improvement across all categories. Mini-BESTest scores increased from a mean of 15.8 (median 16) to 21.4 (median 20), showing improved dynamic balance. VVAS scores decreased from a mean of 74.4 (median 73) to 61 (median 61), indicating a decrease in visual induced dizziness. DHI scores increased from a mean of 56.8 (median 54) to 31.6 (median 30), indicating reduced dizziness-related limitations. Tandem gait steps increased from a mean of 6.8 (median 6) to 11.4 (median 11), suggesting improved gait coordination. Overall, the findings indicate that auditory exercises may serve as an adjunct in improving postural control and coordination among individuals with BPPV.

Keywords: Benign Paroxysmal Positional Vertigo, Dizziness, Postural Balance, Gait, Sound Localization, Acoustic Stimulation.

PG-026: A scoping review for clinical diagnostic criteria and their psychometric properties in diagnosing Motion sickness

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ABSTRACT

Motion sickness is a frequent condition resulting from conflicting sensory signals between the eyes, vestibular system, and body, leading to symptoms like nausea, vomiting, dizziness, headache, sweating, pallor, drowsiness, and increased salivation. Although tools such as the Motion Sickness Susceptibility Questionnaire (MSSQ), Simulator Sickness Questionnaire (SSQ), and the Motion Sickness Assessment Questionnaire (MSAQ) are widely used. Most available tests rely on subjective symptom reports, which impacts diagnostic accuracy across diverse populations. This scoping review aims to summarize clinical diagnostic criteria and psychometric properties—reliability, validity, sensitivity, and specificity—of motion sickness assessment tools. Following the PCC framework (Population: individuals affected; Concept: diagnostic tools/criteria; Context: psychometric properties), the review screened 17,295 articles from databases such as PubMed, Scopus, Cochrane, and Science Direct. After duplicate removal and screening, 8 studies met the inclusion criteria and were reviewed in line with PRISMA-ScR guidelines. The reviewed tools—MSSQ, SSQ, Motion Sickness Severity Scale (MSSS), Fast Motion Sickness Questionnaire (FMSQ), and the Visually Induced Motion Sickness Susceptibility Questionnaire (VIMSSQ)—demonstrate robust internal consistency, reliability, and sensitivity to motion sickness symptoms. The VIMSSQ features strong reliability and detects differences by age and sex; MSSQ offers high reliability (Cronbach's $\alpha = 0.86$, test-retest > 0.8) and moderate predictive validity, with greater sensitivity than specificity. SSQ and its adaptations confirm high reliability, valid symptom domains, and good sensitivity, but specificity remains less established. Current tools reliably identify at-risk individuals and measure severity but may overestimate susceptibility, highlighting the need for standardized diagnostic criteria and physiological markers to improve specificity and adapt to emerging technologies.

Keywords: Motion sickness, nausea, vomiting, headache, dizziness, sweating, pallor.

PG-027: Effect of Integrated Neuromuscular Inhibition Technique in desktop workers having chronic neck pain: A case series

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ABSTRACT

Chronic neck pain is a highly prevalent musculoskeletal condition among desktop workers, largely attributed to prolonged sitting, sustained forward-head posture, poor ergonomics, and repetitive upper-quarter muscle activity. Myofascial trigger points and neuromuscular imbalance are common contributors to persistent symptoms in this population. The Integrated Neuromuscular Inhibition Technique (INIT), which combines ischemic compression, positional release technique, and muscle energy technique, is designed to address both mechanical and neurophysiological dysfunctions associated with myofascial pain. This case series aimed to explore the clinical effects of INIT on pain intensity, cervical range of motion, and functional disability in chronic desk-based workers with neck pain. Three desktop workers (2 males, 1 female). The mean age of the participants was approximately 37 years (range: 29–52 years). All participants were engaged in desk-based occupations for ≥ 6 hours per day with nonspecific neck pain of more than three months duration underwent a four-week INIT intervention consisting of 12 treatment sessions. Outcome measures included the Numeric Pain Rating Scale (NPRS), Neck Disability Index (NDI), and cervical range of motion assessed using a goniometer. Post-intervention assessment demonstrated a reduction in pain intensity in all participants, with NPRS improvements ranging from 1 to 3 points. Improvements were observed across most cervical range of motion parameters. Functional disability, as measured by the NDI, showed mild improvement in two participants and remained unchanged in one participant who had minimal baseline disability. INIT may be a safe, feasible, and potentially effective intervention for reducing pain and improving cervical mobility in chronic desktop workers with neck pain.

Keywords: Neck Pain, Pain Measurement, Trigger Points, Musculoskeletal Diseases Range of Motion, Occupations, Muscles.

PG-028: Role of Instrument-Assisted Soft Tissue Mobilization in Individuals with Elbow Pain: A Literature Review

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ABSTRACT

Instrument-Assisted Soft-Tissue Mobilization (IASTM) is a non-invasive intervention that employs specially designed instruments to address soft-tissue dysfunction and optimize myofascial function by providing targeted mechanical stimulation, thereby enhancing joint range of motion (ROM). Although conceptually comparable to manual techniques such as deep friction massage, IASTM may confer additional advantages by allowing the application of greater force while reducing both treatment time and physical strain on clinician. Despite its increasing clinical use, evidence specifically examining the impact of IASTM on elbow pain, flexibility, functional status, and quality of life remains limited. Accordingly, this review aimed to summarize and appraise the available literature on effectiveness of IASTM among elbow pain individuals. Studies investigating IASTM in adults with elbow pathology were considered, including primary research with male and female participants aged 20 to 50 years and published in English. A systematic search of PubMed, Cochrane Library, and PEDro from January 2020 to November 2025 using the terms “IASTM” and “elbow pain” identified 181 records, of which eight randomized controlled or clinical trials met the inclusion criteria. Methodological quality and risk of bias were assessed using the PEDro scale and the Cochrane Risk of Bias 2 tool. Seven of the eight studies reported that IASTM was effective in improving pain, stiffness, grip strength and functional outcomes, whereas one study indicated that Mulligan mobilization may be more effective than IASTM for pain relief, increasing ROM, enhancing hand-grip strength, and reducing upper limb disability in individuals with chronic lateral epicondylitis. Overall, the current evidence suggests a beneficial role of IASTM in improving elbow pain, grip strength, stiffness, function, and quality of life; however, larger, high-quality clinical trials are needed to further clarify its therapeutic value, both as stand-alone intervention and in combination with other treatment approaches.

Keywords: Elbow; Pain; Massage; Quality of Life; Hand Strength

PG-029: Title – Correlation of Perceptual Alterations with Prolonged Screen Time among Young Adults

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ABSTRACT

Introduction: The perceptual-motor process involves a sequence of actions through which an individual selects, organises, and interprets sensory inputs from both the body and the external environment. With the growing dependence on digital devices for study and leisure, daily screen exposure has increased; it has become imperative to assess the correlation of perceptual alteration with prolonged screen time among young adults.

Aim: To assess the correlation of perceptual alterations and analyse their relationship with prolonged screen time in young adults.

Methods: This cross-sectional study included young adults aged 18–25 years. Participants initially fill a Screen Time Questionnaire to estimate their total daily screen exposure. Individuals reporting >4 hours of screen use per day were provided with the CVS-Q to assess visual perceptual symptoms. Balance abilities were then evaluated using the Berg Balance Scale (BBS) and the Tinetti Performance-Oriented Mobility Assessment (POMA).

Result: A total of 202 participants (108 females, 94 males) were included. Correlation analysis showed a weak negative association between screen time and both BBS ($r = -0.189$, $p = 0.007$) and POMA scores ($r = -0.181$, $p = 0.010$). Screen time moderately correlated with higher CVS_Q scores ($r = 0.339$, $p = 0.001$). CVS_Q scores strongly correlated with lower BBS ($r = -0.596$, $p = 0.001$) and moderately with lower POMA ($r = -0.307$, $p = 0.001$), indicating that greater visual strain was associated with poorer balance and mobility outcomes.

Conclusion: The findings indicate that prolonged screen time in young adults is associated with a higher prevalence of visual perceptual alterations. Additionally, extended screen exposure shows a measurable relationship with reduced balance performance on both the BBS and POMA. These results highlight the need for awareness and early preventive strategies to mitigate perceptual and postural deficits linked to excessive screen use.

Keywords: Screen time, Students, Prevalence, Leisure Activities.

PG: 030: Monitoring Muscle-Strengthening and Physical Activity Through Self-Report Questionnaires: A Literature Review

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ABSTRACT

A healthy lifestyle must include both the physical activity and workouts that build muscles. To monitoring health results, creating fitness regimens, and comprehending their impact on general well-being, an accurate assessment of these activities is essential. A number of surveys have been created to check levels of physical activity and they differ in how much focus they place on elements that strengthen muscles. Among these are International Physical Activity Questionnaire (IPAQ), Global Physical Activity Questionnaire (GPAQ), One Repetition Maximum (1RM) Questionnaire and the Muscle-Strengthening Exercise Questionnaire (MSEQ). The features, efficacy, and limits of these tools are examined in this review with special focus on their ability to evaluate general physical activity and muscle-strengthening exercises. The full-text English-language studies investigating the use of MSEQ, IPAQ, GPAQ, and the 1RM Questionnaire for assessing physical activity or muscle strength, a thorough literature search was carried out in PubMed, EMBASE, and EBSCOhost. There were no limitations on the study design, location, or year of publication in the search. The review focused on each questionnaire's clinical and research applicability, dependability across populations, and validation techniques. In order to compare the advantages, disadvantages, and contextual appropriateness of each tool, five observational studies that satisfied the inclusion criteria were examined. The results showed that whereas the IPAQ and GPAQ offer a more comprehensive measure of general physical activity, including walking and moderate-to-intense exercise, the MSEQ and 1RM Questionnaire are more focused on muscle-strengthening activities and strength measurement. The MSEQ and 1RM Questionnaire are better suited for customized or clinical assessments, whereas the IPAQ and GPAQ were shown to be more suitable for large-scale population investigations. When compared to the IPAQ, GPAQ, and 1RM tools, the MSEQ showed reliability coefficients ranging from 0.76 to 0.91. In conclusion, the IPAQ and GPAQ provide a more thorough assessment of overall physical activity, whereas the MSEQ and 1RM Questionnaire provide insightful information about muscle-strengthening behaviors and strength levels. To improve these evaluation tools' generalizability and therapeutic application, more research should focus on cross-validating them across a range of groups and environments.

Keywords: Muscle Strength, Muscle-Strengthening Exercise, Physical Activity, Outcome Assessment, Exercise Therapy.

PG-031: Physiotherapy in Post-Burn Hand Contractures- A Literature Review

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ABSTRACT

Hand contractures represent a common and debilitating complication sequelae to burn injuries. They will typically result in limited ranges of motion, functional limitation, and reduced independence in activities of daily living. Physiotherapy plays a key role in the prevention and rehabilitation of post-burn hand contractures; however, clinical approaches are very variable. The aim is to establish the role and effectiveness of physiotherapy treatment on functional hand outcomes and ranges of motion in patients suffering from post-burn hand contractures. A literature search was conducted through databases such as PubMed, MEDLINE (Ovid), and EBSCO, in accordance with PRISMA guidelines. The screening of articles was done using predefined inclusion and exclusion criteria; with these articles published between the years 2010 and 2025. Keywords included hand contracture, hand burns, physiotherapy, hand exercises, combined with Boolean operators AND/OR. Twenty-four studies met the criteria, including randomized controlled trials, comparative studies, and case-based research. The literature reviewed indicated significant improvement in functional outcomes with physiotherapy interventions such as early mobilization, passive and active range-of-motion exercises, splinting, scar management, strengthening, paraffin wax therapy, ultrasound therapy, and extracorporeal shock wave therapy. Gains in joint flexibility, reduction of scar stiffness, improvement in grip strength, and restoration of daily hand functions have been consistently reported when physiotherapy was started early and applied in a structured program in a multidisciplinary manner. Physiotherapy is very effective for the management of post-burn hand contractures and constitutes an important link in functional rehabilitation. Early, intensive, and individual rehabilitation protocols enhance the outcomes and minimize long-term disability. More high-quality research is needed to establish standardized protocols in treatment.

Keywords: Hand strength, Contracture, Range of Motion, Activities of Daily Living.

PG-032: Hindi Translation, Validation and Psychometric Evaluation of Istanbul Low Back Pain Disability Index (ILBPDI) In Patients with Non-Specific Low Back Pain - A Study Protocol

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ABSTRACT

Introduction: Low back pain is a significant cause of disability and is a major cause of activity limitation worldwide. Non-specific low back pain (NSLBP) impacts individuals across all age groups and is a primary factor in global disease burden. A comprehensive assessment of functional limitations is essential for clinical evaluation, treatment planning, and outcome assessment. The Istanbul Low Back Pain Disability Index scale (ILBPDI) is a reliable tool available in Turkish and English-speaking population but no previous works of literature is available to exhibit the effectiveness of ILBPDI in Indian population.

Aim: The purpose of this study is to translate ILBPDI in hindi language, evaluate its validity and psychometric properties in individuals with NSLBP.

Materials and methods: Using both forward and backward translation, the ILBPDI scale will be translated in accordance with Beaton's guidelines. A Delphi survey will be carried out by an expert committee to validate the questionnaire. 51 NSLBP patients from super speciality OPD, from 25 to 60 years, will be tested on Hindi version of ILBPDI Scale and validity will be tested. Psychometric evaluation will include Reliability testing, Minimal Detectable Change (MDC), Covariable Coefficient, Smallest Worthwhile Change (SWC), Test-retest reliability using Intraclass Correlation Coefficients (ICC), Internal consistency through Cronbach's alpha, and Measurement Error Estimation. Construct and convergent validity will be assessed by correlating ILBPDI scores with established disability and pain scales.

Results: The expert committee review and Delphi survey will help in establishing the content validity, test-retest reliability and internal consistency for the Hindi ILBPDI version in the target population and whether the adapted questionnaire would be comprehensible and feasible for Hindi-speaking NSLBP patients.

Conclusion: The content validity and test-retest reliability of the Hindi version of the ILBPDI questionnaire in patients with NSLBP in terms of functional limitations will be determined in this study.

Keywords: Hindi language, Low Back Pain, Psychometric, test-retest reliability.

PG-033: The Role of the American Shoulder and Elbow Surgeons Shoulder Assessment Form in Predicting Functional Recovery in Frozen Shoulder: A Narrative Review

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ABSTRACT

Frozen shoulder is a common condition characterised by intense shoulder pain and progressive restriction of joint movement, often interfering with daily activities. Its prevalence in the general population is estimated between 2% and 5%, and it causes prolonged functional limitation. The American Shoulder and Elbow Surgeons (ASES) Shoulder Score is widely used to evaluate outcomes in patients with this condition, as it assesses both pain and function. This comprehensive narrative review evaluates how ASES can help to monitor pain and function during recovery after rehabilitation in frozen shoulder patients. To explore this connection, a literature search was performed across multiple databases, including Cochrane Library, Scopus, and PubMed, covering studies published from 2020 to 2025. The initial search identified articles, which were further refined total of seven studies that met the inclusion criteria and were included for review. The studies reveal that patients managed with manipulation and structured rehabilitation programs support the ASES as a valid and sensitive tool for tracking recovery after treatment and predicting long-term functional outcomes. Interventions such as manipulation under anaesthesia, targeted physiotherapy, and arthroscopic capsular release have been associated with significant improvements in ASES, often demonstrating notable gains in pain reduction and shoulder function. Early improvements in ASES scores highlight its prognostic value. Its responsiveness allows clinicians to monitor recovery closely, modify treatment plans, and identify patients at risk for lingering impairment. Moreover, factors such as symptom duration, diabetes, and initial severity have been found to influence ASES score progression and ultimate recovery potential. Due to its practicality, broad clinical acceptance, and dual focus on pain and function, the ASES Shoulder Score remains a key instrument for evaluating intervention efficacy and guiding management strategies in frozen shoulder.

Keywords: Shoulder, Pain, Shoulder joint, Patient-reported outcome measure

PG-034: Effectiveness of Strengthening Exercises in Post-Operative Management of Bankart Repair: A Narrative Review

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ABSTRACT

Bankart lesion is a common cause of recurrent anterior shoulder instability, especially among young athletes. While surgery restores anatomical stability, functional recovery and prevention of re-dislocation depends largely on postoperative rehabilitation. Postoperative physiotherapy regimen mainly emphasizes on strengthening of deltoid and rotator cuff musculature.

Objective: This narrative review aims to evaluate current evidence regarding the effectiveness of strengthening exercises in the postoperative management of Bankart repair. **Methods:** A comprehensive literature search was conducted across PubMed, Cochrane Library and PEDro databases for studies published between 2020 and 2025. Randomized controlled trials, cohort studies and clinical guidelines focusing on strengthening interventions were included. Evaluated outcomes comprised shoulder range of motion, muscle strength, functional scores (American Shoulder and Elbow Surgeons (ASES) score, Western Ontario Shoulder Instability Index (WOSI), Rowe score etc), recurrence rate, proprioceptive improvement and return-to-sport time. Key findings were narratively summarized to emphasize the clinical efficacy of strengthening protocols. **Results:** Evidence supports a gradual, phase-oriented strengthening approach that begins with isometric activation and progresses to isotonic and closed-chain exercises. Strengthening the deltoid, rotator cuff musculature and scapular muscles improves joint position, reduces forward translation and proprioceptive control. Combining kinetic-chain and neuromuscular exercises speeds up return to sport and function without increasing recurrence risk. Research consistently shows notable enhancements in range of motion, strength, balance and functional outcome scores when strengthening is integrated correctly during recovery stages. **Conclusion:** Postoperative strengthening exercises are essential in restoring dynamic stability and shoulder function and they effectively aid in attaining best results following a Bankart repair. A well-structured, evidence-based strengthening program contributes to greater shoulder stability, decreased recurrence rates and improved functional recovery.

Keywords: Bankart Lesions, Joint Instability, Return to Sport, Rotator Cuff

PG-035: Comparative Effectiveness of Graded Motor Imagery and Sensorimotor Training on Pain and Physical Function in Knee Osteoarthritis: A Narrative Review

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ABSTRACT

Knee osteoarthritis (KOA) is a debilitating chronic pain disorder affecting a significant number of people, causing pain, functional decline, and decreased quality of life. In recent years, interventions such as graded motor imagery (GMI) and sensorimotor training have been shown to help reduce pain and improve function. GMI works on cortical reorganisation through cognitive motor imagery, and sensorimotor training is based on enhancing proprioceptive and motor control through physical exercises. The systematic review and meta-analysis aim to compare the effectiveness of GMI and sensorimotor training interventions on pain and physical function outcomes in patients with KOA. A comprehensive review of randomised controlled trials, clinical studies, and relevant literature was filtered; only those published between the years 2020 to 2025 were considered. A comprehensive search was conducted across three databases: PubMed, Cochrane Library, and PEDro. The review assessed outcome measures related to pain using the Visual Analogue Scale (VAS) and physical function using the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC). Both graded motor imagery and sensorimotor training represent valuable rehabilitative strategies for managing pain and dysfunction in KOA. Their distinct mechanisms imply that integrating these interventions could potentially lead to synergistic effects, addressing both central and peripheral contributors to KOA symptoms. Further research through well-designed comparative trials is needed to optimise treatment guidelines and tailor interventions based on patient-specific factors.

Keywords: Visual Analogue Scale, Pain Management, Chronic Pain, Knee Osteoarthritis, Randomised Controlled Trials

PG-036: Effectiveness of Neuromuscular Training and Kinesio Taping for Patellofemoral Pain Syndrome: A Narrative Review

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ABSTRACT

Patellofemoral Pain Syndrome (PFPS) is one of the most common sources of anterior knee pain, frequently affecting athletes and young adults due to altered biomechanics, reduced neuromuscular control, and patellar maltracking. Conservative rehabilitation remains the preferred management, with kinesio Taping and neuromuscular training widely used to improve patellar alignment, muscle activation, proprioception, and overall function. This narrative review synthesizes recent evidence regarding the effectiveness of these interventions. A comprehensive search was performed in PubMed, Cochrane Library, and Web of Science for the years 2020–2025 using targeted keywords including: “patellofemoral pain syndrome,” “PFPS,” “kinesiotaping,” “kinesio taping,” “neuromuscular training,” “exercise therapy,” “systematic review,” and “.” Database search strategies replicated the Boolean combinations used in preliminary screening. A total of 831 articles were identified across all databases using combined search strategies. After applying filters for publication years 2020–2025, full-text availability, clinical trials, and PFPS-specific relevance, 12 studies met the inclusion criteria and were included in this narrative review. Review of the included studies showed that kinesio Taping provides short-term benefits including pain reduction, improved patellar tracking, and better proprioceptive feedback. Neuromuscular training, particularly when targeting hip abductors, external rotators, and quadriceps, demonstrated greater long-term improvements in strength, movement control, and functional outcomes. However, research combining both interventions in PFPS populations remains limited. The available evidence suggests that a multimodal rehabilitation approach integrating neuromuscular training with taping techniques may offer synergistic effects. In conclusion, kinesio Taping is beneficial for short-term symptom relief, whereas neuromuscular training produces more durable functional gains. Despite promising results, further high-quality PFPS-specific randomized controlled trials are required to determine the additive effectiveness of combining these interventions.

Keywords: Patellofemoral Pain Syndrome, Athletic Tape, Pain, Biomechanical Phenomena, Exercise Therapy

PG-037: Pulsed Electromagnetic Field Therapy as a Non-Invasive Intervention for Women's Primary Dysmenorrhea: Comprehensive Review

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ABSTRACT

Primary dysmenorrhea is a common menstrual disorder caused by elevated prostaglandin levels that trigger strong uterine contractions and pelvic pain. To prevent the negative effect of analgesics, many women look for non-pharmacological alternatives. Pulsed Electromagnetic Field (PEMF) therapy is a non-invasive physical method that may help reduce menstruation pain through its impact on local circulation, inflammatory mediators, and neurological pain pathway. This review was aimed to compile the information that is currently available regarding PEMF ability to alleviate pain and improve symptoms in women who have primary dysmenorrhea. PEMF administered transabdominally or over the pelvic region. Relevant literature was retrieved from databases including PubMed, Cochrane Library, ScienceDirect, and Google Scholar. Rayyan software was used for screening, duplicate removal, and selecting studies based on predefined inclusion criteria. Relevant articles published between 2015 and 2025 were then evaluated for methodological quality and clinical outcomes. Research involving secondary dysmenorrhea or other gynecological disorders was omitted, but studies reporting outcomes including pain severity, analgesic usage, and functional activity level were included. Results were narratively summarized due to methodological heterogeneity. Compared with placebo or no intervention, PEMF consistently reduced menstrual pain, with mean VAS/NRS scores decreasing by ~2.0–4.5 points versus 0.5–1.5 points in controls, often with significant between-group differences ($p < 0.05$) and moderate effect sizes. Women reported reduced analgesic use and improved daily functioning, with benefits evident within 1–3 menstrual cycles. Proposed mechanisms include reduced prostaglandin activity, improved uterine blood flow, smooth muscle relaxation, and modulation of nociceptive signaling, with minimal side effects indicating good safety and tolerability. However, small sample sizes, brief treatment durations, and non-standardized device parameters limit the available information. Long-term effects are still mostly unknown. In conclusion, PEMF, exhibits encouraging potential as a non-pharmacological, safe treatment for primary dysmenorrhea. To determine the best treatment regimens and confirm long-term clinical effects, larger, better trails are required.

Keywords: Pulsed Electromagnetic Field; Primary Dysmenorrhea; Pain Intensity; Menstrual Distress; Analgesia.

PG-038: Sensitizing Techniques and Movements of Lower Limb Neural Testing: A Narrative Review

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ABSTRACT

Sensitizing maneuvers such as ankle movements (dorsiflexion, plantarflexion, inversion, eversion), cervical flexion/extension, and hip motions are key components of lower limb neurodynamic testing. They enhance diagnostic accuracy for radicular pain, increase neural tissue tension, and support structural differentiation between neural and non-neural pathology. The objectives were: (1) identify sensitizing methods used in lower limb neurodynamic testing; (2) explore clinical applications for structural differentiation; (3) summarize RCT evidence from 2015–2025; and (4) propose standardized clinical recommendations. A total of 2,847 records were identified through PubMed, Cochrane Library, and PEDro. After screening 156 titles and abstracts, 37 studies met the inclusion criteria, comprising 13 RCTs, 6 biomechanical studies, 7 systematic reviews, 4 diagnostic imaging-based studies, and 7 clinical practice resources. Data extraction focused on study characteristics, sensitizing techniques, biomechanical measures, clinical outcomes, and statistical analysis. Ankle dorsiflexion causes a 0.7–1.6 mm sciatic excursion ($p = 0.049$), which knee extension enhances 0.7–1.6 mm ($r = 0.379$) relative to knee flexion 0.5–1.4 mm ($p > 0.45$). Proximal hip/neck position has no distal effect. Cervical flexion alone raises popliteal angle deficits 13.67°, and dorsiflexion increases them to 15.74° (SD 4.52) for normal weight people and 26.2° (SD 7.87) for overweight people. The contralateral position significantly altered ipsilateral mechanics, increasing hip angle (75.4° vs 72.4°, $p < 0.001$) and head-knee distance (0.37 vs 0.35, $p < 0.001$), suggesting mechanical tension transmission. In conclusion, sensitizing maneuvers like ankle dorsiflexion, cervical flexion, and contralateral position induce measurable biomechanical changes in nerve excursion and neural tension. Despite this, no studies exist that have correlated these mechanical changes to validated electrophysiological criteria such as nerve conduction velocity (NCV), or motor nerve latency, which stops the electrophysiological validation needed to establish diagnostic reliability or to select the best sensitizing protocols.

Keywords - Ankle, Neural Conduction, Pain, Reproducibility of Results, Diagnostic Imaging

PG-039: Physiotherapeutic Intervention for Visual-Motor Integration in Older Adults: A Review

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ABSTRACT

Visual Motor Integration (VMI) is defined as the ability of the visual system to transmit environmental information to the brain for organisation, analysis, comparison, integration, and other processing. VMI is fundamental to cognitive function, balance, coordination and functional independence in older adults. Age-related decline is often associated with impaired visuomotor processing, impaired balance, and increased fall risk. Therefore, this review sought to gather and evaluate the existing literature on the effectiveness of physiotherapy intervention for VMI in older adults. An extensive literature search was conducted from 2020-2025 on PubMed, Scopus, Web of Science, and Google Scholar using keywords (“Visual motor integration” OR “visuomotor” OR “eye-hand coordination”) AND (“Elder” OR “Older adults”) AND (“Physiotherapy” OR “Rehabilitation” AND “Motor training” OR “Rehabilitation” OR “Physiotherapy”). Boolean operators “AND” and “OR” were used to combine the keywords. A total of 312 studies were initially identified however, after screening titles and abstracts and eliminating duplicates, only five studies met the inclusion criteria. Physiotherapy interventions, including motor accuracy exercise and visual art activities, motor imagery, dual motor cognitive training, and visual reaction exercises, were consistently effective in enhancing visuomotor outcomes. Following physiotherapy, the mean motor impairment scores significantly improved from 33.95 ± 3.50 to 17.20 ± 9.45 ($p = 0.001$), and balance scores increased from 37.15 ± 3.44 to 50.10 ± 4.90 ($p = 0.019$), reflecting a clinically meaningful gain in functions dependent on VMI. Another study demonstrated significant improvement in global cognition, frailty indices, visual reaction time, and dual task performance ($p < 0.05$). Overall, the findings of this review indicated that structured motor cognitive physiotherapy, especially when integrated with virtual reality, produces measurable improvements in VMI among the elderly, although standardised outcome metrics are required for stronger comparative synthesis.

Keywords: Visual motor integration, eye-hand coordination, ageing, elderly.

PG-040: Prevalence of Hamstring Tightness in Individuals with PIVD (Prolapsed Intervertebral Disc)

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ABSTRACT

Introduction: PIVD is a prevalent musculoskeletal disorder of the lumbosacral spine and one of the common causes of radiating symptoms and low back pain. Hamstring tightness is generally found in individuals with dysfunction of the lumbar spine due to altered biomechanics, muscle guarding, and neurological strain. Determining the prevalence of hamstring tightness in patients with PIVD may help in understanding the secondary musculoskeletal consequences and guide treatment.

Aims: To determine the prevalence of hamstring tightness among individuals with PIVD.

Objectives: To ascertain the frequency of hamstring tightness in PIVD patients and its correlation with disc severity, side of involvement, and level of discomfort.

Materials and Methods: A cross-sectional observational study was conducted on 80 people aged between 18 and 80 years who had been diagnosed based on clinical examination and MRI results with lumbar PIVD from the outpatient orthopaedic and physiotherapy departments. After prior written informed consent, hamstring tightness was measured using the Finger to Touch Test (FTT) and Active Knee Extension Test (AKET). Descriptive statistics were used to find out the prevalence of hamstring tightness in the study population. Results: Out of the 80 participants with mean age of years (42. male and 38: female), 60 participants (75%) had significant hamstring stiffness in either one or both limbs. Significant hamstring tightness was found to be more common in those with continuing PIVD symptoms. Overall, hamstring stiffness was more common in men(59.5%) than in women(21.05%).

Conclusion: The study found that hamstring tightness was common in people with PIVD, indicating that secondary muscle shortening may be caused by chronic neural stimulation and altered lumbar biomechanics. Incorporating neural mobilisation techniques and hamstring flexibility training during rehabilitation may enhance functional outcomes and lessen problem recurrence.

Keywords: Prevalence, Muscle, Musculoskeletal Diseases, Low Back Pain, Young Adult

PG-041: Reference norms of Two-Point discrimination of lower extremities in elderly: An Observational study

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ABSTRACT

The cutaneous sensory evaluation plays a pivotal role in overall neurological assessment, providing insights into exteroceptive and proprioceptive sensations. Physiological changes associated with aging lead to depletion of visual, vestibular, and proprioceptive systems, and an increasing risk of falls. Two-point discrimination (TPD) is the ability to perceive two closely spaced points on the skin as separate points rather than one. The observational data will be collected from a large neurologically healthy elderly individual. TPD provides an appraisal for tactile spatial acuity. The (TPD) test gives profound observations about the functional limitations and gauges the severity of the condition. This study aims to find the reference norms of (TPD) of lower extremities, as it will check sensory aging and clarify the risk of functional decline in the elderly. An observational study will be conducted TPD values (mean $\pm$ SD) across dermatomes L1-S2 were calculated from 5-7 trials per site. Frequency, age, and BMI were compared by gender using the independent sample t-test. The association between BMI and TPD values will determine using Spearman's ratio. TPD values were compared by gender using the Mann-Whitney U-test. The TPD values on the right and left will compared using the Wilcoxon signed-rank test. Statistical significance set at ($p < 0.05$). This study will establish the reference norms of TPD of the lower extremities in the elderly population and integrating the results of neurorehabilitation to fully address sensory aging.

Keywords: Neurological Examination, Lower Extremity, Quality of life, Aged, Accidental falls.

PG-042: Reliability and Validity of Lower-Limb Lymphoedema Questionnaires: A Narrative Review

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ABSTRACT

Chronic lower-limb lymphoedema is frequently linked to decreased quality of life, mobility restrictions, and functional impairment. Patient-reported outcome measures (PROMs) with psychometric qualities are essential for accurate therapeutic evaluation. Lower-limb lymphoedema patients' symptoms, function, and psychosocial effect are assessed using a number of validated questionnaires, most notably LYMQOL-Leg, Lymph-ICF-LL, and LSIDS-LL. In order to facilitate worldwide clinical application, these instruments have also undergone translation and culturally appropriate adaption. This narrative review looked at published research that assessed these surveys' psychometric performance. This study analyzed articles that evaluated versions that were translated in Turkish, German, Dutch, Chinese, Korean, Japanese, and Brazilian Portuguese populations, as well as those that reported internal consistency, test-retest reliability, construct validity, and cross-cultural equivalency. According to the results, LYMQOL-Leg has strong test-retest reliability with intraclass correlation coefficients (ICC) between 0.80 and 0.95 and good to outstanding internal consistency with Cronbach's alpha values between 0.72 and 0.93. With internal consistency values ranging from 0.79 to 0.96 and ICC values between 0.82 and 0.98, Lymph-ICF-LL regularly displays good psychometric performance, demonstrating excellent repeatability. With reported internal consistency values ranging from 0.88 to 0.94, the LSIDS-LL instrument likewise demonstrates strong dependability. Construct validity was typically robust across translations, and cross-cultural adaptation procedures were effectively carried out in accordance with accepted practices. The LYMQOL-Leg, Lymph-ICF-LL, and LSIDS-LL are valid, reliable, and clinically significant tools for evaluating the burden of symptoms and functional restrictions in lower-limb lymphoedema, according to the data currently available. In both clinical and scientific contexts, these instruments provide standardized evaluation. However, to improve worldwide applicability and support long-term therapeutic decision-making, further research assessing therapy responsiveness and validation in underrepresented communities is advised.

Keywords: Humans, Quality of Results, Leg, Psychometrics and Surveys and Questionnaires.

PG-043: A Combining Effects of Dynamic Cupping on the Thoraco-lumbar Region and Suboccipital Myofascial Release on Mechanical Neck Pain: Systematic Review

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ABSTRACT

Myofascial trigger points, altered cervical biomechanics, and fascial tightness are frequent features of mechanical neck pain (MNP), a musculoskeletal disorder. Suboccipital myofascial release (MFR) and dynamic cupping are two manual treatment procedures that are increasingly used to increase cervical range of motion, lessen discomfort, and improve functional performance. Treatment of distant areas like the thoraco-lumbar fascia may affect cervical symptoms through neuromyofascial and biomechanical continuity, according to fascial-chain theories like the anatomical trains model. However, the clinical efficacy of thoraco-lumbar dynamic cupping, either by itself or in combination with suboccipital MFR, has not yet been established. This systematic review aimed to assess whether dynamic cupping, either by itself or in combination with suboccipital myofascial release, is beneficial for the thoraco-lumbar region. on cervical range of motion, disability, and pain severity in those with mechanical neck pain. A comprehensive search for research published between 2015 and 2025 was conducted using PubMed, Scopus, Web of Science, and PEDro. After screening, a total of 4012 records were found and reduced to 1033 articles, of which 8 studies with 312 individuals fulfilled the inclusion requirements. The results were summarised narratively due to clinical heterogeneity. The Numerical Pain Rating Scale reported a 2.1–3.6 point reduction in pain intensity across all analysed trials ($p < 0.05$). Cervical range of motion increased by 6°–15° in many movement planes, and disability as measured by the Neck Disability Index improved by 8%–18%. When compared to single-modality or traditional treatment techniques, studies assessing combination therapies generally found greater improvements in pain and function. According to these results, people with mechanical neck discomfort may benefit from thoraco-lumbar dynamic cupping combined with suboccipital myofascial release to improve cervical mobility and lessen pain and impairment.

Keywords: Cupping Therapy, Neck Pain, Myofascial Release, Thoracolumbar Fascia.

PG-044: Role of ProFitMap Neck questionnaire form in predicting functional outcome in recovery in chronic mechanical neck pain A Narrative review

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ABSTRACT

The ProFitMap-Neck questionnaire serves as a reliable and valid patient-reported outcome measure for assessing symptoms (intensity and frequency) and functional limitations in individuals with chronic mechanical neck pain, demonstrating strong potential in predicting functional recovery outcomes. Developed through collaboration with neck pain patients, it comprises separate indices a symptom scale (26 items) subdivided into intensity and frequency subscales, and a functional limitation scale (18 items) yielding normalized scores from 0 to 100, where higher values indicate better health or function. Studies confirm its excellent internal consistency (Cronbach's α 0.89–0.96), intrarater reliability (ICC 0.72–0.84), and concurrent validity with tools like the Neck Disability Index (NDI; $r=0.61$ –0.71) and Visual Analogue Scale (VAS; $r=0.50$ –0.68) in chronic neck pain cohorts, including Turkish and original Swedish validations. In predicting functional outcomes during recovery, ProFitMap Neck excels due to its proven responsiveness, with area under the receiver operating characteristic curve (AUC) values of 0.74–0.83 across symptom and function indices in longitudinal randomized controlled trials involving women with non-specific chronic neck–shoulder pain (pain duration >3–6 months). These AUCs match or exceed NDI (0.75–0.86), indicating adequate discrimination between improved (global rating of change scale $\geq 6/7$) and unchanged participants post-intervention (e.g., neck coordination exercises, strength training). Minimal important change (MIC) thresholds range from 6.6%–13.6% for ProFitMap-Neck indices versus 5.2%–6.3% for NDI, enabling clinicians to detect clinically meaningful improvements in symptoms and function, such as reduced stiffness, weakness, or activity limitations. Cross-cultural adaptations (e.g., Turkish, Chinese) affirm its utility in diverse populations with chronic mechanical neck pain, where it captures biopsychosocial impacts like balance disturbances, cognitive fog, and daily task impairments better than NDI, which mixes domains and shows uncertain MIC. In recovery contexts, baseline ProFitMap Neck scores correlate with sensorimotor changes and treatment response, supporting prognostic use in physiotherapy for mechanical neck pain characterized by >3 months of musculoskeletal-origin pain without red flags. Compared to NDI's limited content validity, ProFitMap Neck's patient centered design enhances prediction of long-term functional gains, though male-specific data and direct prognostic models remain gaps. Narrative reviews should integrate emerging virtual reality trials using it as an outcome.

Keywords: Neck Pain, Resistance Training, Cross Cultural Comparison, Shoulder Pain, Visual Analogue Scale, Musculoskeletal Pain, Patient Centered Care

PG-045: Effect of Brain Gym Exercise on Attention and Working Memory in Short Video Dependent University Students: A Study Protocol for Randomized Controlled Trial

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ABSTRACT

Introduction: Short Video Dependence (SVD) is an emerging form of behavioural issue, characterized by widespread use of digital platforms featuring highly engaging brief video content. Empirical evidence has shed light on the adverse effects of short video consumption on cognition, especially on attention and working memory levels. Brain Gym Exercise is a set of simple exercises designed to improve attention, memory, and overall cognition levels of an individual.

Aims & Objectives: This study aims to find the effect of Brain Gym Exercise on improving the adversely affected attention and working memory levels in SVD university students.

Materials and Methods: A single-blinded randomized controlled study will be conducted where Group A will receive Brain Gym exercise and conventional training protocol, and Group B will receive only conventional training protocol, both for 3 days/week for 4 weeks. Participants will be initially screened by the Short Video Dependence Scale for inclusion. Pre- and post-intervention results will be compared by the key parameters of sustained attention, selective attention, and working memory (by the Mackworth Clock Test, Incongruent Stroop Task, and Forward Digit Span Test, respectively, using Psytoolkit software) and a Patient Reported Attention Scale (Self-Report Attention Scale). A follow-up score will be taken further after 4 weeks to check the retention effect.

Results: Data normality will be tested using the Shapiro–Wilk test (samples less than 50) or Kolmogorov–Smirnov test (samples more than 50). For within-group comparisons, if data are normally distributed, a paired t-test will be applied; if not, the Wilcoxon Signed-Rank Test will be used. For between-group comparisons, if data are normally distributed, an independent t-test will be used; if non-normal, the Mann–Whitney U Test will be applied. Statistical significance will be set at $p < 0.05$.

Conclusion: If successful, Brain Gym Exercise will evolve as the primary evidence-based practice method to improve the attention and working memory levels in short video-dependent university students, which may lessen the risk factor of adult ADHD.

Keywords: Brain, Attention, Memory, Cognition, Software

PG-046: Combined effect of Static Openers to Sciatic nerve mobilisation on Pain, Range of Motion, and lower extremity functions in Individuals with Piriformis Syndrome: A Case Report.

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ABSTRACT

Piriformis syndrome (PS) is defined as the impingement of the sciatic nerve by the piriformis muscle, resulting in buttock pain, sciatica-like symptoms, or both. Various physiotherapeutic interventions are used for its management, such as sciatic nerve mobilization, strengthening of the hip abductors, extensors, and external rotators, and electrotherapy modalities including TENS and IFT, however, none have been proven to provide long-term effects. Static openers are novel techniques that facilitate canal opening and create space for compressed nerves. This case report aimed to assess the combined effect of static openers and sciatic nerve mobilization on pain, range of motion, and lower extremity function in an individual with PS. A 24-year-old female presented to the OPD with complaints of low back pain for three months, radiating to the posterior aspect of the thigh. On assessment, special tests such as SLR, Beatty, and FAIR were positive. Symptoms were aggravated by prolonged standing, brisk walking, and sudden rising from a chair but were relieved by rest and analgesics. Sciatic nerve mobilization was performed for three sets of 30–40 repetitions (2 minutes per set) with a one-minute rest between sets, while static openers were given for 30 seconds to 1 minute, 10–20 repetitions, four days per week. Post-intervention, improvements were observed in VAS (8 to 5), PPT of the piriformis muscle (2.20 to 2.10), hip external rotation (32° to 36°), internal rotation (43° to 48°), and LEFS (25 to 35). This case report concludes that combining static openers with sciatic nerve mobilization can be an effective intervention for managing PS. The study was approved by the Institutional Ethics Committee (MMIMSR/2024/IEC-3083) and registered with the Clinical Trials Registry of India (CTRI/2025/04/085369).

Keywords: Buttocks, Low Back Pain, Piriformis Muscle Syndrome, Sciatica, Range of Motion, Sciatic nerve.

PG-047: Effect of virtual reality guided trunk rehabilitation on balance and risk of fall in elderly: A study protocol

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ABSTRACT

Introduction: Balance plays a critical role in maintaining independence and functional mobility in older adults. However, age-related decline in balance significantly increases the risk of falls, making it an important area of research and prevention. Virtual reality (VR) technology has shown significant potential in rehabilitation, offering immersive, interactive environments where elderly individuals can safely practice balance and trunk movements. VR-guided trunk rehabilitation not only enhances dynamic and static balance but also helps reduce the risk and fear of falling through multisensory stimulation and real-time feedback.

Aim: To assess the effectiveness of VR guided trunk rehabilitation on reducing risk of fall, and improving balance in elderly.

Material and Methods: A single-blinded randomised controlled trial will be conducted involving elderly participants who will be assigned to either VR-guided trunk rehabilitation (group A) or the conventional trunk method (group B). Group A will be provided VR-guided trunk rehabilitation, and Group B will be provided the conventional trunk method for 3 days per week for 4 weeks. After which baseline data will be compared with post-intervention data on the basis of the BESS scale and the Time Up and Go scale.

Result: It is predicted that VR guided trunk rehabilitation will show greater important in post intervention.

Conclusion: If successful than VR guided trunk rehabilitation will be proved to be an efficient method to improve balance and risk older.

Key terms: Virtual reality, risk of fall, elderly, balance, fear of fall

PG-048: A Pilot Study on the Efficacy of Magnetotherapy on Pain and Range of Motion in Individuals with Shoulder Adhesive Capsulitis

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ABSTRACT

Introduction: Shoulder adhesive capsulitis leads to considerable pain, reduced functional ability, and significant restriction of shoulder mobility. Magnetotherapy, employing pulsed electromagnetic fields, may aid in controlling inflammation, promoting tissue healing, and reducing pain. However, evidence supporting its specific effectiveness in adhesive capsulitis remains limited.

Aims & Objective: To find the efficacy of Magneto therapy on Pain and Range of motion in individuals with Shoulder Adhesive Capsulitis.

Materials and Methods: The study employed a single-blinded, pilot randomised controlled trial design and included 24 participants of both genders, aged 35–50 years, meeting the inclusion criteria for shoulder adhesive capsulitis in the freezing and frozen stages. Participants were randomly assigned to the intervention group (n=12) receiving magnetotherapy combined with conventional physiotherapy, and a control group (n = 12) receiving conventional physiotherapy alone. Both groups underwent the assigned physiotherapy regimen 5 days per week for two weeks. Pre- and post-intervention outcome assessments were conducted using the Numeric pain rating scale (NPRS) for pain intensity and shoulder range of motion (abduction and external rotation) measured with a universal goniometer. Data were analysed for normality testing (Shapiro–Wilk test). Depending on data distribution, within-group comparisons were performed using paired t-tests or Wilcoxon tests, and between-group differences using independent t-tests or Mann–Whitney U tests. Effect sizes were calculated, and significance was set at $p < 0.05$.

Results: Baseline characteristics were comparable between the two groups. Both groups demonstrated significant improvements in pain intensity and shoulder range of motion from pre- to post-intervention. Between-group analysis, however, revealed no statistically significant differences in post-intervention outcomes. The effect sizes for between-group comparisons were (0-0.56).

Conclusion: Although both groups improved significantly, magnetotherapy did not demonstrate superior effectiveness compared to conventional physiotherapy. Further studies with larger samples and longer treatment duration are recommended to clarify its clinical value.

Keywords: Bursitis, Electromagnetic field, Freezing, Inflammation

PG-049: A comparison of Circadian Light Therapy and Cranial Electrical Stimulation (CES) on cognition in post-craniectomy patients: A Study Protocol

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ABSTRACT

Introduction: Cognitive deficits are prevalent in craniectomy patients. This issue has a substantial impact on the patient's rehabilitation and quality of life. Circadian Light Therapy has been shown to affect sleep-wake cycles and neuroplasticity, perhaps improving cognitive recovery. Cranial Electrical Stimulation (CES) is a type of non-invasive brain stimulation that has been shown to alter neuronal activity in a way that may benefit cognitive ability.

Aim: This study aims to find the effect of the efficacy of Circadian Light Therapy and CES on cognitive recovery in craniectomy patients.

Materials and Methods: A single-blinded randomized controlled trial will be undertaken in which group A will undergo Circadian Light Therapy and group B will receive CES, with both groups receiving treatment for 7 days. Participants in the study will be persons aged 18-70 who have had craniectomy, have cognitive impairment, with a Glasgow Coma Score ≥ 13 . Patients with previous serious psychiatric or neurological illnesses, bilateral fixed and dilated pupils, catastrophic injuries with a life expectancy of less than 24 hours, or severe comorbidities would be excluded. The ACE-III will be used to assess cognitive performance at baseline and after therapy.

Result: This study anticipates that post-analysis data will reveal significant differences in cognitive recovery between the two treatment groups, as measured by changes in ACE-III scoring. The analysis will focus on the average change in ACE-III scores from baseline to post-treatment to identify which intervention is more effective at enhancing cognitive functioning.

Conclusion: If both therapies are effective, they will become major evidence-based practice strategies for improving cognitive function in post-craniectomy patients.

MeSH Keywords: Electric Stimulation, Cognition, Phototherapy, Craniotomy, Sleep

PG-050: Impact of Backpack Weight on the Development of Mechanical Back Pain in the School Students Population: A Narrative Review

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ABSTRACT

Carrying heavy backpacks has become a pervasive issue among school-aged children, contributing to postural deviations, musculoskeletal strain, and discomfort. The growing academic demands and lack of ergonomic awareness have resulted in excessive backpack weights often exceeding recommended limits (10–15% of body weight), predisposing children to mechanical stress and chronic pain. This narrative review aims to synthesize evidence regarding the biomechanical, physiological, and postural consequences of heavy backpack carriage among school-going children. This narrative review was conducted through a comprehensive search of relevant literature using databases including PubMed, Cochrane Library, and Web of Science. Peer-reviewed experimental, cross-sectional, and observational studies focusing on the biomechanical and musculoskeletal effects of heavy backpack use among school-aged children were included. Articles not written in English or unrelated to postural and back pain outcomes were excluded. Data were qualitatively synthesized and summarized under thematic areas such as spinal alignment changes, pain prevalence, and ergonomic factors influencing posture. Across studies, backpack loads exceeding 10–15% of body weight significantly altered cervical and lumbar posture, reduced postural stability, and increased trunk forward lean. Experimental data revealed decreased craniovertebral angle and increased forward head posture under 10% static and dynamic loading conditions. Cross-sectional evidence demonstrated high prevalence of back, neck, and shoulder pain, especially among younger children and females. High-position backpack carriage resulted in relatively greater postural stability than low placement. Additionally, chronic use led to discomfort localized in the upper and lower back, legs, and shoulders. Heavy backpack use imposes substantial postural and musculoskeletal challenges in children, leading to forward head posture, spinal misalignment, and back pain. Limiting backpack load to below 10% of body weight, incorporating ergonomic education, and promoting the use of lockers or wheeled bags can mitigate these effects. Further longitudinal research is needed to understand long-term spinal adaptation and preventive strategies.

Keywords: Child, Female, Shoulder, Chronic pain, Back pain, Posture.

PG-051: Title: Interventions for Soft Tissue Imbalance and Motor Control Deficits in Upper Cross Syndrome: A Literature Review of Myofascial Release and Sensorimotor Training

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ABSTRACT

Upper Cross Syndrome (UCS) is a common postural dysfunction involving tightness of the anterior chest and cervical musculature, weakness of the deep neck flexors and scapular stabilizers, and reduced proprioceptive and motor control efficiency. UCS causes functional dysfunctions that increases muscle spindle sensitivity and activate gamma motor neurons, resulting in impaired dynamic balance. Recent physiotherapy literature has increasingly explored combined approaches that target both soft-tissue restrictions and neuromuscular impairments. Therefore, this review was aimed to gather the existing literature that has stated the effectiveness of MFR and sensorimotor training in patients with UCS. An extensive literature was conducted on PubMed, Scholar, Ovid, and Web of science from 2019 to 2025. Keywords used were: “upper cross syndrome OR “upper crossed syndrome” AND “myofascial release” AND “sensorimotor training”. Boolean operators “AND” and “OR” were used to combine the keywords. Research has found that MFR was found to decrease fascial tightness in the pectoral muscles, upper trapezius, levator scapulae, and suboccipital region, whereas sensorimotor training focuses on enhancing cervical proprioception, joint position sense, deep cervical flexor activation, and postural stability. MFR was found to enhance vertical alignment of muscles along with the lengthening of the body. There are extensive anatomical connections between neck proprioceptive inputs. If neck proprioceptive information is inaccurate, then control of head position may be affected. Overall, the available evidence showed that approaches incorporating both MFR and sensorimotor training tends to improve pain, craniovertebral angle, proprioceptive accuracy, cervical mobility, and deep cervical flexor endurance, often producing better outcomes than either intervention alone. Even though the combined evidence is supportive, the number of high-quality studies remains limited, indicating a need for more robust randomized controlled trials to establish clearer clinical guidelines.

Keywords: Upper cross syndrome, Myofascial release therapy, Sensorimotor training, Gamma motor neurons.

PG-052: Effect Of Mat Pilates On Blood Pressure And Heart Rate Recovery In Prehypertensive Collage Going Students-Pilot Study

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ABSTRACT

Introduction: Pre-hypertension in college-going students could raise the future chances for cardiovascular disease because it leads to increased resting blood pressure and delayed heart-rate recovery. Exercise therapies like mat Pilates have been shown to boost vascular function and lower resting blood pressure in young people and hypertensive populations.

AIM-The aim of the pilot study is to examine the effect of mat-Pilates intervention for 4 weeks on resting blood pressure and heart-rate recovery (HRR) in pre-hypertensive college students.

Methodology-Twelve students (6 males, 6 females) with pre-hypertension (mean age 22.6 ± 2.3 years; mean height 160 ± 8.2 cm; mean weight 77 ± 13.25 kg; mean BMI 29.9 ± 5.2 kg/m²) were randomly assigned to experimental (n=6) and control (n=6) groups. Both groups went to 6 sessions/weeks for four weeks. The experimental group did 40-minute mat-Pilates sessions, while the control group went through 40-minute traditional workouts (mobility/flexibility) including sleep hygiene education. HRR was recorded using the Queen's College Step Test, and resting systolic and diastolic blood pressure were measured using a manual sphygmomanometer.

Result-Descriptive statistics are used to compute mean $\pm$ standard deviation, while t tests related to inferential statistics are used to compare pre and post reading. After intervention, the Pilates group showed significant reductions in systolic BP with the mean difference (-3.5 ± 1.2 mmHg, $p = 0.016$) but not in diastolic BP (-2.1 ± 1.1 mmHg, $p = 0.079$). The control group showed no significant changes. HRR1 (3.8 ± 1.5) $p=0.035$ and HRR2(5.6 ± 1.8) $P=0.011$ improved more in the Pilates group as compared with the control group. No adverse events were reported.

Conclusion-This shows that Pilates improved resting SBP and HRR1 and HRR2 in pre-hypertensive college students, indicating its potential as a non-pharmacological early-intervention approach.

Keywords- Pre-hypertension, Mat Pilates, Blood pressure, Heart-rate recovery, College students, Pilot study.

PG-053: Effect of Neuromuscular Electrical Stimulation on Quadriceps Strength, Static Balance, and Fall Risk in Individuals with Parkinson's Disease: A Study Protocol

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ABSTRACT

Introduction: Parkinson's disease represents a fast-growing neurodegenerative condition; current diagnostic standards emphasize bradykinesia paired with rest tremor or rigidity, but Parkinson's disease extends beyond these motor signs and includes multiple non-motor clinical features. Parkinson's disease is distinguished by changes in firing patterns and inappropriate oscillations within the basal ganglia. Neuromuscular electrical stimulation (NMES) can enhance motor function in patients with CNS injuries by inducing neural plasticity. NMES improves motor function in patients by mediating neuroplasticity and upregulating a variety of neurotropic variables, as seen by enhanced axonal sprouting and newly created neuromuscular junctions.

Aim: The intended effect of this research study is to determine whether NMES can foster better static balance and further reduce the risk of falls in people with Parkinson's disease by strengthening the quadriceps.

Materials and Methods: A Randomised controlled study will be conducted in which Group A will receive NMES and a Conventional Training Protocol, and Group B will receive only a Conventional Training Protocol, both for 3 days/week for 4 weeks. Participants will be initially screened by the UPDRS Scale. Baseline data will be compared with post-intervention data based on the 30-second sit-to-stand test and the time up and go test.

Results: We will assess data normality using the Shapiro-Wilk test (samples with fewer than 50). A paired t-test will be performed for within-group comparisons if the data are normally distributed; otherwise, the Wilcoxon Signed-Rank Test will be implemented. For between-group comparisons, normally distributed data will be analyzed using an independent t-test; for irregularly distributed data, the Mann-Whitney U test will be employed. Statistical significance will be established at $p < 0.05$.

Conclusion: If Successful, NMES will define the primary evidence-based practice method to improve the static balance and reduce Fall Risk in individuals with Parkinson's disease.

Keywords: Parkinson Disease, Electric Stimulation, Hypokinesia, Postural Balance, Neuronal Plasticity, Randomized Controlled Trials.

PG-054: Effect of deep cervical flexor training versus gaze stability training on cervical proprioception in individual with motion sickness: A randomized control trial protocol

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ABSTRACT

Motion sickness is a commonly experienced physiological response that occurs when the visual, vestibular, and proprioceptive systems receive conflicting information, resulting in symptoms such as nausea, dizziness, vomiting, and general discomfort. It is frequently reported among young adults, a population that engages in regular travel and academic or occupational activities that may provoke these symptoms. Approximately 71.4% experience mild symptoms, while 27.8% report moderate symptoms, and about 0.9% experience severe episodes. Despite the frequent use of pharmacological options such as antihistamines and anticholinergics, along with non-pharmacological methods including vestibular rehabilitation, optokinetic training, gaze-stability exercises, and controlled breathing techniques, many individuals continue to experience recurring symptoms. Reduced neck joint position sense may heighten dizziness, disorientation, and motion sickness symptom severity which can be improved by DCF training. This study aimed to examine the influence of DCF training on cervical proprioception and motion sickness symptoms in individual with motion sickness. Participants aged 18–40 years with mild-to-moderate susceptibility on Motion Sickness Susceptibility Questionnaire (MSSQ) with score ranges of 16–35, will be recruited through purposive sampling. Following informed consent, participants will be assigned to either an experimental group receiving DCF training with a pressure biofeedback device performing gradual contractions from 20 mmHg to 30 mmHg for 10–15 seconds combined with gaze-stability tasks or to a control group that performs only gaze-stability exercises. Both groups will undergo a 4-week with 3 sessions / week. The outcome measures will include Joint Position Sense testing using a laser-pointer method and MSSQ scoring. It is anticipated that individuals receiving cervical flexor training will show greater improvement in proprioception and reduced susceptibility to motion sickness, supporting this approach as a beneficial supplementary intervention.

Keywords - Motion sickness, Proprioception, Neck muscle, Headache, Dizziness

PG-055: Effect of Blood Flow Restriction training on Cardiorespiratory endurance, Functional capacity, and Muscle strength in Postmenopausal women: Scoping review

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ABSTRACT

Post menopause is a physiological phase that occur after the age of 45- 55 years of age. The prevalence of postmenopausal symptoms is high, with studies showing that between 89%-93.5% of postmenopausal women experience at least one symptom. This transition is accompanied by range of systematic alterations affecting musculoskeletal integrity, cardiovascular health, metabolic function and overall physical performance. Blood flow restriction training (BFRT) has gained attention as a therapeutic option that uses low intensity exercises to enhance strength and endurance, making it particularly suitable for postmenopausal women who may have limited tolerance for high-load training. A systematic search was conducted across PubMed, Pedro, Scopus, and Science direct for studies published from 2015 to 2025 using the following key terms “blood flow restriction training”, “postmenopause”, “muscle strength”, “functional capacity”, “cardiorespiratory endurance”, “and”. This review focuses on comparing the effect of interventions on cardiorespiratory endurance, muscle strength, and functional capacity. The initial search yielded 930 articles. After removing 387 duplicates using Mendeley. Title and abstract screening of 543 articles resulted in 15 eligible records. From which 5 studies ultimately met the inclusion criteria and have full-text article available.

Across trials, Bftr has greatly improved muscle strength, functional capacity among postmenopausal women, often producing outcomes comparable to high load resistance training. However, no study directly examined the effects of BFRT on cardiorespiratory endurance, leaving this domain uninvestigated. While certain functional outcomes may reflect endurance-related components, none assessed aerobic or ventilatory capacity as primary endpoints. In light of this gap, the present work intends to explore the influence of BFRT on cardiorespiratory endurance, contributing evidence to an area currently absent from the literature.

Keywords- Postmenopausal, Blood flow restriction training, Muscle strength, Physical function performance

PG-056: Effect of Muscular Kinesiotaping on Pain, Pain Pressure Threshold and Disability in Patients with Cervicogenic Headache: A Randomized Clinical Trial Protocol

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ABSTRACT

Introduction: Cervicogenic headache (CGH) is a secondary headache originating from dysfunction of cervical structures innervated by the C1–C3 spinal nerves, including the splenius capitis, semispinalis, upper trapezius, levator scapulae, and sternocleidomastoid muscles. It typically presents as unilateral head pain referred from the neck, often accompanied by muscle tenderness, stiffness, and reduced cervical mobility. Kinesiotaping (KT), is increasingly integrated into physiotherapy for various musculoskeletal disorders, evidence regarding its targeted benefits for individuals with CGH remains limited, underscoring the necessity for rigorous clinical evaluation.

Aim: This planned study aims to evaluate the effect of muscular KT on pain intensity, pain pressure threshold, and disability in patients with cervicogenic headache.

Method: In this planned randomized clinical trial, participants diagnosed with CGH according to the CHISG criteria will be enrolled and randomly assigned to one of two study groups. The intervention group will receive muscular kinesiotaping in combination with conventional physiotherapy, while the control arm will receive conventional physiotherapy alone. Outcome measures will be collected at baseline and post-intervention, after 12 sessions (3 sessions per week for 4 weeks), including pain intensity assessed by Numerical Pain Rating Scale, pain pressure threshold measured with a digital algometer, and functional disability evaluated through the Headache Disability Index. Randomization, allocation concealment, and standardized treatment procedures will be implemented to ensure methodological rigor. A pilot study will be conducted to determine the appropriate sample size.

Result: Results will be analyzed after completion of data collection.

Conclusion: This study is expected to demonstrate that muscular kinesiotaping is an effective adjunct intervention for reducing pain, improving PPT, and decreasing disability in patients with CGH. By targeting cervical muscle dysfunction and enhancing neuromuscular support, kinesiotaping may offer a safe, cost-effective, and clinically applicable treatment option and provide a basis for future controlled trials and standardized treatment protocols.

Keywords: Headache, Paraspinal Muscles, Myalgia, Physical Therapy, Athletic Tape.

PG-057: Rehabilitation Approach Integrating Virtual Reality and Dual-Task Training for Cognitive-Motor Interference in Parkinson's Disease: A Case Report

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ABSTRACT

Cognitive-Motor Interference (CMI) is characterized by reduced motor performance during concurrent cognitive tasks in individuals with Parkinson's disease (PD). This impairment significantly affects mobility, balance, and functional independence. Rehabilitation plays a crucial role in PD management. Dual-task training has been shown to enhance both cognitive and motor performance, while virtual reality-based (VR) therapy can improve gait and balance compared with conventional interventions. However, limited evidence exists regarding the combined application of dual-task training and VR, particularly in addressing CMI. This case report involves a 72-year-old male diagnosed with PD. The Patient reported a progressive worsening in his ability to perform activities that required simultaneous cognitive and motor functioning. He also described occasional gait hesitation, diminished confidence in his balance, and marked slowing when engaged in dual-task situations. Baseline assessment indicated Hoehn and Yahr stage 2.5, an MDS-UPDRS Part I-III score of 53, a MoCA score of 18, and a Timed Up and Go (TUG) time of 26 seconds. The patient underwent a 4-week intervention, five days per week, combining structured dual-task training and semi-immersive VR therapy. Dual-task training comprised progressively challenging cognitive tasks such as verbal fluency, mental arithmetic, attention shifting, and memory recall performed concurrently with gait and balance activities. The VR intervention consisted of semi-immersive headset-based VR games focusing on balance training, weight shifting, postural control, and dynamic stability during standing and stepping tasks. Post-intervention assessment demonstrated MDS-UPDRS score decreased to 47, MoCA improved to 21, and TUG time reduced to 21 seconds. Dual-task cost was substantially reduced, indicating improved integration of cognitive processing and motor performance. Functionally, the patient reported increased walking confidence, fewer hesitations during turning, and improved ability to manage everyday multitasking. This case suggests that integrating dual-task training with VR may be a promising approach for reducing CMI in patients with PD.

Keywords: Cognition, Dual-task performance, Gait, Parkinson's disease, Virtual Reality.

PG-058: Balance, Falls, Risk of Falls, and Related Disability in Patients with Vestibular Impairment: A Comprehensive Review

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ABSTRACT

Vestibular impairment is a significant cause of dizziness and imbalance, causing a significant threat to mobility, independence, and quality of life. This review summarizes current evidence linking vestibular dysfunction with balance deficits, increased fall risk, and fall-related disability. A systematic search of PubMed, Web of Science, Ovid, and Scopus was conducted using the keywords "vestibular impairment," "vestibular dysfunction," "fall," "risk of fall," and "balance," which were used interchangeably with the Boolean operators "OR" and "AND". From articles published within past five years, an initial pool of 353 articles was identified, of which 90 were filtered for review based on relevance. After applying strict inclusion and exclusion criteria, 22 high impact studies were included in this review. Study quality and risk of bias were assessed using standardized tools, including PEDro scale for randomized trials and Newcastle-Ottawa Scale for observational studies. The evidence confirms that vestibular impairment, whether peripheral or central, is consistently associated with poor balance performance across all age groups. This is measured objectively using tools like Sensory organization test, Instrumented Timed Up and Go test, and gait analysis, and subjectively by patient-reported outcomes like the Dizziness Handicap Inventory and Activities-specific Balance Confidence scale. Vestibular loss is a significant independent predictor of falls, particularly in older adults and specific clinical populations (e.g., Alzheimer's disease, traumatic brain injury). The functional disability presents as reduced mobility, social participation, and quality of life. Evidence supports the efficacy of vestibular rehabilitation therapy, including innovative approaches using virtual reality and telerehabilitation, in improving balance and reducing risk of fall. Vestibular impairment is a critical determinant of balance deficits, falls, and disability. A complete management approach, including accurate diagnosis and targeted rehabilitation, is essential to reduce risk of fall and improve functional outcomes in this patient population.

Keywords: Vestibular impairment, Risk of fall, Falls, Vestibular dysfunction

PG-059: Effectiveness of Thoracic Kinesio Taping on Pulmonary Function among Individuals with COPD: A Scoping Review

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ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) is a major global health burden, affecting more than 300 million people worldwide and ranking among the leading causes of morbidity and mortality. The disease reduces thoracic mobility, weakens respiratory muscles, and limits functional capacity. Thoracic kinesio-taping has emerged as an adjunct physiotherapy technique aimed at improving chest wall mechanics and easing breathing. Despite its growing clinical use, evidence regarding its effectiveness in COPD remains limited. This review synthesises available research examining its impact on pulmonary function, respiratory muscle performance, oxygen saturation, and functional outcomes in individuals with COPD. A systematic search of literature from PubMed, ScienceDirect, PEDro and Scopus identified studies published between January 2011 to November 2025 following the Arksey and O Malley framework and PRISMA-ScR guidelines. Search terms included “thoracic kinesiostaping”, “Diaphragmatic KinesioTaping”, “KinesioTaping” and “respiratory function”. Randomized controlled or clinical trials involving adults with COPD who received thoracic kinesio-taping were included as intervention. The initial search yielded 42 articles. After removing 19 duplicates using Mendeley, 23 unique records underwent title and abstract screening. This resulted in 5 articles for full-text review against the selection criteria, from which 4 studies were ultimately included in the final review. Methodological quality was assessed using standard risk-of-bias tools. Due to heterogeneity in study protocols and outcomes, a narrative synthesis was conducted. Three studies met the inclusion criteria. Across trials, thoracic kinesio-taping produced short-term improvements in pulmonary function parameters, oxygen saturation, and six-minute walk performance. Out of four trials, two showed similar effectiveness between diaphragmatic and intercostal taping, whereas one demonstrated improved respiratory muscle strength and functional capacity when kinesio-taping was combined with physiotherapy, while the third offered only theoretical support without clinical outcome data. The fourth review paper shows the immediate effect of diaphragmatic taping on inspiratory muscle activity, chest expansion and pulmonary function. Overall, the evidence suggests potential benefits, though current data remain limited and variable. Thoracic kinesio-taping may serve as a supportive adjunct to physiotherapy in COPD, offering modest improvements in breathing mechanics and functional performance.

Keywords: Athletic Tape, pulmonary Disease, chronic obstructive, Respiratory Mechanics, Randomized controlled Trials.

PG-060: Impact of Lumbosacral Belt wear-time on Pain, Core Stability, and Functional Disability in individuals with Chronic Lumbar Disc Herniation: A Randomized Clinical Trial Protocol

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ABSTRACT:

Introduction: Lumbar Disc Herniation (LDH) is a common cause of lower back pain. The Lumbosacral (LS) Belt is used to support the lower back, reduce excessive movement and pain associated with it. Despite its routine clinical use, there is limited evidence regarding the optimal duration of belt wear in individuals with LDH.

Aims and Objectives: This study aims to examine how different durations of wearing LS belt influences pain levels, core stability, and functional disability in individuals with chronic LDH.

Materials and Methods: In this planned randomized clinical trial, participants diagnosed with chronic LDH will be randomly assigned into three groups through purposive sampling, using computer generated random numbers. Group-1 will wear the LS belt throughout the day (minimum 8 hours) with conventional physiotherapy; Group-2 will wear the belt only during prolonged sitting or standing (minimum 3 hours) with conventional physiotherapy; and Group-3 will receive conventional physiotherapy alone including Moist Hot Pack (15 mins), Transcutaneous Electrical Nerve Stimulation (15 mins), followed by strengthening and stretching exercises emphasizing core muscle stabilization. Outcome measures will be collected at baseline, day 7, day 14 and post-intervention at day 21, after 9 sessions (3 sessions/week for 3 weeks), including pain perception (Short-form McGill pain questionnaire), core muscle stability (Pressure Biofeedback), and functional disability (Oswestry Disability Index). A pilot study will be conducted to estimate the appropriate sample size, and adherence to belt wear will be monitored through regular telephonic follow-ups.

Results: Data will be analysed using descriptive statistics and normality testing (Kolmogoro-Smirnov test). Changes across time points will be evaluated using repeated-measures ANOVA or mixed-effects models, with non-parametric alternatives applied when assumptions are violated. Statistical significance will be set at $p < 0.05$.

Conclusion: By evaluating the impact of LS belt wear-time on outcomes, this study tends to provide evidence-based guidance on its role in the management of Chronic LDH.

Keywords: Low Back Pain, Intervertebral Disc Displacement, Pain Measurement, Core Stability

PG-061: Effect of Instrument-Assisted Soft Tissue Mobilization on Pain and Function in Patients with Plantar Fasciitis- A Systematic Review

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ABSTRACT

Plantar fasciitis is a prevalent foot condition caused by repetitive micro-trauma or excessive loading of the plantar fascia. Traditionally, it has been managed using conventional physiotherapy approaches such as electrotherapy, taping, and manual therapy techniques. In recent years, Instrument-Assisted Soft Tissue Mobilization (IASTM) has gained popularity as a treatment modality for plantar fasciitis. IASTM utilises specially designed metal instruments to address musculoskeletal dysfunction, scar tissue, and soft tissue restrictions, thereby facilitating tissue healing and recovery. Currently, the evidence supporting the effectiveness of IASTM in enhancing pain relief and functional outcomes in plantar fasciitis remains limited. Therefore, this review aimed to examine the role of IASTM in reducing pain and improving function in individuals with plantar fasciitis. The systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. This review protocol was registered with PROSPERO (CRD420251242489). A systematic literature search was conducted in PubMed, PEDro, and Embase databases for studies published between 2020 and 2025, using the keywords “IASTM” and “Plantar Fasciitis”. The methodological quality of the included studies was evaluated using PEDro Scale and risk of bias was assessed with the Cochrane Risk of Bias tool. 239 studies were initially found from the three databases, out of which only five met the predefined inclusion criteria and were analysed. One study reported a notable increase in weight-bearing capacity at the first metatarsophalangeal (MTP) joint and improved ankle range of motion (ROM) in both comparison groups. In contrast, another study indicated significant improvement in pain, strength, and plantar flexion ROM but no significant change in dorsiflexion range. Additionally, one trial demonstrated that both IASTM and extracorporeal shockwave therapy (ESWT) were effective; however, the combination of IASTM and stretching exercises produced the most significant functional improvement at a 6-month follow-up. Overall, this review suggests that IASTM is an effective intervention for plantar fasciitis, providing improvements in pain and function, both alone and in combination with conventional exercise. However, heterogeneity of protocols and the limited number of high-quality trials emphasise the need for larger randomised trials with uniform treatment parameters and long-term outcomes.

Keywords: Fascia, Pain, Range of motion, Ankle

PG-062: Effect of manual therapy in chronic ankle instability: A systematic literature review

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ABSTRACT

Persistent mechanical and functional impairments characterize chronic ankle instability (CAI) following an initial lateral ankle sprain. These impairments lead to alterations in gait biomechanics and increase the risk of recurrent ankle sprains. These are common in athletes and physically active individuals, resulting in swelling, pain and reduced range of motion. Manual therapy is prominently used to support healing and improve outcomes in musculoskeletal injuries. However, the evidence supporting its effectiveness specifically in CAI remains limited. This review aimed to summarize available literature on the effectiveness of manual therapy in CAI. Studies involving individuals aged 18 years or older, including primary studies (such as randomised controlled trials and clinical trials) published in English, were included. A systematic search of PubMed, the Cochrane Library, and PEDro databases was conducted for the period 2020–2025 using the terms (“manual therapy”) OR (“chronic ankle instability”), yielding a total of 1059 records. Of these, 7 met the inclusion criteria and were included in the analysis. Four studies reported that manual therapy improved ankle functional performance in individuals with CAI. One study indicated that manual therapy may enhance neuromuscular control; however, evidence was inconsistent and did not demonstrate meaningful changes in gait biomechanics. Another study found that a combination of manual massage and Kinesio-taping was effective in reducing swelling, pain, and improving functional outcomes. Additionally, one trial reported that Mulligan mobilisation with movement significantly improved pain, range of motion, and dynamic balance during rehabilitation for ankle sprains. Overall, current evidence suggests that manual therapy can contribute to improvements in pain, strength, ROM, balance and function in patients with CKI. Nevertheless, further high-quality clinical research is needed to define its effectiveness and optimise treatment protocols more clearly.

Keywords: Ankle injury, Massage, Pain, Ankle, Athletes

PG-063: Exploring the Impact of Early Physiotherapy Intervention in Preterm with Bronchopulmonary Dysplasia – A Review

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ABSTRACT

Bronchopulmonary dysplasia (BPD) remains one of the most significant complications in premature infants, often leading to prolonged dependence on respiratory support, feeding challenges, delayed neurodevelopment, and longer hospital stays. With ongoing improvements in neonatal care, early physiotherapy has emerged as a key element of multidisciplinary management, aiming to enhance respiratory function, support neuromotor development, and facilitate overall functional growth. The objective of the study is to summarize and evaluate existing evidence on how early physiotherapy influences respiratory stability, developmental progress, and functional outcomes in preterm infants diagnosed with BPD. This narrative review analysed current literature, including recent clinical trials, observational studies, and NICU rehabilitation research. The search across Cochrane, Google Scholar, PEDro, and PubMed (2013–2025) identified 16 articles for full-text review, with 9 meeting the inclusion criteria. The reviewed evidence covered different physiotherapy methods used for infants with or at risk of BPD, including respiratory techniques, developmental care, positioning, sensorimotor work, and parent-assisted handling. Findings indicate that early physiotherapy provides benefits across several clinical dimensions. Respiratory-focused interventions—such as airway clearance methods, breathing facilitation techniques, and strategies to enhance chest wall mobility—are associated with improved oxygenation and decreased dependence on mechanical ventilation. Developmental care practices, including tailored positioning, environmental modification, and guided motor activities, support neuromotor development and behavioural regulation. Additional evidence suggests that early physiotherapy improves feeding preparedness and postural stability. Long-term outcomes show enhanced motor abilities, lower incidence of developmental delays, and better adaptive skills during early childhood. Although intervention methods vary, physiotherapy remains a safe and well-accepted component of neonatal care. In summary, early physiotherapy supports better breathing, development, and overall function in preterm infants with BPD. More standardized guidelines and robust clinical trials will play crucial role to further improve physiotherapy practice in NICUs.

Keywords: Bronchopulmonary Dysplasia; Preterm Infants; NICU; Respiratory Physiotherapy; Early Childhood

PG-064: Title: Efficacy of Transcutaneous auricular Vagus Nerve Stimulation (TaVNS) on cognitive function in Postmenopausal Women with type II Diabetes.

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ABSTRACT

Introduction: Diabetes mellitus, commonly known as diabetes, is a chronic metabolic disorder that occurs when blood glucose levels are too high due to the body's inability to produce enough insulin or use insulin effectively. Menopause is a natural biological process marked by the permanent end of menstrual cycles, occurring after at least twelve consecutive months without menstruation, due to a decrease in the ovaries' production of reproductive hormones. Transcutaneous Auricular Vagus Nerve Stimulation (TaVNS) is a non-invasive technique to enhance noradrenergic neurotransmission in the human brain, to increase cognitive control. Postmenopausal women with type 2 diabetes mellitus show a slightly higher risk of developing cognitive impairment.

Aim: This study aims to find the efficacy of Transcutaneous Auricular Vagus Nerve Stimulation (TaVNS) in postmenopausal women with type 2 diabetes on cognitive function improvement.

Material and Method: A randomised controlled study will be conducted with participants meeting the inclusion criteria. Subjects will be randomly assigned to the active stimulation group and a combination of conventional therapy with stimulation group and the sham control group. These two active stimulation groups will receive TaVNS for 30 min, 3 times a week for 3 weeks.

Result: This study predicts that transcutaneous auricular vagus nerve stimulation (TaVNS) will improve cognitive function in post menopausal women with type 2 Diabetes.

Conclusion: If successful, Transcutaneous Auricular vagus nerve stimulation will develop as the primary evidence-based practice method for cognitive rehabilitation in post menopausal women with type 2 diabetes.

Keywords: Postmenopausal Diabetes mellitus, cognitive function, Transcutaneous Auricular vagus nerve stimulation (TaVNS)

PG-065: Effectiveness Of Upper-Thoracic Mulligan Mobilization for Mechanical Neck Pain: A Systematic Review

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ABSTRACT

Mechanical neck pain is a prevalent musculoskeletal disorder associated with biomechanical dysfunctions, poor posture, repetitive stress, and psychosocial factors, affecting 6–22% of adults and up to 38% of older individuals, with a substantial impact on quality of life. Upper-thoracic Mulligan mobilization techniques, including Reverse Natural Apophyseal Glides (RNAGs) and thoracic Sustained Natural Apophyseal Glides (SNAGs), have been proposed to improve cervicothoracic mobility and pain, yet evidence remains limited. This systematic review evaluated the effectiveness of upper-thoracic Mulligan mobilization for mechanical neck pain and was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A comprehensive search of PubMed, Cochrane CENTRAL, PEDro, Scopus, and Web of Science was performed from inception to 2025 using relevant keywords and MeSH terms, with additional hand-searching of reference lists. Randomized controlled trials evaluating upper-thoracic RNAGs or thoracic SNAGs compared with exercise or other manual therapies were included, while cervical-only applications were excluded. Methodological quality and risk of bias were independently assessed using the Physiotherapy Evidence Database (PEDro) scale. Three randomized controlled trials met the inclusion criteria, demonstrating moderate methodological quality and low to moderate risk of bias (PEDro scores $\geq 6/10$). High-quality evidence showed that upper-thoracic RNAGs produced significantly greater reductions in pain intensity ($p < 0.001$), improvements in cervical range of motion ($p < 0.01$), and reductions in neck-related disability ($p < 0.001$) compared with physiotherapy alone. Thoracic SNAGs demonstrated comparable or superior outcomes to thoracic manipulation and exercise-only programs, with statistically significant between-group differences favoring Mulligan techniques ($p < 0.05$). Consistent short-term benefits were reported with no serious adverse events. Long-term effectiveness remains insufficiently investigated. Upper-thoracic Mulligan mobilization appears to be an effective short-term intervention for mechanical neck pain, warranting further high-quality trials with standardized protocols and extended follow-up.

Keywords: Neck Pain, Thoracic Vertebrae, Spinal Manipulation, Mobilization, Manual Therapy, ROM, Articular, Randomized Controlled Trial.

PG-066: Effect of Type 2 Diabetes Mellitus on Lower limb Muscle weakness and risk of fall in patients: A Systematic Review

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ABSTRACT

Type 2 diabetes mellitus (T2DM) is associated with progressive loss of skeletal muscle mass, impaired neuromuscular function, and reduced physical capacity, leading to lower-limb weakness, mobility limitations, and an increased risk of falls, affecting approximately 30–60% of individuals. Although resistance and balance-based exercise interventions are commonly recommended, the strength and quality of recent evidence remain uncertain. This systematic review examined randomized controlled trials published within the past five years that investigated lower-limb muscle weakness, fall-related outcomes, and the effects of exercise-based interventions in adults with T2DM. A comprehensive search of PubMed, Cochrane CENTRAL, PEDro, Scopus, Web of Science, and Google Scholar up to 2025 identified ten eligible trials. Methodological quality was assessed using the PEDro scale, and risk of bias was evaluated using the Cochrane Risk of Bias 2 tool. Studies focusing exclusively on diabetic peripheral neuropathy were excluded from the primary conclusions. PEDro scores indicated moderate to high methodological quality (5–8/10), with frequent limitations related to blinding procedures and allocation concealment; overall risk of bias was low to moderate across most studies. Consistent evidence showed that structured, progressive resistance training improved knee-extensor strength, chair-rise performance, and balance compared with usual care. Multicomponent exercise programs incorporating resistance and balance training produced greater improvements in fall-risk measures than aerobic training alone. While short-term gains in muscle strength and functional performance were consistently reported, evidence on long-term outcomes and fall incidence remains limited. In summary, T2DM contributes to lower-limb weakness and increased fall risk, and current moderate- to high-quality evidence supports resistance-based and combined balance training interventions as effective strategies to improve muscle strength and functional performance. Further trials with standardized protocols and longer follow-up are required to strengthen clinical recommendations.

Keywords: Type 2 Diabetes Mellitus, Muscle weakness, Lower extremity, Postural Balance, Accidental Falls.

PG-067: Vibration Therapy as a Countermeasure for Disuse Osteoporosis: A Systematic Review

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ABSTRACT

Osteoporosis is a significant health concern for individuals with restricted movement, particularly those who are confined to bed or rely on a wheelchair for extended periods, as they cannot carry out daily activities and weight-bearing workouts. Low-magnitude, high-frequency vibration (LMHFV) treatment has been introduced as a potential alternative that would not only help encourage bone growth but also avert the decline of bone mineral density. The aim is to examine the effectiveness of LMHFV treatment on osteoporosis prevention and management in patients on long-term bed rest and wheelchair. Search was done on databases such as PubMed, Google Scholar, and SciSpace from 2015 to 2025. The search terms included “low-magnitude high-frequency vibration,” “whole-body vibration,” “osteoporosis,” “bone mineral density,” “bedridden,” “wheelchair-dependent”, and “immobilised”. In total, 622 papers were identified and 210 distinct studies were reviewed after excluding duplicates and focusing on relevance. There is some evidence indicating that LMHFV (typically 30–37 Hz frequency, 0.3–0.5 g magnitude) makes a very slight difference for those who can walk and undergo treatment, with children and teenagers with low BMD being the most impacted. Studies focusing on groups with chronic spinal cord injury, immobility, and long-term bedridden status show that there is nearly no increase in bone mineral density and no change in bone microstructure at the treatment doses. Study is not robust enough to dismiss LMHFV treatment as a standard solution for preventing fractures among long-term bedridden patients. The treatment appears to be safe, and the side effects are manageable. There is a need for large-scale RCTs with longer follow-ups and detailed protocols to determine optimum treatment methods and identify the categories of immobilised patients who will benefit the most from the treatment.

Keywords: Low-magnitude, high-frequency vibration, osteoporosis, bone mineral density, bedridden, immobilisation, spinal cord injury

PG-068: Effectiveness of Bruggers Exercise in Forward Head Posture on Craniovertebral Angle and Craniocervical Flexion Endurance: A Narrative Review

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ABSTRACT

For people with forward head posture, the Brugger's exercise is a common way to address the craniovertebral angle and craniocervical flexion. This exercise primarily aids in lengthening the pectoralis minor, and it greatly increases the endurance of the deep cervical flexor muscles. Brugger's exercise has also been shown to help keep the craniovertebral angle in the proper position over extended periods of time. The aim of the review was to evaluate the effectiveness of Brugger's exercise in improving Craniovertebral Angle (CVA) and Craniocervical Flexion Endurance (CCFE) in individuals with FHP. A literature search was conducted from PubMed, Cochrane Library, and Google Scholar database from 2015 to 2025. The search term such as “Brugger's exercise,” “Bruegger exercise,” “forward head posture,” “craniovertebral angle,” “cervical alignment,” “craniocervical flexion endurance,” and “deep cervical flexors.” Boolean Operators (AND, OR). The Article in which was treated in this review, non-English article were excluded. 40 Article found from different database, out of which six met the inclusion criteria.

Based on the available article it shows that Brugger's exercise has a significant effect on ‘Forward Head Posture’ condition and its markable for decreasing the craniovertebral angle. Therapist can add this exercise along with other conventional exercise to treat FHP conditions.

Keywords: pectoralis muscles, neck, muscle, skeletal, posture.

PG-069: Assessing Quality of Life in Musculoskeletal Disorders: A Literature Review of the EQ-5D-5L Tool

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ABSTRACT

The EQ-5D-5L questionnaire is a widely used tool for assessing health-related quality of life (QoL) across diverse clinical and public health contexts. This assessment tool has been adapted for use in various languages, such as Spanish, French, and Hindi, enabling its application across diverse populations. However, the developers have not explicitly outlined the range of musculoskeletal conditions for which this tool is suitable. This literature review, therefore aims to comprehensively evaluate the range of health conditions assessed using the EQ-5D-5L, summarizing its application across various medical-surgical and rehabilitative domains related to musculoskeletal disorders. A comprehensive literature search was performed across PubMed, Scopus and Cochrane for full-text articles reporting the use of the EQ-5D-5L in evaluating HRQoL for Musculoskeletal medical conditions, published in the English language between 2020 and 2025. All the relevant articles were included, irrespective of study design and geographical presentation. A total of 4 articles were retrieved from different databases that fulfilled the inclusion criteria and were included for the present review. An analysis of these studies revealed that the findings underscore its value as a generic HRQoL tool while advocating for integration with disease-specific instruments for comprehensive assessments. Articles suggested its use in chronic diseases like knee osteoarthritis, low back pain, and osteoarthritis of the metatarsophalangeal joint, as well as in evaluations of healthcare interventions. One of the included articles assessed the QoL of the patients, one articles assessed the functionality of the patient after the intervention, and the other two articles assessed both. This review concludes that although there are multiple QoL assessment tools that can be used indifferent conditions, EQ-5D-5L has been considered to be an effective generic health-related QoL tool for various musculoskeletal diseases that helps with the assessment and prognosis documentation of patients. The tool also proved valuable in evaluating patient functionality and the impact of healthcare interventions. However, the findings suggest that the EQ-5D-5L may benefit from integration with disease-specific instruments for a more comprehensive assessment of HRQoL in musculoskeletal conditions.

Keywords: Quality of Life, Prognosis, Surveys and Questionnaires, Chronic Disease, Musculoskeletal Disease

PG-070: Efficacy of Target-Based Progressive Training on Kicking Accuracy in Football Players: A Study Protocol

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ABSTRACT

Kicking is the main offensive action during games, it is a crucial factor in determining football performance. Although many players exhibit inconsistent accuracy, teams with more shots on target have better scoring opportunities. For this reason, improvement of instep kick technique is one of the most important aims of training programs in football players. Football kicking accuracy may be improved by progressive, target-based training (TBPT), which also improved motor learning and precision in other sports. To evaluate the effect of a six-week Target Based Progressive Training (TBPT) program on kicking accuracy in college football players. In this study, football players of age 18- 25, with minimum 1 year of experience will be included, while the players with recent lower-limb injury, fracture, or pain affecting performance will be excluded. The G* Power method will be used to determine the study's sample size. Non-Probability sampling will be performed to allocate the players. The Target Based Progressive Training (TBPT) combines accuracy-focused instep kicking with support exercises, including single-leg balance, hip and trunk stabilization. Kicking difficulty will progressively increase by reducing target size from outer to inner zones, with all kicks from 10 m. The outcome of Kicking accuracy will be assessed using the Target Zone Test. This study concludes that target-based progressive training is a structured, low-cost method for improving kicking accuracy in football players, offering coaches and physiotherapists a practical, technique-focused approach through task-specific motor training.

Keywords: Football; Kicking Accuracy; Instep Kick; Target zone test; Target Based Progressive Training

PG-071: Effect of a Virtual Reality Based Respiratory Physiotherapy Intervention on Pulmonary Function, Dyspnoea Related Fear Avoidance and Quality of Life In Individuals with COPD: A Study Protocol

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ABSTRACT

Introduction: Virtual reality technology is rapidly becoming an innovative addition to medical rehabilitation, particularly for Chronic Obstructive Pulmonary Disease. COPD is a progressive respiratory disorder causing airflow obstruction, dyspnoea, reduced mobility and diminished quality of life. VR's immersive environments enhance motivation and participation and growing evidence shows it can improve pulmonary function, exercise tolerance and dyspnoea, enhancing COPD rehabilitation.

Aim: To investigate the effect of virtual reality-based respiratory physiotherapy intervention on pulmonary function, dyspnoea-related fear avoidance and Quality of life in individuals with COPD in ICU.

Methods: A randomized controlled study will be conducted with participants meeting specific inclusion criteria. Subjects will be randomly assigned to Experimental group and Conventional group. The experimental group will receive VR based physiotherapy intervention along with Conventional Breathing Exercises 15-20 minutes per day, four days a week. The Conventional group will receive Breathing Exercises for the same duration as experimental group. Both groups will undergo four weeks treatment along with follow up after two weeks after post intervention assessments. Pre and Post-Intervention assessments will include Pulmonary Function, measured using 6 MWD and Spirometry, dyspnoea-related fear avoidance will be measured using CAF-R questionnaire and Quality of life using SGRQ.

Results: If the sample size is less than 50, Shapiro-Wilk test will be applied, and if it exceeds 50, the Kolmogorov-Smirnov test will be used for normality testing. For within-group comparison, normally distributed data will be assessed with a paired t-test and if it does not meet normality assumptions, Wilcoxon Signed-Rank Test will be applied. For between-group comparison, an independent t-test will be used for normally distributed data and, Mann-Whitney U Test will be applied if the data does not meet normality assumptions.

Conclusion: This study aims to improve effectiveness of VR based respiratory physiotherapy in improving key outcomes for individuals with COPD in ICU.

Keywords: Pulmonary Disease, Chronic Obstructive, Lung, Dyspnea, Virtual Reality, Quality of life.

PG-072: Blood Flow Restriction Training In Cardiopulmonary Rehabilitation- A Narrative Review Author Affiliation

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ABSTRACT

Patient with heart or lung diseases struggle to exercise at high intensity, which limits the benefits they can get from rehabilitation. Because of this, blood flow restriction training (BFRT) has been explored as a way to build strength with much lighter loads. This review looked at what current research says about using BFRT in cardiopulmonary rehabilitation. A systematic search was carried out in PubMed, PEDro, and ScienceDirect, while using search terms "Blood Flow Restriction Exercise", "heart disease", "heart failure", "pulmonary rehabilitation", "Chronic Obstructive Pulmonary Disease", "muscle strength", "skeletal muscle", "physical functional outcome", yielding a total of 342 articles between January 2015 to November 2025. After removing 103 duplicates, 239 unique records were screened by title and abstract. From these, 38 studies were eligible for full-text review based on relevance to BFRT in cardiopulmonary conditions. Following further evaluation, only 6 studies met the final inclusion criteria. Across the six studies—three on COPD, two on heart failure, and one on coronary artery disease. Overall, the included studies reported improvements in muscle strength, functional capacity, and exercise tolerance when BFRT was incorporated into cardiopulmonary rehabilitation. Some studies also noted reduced breathlessness and better early training performance with low load exercise. One study in COPD population reported there was no significant difference in strength between control and BFRT group. In conclusion, BFRT seems to be a useful option for people who cannot tolerate heavy exercise and BFRT may also be practical option for strengthening and conditioning in cardiopulmonary rehabilitation. However, larger studies and guidelines are still needed before it can be used routinely in cardiopulmonary rehabilitation.

Keywords : Blood flow restriction exercise, heart failure, heart disease, muscle strength, physical functional outcome.

PG-073: Study Protocol for A Randomized Controlled Trial Comparing the Impact of Neuromuscular Joint Facilitation and Conventional Physiotherapy on Pain, Range of Motion, Quality of Life and Function in Patients with Non-Specific Neck Pain

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ABSTRACT

Introduction: Non-specific neck pain is one of the most common musculoskeletal disorders, often leading to persistent pain, reduced cervical mobility, muscular imbalance, and functional disability. Conventional physiotherapy, which includes stretching, strengthening, postural correction, and manual therapy, remains the standard approach for its management, yet many individuals continue to experience recurrent or chronic symptoms. Neuromuscular joint facilitation (NJF), a newer therapeutic concept that integrates joint mobilisation with neuromuscular facilitation through diagonal and spiral movement patterns, aims to enhance joint mechanics, improve muscle activation, and restore coordinated cervical motion.

Aim & Objective: The study aims to compare the effectiveness of neuromuscular joint facilitation technique against conventional physiotherapy, methods in reducing pain and improve quality of life, range of motion and function in individuals with non-specific neck pain.

Materials and Methods: A single blinded randomized controlled study will be conducted where the group A will receive neuromuscular joint facilitation along with conventional treatment protocol and in group B will receive only conventional treatment. The treatment protocol will be for 3 times a week for 4 weeks. Participants will be included according to inclusion and exclusion criteria. Outcome measures like the numeric pain rating scale (NPRS), universal goniometer, and Neck disability index (NDI) will be used to compare patients' pre-post intervention status.

Results: This study expected to demonstrate that NJF will improve the pain, range of motion, quality of life and function, by giving a viable change in the outcome measure scoring.

Conclusion: If successful, NJF treatment will evolve as the primary evidence-based practice method to improve pain, rom, quality of life and function in individuals with non-specific neck pain.

Keywords: Neuromuscular Joint Facilitation, function, treatment protocol, pain, physical therapy modalities.

PG-074: Title: Effect of Muscle Energy Technique on Pain, Muscle Activation, and Function in Individuals with Subacromial Impingement Syndrome: A Randomized Control Trial Protocol

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ABSTRACT

Introduction: Subacromial impingement syndrome involves changes in scapular movement, muscle imbalances, and reduced joint mobility. It causes pain and limits function, especially during overhead movements. Muscle Energy Technique (MET) is an active manual therapy that encourages patient involvement and aims to improve muscle length, strength, proprioception, and function.

Aims & Objective: To evaluate the effectiveness of MET in reducing pain, improving muscle activation, and enhancing functional outcomes in individuals with subacromial impingement syndrome.

Materials and Methods: This planned study will use a randomized controlled trial design. Participants with secondary subacromial impingement will be randomly divided into two groups. The experimental group will receive MET, which includes post-isometric relaxation for the pectoralis major, pectoralis minor, upper trapezius, and levator scapulae. This will involve 3 to 5 repetitions with 5 to 7 seconds of isometric hold followed by 10 to 15 seconds of relaxation. The control group will receive sham MET mimicking the same positioning and therapist contact but without resistance, stretching, or active contraction. Strengthening exercises for the rotator cuff and scapula will be common to both groups. Outcomes like pain, muscle activation, and function will be assessed using VAS, EMG, and SPADI, respectively, before and after 12 sessions of intervention (3 sessions/ week for 4 weeks).

Results: As per the suggested study protocol, the data collection for this study will commence in March 2026 and is estimated to be over within 10 months. The final study report is anticipated to be completed by February 2027.

Conclusion: By incorporating active neuromuscular engagement, MET may offer superior improvements in muscle activation, pain reduction, and functional recovery compared to non-therapeutic control interventions. Findings from this study could provide stronger evidence for integrating MET into rehabilitation strategies for individuals with subacromial impingement syndrome.

Keywords: Rotator cuff, Shoulder Impingement Syndrome, Scapula, Pain, Muscle Energy Technique

PG-075: Effect of Mulligan Mobilization with Movement Technique on Pain and Range Of Motion in Adhesive Capsulitis: A Literature Review

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ABSTRACT

Adhesive capsulitis, commonly referred to as frozen shoulder, is characterised by pain and a significant reduction in the shoulder joint range of motion. This musculoskeletal condition involves inflammation of the shoulder joint, resulting in muscle guarding, capsular tightness, restricted movement, and difficulty performing overhead activities. The Mulligan concept is a manual therapy approach that involves applying sustained accessory gliding to a painful joint during the patient's active movement, with the goal of reducing pain and improving mobility in peripheral joints. Currently, evidence supporting the effectiveness of Mulligan mobilisation in adhesive capsulitis is limited. Therefore, this review aims to synthesize the available literature regarding the efficacy and clinical utility of this approach. A comprehensive search was conducted in three electronic databases (PubMed, PEDro, and EMBASE) using the keywords "adhesive capsulitis" and "Mulligan technique," with a restriction to studies published between 2020 and 2025, yielding 175 articles. Of these, five studies that met the inclusion criteria were included in the review. Among the included studies, three reported that Mulligan therapy combined with stabilisation exercises produced significant improvements in pain, range of motion (ROM), and functional outcomes in individuals with adhesive capsulitis when compared with the Muscle Energy Technique (MET). One study demonstrated that a combined protocol of Mulligan therapy, stabilisation exercises, and moist heat therapy, administered 5 days per week for 8 weeks ($p < 0.05$) yielded superior clinical outcomes. Overall, the available evidence suggests that the Mulligan Mobilization with Movement (MWM) technique is effective in reducing pain intensity, improving shoulder range of motion, and enhancing activities of daily living in individuals with adhesive capsulitis. Furthermore, integrating MWM with conventional conservative interventions may enhance overall treatment success.

Keywords: Shoulder joint ; Activities of daily living , pain , inflammation , range of motion , inflammation

PG-076: Efficacy of Extracorporeal Shockwave and High Intensity Laser Therapies for Pain and Functional recovery in Lateral Epicondylitis: A Narrative Review

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ABSTRACT

Lateral epicondylitis (LE), or tennis elbow, is a common musculoskeletal disorder causing lateral elbow pain, functional impairment, and decreased grip strength. Conservative treatments such as high-intensity laser therapy (HILT), extracorporeal shock wave therapy (ESWT) are utilized, but their comparative efficacy is not clearly established. A total of 31,985 articles were identified through searches in databases like PubMed, Cochrane, and Science Direct. Duplicate removal using Mendeley resulted in the exclusion of 25,768 records, 6,217 articles remained for title and abstract screening. Out of these, 5,682 were excluded, leaving 535 for full-text review. Ultimately, 3 studies met the inclusion criteria. The review was conducted in accordance with the PRISMA Extension for Scoping Reviews (PRISMA-ScR) guidelines. The literature search covered publications from 2015 to 2025. Search terms and Medical Subject Headings (MeSH) included combinations of "High-intensity laser," "Lateral epicondylitis," "Extracorporeal shockwave therapy," and "Functional recovery." Boolean operators (AND, OR, NOT) were applied to optimize the search strategy, particularly within the PubMed database. All treatments significantly improved pain, disability scores, and grip strength at short- and intermediate-term follow-ups. HILT combined with physiotherapy showed superior reductions in pain and disability compared to ESWT, with comparable grip strength gains. ESWT demonstrated greater pain relief and functional improvement. Ultrasonography confirmed tendon thickness reduction post-HILT and ESWT. Adverse effects were minimal, and therapies were well tolerated. HILT and ESWT are effective, safe non-invasive treatments for LE, improving pain, function, and tendon pathology. HILT may be preferable to ESWT for pain and disability reduction. ESWT outperforms US with friction massage. Integration of HILT or ESWT with exercise regimens is recommended. Larger long-term trials are needed to optimize protocols. The included trials reported mean pain scores reducing from approximately 6–8 at baseline to 0–3 at follow-up, while mean disability scores (Q-DASH/PRTEE) decreased from ~55–65 to ~25–30 after HILT or ESWT, indicating clinically meaningful improvement with both interventions.

Keywords : Lateral epicondylitis , tennis elbow , lateral elbow pain , grip strength , laser therapy , extracorporeal shock wave

PG-077: Impact of Pain Neuroscience Education and Cognitive-Behavioural Therapy on Kinesiophobia, Catastrophizing and Self-Efficacy in Knee Osteoarthritis: A Narrative Review

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ABSTRACT

Knee Osteoarthritis is a source of pain, disability, and psychosocial disturbances. Maladaptive cognitions, such as catastrophizing, kinesiophobia, and low pain self-efficacy, develop in many patients and may contribute to worsening of disability. According to the fear-avoidance model of musculoskeletal pain, catastrophizing feeds into fear and subsequent activity avoidance, while self-efficacy theory proposes that one's confidence in managing pain promotes active coping and therapy adherence. Pain Neuroscience Education and Cognitive-Behavioral Therapy are interventions directed at altering these unhelpful beliefs by reframing pain and building new coping skills. Objective of this review examines whether literature on how Pain Neuroscience Education and Cognitive-Behavioral Therapy influence knee osteoarthritis-related psychological determinants and whether targeting these mechanisms contributes to improvements in pain and functional capacity. A comprehensive literature search was conducted of databases like PUBMED, PEDro and Cochrane Library between years 2020 to 2025 focusing on trials that conducted study on Pain neuroscience education (PNE) and Cognitive behavioral therapy (CBT) interventions in adults with non-surgical knee OA and their effect on outcomes of Kinesiophobia, pain catastrophizing, pain self-efficacy, as well as pain intensity and physical function. Findings were interpreted qualitatively. Result: Recent primary trials have consistently demonstrated moderate to large improvements in psychosocial outcomes for PNE and CBT-based educational approaches in patients with knee OA who do not require surgery. Interventions combining PNE or cognitive components with other strategies led to reduced pain catastrophizing (−3.9 to −11.4) and kinesiophobia (−1.6 to −4.2 points), and increased pain self-efficacy (+0.4 to +6.1), compared with exercise or physiotherapy alone. Although psychological variables clearly and consistently showed improvement, pain intensity and physical function produced mixed and generally modest effects. In KOA, PNE and CBT reduce maladaptive pain beliefs and fear of movement, and improve self-efficacy, although effects on pain and function remain modest. Clinically, integrating brief “explain pain” education with CBT strategies and graded exercise promotes confidence, reduces avoidance, and supports better rehabilitation engagement.

Keywords: Cognitive Behavioral Therapy, Fear, Kinesiophobia, Osteoarthritis Knee, Pain Measurement, Self Efficacy

PG-078: Efficacy of Transcutaneous Electrical Diaphragmatic Stimulation and Myofascial Release on Diaphragm Mobility, Pulmonary Function Test Parameters and Activity of Daily Living in Patients with COPD: A Pilot Study

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ABSTRACT

Introduction: Chronic Obstructive Pulmonary Disease is a progressive respiratory condition characterized by reduced diaphragm mobility, impaired pulmonary function, and decreased ability to perform ADL. TEDS induces muscle contraction by applying a series of electrical stimuli to the muscle. It is proven that diaphragmatic myofascial release reduces dyspnea in COPD patients. TEDS and MFR have shown promise as interventions to improve respiratory mechanics and functional outcomes. However, the combined efficacy of these techniques in COPD patients remains unexplored.

Aim: This study aims to evaluate the efficacy of TEDS and MFR on diaphragm mobility, PFT parameters, and ADL in patients with COPD.

Methods: A randomized, controlled, single-blinded study was conducted with participants meeting specific inclusion criteria. Subjects were randomly assigned to the experimental group and the control group. The experimental group were received TEDS at a frequency of 30 Hz for 30 minutes per day, five days a week and diaphragm MFR for 2 sets of 10 repetitions with a 1-minute interval between sets. Patients in the control group received sham TEDS and the same MFR protocol. Both groups underwent treatment for 3 weeks. Pre- and post-intervention assessments included diaphragm mobility measured using ultrasonography, pulmonary function parameters assessed via spirometry, and ADL'S evaluated using the LCADL.

Result: The intervention group showed significantly greater improvement than the control group in FEV1 ($p = 0.002$), FEV1/FVC ($p = 0.002$), respiratory muscle performance parameters (DMQB, DTQB, DMDB, DTDB; $p < 0.001$), and functional ability (LCADL; $p < 0.001$). The control group had a significant improvement in FEV1 ($p = 0.041$) and FEV1/FVC ($p = 0.041$) and no improvement in respiratory muscle performance parameters and functional ability.

Conclusion: The experimental intervention produced significantly greater improvements in respiratory muscle performance, pulmonary function and daily living activity scores compared with the control group. The findings support the effectiveness of the intervention in enhancing pulmonary function and functional capacity and may be considered as an effective rehabilitation strategy for individuals with respiratory impairment.

Keywords: Pulmonary Disease, Chronic Obstructive, Ultrasonography, Spirometry, Activities of Daily Living

PG-079: Scale Translation and Content Validation for the Manchester COPD Fatigue Scale

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ABSTRACT

Introduction: One prevalent and incapacitating symptom of COPD is fatigue. In order to evaluate physical, cognitive, and psychosocial exhaustion, the Manchester COPD exhaustion Scale (MCFS) was created. Translation and content validation are crucial to ensuring cultural relevance, conceptual equivalency, and therapeutic usefulness as its use grows across varied groups.

Aim: The study was aimed to translate the MCFS into Hindi language and establish its content validity.

Methods: This study employed a modified Delphi-based expert review in accordance with Beaton's recommendations. A single draft (T12) was created by combining two forward translations, one by a medical translator and one by a non-medical translator. After that, two separate bilingual translators carried out back translation to find any conceptual or semantic problems. Experienced doctors from all around India participated in an online Delphi survey to validate the content. They used a three-point rating system to assess each item's clarity, relevance, and equivalency.

Result: MCFS items show good cross-linguistic equivalency and proven relevance in COPD populations. Excellent content validity for the Hindi translation was confirmed by the study's strong expert agreement, which showed I-CVI values of 0.95 and an S-CVI/Ave of 0.94.

Conclusion: The translated versions of the MCFS, which frequently exhibit good content validity, maintain the conceptual framework and therapeutic significance for assessing fatigue in COPD patients. Further researches are needed to improve qualitative item evaluation, culturally appropriate adaption, and validation in broader COPD groups in order to boost worldwide applicability.

Keywords: Humans, Semantics, Cognition, Fatigue, India, Pulmonary disease

PG-080: Translation and Content Validation of Smoking-Abstinence Self-Efficacy Questionnaire (SASEQ)

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ABSTRACT

Introduction: A key component of secondary prevention is quitting smoking however relapses are frequent. The smoking abstinence self-efficacy questionnaire is a short, reliable instruments that assess an individual confidence in their ability to quit smoking.

Aim: The study was aimed to translate SASEQ into Hindi language and establish its content validity.

Methods: This study uses a modified expert review using the Delphi technique in accordance with Beaton's criteria. In order to guarantee both conceptual accuracy and natural language use, the translation process starts with two separate forward translations of the English scale into Hindi, one by a translator with medical expertise and another by a non-medical translator. A single draft is created by comparing and combining their versions (T12). In order to find semantic or conceptual problems, two fluent English speakers who are unfamiliar with the instrument then do back translation. Experienced doctors from various parts of India participate in an online Delphi survey to validate the content. They use a three-point rating system to assess each item's clarity, relevance, and equivalency.

Results: The SASEQ is a brief 6-item instrument developed for pragmatic use and has demonstrated acceptable reliability and predictive validity in general smoking populations with S-CVI/Ave and I-CVI value 0.96. The Content Validity Index (CVI) in this study demonstrated substantial expert agreement, indicating outstanding content validity for the Hindi translation.

Conclusions: Brief smoking-abstinence self-efficacy scales have been shown to be accurate and helpful predictors of cessation in general populations. However, there is a dearth of disease-specific validation and uneven reporting of rigorous content validation.

Keywords: Smoking Cessation, Smokers, Self-efficacy, Surveys and Questionnaires

PG-081: Establishment of Normative Values for Calf Muscle Flexibility in Adults through the Weight-Bearing Lunge Test: A Pilot Study

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ABSTRACT

Introduction: The Weight-Bearing Lunge Test (WBLT) is widely recognized as a reliable and specific method for assessing calf muscle flexibility. Despite the test's clinical relevance, the literature lacks established normative reference values for healthy adults. This gap limits clinicians' ability to accurately interpret test results and distinguish normal from restricted dorsiflexion.

Aims & Objective: To establish normative reference values for the WBLT, which will also serve as essential baseline data for determining an appropriate sample size in future studies.

Materials & Methods: In this pilot study, adults aged between 30 to 50 were recruited from a tertiary care center. Calf muscle flexibility was measured using the WBLT; in this, the distance between the toe and the wall was measured. Normative reference values for the WBLT were established following normality testing of the data. Depending on whether the distribution met normality assumptions, appropriate descriptive statistics were calculated, means and standard deviations for normally distributed data, or medians and interquartile ranges for non-normal data along with ranges and percentile values.

Results: A pilot study was conducted with 30 participants to inform the sampling strategy. From the pilot data, normative ranges of 9.7–11 cm for the left limb and 9.6–10.2 cm for the right limb were identified. The mean and standard deviation were calculated as 10.4 ± 3.2 cm for the left limb and 9.9 ± 1.6 cm for the right limb. Based on the Precision-Based Sample Size Formula, a minimum sample size of 97 individuals was determined. However, to enhance generalizability and statistical power, a total of 500 participants is planned for recruitment.

Conclusion: This pilot study established preliminary normative values for the Weight-Bearing Lunge Test in healthy adults aged 30–50 years. These findings offer useful reference ranges for clinical assessment and provide essential statistical inputs for planning a larger, more robust study.

Keywords: Adults, Calf Muscle, Flexibility, Reference Values, Weight-Bearing Lunge Test

PG-082: Effectiveness of the Comprehensive Corrective Exercise Program (CCEP) for Upper Cross Syndrome: A Systematic Review

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ABSTRACT

Upper Cross Syndrome (UCS) is a prevalent postural and neuromuscular disorder characterised by forward head posture, rounded shoulders, thoracic hyperkyphosis, altered scapular kinematics, and muscle activation imbalance. The Comprehensive Corrective Exercise Program (CCEP), grounded in Janda's upper-crossed pattern and systems-based neuromuscular control theory, is a structured multi-phase intervention designed to address postural alignment, muscle activation, and movement patterns simultaneously. This systematic review synthesised evidence on the effectiveness of CCEP as a standalone intervention for individuals with UCS. A systematic search of PubMed, Scopus, Web of Science, PEDro, and was conducted for studies published between January 2010 and March 2025 using the Boolean strategy: ("Upper Crossed Syndrome") AND ("Comprehensive Corrective Exercise Program" OR "corrective exercises") AND ("posture" OR "muscle activation" OR "movement pattern"). The search identified 148 records; after removing 42 duplicates, 106 titles and abstracts were screened. Seventeen full-text articles were reviewed, and five randomised controlled trials met the inclusion criteria. Across five trials ($n = 162$), CCEP interventions lasting 8–12 weeks produced significant improvements in postural and neuromuscular outcomes. Craniovertebral angle increased by $44.72 \pm 13.60^\circ$ ($p < 0.001$) and thoracic kyphosis angle decreased by $42.36 \pm 20.32^\circ$ ($p < 0.001$). Forward shoulder angle reduced by $50.52 \pm 20.32^\circ$ ($p < 0.01$). Electromyography showed reduced upper trapezius activation 16.40 ± 8.09 ($p = 0.001$). Significant pain reduction and posture improvement is seen among the participants ($p < 0.05$). Current evidence supports CCEP as an effective intervention for improving posture, neuromuscular balance, pain, and disability in individuals with UCS, though further high-quality trials with long-term follow-up are recommended.

Keywords: Posture, Exercise Therapy, Muscle Imbalance, Neck Pain, Electromyography

PG-083: Chronic neck pain and manual therapy: A literature review

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ABSTRACT

Chronic Neck Pain is one of the most common musculoskeletal painful disorders, affecting millions of people worldwide. Chronic Neck Pain is highly prevalent, with approximately 70% of individuals experiencing neck pain at some point in their lives. It can significantly impact daily activities and overall quality of life. Manual Therapy is among the most commonly used therapeutic interventions for the management of chronic neck pain. This review aimed to assess the effectiveness of Manual Therapy in reducing pain and improving functional outcomes in individuals with Chronic Neck Pain. A comprehensive literature search was conducted using PubMed, Google Scholar, and the Embase database from December 2020 to December 2025. The search utilized terms such as “Manual Therapy,” OR “Massage Therapy,” OR “Manipulation,” OR “Mobilization,” AND “Chronic Neck Pain,” OR “Neck Pain,” OR “Cervical Pain,”. Review articles, systematic reviews, conference papers, and studies published in languages other than English were excluded. A total of 437 articles were identified across the three databases, of which only 12 studies met the inclusion criteria. The included studies reported a statistically significant reduction in pain intensity, with mean pain reduction ranging from 30% to 55%, along with improvements in functional outcomes such as range of motion and disability scores by approximately 25% to 40%. These findings suggest that Manual Therapy interventions, including Massage Therapy, Mobilization, and Manipulation, are effective in reducing pain and enhancing functional outcomes in individuals with Chronic Neck Pain. However, the methodological quality of the included studies varied, and several studies presented limitations, indicating the need for further high-quality Randomized Controlled Trials.

Keywords: Manipulation therapy, Mobilization therapy, Neck pain, Pain management, Functional outcomes

PG-084: Title - Effect of Graded Motor Imagery on Pain, Disability, Lower-Extremity Function and Fear-Avoidance in Chronic Lumbar PIVD: A Randomised Controlled Trial Protocol

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ABSTRACT

Introduction: Prolapsed Intervertebral Disc (PIVD) causes low back pain, radiculopathy, altered sensory processing, fear of movement, and reduced function. Chronic PIVD alters central pain processing, impairing motor planning, and body perception. Graded Motor Imagery (GMI) normalizes brain representations, lowers fear-avoidance, and enhances function through laterality recognition, motor imagery, and sensory discrimination.

Aims: To evaluate the effect of GMI training on pain, lower extremity function, disability, and fear-avoidance in chronic lumbar PIVD patients.

Materials and Methods: This study protocol describes a randomised controlled trial designed to examine the effect of GMI in adults with chronic lumbar PIVD. A convenience sampling of 30 participants will recruit age of 18–45 years with chronic lumbar PIVD reporting $\geq 4/10$ pain on the Numerical Pain Rating Scale (NPRS) and ≥ 29 (Work subscale) OR ≥ 14 (Physical Activity subscale) on the Fear Avoidance Beliefs Questionnaire (FABQ). Exclude participants scoring zero on FABQ or NPRS or unable/unwilling and randomly allocated into two groups. Group A (Experimental) will receive GMI training and conventional physiotherapy, including motor imagery using movement videos, localization training with a 9-dot lumbar grid, sensory discrimination using dull/sharp stimuli, graphesthesia, two-point discrimination, and laterality training. Group B (Control) will receive conventional physiotherapy only. Participants in both groups will receive twice-a-week intervention for 4 weeks. Pre-Post intervention outcome measures for pain: NPRS, Disability: ODI, fear avoidance: FABQ, will be assessed at baseline and after the intervention period.

Result: Participants receiving GMI training are expected to show clinically significant reductions in pain, disability, and fear-avoidance, and improvements in lower-extremity function versus control group. Data will be analyzed using paired t-tests (within groups) and independent t-tests (between-groups).

Conclusion: This study aims to address an existing gap by investigating the role of GMI training in chronic lumbar PIVD rehabilitation. Positive findings may support integrating neurocognitive techniques into conventional physiotherapy for better outcomes.

Keywords – Intervertebral disc, Radiculopathy, Low back pain, Kinesiophobia, Perception

PG-085: Effectiveness of Integrated Proprioceptive Neuromuscular Facilitation (PNF) Techniques in Chronic Low Back Pain: A Narrative Review

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ABSTRACT

Chronic low back pain (CLBP) is a major cause of disability globally and is often linked with impaired trunk muscle coordination, proprioceptive deficits, and reduced functional capacity. In rehabilitation programs, proprioceptive neuromuscular facilitation (PNF), which combines neuromuscular facilitation techniques with diagonal and spiral movement patterns, is frequently used to improve sensorimotor control and trunk stability. The aim of the study is to examine recent evidence on the effectiveness of PNF in improving pain, disability, balance, and trunk muscle strength in chronic low back pain. A comprehensive literature search was conducted across three major databases: PubMed, Cochrane Library, and PEDro databases. The search was conducted from the year 2010 to the year 2025. Search terms included: "chronic low back pain," "proprioceptive neuromuscular facilitation," "PNF," "trunk stabilization," "motor control," and "balance training". Boolean Operators like AND, OR were used. Full-text articles and articles written in English language were included. 68 articles were primarily found during the primary search across these databases, out of which 12 articles met the inclusion criteria. We found that the current evidence suggests that PNF-based rehabilitation can provide meaningful short-term improvements in pain, disability, balance, and trunk muscle function in adults with chronic low back pain, particularly when neuromuscular control impairments are present.

Keywords: Chronic low back pain, proprioceptive neuromuscular facilitation, PNF, trunk stabilization, neuromuscular control, balance.

PG-086: Evaluate the effect of different types of footwear on foot biomechanics during gait in healthy adults : An Observational study

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ABSTRACT

Introduction: Footwear plays a crucial role in influencing foot biomechanics and gait patterns during daily activities. Despite widespread use of various footwear types such as sports shoes, formal shoes, slippers, and sandals, limited research has explored their biomechanical impact on gait in healthy adults using commonly worn everyday footwear.

Aim: This study aims to evaluate the effect of different types of footwear on foot biomechanics during walking gait in healthy adults using observational gait analysis.

Methods: An observational study design was adopted involving healthy adult participants without any known musculoskeletal or neurological impairments. Participants were assessed while walking under different footwear conditions, including sports shoes, formal shoes, slippers, and sandals. Gait parameters and foot biomechanics were analyzed using observational gait analysis techniques, supplemented by tools such as plantar pressure assessment and joint kinematic evaluation where applicable. Data were statistically analyzed using SPSS (version 20.0).

Results: The study highlights notable variations in gait parameters and foot biomechanics across different footwear types. Differences were observed in foot posture, pressure distribution, and overall gait mechanics, indicating that footwear significantly influences walking biomechanics even in healthy individuals.

Conclusion: Commonly worn footwear has a measurable impact on foot biomechanics during gait. Understanding these effects can help in promoting appropriate footwear choices, preventing future foot-related problems, and guiding physiotherapists and healthcare professionals in clinical decision-making. The findings also provide valuable insights for footwear designers and ergonomists to develop footwear that supports optimal gait mechanics and foot health.

Keywords: Foot biomechanics, Gait analysis, Footwear, Healthy adults, Observational study

PG-087: Title:Effect of Pelvic Proprioceptive Neuromuscular Facilitation Versus Lumbar Stabilization exercises on Trunk Control and Balance in individuals with Post Laminectomy:A Protocol For Randomized Clinical Trail

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ABSTRACT

Introduction: Laminectomy is a common surgical procedure to relieve spinal canal compression caused by degenerative stenosis, fractures, tumours, abscesses, or deformities which causes trunk muscle weakness, poor postural control, and imbalance. Rehabilitation focusing on trunk control and balance is crucial to enhance functional recovery. Lumbar stabilization exercises and Pelvic Proprioceptive Neuromuscular Facilitation (PNF) both have been reported to improve trunk stability, balance, and functional mobility.

Aims: To compare the effectiveness of Pelvic PNF versus Lumbar Stabilization exercises on trunk control and balance in individuals following Post laminectomy.

Materials And Method: A randomized clinical trial will be conducted at Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation, Mullana, Ambala, Haryana. Participants aged between 25–60 years, post-lumbar laminectomy, medically stable, and exhibiting trunk weakness or imbalance will be recruited using criterion-based purposive sampling. Participants will then be randomly assigned to either intervention Group A (Pelvic PNF anterior elevation posterior depression) or Group B (Lumbar Stabilization exercises). Both groups will undergo a four-week intervention with five sessions per week. Demographic data were recorded, and informed consent was obtained. Outcome measures pre post assessment of Trunk Control Test (TCT) Berg Balance Scale (BBS), and Modified Functional Reach Test (MFRT) will be done

Results: This study anticipates that Pelvic Proprioceptive Neuromuscular Facilitation will significantly improve the Trunk Control and Balance in individuals with Post Laminectomy By enhancing pelvic stability stimulating proprioceptors in muscles and joints and facilitating trunk muscle activation

Conclusion: If Successful, Pelvic Proprioceptive Neuromuscular Facilitation will evolve as the primary evidence based practice method to improve the Trunk Control and Balance in individuals with Post Laminectomy

Keywords: Laminectomy, Postural Balance, Muscle Weakness, Spinal Canal, Muscle Stretching Exercises

PG-088: Physiotherapy Application of Positional Release Technique in Non-Specific Neck Pain: A Narrative Review

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ABSTRACT

Non-specific neck pain (NSNP) is a common musculoskeletal condition resulting in significant functional limitations, reduced cervical mobility, and impaired quality of life. It is frequently associated with myofascial trigger points, sustained postural strain, and muscular imbalance. Among various physiotherapy interventions, the Positional Release Technique (PRT) is a gentle, passive manual therapy approach that aims to reduce pain and neuromuscular tension by positioning affected tissues in a state of maximal comfort. Despite its clinical popularity, PRT remains comparatively under-researched in the management of NSNP. This narrative review synthesizes existing evidence on the physiotherapy application of PRT in NSNP and upper trapezius myofascial pain using a selective search strategy involving key databases PubMed, Scopus, and Physiotherapy Evidence Database, citation tracking from seminal studies, and expert-curated literature without exhaustive systematic protocols. According to the reviewed literature, people with neck discomfort and trigger-point-related conditions consistently showed significant short-term benefits with Positional Release Therapy (PRT). PRT was linked to improvements in pressure pain thresholds, increases in cervical range of motion, and decreases in pain severity. Following PRT, favourable changes were also observed in functional outcomes, such as disability and active cervical rotation. PRT generally showed similar or better improvements in pain and mobility when compared to widely used treatment techniques such as kinesio taping, myofascial release, and dry needling; however, effect sizes for functional measures were marginally smaller than those observed with dry needling. Overall, the data suggests that PRT is a successful short-term treatment for patients with upper trapezius trigger-point dysfunction and mechanical neck discomfort that improves cervical mobility and reduces pain. Although preliminary evidence supports the clinical utility of PRT, the existing studies are limited by small sample sizes, inconsistent methodologies, and short-term follow-up. More rigorous, large-scale randomized controlled trials are required to establish standardized protocols and long-term effectiveness. Overall, PRT appears to be a safe and beneficial adjunct in the physiotherapy management of NSNP.

Keywords: Positional Release Technique, Non-Specific Neck Pain, Myofascial Trigger Points, Manual Therapy, Physiotherapy, Cervical Range of Motion.

PG-089: Establishing the Reference Range Values of Sideways-Walking and Tandem-Walking for Elderly Population: A Cross Sectional Study

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ABSTRACT

Introduction: Sideways-walking and tandem-walking are important functional gait tasks used to assess balance, coordination, and fall risk in older adults. However, normative reference values for these tasks are not available for the Indian elderly population. Establishing reference ranges is essential for accurate clinical interpretation and early detection of gait and balance impairments.

Aim: To establish normative reference range values for sideways-walking and tandem-walking in healthy community-dwelling elderly population.

Methods: A cross-sectional study was conducted in which participants between age of 60 years and above were recruited and asked to perform three-three trials of sideways-walking and tandem-walking on a 10 meter walkway. The mean of three trials was used for analysis. Data normality was assessed using the Shapiro–Wilk test. Descriptive statistics, parametric reference intervals (mean $\pm$ 1.96 SD), and non-parametric percentile ranges (2.5th–97.5th) were calculated to establish normative values.

Results: Shapiro–Wilk results confirmed normal distribution for both tasks (sideways-walking: $p = 0.346$; tandem-walking: $p = 0.439$). The mean sideways-walking time was 35.83 ± 4.72 seconds, with a 95% reference interval of 26.58–45.09 seconds and a non-parametric range of 28.35–44.32 seconds. The mean tandem-walking time was 40.59 ± 6.13 seconds, with a 95% reference interval of 28.59–52.59 seconds and a non-parametric range of 31.33–52.31 seconds. These values represent the expected performance spectrum for healthy elderly adults.

Conclusion: This study provides population-specific normative reference values for sideways-walking and tandem-walking in older adults. These reference intervals offer reliable clinical benchmarks for identifying gait deviations, assessing fall risk, and planning targeted balance rehabilitation.

Keywords: Normative reference values, elderly, community-dwelling, gait deviations, benchmarks.

PG-090: Effect of Muscle Energy Technique on Erector Spinae Muscle Thickness, Range of Motion and Pain in Non-Specific Low Back Pain. A Study Protocol

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ABSTRACT

Introduction: All age groups have low back discomfort, and high, middle, and low-income nations commonly report cases of this condition. It is the most prevalent kind of chronic pain and is characterized by pain or discomfort between the gluteal folds and the costal margin, either with or without referred leg pain. Chronic non-specific low back pain (CNSLBP) is the term used to describe the condition when such symptoms last longer than three months. Osteopaths, physiotherapists, and chiropractors are the main practitioners of the muscle energy technique (MET), which alternates periods of aided stretching and resisted muscle contractions. Although MET is widely used in clinical settings, its efficacy in lowering pain and enhancing function in individuals with CNSLBP is unknown.

Aim: To evaluate the effect of muscle energy technique on erector spinae muscle thickness, range of motion, and pain in cases of non-specific low back pain.

Methods: A Single blinded randomized control study will be conducted where Group A will receive Muscle energy technique along with conventional therapy and Group B will receive only Conventional therapy protocol. The treatment protocol for both groups will be for 3days/week for 4 weeks. Participants will be included based on inclusion and exclusion criteria. Outcome measures like Visual Analogue Scale(VAS), universal Goniometer will be used to compare pre-post intervention status.

Result: This study expected to show that MET is a useful conservative treatment for NSLBP by increasing the thickness of the erector spinae muscle, improving lumbar mobility, and reducing pain.

Conclusion: If successful, there will be evidence that MET may be used in musculoskeletal rehabilitation to enhance muscle function and reduce low back pain patients' symptoms.

Keywords: Muscle energy technique, non-specific low back pain, muscle thickness, range of motion.

PG-091: PG-092: Assessment Tools for Balance Confidence in Individuals with Spinal Disorders: A Scoping Review

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ABSTRACT

Spinal disorders are commonly associated to impaired balance, reduced mobility, and a higher risk of falls. Beyond physical limitations, decreased balance confidence contributes to fear of falling, activity avoidance, and poorer rehabilitation outcomes. Despite its importance, balance confidence is not consistently evaluated in individuals with spinal disorders, and there is variation in the assessment tools used. This scoping review aimed to identify and summarize the tools used to assess balance confidence in people with spinal disorders and to describe their psychometric properties. The review followed the methodological framework proposed by Arksey and O'Malley and was reported in accordance with the PRISMA extension for Scoping Reviews (PRISMA-ScR). A comprehensive search was conducted across PubMed, Scopus, PEDro, and the Cochrane Library for studies published between January 2016 and November 2025. The search strategy used a combination of keywords and Medical Subject Headings (MeSH), including "balance confidence", "spinal disorders," "fear of falling," and "balance assessment," combined with Boolean operators. A total of 3,292 records were identified. After removing 264 duplicates, 3,028 records were screened by title and abstract, of which 3,014 were excluded. Full-text assessment resulted in the inclusion of 11 studies. Eligible studies included adults with spinal disorders who completed self-reported measures of balance confidence, while reviews, case reports, conference abstracts, non-English papers, and studies without full-text availability were excluded. The Activities-specific Balance Confidence (ABC) Scale was the most frequently used tool across spinal cord injury, lumbar spinal stenosis, and cervical spine disorders. It demonstrated good reliability, validity, and strong correlations with functional measures such as the Timed Up and Go test and the Berg Balance Scale. Overall, the ABC Scale emerged as the most reliable and widely supported tool for assessing balance confidence in individuals with spinal disorders.

Keywords: Balance Confidence, Spinal Disorders, Postural Balance, Self- efficacy, Rehabilitation.

PG-093: Establishing Reference Ranges of the Single Leg Hop Test in School Going Children

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ABSTRACT

The Single Leg Hop Test (SLHT) is a functional tool used to evaluate unilateral lower limb power and dynamic stability in pediatric populations. Although it is widely used in clinical and research settings, standardized reference ranges for school-going children are not well-established, limits the ability of consistent interpretation of performance results. To establish normative reference ranges for the Single Leg Hop Test among school going children aged 8-15 years. Participants were stratified by age and gender. The test was conducted using standardized procedures, and hop distance was recorded as the primary outcome measure. Age- and gender-specific reference ranges were established using descriptive statistics, including mean values, standard deviations, and percentile distributions to measure the changes in functional performance. A total of 330 school-going children aged 8-15 years were analyzed. The mean distances of the single leg hop were 85.04 ± 28.46 cm for the right leg and 81.83 ± 29.67 cm for the left leg. Hop performance improved gradually with age ($p < 0.001$). Males demonstrated slightly longer hop distances than females ($p < 0.05$), while higher BMI showed a mild negative relationship with hop performance outcomes ($p < 0.05$). The children showed age-related improvements in lower-limb strength, balance, and functional ability. The hop distances demonstrated consistent age-related improvements, with males showing slightly greater performance levels, while higher BMI was associated with mild decrease in hop capacity. These normative values enhance the accuracy for interpretation of SLHT performance and support its standardized use in paediatric functional assessment.

Keywords: Single Leg Hop Test, age- and gender-specific norms, paediatric functional performance, reference ranges, school-going children

PG-094: Long Term Effects of Chronic Ankle Instability: A Narrative Review

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ABSTRACT

Chronic ankle instability refers to the occurrence of repetitive episodes of instability, leading to numerous ankle sprains, the sensation of the ankle “giving away” and perceived instability by the individuals. This instability commonly arises from an initial ankle twist, compounded by inadequate rehabilitation efforts. Chronic ankle instability has been attributed to mechanical instability and functional instability. This narrative review aims to summarise the long-term effects of chronic ankle instability on individuals, encompassing their mechanical, neuromuscular and neurophysiological deficits. Understanding of these impairments is essential for the development of standardised rehabilitation strategies and to prevent disability. The articles were searched from Google Scholar, PubMed, the Journal of Athletic Training and ScienceDirect using keywords “Chronic Ankle Instability” OR “CAI” OR “Lateral ankle instability” AND “Long term effects” AND “Quality of life” OR “Knee Osteoarthritis” OR “Proprioception”. After retrieving and screening almost 330 publications, 76 duplicates were eliminated, 254 titles and abstracts were examined, 82 complete texts were evaluated, and 12 studies were included. Research shows persistent deficits in neuro-proprioception, postural control, and muscular activation patterns with chronic ankle instability. It has been associated with early development of osteoarthritis, decline in quality of life, lower limb muscular strength, impaired dynamic and static balance, and poor performance of athletics, further contributing to recurrent sprains, altered gait mechanics, and reduced functional capacity. Hip and Knee joints adaptations as well as long-term structural changes in ligaments and sensorimotor pathways have also been observed. Chronic ankle instability causes chronic alterations in neurological as well as muscular systems, demonstrating the need for long-term follow-up assessments, rehabilitation and prevention measures.

Keywords: Osteoarthritis, Knee, Quality of Life, Proprioception, Postural Balance, Ankle Injuries

PG-095: Technological Advancements in Dynamic Balance Testing: A Narrative Review

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ABSTRACT

Functional mobility and athletic performance depend greatly on dynamic balance, which is governed by neuromuscular coordination, postural control, and sensorimotor integration. Rapid technological advancements are transforming dynamic balance testing, making assessments more accurate, objective, and clinically accessible. Although traditional methods such as the Star Excursion Balance Test and the Y Balance Test are well established, they present limitations, including subjective scoring, limited biomechanical insight, and reduced ecological validity. Consequently, these conventional tests are increasingly being complemented or replaced by mobile technologies, wearable inertial sensors, and artificial-intelligence-driven analytical systems. This narrative review summarizes recent technological innovations in dynamic balance assessment, with emphasis on advancements that enhance clinical decision-making, measurement accuracy, and accessibility. The objective assessment of postural control and movement quality has greatly improved thanks to new technologies like wearable inertial measurement units (IMUs), smartphone-based accelerometer, marker-based and marker less motion capture, virtual and augmented reality systems, and instrumented balance platforms. Wearable IMUs enable continuous real-world monitoring of dynamic balance and support early detection of neurological and motor impairments. Wearable sensor-based interventions demonstrate superior outcomes compared to conventional therapy, with meta-analytic evidence from 58 randomized controlled trials (n = 2713) showing significant improvements in Timed Up and Go test scores (mean difference -0.68 s, p < 0.001), gait speed (+4.24 cm/s, p < 0.001), Berg Balance Scale scores (+2.32 points, p = 0.001), and 6-Minute Walk Test distance (+25.16 m, p < 0.001). AI-assisted dynamic postural control systems further report greater functional gains, including a gait speed increase of up to 15 cm/s and significant improvements in Short Physical Performance Battery scores (p < 0.001). Machine-learning models trained on sensor-derived data further allow automated performance scoring, classification of balance dysfunction, and remote or asynchronous assessment. Marker-less motion capture and depth-sensing technologies reduce dependence on raters and laboratory infrastructure while improving measurement precision. Smartphone-based applications offer portable, cost-effective tools that support telehealth-based balance screening. Despite these advancements, variability in data-processing methods, inconsistent testing protocols, and limited normative datasets restrict the widespread adoption of these technologies. To enable effective clinical translation, future research should focus on developing standardized digital assessment protocols, expanding normative reference databases, and validating emerging tools across diverse age groups, functional levels, and clinical populations.

Keywords: Inventions, Motion capture, Wearable Electronic Devices, Augmented reality, Smartphones

PG-096: Exploring the impact of different load lifting techniques in improving muscle activation and kinematics in individuals with chronic low back pain – A review

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ABSTRACT

Low back pain (LBP) is a major health issue that affects daily functioning and overall quality of life, often leading to significant consequences. Lifting tasks are commonly used in musculoskeletal evaluations to assess functional ability, particularly in individuals with chronic low back pain (CLBP). These tasks closely replicate everyday activities that frequently provoke or exacerbate pain. However, research on their effectiveness in improving muscle activation and movement patterns in individuals with CLBP remains inconclusive. The purpose of the study was to explore the impact of different load-lifting techniques on muscle activation and kinematics in individuals with CLBP. This review conducted a search of the PubMed, Cochrane, Embase, and Google Scholar databases covering studies from 2015 to 2025, identifying the 14,000 studies. Rayyan software used for the screening process, removal of duplicates, and selection of studies. At last, only 8 studies met the inclusion criterion. Individuals with CLBP show higher lumbar loads and increased trunk muscle co-activation during lifting, especially under unstable or fatiguing conditions. Age further influences trunk muscle activation and lifting technique significantly affects spinal loading. Back muscle fatigue caused higher EMG amplitudes and lower median frequencies during the fatiguing activity, but did not alter kinematics or low-back loading. Load weight influences the movement patterns and muscle activation during freestyle lifting in people with CLBP and healthy adults. Differences in EMG patterns across various lifting tasks highlight the significance of task-specific approaches in assessment and treatment planning.

Keywords: Low back pain, Electromyography, Lifting, Biomechanical phenomena.

PG-097: Review of scale translation and content validation of the dynamic gait index in stroke patients with residual weakness

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ABSTRACT

Introduction : The Dynamic Gait Index (DGI) is a widely recognized clinical tool for evaluating gait adaptability and fall risk. However, its direct use in non-English-speaking populations is challenging without proper cultural and linguistic adaptation. Stroke survivors often experience residual weakness, balance impairments, and altered gait patterns, making accurate gait assessment crucial for effective rehabilitation. Systematic translation and validation of clinical scales ensure that adapted versions maintain equivalence with the original tool in meaning, interpretation, and application.

Aims & Objective: This study aimed to translate the DGI into Hindi and evaluate its content validity and reliability among stroke patients with residual motor weakness. Additionally, it sought to outline key methodological steps for the translation and validation of clinical tools used in neurological rehabilitation.

Materials and Methods: The DGI was translated into Hindi using a standardized forward-backward translation procedure. An expert panel comprising physiotherapists and neurologists reviewed the translated version to ensure cultural relevance, clarity, and conceptual equivalence. Content validity was determined using the Content Validity Index (CVI). A group of stroke patients with residual weakness was then assessed to determine the Hindi DGI's reliability. Inter-rater reliability was evaluated using the Intraclass Correlation Coefficient (ICC), internal consistency with Cronbach's alpha, and test-retest reliability over a 48–72-hour interval. Feasibility and patient comprehension were further examined through pilot testing.

Results: Expert reviewers confirmed strong content validity for all items, with item-level CVI scores exceeding acceptable benchmarks. The Hindi version of the DGI demonstrated excellent inter-rater reliability and high test-retest reliability. Internal consistency values indicated that all items effectively measured aspects of gait adaptability. Patients reported that the Hindi version was easy to understand and follow, supporting its linguistic and cultural acceptability.

Conclusion: The Hindi translation of the Dynamic Gait Index is a valid, reliable, and culturally appropriate instrument for assessing gait performance and dynamic balance in stroke patients with residual weakness. This work highlights the importance of systematic translation, expert validation, and psychometric evaluation when adapting clinical assessment tools for diverse populations. The validated Hindi DGI will support accurate gait assessment and more informed rehabilitation planning in Indian physiotherapy practice.

Keywords: Stroke, Gait, Neurological Rehabilitation, Physical Therapists, Psychometrics

PG-098: Effect of various treadmill based aerobic exercise parameters on pain and core stability in individuals with chronic low back pain. – review

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ABSTRACT

Chronic low back pain is the leading cause of disability in the world affecting daily functioning and overall quality of life. Treadmill based Aerobic exercise as a form of exercise is effective but the effects of specific treadmill parameters such as speed, incline, duration on pain and core strength is not clearly demonstrated. Treadmill exercises are commonly used in musculoskeletal evaluations to assess functional ability, particularly in individuals with chronic low back pain (CLBP), as these tasks closely replicate everyday activities and are often used as a part primary treatment protocol. However, research on treadmill parameters and their effects in individuals with CLBP remains inconclusive. The purpose of this study is to investigate the effect of treadmill based aerobic exercise parameters on pain and core strength in individuals with chronic low back pain. This review conducted a search of the PubMed, Science direct, Cochrane, Embase and Google Scholar Databases covering studies from 2015 to 2025 and identified studies that met the inclusion criteria. The keywords utilized were Treadmill, Core stability, Treadmill aerobic exercise, paired with 'Chronic low back pain' 'LBP'. Studies involving relationship between Chronic low back pain and treadmill exercise and core stability were included. 6 Studies involving adults with non-specific CLBP were included, with outcomes focusing on pain intensity, core muscle endurance, trunk stability, and functional measures. A synergistic effect on overall patient outcomes is seen by the combination of low back pain rehabilitation program and treadmill exercise, to a limited extent. The results are conflicted with most of the studies stating treadmill walking can enhance trunk muscle endurance, pain score and disability. Some studies stated beneficial treadmill walking but inferior to targeted core stabilization in respect to pain intensity, functional disability and muscle activation while some stated overground walking more beneficial than treadmill walking.

KEYWORDS -: Low back pain, core stability, Treadmill walking, Exercise

PG-099: A study protocol on eyes-closed balance training to improve reaction time, postural stability, and functional outcomes in elderly population.

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ABSTRACT

Introduction: The ability to control balance during activities of daily living (ADL) is impaired in older adults because of deterioration in the sensory systems (i.e., vestibular, visual, and somatosensory). Consequently, many older adults face a risk of falling during their ADL. Numerous researchers have investigated balance ability and training of balance in the elderly. However, current literature provides limited evidence on whether balance training performed with eyes closed effectively enhances reaction time and functional outcomes.

Aim: To evaluate the effectiveness of the eyes-closed balance training on reaction time, postural control, and functional outcomes in the elderly population.

Materials and Methods: 32 subjects age 60 years or older with mild to moderate balance impairment will participate in this quasi-experimental study. Eligible individuals will participate in an eyes-closed balance training under supervised sessions 5 times/week for 4 weeks, where participants perform static and dynamic postural tasks with eyes closed. Pre-post assessment will be taken after the completion of the intervention with outcome measures Pedalo-Sensamove Balance Test Pro with Miniboard, for reaction time and postural control, and geriatric functional scale for functional outcome.

Results: This study anticipates that eyes-closed balance training may significantly improve the reaction time and postural control, and functional outcome among the elderly population.

Conclusion: Eyes-closed balance training may have the potential to become an effective evidence-based intervention to improve reaction time, postural control, and functional outcomes in the elderly population.

Keywords: Reaction Time, Elderly, Balance Training, Postural Control, Risk of Fall

PG-100: Joint Mobilization for Enhancing Muscle Activation and Reducing Functional Limitation in Knee Osteoarthritis: A Review

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ABSTRACT

As the Knee Osteoarthritis advances, individuals mostly have trouble in walking, climbing stairs, and performing daily activities. Pain and restricted joint motion can also inhibit normal Quadriceps activation, reduce the stability, and contribute to altered movement patterns. Joint Mobilization has gained attention as a Manual Therapy aimed at reducing discomfort and improving Range of Motion. This review examines the role of Mobilization in improving Muscle Activation and Functional Ability in individual with Knee Osteoarthritis. A focused search of PubMed, Scopus, PEDro, and ScienceDirect for studies published between 2015 and 2025 identified five randomized controlled trials meeting the inclusion criteria. Across these studies, Mobilization consistently demonstrated reduction in pain and stiffness, along with improvements in joint Range of Motion and overall Functional tasks such as walking, performing day to day activities and climbing stairs. Several trials also reported enhanced Quadriceps recruitment and improved proprioceptive control. Although encouraging, current evidence is limited by small sample sizes and short follow-up periods. More rigorous research is required to clarify long-term effects of Mobilization. Nevertheless, existing findings support Joint Mobilization as an effective intervention for improving mobility and functional performance in individual with Knee Osteoarthritis. Joint Mobilization has gained attention as a Manual Therapy technique aimed at improving joint mobility, reducing discomfort, and supporting better neuromuscular function.

Keywords: Knee Osteoarthritis, Tibiofemoral Joint Mobilization, Range of Motion, Functional Performance.

PG-101: Enhancing Knee Osteoarthritis Care through Wearable Technologies: Assessment and Rehabilitation Perspectives

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ABSTRACT

Knee osteoarthritis (KOA) is a significant public health concern, prompting clinicians to seek objective, low-cost techniques that complement the patient-reported outcomes. Wearable technology has swiftly entered the field of KOA management, providing clinicians with portable tools for quantifying movement, monitoring disease progression, and guiding tailored rehabilitation. This narrative review synthesizes the current evidence on using wearable sensors for KOA assessment and rehabilitation, focusing on accuracy, clinical utility, and patient outcomes. A literature search was performed across databases such as PubMed, Scopus and Web of Science for articles published between 2015 and 2025. Studies were screened for relevance to gait analysis, joint angle measurement, biofeedback, and remote monitoring. Rayyan software was used for screening, duplicate removal, and selecting studies based on predefined inclusion criteria. The devices with the greatest demand were accelerometers because of their affordability, user-friendliness, and smooth data transfer. In free-living conditions, Inertial Measurement Units were the dominant technology, with reported error rates for measurements ranging from 0.2° to 5° for knee range of motion, like laboratory motion-capture systems. Correlations between sensor derived anticipatory postural adjustments and gold standard video capture range from $r = 0.80$ to 0.98 , confirming high fidelity in dynamic tasks. Kinetic estimations of tibia-femoral contact forces agree somewhat with inverse-dynamic models. Biofeedback therapies using real-time inertial data improve gait symmetry, minimize asymmetrical loads, and promote adherence to home-based training programs. However, most experiments are limited to laboratory settings, using small sample sizes, and focus largely on walking rather than a broader spectrum of daily activities. Future research should target large-scale, real-world trials, standardized protocols, and integrating machine-learning analytics to fully harness their therapeutic potential.

Keywords: knee osteoarthritis, wearable inertial sensors, gait analysis, remote monitoring, biofeedback, rehabilitation

PG - 102: Assessing Function in Chronic Low Back Pain: A Review of Outcome Measures

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ABSTRACT

Chronic low back pain (CLBP) is a highly prevalent musculoskeletal condition characterized by persistent pain, disability and diminished functional capacity. Functional capacity and disability in this population are commonly evaluated using standardized physical performance tests and validated self-administered questionnaires, respectively. Although numerous studies have examined functional capacity, responsiveness of clinical outcome measures, and the relationships among pain, disability, and physical performance, these findings have not been comprehensively synthesized. The purpose of this review was to synthesize the literature about various functional capacity tests incorporated to analyze performance deficits among individuals with CLBP. A systematic search Scopus, PEDro, and PubMed databases respectively, covering the years 2015 to 2025 was done which yielded four studies according to the selection criteria. Collectively, the evidence demonstrated that individuals with CLBP exhibit reduced performance on functional reach tests (FRT) ($p=0.24=5$), five-time sit-to-stand tests (5STS) ($p=0.001$), and two-minute step tests (2MST) ($p=0.025$). Work-related functional capacity, assessed using a standardized Functional Capacity Evaluation (FCE), also revealed significant impairments across lifting, carrying, ambulation, and sustained postures. Furthermore, significant correlations were observed among pain intensity, disability scores (ODI/MODQ), 5STS performance, and 2MST endurance, underscoring the interrelated nature of symptom severity and functional capacity. Overall, this review highlights that functional capacity tests are reliable and responsive tools for evaluating CLBP. Incorporating functional performance measures alongside pain and disability evaluation enhances clinical decision-making and facilitates individualized rehabilitation planning.

Keywords: Chronic low back pain, Functional performance tests, Musculoskeletal disorders, Clinical decision making, Pain measurement

PG-103: Effects of Unstable-Surfaces Training in Overweight/Obese Adults on Body Composition, Weight Management and Balance: A Narrative Review

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ABSTRACT

Obesity is often accompanied by impaired balance and core stability. Training on unstable surfaces challenges balance and engages core musculature; however, its specific effects on weight loss and fat metabolism have not been well established. Therefore, this review was conducted to appraise the literature on mechanisms and recent evidence on the use of unstable-surface training for weight management in overweight or obese individuals. A comprehensive literature search was conducted of databases like Pubmed ,PEDro and Cochrane Library between years 2020 to 2025 focusing on trials involving overweight/obese participants performing exercises on unstable-surface. Data on energy expenditure, body composition, balance and functional outcomes were extracted. Unstable-surface training produces greater core muscle activation and neuromuscular demand than the same exercises done on stable surfaces. Swiss-ball core-exercise program led to a noticeable reduction in body fat among overweight adults. In long term trials of obese adolescents with functional program including BOSU and other dynamic exercises plus aerobic training yielded significantly larger reductions in body mass, body-fat percentage than a traditional resistance and aerobic program. Greater fat loss was attributed to increased muscle co-contraction and energy expenditure during unstable exercise. In contrast, mixed unstable resistance programs involving wobble board shown to elicit similar strength, proprioception and body-composition changes in healthy adults. Unstable surface training is a practical adjunct for weight management, since it enhances core stability and modestly increases energy expenditure while offering the additional benefits of improved balance and fat loss when combined with aerobic exercise.

Keywords: Body Mass Index, Core Stability, Overweight , Obesity, Postural Balance , Weight Loss

PG-104: Role of Brace-Assisted Gait Retraining Combined with Neuromuscular Physiotherapy on Functional Capacity in Knee OA: A literature review

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ABSTRACT

Knee osteoarthritis (OA) is a prevalent degenerative joint disorder characterized by pain, altered gait mechanics, neuromuscular impairments, and reduced functional capacity. Conservative rehabilitation strategies increasingly focus on interventions that address both biomechanical loading and neuromuscular control. Brace-assisted gait retraining aims to modify pathological joint loading patterns and provide external support to improve gait efficiency, while neuromuscular physiotherapy targets deficits in muscle strength, proprioception, balance, and motor control. This literature review synthesizes current evidence on the individual and combined effects of these interventions on functional capacity in individuals with knee OA. The reviewed studies indicate that knee bracing and gait retraining can reduce pain, improve walking parameters, and decrease adverse knee joint moments, whereas neuromuscular physiotherapy demonstrates consistent benefits in enhancing physical function, performance-based outcomes, and quality of movement. Although direct evidence on integrated brace-assisted gait retraining combined with neuromuscular physiotherapy is limited, existing findings suggest a complementary and potentially synergistic effect on functional capacity outcomes such as walking ability, sit-to-stand performance, and patient-reported functional scores. The review highlights the potential of a combined rehabilitation approach to address both mechanical and neuromuscular contributors to functional disability in knee OA, while emphasizing the need for high-quality randomized controlled trials to establish standardized protocols and long-term effectiveness.

Keywords: Knee Osteoarthritis, Neuromuscular physiotherapy, Unloader knee brace, Gait modification strategies.

PG-105: Physiotherapy-Based Rehabilitation for Chemotherapy-Induced Peripheral Neuropathy in Leukemia: A Scoping Review

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ABSTRACT

Chemotherapy-induced peripheral neuropathy (CIPN) is a common and functionally limiting adverse effect in patients undergoing treatment for leukemia. It presents with sensory deficits, neuropathic pain, and balance impairments, leading to reduced mobility, functional independence, and quality of life. This scoping review aimed to map and summarize the existing evidence on physiotherapy management strategies for chemotherapy-induced peripheral neuropathy in patients with leukemia. A systematic literature search was conducted across four electronic databases: PubMed, Scopus, Web of Science, and PEDro. Relevant studies addressing physiotherapy interventions for CIPN were identified and reviewed. Evidence was synthesized to describe commonly used rehabilitation approaches and identify research gaps specific to the leukemia population. Physiotherapy interventions including balance and gait training, sensorimotor and neuromuscular re-education, strength maintenance exercises, and sensory retraining—demonstrated potential benefits in reducing functional decline associated with CIPN. Adjunctive approaches such as patient education and manual therapy were also identified as supportive components for symptom management. However, most available evidence is derived from broader oncology populations or mixed etiology neuropathy studies. There is limited leukemia-specific research, with a lack of standardized functional outcome measures and insufficient data regarding optimal timing, dosage, and long-term effectiveness of physiotherapy interventions within leukemia treatment pathways. Although physiotherapy appears to be a promising supportive intervention for managing CIPN in patients with leukemia, the current evidence base remains limited and preliminary. High-quality, leukemia-specific research is urgently needed to develop evidence-based rehabilitation frameworks that can be integrated into comprehensive survivorship care to optimize functional outcomes and patient independence.

Keywords: Leukemia, Chemotherapy-induced, neuropathic pain, Physiotherapy.

PG-106: Establishing Reference Ranges of the 2-Minute Step Test in School-Going Children

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ABSTRACT

The 2-Minute Step Test (2MST) is a validated, low-resource measure of functional aerobic capacity that is particularly suitable for paediatric populations due to its simplicity, safety, and minimal space requirements. It is increasingly used in schools, community screenings, and paediatric rehabilitation settings to evaluate cardiovascular endurance and functional mobility. However, the absence of standardized age- and gender-specific reference ranges for school-going children limits its comparative clinical value and restricts its application in early detection of reduced functional capacity. Establishing normative data is therefore essential to support accurate interpretation, promote evidence-based practice, and enhance paediatric fitness assessment frameworks. To establish normative reference ranges for the 2MST in school-going children, stratified by age and gender. A cross-sectional study was conducted among children aged 6 to 12 years recruited through stratified sampling from local schools. The 2MST was administered in accordance with standardized testing protocols. Step count, physiological responses, and anthropometric parameters (height, weight, BMI) were recorded. Descriptive statistics and percentile distributions were used to generate age- and gender-specific normative ranges. Inferential statistics were applied to examine associations between performance and anthropometric variables. The study included 320 children between the ages of 6 and 12 (mean = 9.78 ± 1.96). BMI (18.11 ± 2.43 kg/m²) and gender distribution (significantly more boys) were anthropometric measurements. Children took the 2-Minute Step Test (2MST), and their heart rates were 89.58 ± 11.36 bpm and 113.85 ± 14.95 bpm, respectively, and their mean pre- and post-test SpO₂ values were 97.51 ± 1.12% and 97.00 ± 1.23%. The range of 2MST scores was 40-159 (mean = 101.20 ± 34.15). The Kolmogorov-Smirnov test verified that the data were normally distributed, offering normative reference values for the 2MST in school-age children. This study provides robust normative reference ranges for the 2-Minute Step Test in school-going children. These values enhance the clinical and educational utility of the 2MST by enabling accurate benchmarking, early identification of reduced functional capacity, and evidence-based planning of paediatric fitness and rehabilitation programmes

Keywords: Paediatric population, Aerobic endurance, Physical fitness

PG-107: The Role of Artificial Intelligence in Enhancing Musculoskeletal Pain Rehabilitation: Evidence and Future Scope

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ABSTRACT

Musculoskeletal (MSK) pain is a leading cause of global disability and frequently requires prolonged rehabilitation. Artificial Intelligence (AI) has emerged as a transformative technology in MSK rehabilitation by enabling objective assessment, personalized treatment planning, remote monitoring, and improved clinical outcomes. This literature review synthesizes recent developments in AI applications for MSK pain conditions, including machine learning based diagnosis, wearable sensor analytics, computer-vision-driven movement assessment, virtual rehabilitation, and robotics. This literature review followed a narrative approach to synthesize current evidence on the applications and clinical outcomes of AI in musculoskeletal pain rehabilitation. A comprehensive literature search was conducted across four major electronic databases PubMed, Cochrane Library, and Web of Science. A combination of keywords and Medical Subject Headings (MeSH) related to musculoskeletal conditions, artificial intelligence, rehabilitation, and RCTs was used, employing Boolean operators (AND, OR) to refine the search strategy. Strong evidence shows that AI facilitates accurate movement analysis, enhances patient engagement through exergaming, supports early prediction of pain severity, and improves adherence to home-based programs. Clinical trials demonstrate improvements in pain reduction, functional mobility, and range of motion when AI is integrated with conventional physiotherapy. However, despite promising results, challenges remain, including limited large-scale randomized trials, data governance concerns, cost issues, and varying levels of clinician readiness. Future work should focus on developing clinically validated, multimodal AI systems that integrate biomechanics, patient-reported outcomes, imaging, and behavioral data to deliver precision rehabilitation. Overall, AI holds immense potential to transform musculoskeletal pain management and expand global access to effective rehabilitation care.

Keywords: Artificial intelligence, musculoskeletal, pain, biomechanics.

PG-108: Does Exercise Improve Visuospatial Working Memory in Middle Age? A Review

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ABSTRACT

Visuospatial working memory (VSWM) is an important cognitive function that enables individuals to temporarily store and manipulate visual and spatial information skills that are essential for problem-solving, navigation and efficient daily functioning. Although middle age is often considered a period of relative cognitive stability, subtle declines in VSWM and related executive processes can begin to emerge during these years. Exercise has long been recognized as a promising, accessible approach to supporting cognitive health, with growing research suggesting benefits across several domains, including memory, processing speed and executive functioning. A structured literature was searched across PubMed, Scopus, PEDro and the Cochrane Library to identify studies evaluating the effects of exercise on VSWM among middle-age adults. The search strategy used Boolean operators and combined key terms as follows: “exercise” OR “physical activity” AND “visuospatial working memory” OR “visuospatial cognition” OR “working memory” AND “middle age” OR “adults”. The search initially retrieved 10 studies, and after screening titles, abstracts, and full texts for relevance to visuospatial or working-memory outcomes, 9 articles were included in the final review. In middle-aged adults, everyday physical activity produced faster VSWM response times, reflecting an acute cognitive benefit equivalent to roughly four years of improvement, although accuracy remained unchanged. Among older adults, Zumba training improved visuospatial working memory, and high-intensity interval training demonstrated a 0.32-unit gain (95% CI: 0.01–0.64) in working-memory performance compared with moderate-intensity exercise. Clinical samples showed similar patterns, with stroke-related MCI participants exhibiting higher MoCA visuospatial/executive scores (4.60 ± 0.52 vs. 3.30 ± 1.06) after aerobic exercise and depressed adults showing a 3.2-point improvement on visuospatial memory tasks relative to controls. It is suggested that exercise, particularly aerobic and cognitively engaging forms, can produce measurable improvements in visuospatial working memory across adult populations, though direct evidence in middle-aged adults remains limited.

Keywords: Spatial Memory, Cognition, Aerobic Exercise, High-Intensity Interval Training, Working Memory

PG-109: Advanced Restoring Techniques for Myokinetic Chain Dysfunction on Racquet Sports Players: A Study Protocol

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ABSTRACT

Accurate proximal-to-distal muscle activation is necessary for both performance and injury prevention in racquet sports, which predominantly depend upon coordinated myokinetic chain function. Load transmission between joints is altered by dysfunction in this chain, especially in overhead players who are more likely to experience overuse issues. Advanced restoring techniques such as active myokinetic chain release technique, pressure release, dry needling, and the Graston Technique can enhance muscle activation, alleviate fascial limitations, and restore functional movement patterns, thereby reducing pain and impairment caused by trigger points. This study addresses the evidence gap in standardized protocols for chain restoration, as existing isolated treatments do not optimise proximal-distal force transmission or performance parameters such as agility and power. This study aims to assess the effect of advanced restorative techniques on myokinetic chain dysfunction, with a focus on injury prevention, improved performance, flexibility, and neuromuscular coordination. In this study, participants aged between 18 and 24 years, with a minimum of one year of experience, are included. Those who have had recent fractures or any musculoskeletal injuries within the past 6 months are excluded from the study. The G power method was used to determine the sample size. Active myokinetic chain release, pressure release, dry needling, and the Graston technique will be a part of the intervention. Sampling will be done in a convenient sampling. The outcome variables of this study are agility, measured by the T-test, and flexibility will be measured by the sit and reach test. Those players who meet the selection criteria will be included in the research. This study concludes that the myokinetic chain dysfunction is best treated through an integrated approach combining kinetic-chain restoration, neuromuscular retraining, and targeted manual therapy.

Keywords- Myofascial release therapy, Dry needling, Racquet sports, Trigger point, Athletic Performance.

PG-110: Impact of Isokinetic Training on Gymnastic Athletes: Literature Review

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ABSTRACT

Isokinetic training a form of resistance training involving controlled muscle contractions at a constant angular velocity has gained recognition in gymnastics for its potential to improve performance, strength and skill development. This training method is believed to enhance the muscular strength of gymnasts, particularly in knee stabilizers, and optimize the biomechanical execution of complex gymnastic elements such as vaults, floor acrobatics, and static positions on rings. This review aims to explore how isokinetic training helps gymnastic athletes improve their muscle strength and performance, and how it can be used alongside regular gymnastics training. A literature search was carried out across databases like Web of Science, PEDro, EBSCO, and PubMed from 2016 to 2024. Keywords included Gymnastics, Resistance Training, Muscle Strength, and Isokinetic Training. Five articles out of 1070 fulfilled all the inclusion criteria. These studies ranged in duration from 3 to 12 weeks, with preadolescent gymnasts to elite ones, and knee extensors and flexors were assessed using devices such as Cybex II and Biodex 3. Isokinetic training improved knee stabilizer strength and contributed to enhanced gymnastic performance. Preadolescent athletes showed improved vaulting ability, collegiate gymnasts advanced in floor elements like back handsprings, and elite gymnasts gained strength and endurance in static ring holds. Performance gains were linked to better muscle strength balance and peak torque ratios. Isokinetic training can enhance muscle strength, improve skill performance, and help reduce injury risk, making it a useful addition to regular gymnastics training. It is most effective when combined with consistent practice and tailored to each gymnast's age and developmental level. Further research is needed to understand its long-term effects and to determine the most effective training methods for gymnasts.

Keywords: Gymnastics, Resistance Training, Muscle Strength, Athletes.

PG-111: Comparative effects of Oculomotor Exercises with and without Cranial Electrical Stimulation on Pain, Sleep Quality and Disability in Individuals with Computer Vision Syndrome: A Study Protocol

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ABSTRACT

Computer Vision Syndrome (CVS) has become highly prevalent due to prolonged digital screen use, leading to symptoms such as eye strain, headaches, neck pain, and sleep disturbances that negatively affect daily functioning. Oculomotor exercises are commonly used to improve visual efficiency and reduce CVS related fatigue, but they may not fully address the central mechanisms contributing to pain and impaired sleep. Cranial Electrical Stimulation (CES) is a non-invasive neuromodulatory technique that has shown promising effects in modulating pain pathways, reducing stress, and improving sleep quality. As CVS involves both ocular and systemic symptoms, combining CES with oculomotor exercises may offer greater therapeutic benefits than exercises alone. Therefore, this study aims to evaluate the comparative effects of oculomotor exercises with and without CES on pain, sleep quality, and disability. 56 participants will be recruited through purposive sampling according to predefined selection criteria. Group A will receive CES through bilateral earlobe electrodes for 20 minutes at 100 μ A and 0.5 Hz, 4times/week for 3 weeks along with oculomotor exercises. Group B will receive only oculomotor exercises, consisting of eight exercises including saccadic movements, smooth pursuits, and adaptation exercises with 10 repetitions each, 4times/week for 3weeks. Pain will be assessed using the Numerical Pain Rating Scale (NPRS), sleep quality using the Pittsburgh Sleep Quality Index (PSQI), and disability using the Neck Disability Index (NDI) at baseline and post intervention. The expected outcomes may demonstrate that this practical, non-invasive intervention reduces NPRS, improves sleep quality, and enhances NDI and overall functional status. The study will help in determining whether the addition of CES to oculomotor exercises will provide greater improvements in pain, sleep quality, and disability in individuals with CVS. The findings are expected to provide evidence for a more effective, non-pharmacological management approach and guide future clinical practice.

Keywords: Computer Vision Syndrome, Oculomotor exercises, Electrical stimulation, Sleep quality, Disability.

PG-112: Effect of Telerehabilitation on Physical Function in Pre-frail Elderly: A Randomized Control Trial Protocol

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ABSTRACT

Introduction: Pre-frailty is a reversible clinical state that is common in older adults and is characterized by a decline in strength, balance, mobility, and physical function. Early intervention at this time is essential for preventing the development of frailty, disability, and loss of independence. Telerehabilitation has been proved to be an effective and a practical way of delivering physiotherapy services to elderly individuals, particularly those with limited access to traditional in-person care. Nevertheless, there is still no data to support its efficacy in pre-frail elderly. The aim of this study is to evaluate the effect of telerehabilitation on physical function among pre-frail elderly. This study is designed as a pilot randomized controlled trial involving 30 community-dwelling pre-frail adults aged ≥ 60 years, screened using the Fried Frailty Criteria. Participants will be randomly allocated into an experimental group ($n = 15$) and a control group ($n = 15$) using block randomization (1:1), allocation concealment will be maintained using SNOSE method. Pre-intervention and post-intervention assessments will be taken. The experimental group will do a supervised multicomponent telerehabilitation program including warm up, aerobic, strengthening, flexibility and cool down exercises three times per week for 12 weeks via video conferencing application. Both groups will follow a daily walking program monitored using a pedometer application on a mobile phone for assessing daily step count. Outcome measures will include the Short Physical Performance Battery (SPPB) to assess balance, gait, strength, and the Six-Minute Walk Test (6MWT) to assess cardiovascular endurance. Comparison of outcomes will be done between both groups using parametric or non-parametric statistics based on normality assessment. $P < 0.05$ will be considered as statistically significant. Findings from this study will provide important evidence on the feasibility and effectiveness of telerehabilitation as a preventive rehabilitation strategy for pre-frail older adults.

Keywords: Frailty, Telerehabilitation, Elderly, Aerobic exercise, Mobility, Flexibility

PG-113: Effect of Physiotherapy Intervention on Hyperglycemia in critically ill patients diagnosed with ICUAW- A Narrative Review

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ABSTRACT

ICUAW is a frequent complication seen in critically ill patients, resulting from systemic inflammation, prolonged immobilization, and metabolic imbalance. Among this hyperglycemia is one of the most common and modifiable metabolic disturbances in the ICU. Stress-induced hormonal imbalance, impaired glucose uptake contribute to elevated blood glucose levels, which in turn accelerate muscle proteolysis and may worsen the severity of ICUAW. While early mobilization plays a crucial role in preserving muscle function and improving functional outcomes, yet interaction between hyperglycemia, ICUAW and physiotherapy remains underexplored. The aim of this review was to examine the relation between hyperglycemia and ICUAW in critically ICU, and to explore whether glycemic status influences the progression of ICUAW and outcomes related to early physiotherapy interventions. A comprehensive literature search was conducted using PubMed, Google Scholar and Researchgate databases for studies published since 2005-2025. MeSH terms related to ICUAW, hyperglycemia and physiotherapy were used. A total of 435 records were identified, of which 12 full-text articles were assessed for eligibility. Four studies meeting the inclusion criteria were included. The reviewed literature indicates that hyperglycemia is an important metabolic factor associated with the development of ICUAW. Elevated blood glucose levels were consistently linked with muscle weakness, reduced strength, and delayed recovery. Prolonged immobilization further contributed to ICUAW, whereas early physiotherapy during ICU stay were associated with improved muscle strength and reduced duration of mechanical ventilation. Some studies also reported lower insulin requirements with early mobilization, suggesting a favorable interaction between physical activity and glycemic control. This review supports early physiotherapy with glycemic monitoring as a key strategy to preserve muscle integrity and reduce the severity of ICU-AW.

Keywords: ICUAW, physical therapy, hyperglycemia and early mobilization.

PG-114: Preventing sexual disorder in cardiovascular disease patients through modified cardiac rehabilitation: A scoping review

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ABSTRACT

Cardiovascular disease (CVD) is one of the leading causes of death worldwide and is commonly associated with sexual dysfunction. Sexual problems in patients with CVD negatively affect quality of life, emotional health, and intimate relationships. Many patients feel anxious or fearful about resuming sexual activity after a cardiac event, and healthcare professionals may hesitate to address sexual health due to lack of training or structured programs. Modified cardiac rehabilitation (MCR) aims to overcome these barriers by including sexual health education, counseling, lifestyle modification, and partner involvement along with conventional cardiac rehabilitation. This scoping review focuses on the importance of sexual health in cardiac rehabilitation and the role of MCR in managing sexual dysfunction. The need of this review is to explore how modified cardiac rehabilitation can help prevent sexual disorders in patients with CVD.

This scoping review will be conducted following PRISMA-ScR guidelines. A systematic literature search will be carried out using electronic databases such as Pub Med, Google Scholar, and Science Direct. The review considered randomized controlled trials, observational studies, quasi-experimental studies, review articles, and clinical guidelines focusing on adult patients with CVD. Data were selected based on inclusion and exclusion criteria.

The reviewed studies suggest that MCR programs incorporating sexual counseling, psychological education, stress management, exercise training, lifestyle modification, pelvic floor exercises, and partner participation can improve sexual confidence, reduce sexual anxiety, and decrease modifiable risk factors contributing to sexual dysfunction.

This concluded that, modified cardiac rehabilitation appears to be a beneficial and patient-centered approach for addressing sexual dysfunction in individuals with CVD. However, further well-designed studies are required to develop standardized protocols and to support the routine inclusion of sexual health components in cardiac rehabilitation programs.

Keywords : Cardiovascular disease, cardiac rehabilitation, sexual dysfunction and physiotherapy.

PG-115: Effect of Cryotherapy and Mediterranean Diet on Knee Osteoarthritis

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ABSTRACT

Introduction: Knee osteoarthritis (KOA) is a common degenerative joint disorder causing pain, stiffness, and functional limitation, particularly among middle-aged and elderly individuals. Although pharmacological and surgical interventions are widely used, non-pharmacological approaches such as cryotherapy and dietary modification may provide cost-effective and safe alternatives. Limited evidence is available regarding the combined effect of cryotherapy and the Mediterranean diet in patients with knee osteoarthritis.

Aims & Objectives: To evaluate and compare the effects of cryotherapy alone and cryotherapy combined with the Mediterranean diet on pain and functional outcomes in patients with knee osteoarthritis.

Materials and Methods: A randomized experimental study was conducted on 60 patients aged 40–65 years with mild to moderate knee osteoarthritis. Participants were randomly allocated into two groups: Group A (n=30) received cryotherapy alone, and Group B (n=30) received cryotherapy combined with a Mediterranean diet. Cryotherapy was administered for 20 minutes twice daily for 20 consecutive days. Outcome measures included the Visual Analogue Scale (VAS) for pain and the Knee Injury and Osteoarthritis Outcome Score (KOOS) for functional assessment. Pre- and post-intervention data were analyzed using paired and independent t-tests.

Results: Both groups demonstrated statistically significant improvements in pain and functional outcomes after intervention ($p < 0.05$). Significant reductions in VAS scores and improvements in KOOS scores were observed within each group. However, comparison between the two groups revealed no statistically significant difference ($p > 0.05$), indicating that both interventions were equally effective over the 20-day period.

Conclusion: Cryotherapy, when administered alone or in combination with the Mediterranean diet, was effective in reducing pain and improving functional status in patients with knee osteoarthritis. The findings suggest that cryotherapy is a beneficial conservative intervention, and longer duration adherence to the Mediterranean diet may be required to demonstrate additional clinical benefits.

Keywords: Knee Osteoarthritis, Cryotherapy, Mediterranean Diet, VAS, KOOS

PG-116: Effects of Transcranial Direct Current Stimulation as an Adjunct to Physiotherapy in Cervicogenic Headache: A Scoping Review

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ABSTRACT

Cervicogenic Headache (CH) is a secondary headache disorder originating from structural and functional dysfunctions of the cervical spine and related soft tissues, commonly resulting in chronic pain, reduced mobility, and functional disability. Physical Therapy is considered as a primary management approach and typically includes manual therapy, therapeutic exercises, postural correction, and patient education; however, inconsistent treatment outcomes have prompted interest in adjunctive interventions that may enhance pain modulation. Transcranial direct current stimulation (tDCS) is a non-invasive neuromodulation technique that delivers low-intensity electrical currents to cortical regions involved in pain processing. This review aimed to synthesize the existing evidence regarding the use of tDCS in individuals with CH. A systematic search of electronic databases was conducted from 2024 that investigated tDCS interventions in this population. The available literature was limited and included heterogeneous experimental designs, with tDCS most frequently applied as an adjunct to physical therapy or exercise-based interventions rather than as a standalone treatment. Outcome measures primarily focused on pain intensity, headache frequency, headache-related disability, and cervical functional outcomes. Substantial variability was observed across studies in stimulation parameters, including electrode placement, current intensity, session duration, and treatment frequency, which limited comparability and synthesis of findings. Although several studies reported short-term improvements in pain-related outcomes, the overall strength of evidence remains limited due to small sample sizes, methodological heterogeneity, and short follow-up durations. Additionally, few studies explored mechanistic outcomes or clearly differentiated the effects of tDCS from concurrent physical therapy interventions. In conclusion, while preliminary findings suggest that tDCS may have a potential adjunctive role in the management of cervicogenic headache, the current evidence base remains exploratory. High-quality randomized controlled trials with standardized protocols and long-term follow-up are required to clarify the clinical efficacy and optimal application of tDCS alongside physical therapy in this population.

Keywords: Cervicogenic Headache, Transcranial Direct Current Stimulation, Physical therapy, neuromodulation, tDCS, Chronic pain, Headache management

PG-117: Comparative effects of Neurobics and Virtual Reality training program on Cognitive function and Memory in Geriatric population.

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ABSTRACT

Cognitive and memory impairment in the geriatric population is a major public health concern, as it reduces functional independence, increases caregiver burden, and negatively impacts quality of life. With limited effectiveness of pharmacological treatments, non-pharmacological interventions aimed at enhancing cognitive reserve and promoting neuroplasticity are increasingly emphasized. Neurobics and Virtual Reality (VR) training are promising approaches that stimulate cognitive function through multisensory engagement. This study will aim to compare the effects of Neurobics and Virtual Reality based training programs on cognitive function and memory in the geriatric population. The objective is to determine which intervention Neurobics or Virtual Reality yields a more significant improvement on cognitive function and memory in geriatric population. 50 participants will be recruited according to predefined inclusion and exclusion criteria and will be randomly allocated into two groups (25 each group). Group A (25) will receive a Neurobics training program four times per week for four weeks, while Group B (25) will undergo a Virtual Reality based cognitive training program with the same frequency and duration. Cognitive function will be assessed using the Montreal Cognitive Assessment (MoCA), and memory will be evaluated using the Corsi Block Tapping Test. Outcome measures will be recorded at baseline and immediately after completion of the intervention period. The results will demonstrate that both Neurobics and Virtual Reality training programs will lead to improvements in cognitive function and memory, as indicated by increased MoCA scores and enhanced performance on the Corsi Block-Tapping Test. One intervention may produce greater improvements in cognitive outcomes, suggesting a more effective non-pharmacological approach for cognitive rehabilitation in the geriatric population. This study will determine whether Neurobics or Virtual Reality training is more effective in improving cognitive function and memory in the geriatric population. The findings will contribute evidence for effective, non-pharmacological cognitive rehabilitation strategies and may help guide clinical practice aimed at promoting healthy cognitive ageing.

Keywords: Geriatric population, Cognitive Dysfunction, Functional independence, Virtual reality, Cognitive rehabilitation

PG-118: Effects of Early Exercise Therapy on Functional Independence and Quality of Life in Individuals with Duchenne Muscular Dystrophy: A Narrative Review

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ABSTRACT

Duchenne Muscular Dystrophy (DMD) is a progressive neuromuscular disorder marked by continual muscle fiber degeneration, resulting in weakness, loss of mobility, and declining functional independence. As limitations increase with age, timely physiotherapeutic management becomes essential to support daily functioning. The aim of this narrative review is to evaluate current evidence on the impact of early exercise-based physiotherapy on functional independence and quality of life in individuals with Duchenne Muscular Dystrophy. A comprehensive search of PubMed, PEDro, Google Scholar, and ScienceDirect was conducted for studies published between 2015 and 2025. Only English-language randomized controlled trials examining exercise-focused physiotherapy in individuals with DMD were included. From 81 screened articles, 7 trials met the eligibility criteria, with methodological quality scores ranging between 5 and 8 on the PEDro scale. Findings across studies indicate that introducing structured exercise programs early in the disease course—such as stretching routines, low-intensity strengthening, aerobic training, aquatic therapy, and respiratory exercises—helps preserve joint mobility, delay contracture development, and slow functional deterioration. Participants initiating therapy earlier demonstrated better performance in everyday tasks and experienced fewer secondary complications. Improvements in quality of life were consistently reported, including reduced fatigue, greater physical comfort, improved confidence in movement, and increased involvement in school and social activities. Caregivers also observed slower decline and improved daily independence. Interventions emphasizing safety, minimizing mechanical overload, and ensuring regular physiotherapist supervision yielded the most positive outcomes. Current literature supports early implementation of individualized exercise-based physiotherapy as an important component of DMD management, contributing to sustained functional independence and enhanced quality of life.

Keywords: Duchenne Muscular Dystrophy, Exercise Therapy, Functional Independence, Quality of Life, Rehabilitation

PG-119: Therapeutic Effects of Active Release Technique on Pain and Hamstring–Quadriceps Strength Ratio in Patients with Grade I and II Knee Osteoarthritis: A Case Series

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ABSTRACT

Knee Osteoarthritis (OA) also known as degenerative joint disease, is typically the result of wear and tear of the articular cartilage. It can lead to muscle weakness, increased joint loading, alteration in the gait pattern and increase the knee adduction movement. This aim of this case series is to evaluate the impact of Active Release Technique (ART) on pain and hamstring to quadriceps strength ratio in patients with Grade 1 and 2 knee OA. Seven patients aged between 40–60 years were included who were diagnosed with Grade 1 and 2 knee OA. Participants were received an ART, Interferential therapy (IFT) and a set of Exercises for 4 weeks. Pain Intensity was assessed using the Numeric Pain Rating Scale (NPRS). Muscle strength and balance between the hamstrings and quadriceps were evaluated using Pressure Biofeedback (PBU). Outcome measures were assessed before and after the completion of the intervention. A total of seven participants were analysed, comprising five females (71.4%) and two males (28.6%). The mean age was 47.86 ± 6.36 years (range: 40–60 years). Mean height, body weight, and BMI were 156.14 ± 2.97 cm, 57.57 ± 2.64 kg, and 23.66 ± 1.64 kg/m², respectively. Data normality was assessed using the Shapiro-wilk test. Baseline analysis revealed a significant difference in pain intensity measured by the NPRS ($p=0.001$), while no significant difference was observed in the hamstring–quadriceps (H:Q) ratio ($p=0.189$). Within-group analysis demonstrated a significant reduction in NPRS scores using the Wilcoxon signed-rank test ($p=0.011$). Furthermore, the H:Q ratio showed a statistically significant improvement on independent t-test analysis ($p=0.003$). The findings indicate that the intervention effectively reduced pain intensity and improved hamstring–quadriceps muscle strength balance, demonstrating positive effects on pain modulation and neuromuscular function. However, larger studies are required to confirm and generalize these results.

Keywords: Knee Osteoarthritis, articular cartilage, muscle weakness, laceration, Physiotherapy.

PG-120 Emerging Sensorimotor and Neuromodulation Therapies for Restless Leg Syndrome: A Systematic Review

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ABSTRACT

Physical therapy is thought to be crucial for getting the best results. A growing number of people believe that non-pharmacological neuromodulation therapy could be a useful tool for providing medical interventions. The impact of non-pharmacological intervention on results people with restless leg syndrome (RLS). The aim of this review was to evaluate the effectiveness of emerging sensorimotor and neuromodulation therapies for restless leg syndrome in older adult using a systematic study. This systematic review was registered on PROSPERO ID: CRD420251182423). The databases PubMed, Cochrane, ScienceDirect, PEDro, and Google Scholar were used to search for the literature. To identify papers that satisfied the inclusion criteria, titles, abstracts, and then the full texts were screened. The methodological qualities of the studies were evaluated using the 11-point PEDRO scale. Risk of Bias evaluation was performed through the Risk of Bias 2 (ROB 2) tool in Cochrane review tools. Thirteen studies met the inclusion criteria. Combined results showed that the non- pharmacological physiotherapy interventions appear to be effective and safe adjuncts to neuromodulation therapies (resistance, stretching, peroneal electric nerve stimulation, relaxation foot massage and yoga etc.) for restless leg syndrome, improving outcomes such as pain, balance, sleep quality, anxiety, depression and overall quality of life, though their superiority over standard rehabilitation alone remains inconsistent and warrants further research. Non-pharmacological intervention enhances neuromodulation therapies for restless leg syndrome, but further research is needed with more sample size with active and control group to confirm long-term benefits and effectiveness.

Keywords: Neuromodulation, peripheral nerve stimulation, Restless leg syndrome, Sensorimotor, Willis Ekbohm Disease.

PG-121: Effect of endurance training on performance skills in basketball and volleyball players: A Scoping Review

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ABSTRACT

Basketball and volleyball are high-intensity team sports in which players have to develop sport-specific skills like passing, shooting, serving and blocking while performing different actions that are required in the game, like jumping, sprinting and rapid change of direction. Adequate endurance capacity is necessary to maintain technical performance and postpone fatigue during training and competition, even though it is primarily anaerobic. Hence, endurance training is generally included in exercise protocols using different types of training, like circuit-based high-intensity interval training. Although the physiological advantages of endurance training are well known, there is still conflicting and fragmented data about how it affects performance-related abilities in basketball and volleyball. A scoping review was conducted following PRISMA-ScR guidelines and a comprehensive research from PubMed, Web of Science, Cochrane Library and Scopus for studies published from November 2015-November 2025 using the following key terms: “high-intensity interval training”, “circuit training”, “interval training”, “core training”, “cross fit training”, “basketball performance skills”, “volleyball performance skills”. This review focuses on comparing the effects of endurance training on performance skills of volleyball and basketball players. Study selection: 2351 articles were totally identified, after duplicate removal and assessing inclusion criteria, 7 articles were included in this review. According to the reviewed articles, endurance training has greatly improved specific performance skills in basketball and volleyball players. These trainings include circuit-based training, high-intensity, sprint interval training, small-sided games, core complex training, reactive agility exercises and crossfit training. Along with the main skills of basketball and volleyball and general playing ability, this training also improves physical fitness components, like strength, power, agility and repeated sprint ability. However, only a few studies examined the effects of training on performance skills in volleyball players, leaving this domain less investigated.

Keywords: Basketball, Volleyball, Endurance training, High intensity interval training, Passing, Shooting

PG-122: Impact of different training program on performance skills in volleyball players: A Scoping Review

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ABSTRACT

Volleyball is a skill-dependent, high-intensity sport that demands best possible integration of technical, physical, neuromuscular and psychological skills. Different training methods have an impact on performance skills like serving, spiking, blocking, passing and defensive movements. To improve volleyball-specific performance, a variety of training regimens have been introduced in recent years, including strength, plyometric, neuromuscular, endurance, functional and psychological training. However, the relative effectiveness of these training programs remain fragmented. A scoping review was conducted following PRISMA-ScR and ARKSEY and O' MALLEY. Comprehensive research of PubMed, Web of Science, Scopus, and Cochrane library were performed for studies published from November 2015–November 2025 by using the following key terms “endurance training”, “plyometric training”, “strength training”, “neuromuscular training”, “proprioceptive training”, “skill-based training”, and “volleyball skills”. This review focuses on effect of different training program on performance skill in volleyball players. Study selection: 1670 articles were totally identified, after duplicate removal and assessing inclusion criteria, 4 articles were included in this review. Finding indicates that skill based training and visual perception training demonstrates notable improvements in volleyball specific skills particularly passing, serving, and spiking. These interventions also enhanced co-ordination, physical fitness, and cognitive perceptual abilities. This review highlights the need for more high quality in sports specific intervention to determine most effective training strategies for optimizing volleyball performance.

Keywords – Volleyball, Strength training, Endurance training, Spiking, Passing, Blocking.

PG-123: Comparative Effectiveness of Tele-rehabilitation, Home-Based, and Center-Based Rehabilitation Approaches in the Management of Individuals with COPD: A Literature Review

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ABSTRACT

Introduction: Chronic Obstructive Pulmonary Disease (COPD) imposes significant burdens on patients through persistent dyspnea, reduced exercise tolerance, and frequent exacerbations, making accessible pulmonary rehabilitation (PR) essential yet challenging due to geographical and logistical barriers. **Aims & Objective:** This review aims to evaluate and compare the efficacy, accessibility, patient adherence, and clinical outcomes of tele-rehabilitation, home-based rehabilitation, and traditional center-based rehabilitation programs for delivering PR in individuals with COPD.

Materials and Methods: The studies were identified from databases like Pubmed and PEDro. Included studies were free full text randomized controlled trials (RCTs) published between 2015 and 2025, written in English, and only videoconferencing used as a mode of tele-rehabilitation. Search identified a total of 52 articles out of which only 27 RCTs met the inclusion criteria and were selected for review.

Results: Randomized and controlled studies demonstrate that supervised PR yields clinically important improvements in endurance, exercise capacity and tolerance, six minute walk test, dyspnea, self-efficacy, and selected quality-of-life. Long-term trials indicate that both integrated tele-rehabilitation and unsupervised home exercise programmes can reduce hospitalizations and emergency department visits and maintain clinically improved exercise capacity gains over 12–24 months, while unsupervised home-based rehabilitation fails to promise patient adherence to the exercise programme and limits the interaction between therapist and patient making it hard to keep track of prognosis.

Conclusion: Supervised tele-rehabilitation can be opted as a promising advancement for COPD care by enabling live monitoring, enhancing real-time intensity adjustment, and promising patient adherence to programmes over unsupervised home-based rehabilitation. Overall, current evidence suggests that tele-rehabilitation and structured home-based models are effective, acceptable alternatives or complements to traditional centre- and community-based pulmonary rehabilitation for COPD.

Keywords: COPD, dyspnea, exercise capacity, pulmonary rehabilitation, quality-of-life, telerehabilitation

PG-124: Effect of Buteyko Breathing Technique and Jacobson's Relaxation Exercise on Stress Levels of Physical Therapy Students

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ABSTRACT

Introduction: The prevalence of stress among medical students is very high. Recent reports suggest that physical therapy students to undergo high stress levels due to academic demands, clinical responsibilities and performance pressure which negatively affects their concentration, learning, physical health, and overall academic performance. Recently Buteyko Breathing Technique (BBT) has attracted the attention of health professionals for its beneficial effects on stress. Jacobson's Progressive Muscle Relaxation (JPMR) is widely recognized physical therapy intervention known for its ability to relieve stress. So present study intends to investigate combined effectiveness of both interventions in reducing stress levels among physical therapy students. **Aim:** To investigate the combined effectiveness of the Buteyko Breathing Technique plus Jacobson's Progressive Muscle Relaxation Exercise on the stress levels of physical therapy students. **Methodology:** 30 physical therapy students (both gender, aged 18–25 years) were recruited by using convenient sampling method who were then randomly and equally allocated to two groups using chit-pick method, Group A (n=15) and Group B (n=15), respectively. Group A received BBT plus JPMR intervention while Group B received only JPMR. Both the groups received interventions for total duration of 4 weeks at a frequency of 1 session/day, 5 days /week. Outcome measures included the Perceived Stress Scale-10 (PSS-10), General Health Questionnaire-12 (GHQ-12), systolic and diastolic blood pressures, recorded at baseline and after 4th week. **Results:** Within group analysis revealed that extremely significant differences existed in scores of PSS-10 ($p=0.0001$) and GHQ-12 ($p=0.0001$) for both groups. Significant difference in DBP was observed only in Group A. Further between-group results revealed that non-significant differences existed in the change scores of all the outcome measures (PSS-10, GHQ-12, SBP and DBP). **Conclusion:** Combined effect of BBT and JPMR as well as intervention of JPMR alone was effective in improving perceived stress and mental well-being in physical therapy students. However, combining BBT with JPMR did not show additional benefit over administration of JPMR alone.

Keywords: Stress, Buteyko Breathing Technique, Jacobson's Relaxation Exercise, Physical therapy students, Perceived Stress Scale.

PG-125: Efficacy of Sensorimotor Training (SMT) on Forehand Stroke in Recreational Table Tennis Player: A study protocol

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ABSTRACT

Table Tennis is a popular sport, with over three hundred million people actively participating. The popularity of table tennis has been growing considerably since its origination in the late 19th century in England. It requires good execution of motor behaviour and high perceptual ability and depends on finely tuned sensory-motor control between the eyes, hands, and body. Sensorimotor training (SMT) has emerged as an essential component for enhancing athletic performance. Sensorimotor training involves exercises designed to improve the coordination between sensory input and motor output, which is essential for executing precise and timely movements. The study aims to evaluate the effect of Sensorimotor Training (SMT) on forehand accuracy and hand grip in Table Tennis player. In this study, both male & female aged 19-25 years, with minimum 1 year of experience will be included. Players will be excluded with recent fractures, any customised protocol, musculoskeletal injuries, and surgery before 6 months. The sample size will be calculated by using G-power method. Players who met the selection criteria will select for the study. The Sensorimotor Training (SMT) intervention will include wall push up exercises, medicine ball against wall, ball dribbling, tossing a soft weight ball, wall slide with ball. The outcome variables are accuracy measured by forehand smash stroke performance test and hand grip measured by dynamometer. We will assess the normality of data; a parametric or non-parametric test will be applied. This study concludes that the accuracy in recreational table tennis player is enhance by Sensorimotor Training.

Keywords: Hand strength, Accuracy, Tennis, Athletic performance.

PG-126: Effect of High Intensity Interval Training versus Combined Training on Physical Function and Sleep Quality among Postmenopausal Women: A Study Protocol of Two-Arm, Parallel-Group, Active-Controlled Randomized Trial

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ABSTRACT

Introduction: Evidence suggests that postmenopausal women (PMW) experience a decline in sleep quality and physical function. Combined training (CT) has been proven effective in improving physical function and sleep quality in postmenopausal women. High-intensity interval training (HIIT) has also been suggested to be effective in improving sleep quality. Therefore, this study aims to compare whether HIIT or CT is more effective in improving both sleep quality and physical function in PMW. **Aim:** To compare the effects of HIIT and CT on physical function and sleep quality in postmenopausal women. **Methods:** A total of 44 postmenopausal women will be recruited for this Two-Arm, Parallel-Group, Active-Controlled Randomized Trial through purposive sampling. Participants will be classified as PMW (history of at least 1 year of amenorrhea), aged 40–60 years, have a Pittsburgh Sleep Quality Index (PSQI) score >5, and a six-minute walk test (6MWT) distance below the lower limit of normal. Participants will be randomized using bloc randomization into two groups: HIIT (n = 22) and CT (n = 22). Allocation will be 1:1 and concealment will be ensured using the SNOSE method. Sleep quality and physical function will be assessed using the PSQI and the Short Physical Performance Battery, respectively. Outcome measures will be assessed at baseline, after 4 weeks, and at the 8th week. Both groups will undergo training three times per week for 8 weeks. HIIT group will perform exercise 10 sets of vigorous exercises. The CT group will perform strength training and aerobic training. **Results:** Parametric or non-parametric statistical tests will be selected based on the assessment of data normality using Shapiro Wilk Test. A p-value of <0.05 will be considered statistically significant. **Conclusion:** This study will help in determining whether HIIT or CT is more effective in improving sleep quality and physical function in postmenopausal women.

Keywords: Exercise, Menopause, Physical performance.

PG – 127: Determinants of Five repetition sit to stand test among community dwelling elderly population

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ABSTRACT

Introduction: Functional capacity refers to the independent performance of daily activities and can be assessed using tests such as usual gait speed, and the five-repetition sit-to-stand test. Five Repetition Sit-to-Stand(5RSTS) test is a quick, simple and reliable way to assess lower limb strength, balance, and mobility in older adults. As physical and cardiopulmonary performance often declines with age, identifying factors that influence 5RSTS test time which is essential for improving functional assessment, independence, and overall quality of life in older adults. **Aim:** To study the values of 5RSTS and to find the determinants of 5RSTS test among the community dwelling elderly population. **Materials and Methods:** A cross-sectional study was conducted among 111 elderly individuals aged ≥60 years who were living independently in the community through purposive sampling. Anthropometric measurements including height, weight, BMI, leg length, waist and hip circumference were recorded using standardized procedures. Participants performed the 5RSTS test using a standard 43 cm chair, stopwatch and total time to complete five repetitions was noted. **Result:** Descriptive statistics were expressed as mean ± standard deviation. Pearson correlation coefficient was applied to examine the relationship between anthropometric variables and the 5RSTS test. Stepwise multiple linear regression analysis was performed to find the determinants of 5RSTS test. Mean age of the participants was 68.99 ± 6.69 years. Average 5RSTS time among older adults was 20.92 ± 3.28 seconds. Gender significantly affected the values of 5RSTS. Age, BMI, leg length, waist and hip circumferences showed a significant association with 5RSTS performance (p < 0.05). **Conclusion:** The proposed reference values and the newly developed prediction equation could be used in the to interpret the results of functional capacity among community dwelling elderly population.

Keywords: Sit-to-stand test, older adults, quality of life

PG-128: Prediction Equation for Six-Minute Step Test in Younger, Middle, and Older Adults

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ABSTRACT

Introduction: Six-minute step test (6MST) is shown to be effective in assessing aerobic capacity of individuals. As an individual age, their strength and balance usually get affected. There is scarcity of reference values and prediction equation for 6MST in Indian adults. **Aim:** To study normative values and a reference equation for the number of steps climbed during the 6MST in healthy adults, and to assess the reliability of the developed equation. **Materials and Method:** A cross-sectional study was conducted on healthy adults aged 18-80 years using purposive sampling method. Participants were categorized into three age groups: younger (18-40years), middle-aged (41-60years), and older adults (61-80 years). Individuals with orthopaedic, metabolic, neuromuscular and cardiopulmonary diseases were excluded. Anthropometric data including height, weight and body mass index (BMI) were recorded. Each participant performed the 6MST on a standardized 20-cm step for the first time with no learning effect. Participants were instructed to step up and down continuously, completing as many steps as possible. The total number of steps completed in six minutes was documented. **Results:** Descriptive statistics were expressed as mean $\pm$ standard deviation. The 6MST was 100 ± 25 steps in the younger group ($n=107$), 133 ± 26 steps in the middle-aged group ($n=76$), and 152 ± 28 steps in the older group ($n=67$). Stepwise linear regression analysis was used to derive the prediction equation. The 6MST was significantly influenced by age ($P < 0.005$) and it was the main predictor in each age group. **Conclusion:** There exists variability in 6MST performance, with age identified as the main influencing factors. The reference data and prediction equations, developed from this study may assist in interpreting test results and in planning appropriate exercise prescriptions for individuals with clinical conditions.

Keywords: Aerobic capacity, healthy adults, physical decline.

PG-129: Study protocol of a randomized controlled trial for the effectiveness of spinal manipulation on balance, proprioception, and pulmonary function in elderly individuals with thoracic hyper kyphosis

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ABSTRACT

Introduction: Years of bad posture, extended sitting, nutritional deficiencies and lack of weight bearing activities may cause structural changes in the spine which result in hyperkyphosis (Balzini, L., Vannucchi, L. et.al.2003). People with kyphosis had trouble maintaining postural stability and had worse joint position perception (Menant, J. C. et.al,2012). In older people, hyperkyphosis was linked to decreased FEV1 and FVC (Takase, K. et.al,2020). The purpose of this randomized control trial is to determine the effectiveness of spinal manipulation on balance, proprioception, and pulmonary function in elderly with thoracic hyper kyphosis.

Aims & Objective: To find out effect of spinal manipulation combined with postural exercise on balance, proprioception and pulmonary function.

Materials and Methods: An experimental randomized control trial of 3 weeks will be done in elderly with hyperkyphosis. The subjects will be randomly divided into 2 groups- Group 1 (manipulation group – thoracic spinal manipulation + postural correction exercises), Group 2 (control group – postural correction exercises). Follow up will be done after one month of post intervention. Thoracic kyphosis will be assessed using flexicurve; Balance and proprioception using Sensamove Balance Platform Software; and pulmonary functions using computerized spirometer (spiro xel).

Results: Data normality will be evaluated using Shapiro-wilk test. Based on data normality, statistical analysis will be done. One-way mixed Analysis of Variance (ANOVA) with factors ‘intervention’ (between group) and ‘time’ (within group) will be used for the analysis of all parameters. Statistical significance will be set at $p < 0.05$ using the statistical package SPSS V.21.00. **Conclusion:** Balance, proprioception and pulmonary functions showed greater improvement in the spinal manipulation group. The findings could help clinicians make informed decisions on tailoring interventions for elderly patients with postural and functional impairments related to thoracic hyper kyphosis.

Keywords: Spinal Manipulation, Balance, Proprioception, Pulmonary functions, hyper kyphosis.

PG-130: A Study Protocol of A Randomized Controlled Trial for the Effectiveness of Suboccipital Inhibition Technique and Met Stretch in Combination with Cervical Traction on Balance in Cervical Spondylosis: A Randomized Controlled Trial

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ABSTRACT

Introduction: Cervical spondylosis is a common degenerative disorder of the cervical spine and a leading cause of neck pain and functional disability among adults. The condition arises from age-related degenerative changes in the intervertebral discs and adjacent structures, resulting in the narrowing of the neural foramina and spinal canal. Clinically, cervical spondylosis may present with neck pain, stiffness, reduced range of motion, and associated symptoms such as dizziness and radiation of pain to the head, even in the absence of true vertigo or cervical radiculopathy. In older people, cervical spondylosis is associated with impairment in balance.

Aims and Objective: The purpose of this randomised controlled trial is to determine the effectiveness of the suboccipital muscle inhibition technique and MET Stretch, combined with Cervical traction, on balance in Patients with Cervical spondylosis.

Materials and Methods: An experimental randomised controlled trial of a 3-week intervention (3days/ week), aged 50- 65 years old with cervical spondylosis. Participants will be allocated randomly to Group A (Suboccipital Inhibition Technique and Traction), Group B (Suboccipital MET Stretch and Traction) and Group C (Traction only). Participants will be evaluated pre-intervention and post-intervention. Balance will be assessed using the Tandem Stance test for static balance and the Functional Reach Test for dynamic balance. Results: Two-way mixed Analysis of Variance (ANOVA) with factors 'intervention' (between group) and 'time' (within group) will be used for the analysis of all parameters. Statistical significance will be set at $p < 0.05$ using the statistical package SPSS V.21.00.

Conclusion: Static balance and dynamic balance showed greater improvement in the Group B. The findings could help clinicians make informed decisions on tailoring interventions for elderly patients with balance impairments related to Cervical Spondylosis.

Keywords: Suboccipital Inhibition Technique, Suboccipital MET stretch, Balance, Traction, Cervical Spondylosis

PG-131: A Systematic Review on the Efficacy of Physiotherapy Intervention on Risk of Fall in Geriatric Population

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ABSTRACT

Introduction: An incident that causes a person to unintentionally come to rest on the ground, floor, or another lower level is referred to as a fall. It is the second most common cause of unintentional mortality or injury in the elderly. Falls can have several negative physical and psychological effects and are a major cause of hospitalization and injury among older persons.

Objective: The objective of this systematic review was to analyses the efficacy of physiotherapy intervention on risk of fall in geriatric population. **Method:** A comprehensive search was conducted in the databases the Cochrane central register of controlled trial (CENTRAL, Cochrane library) and PubMed for terms related to Proprioception training, Balance training, Risk of fall, and Geriatric population, from commencement to Dec 2025. Quality of the included studies were evaluated using the PEDro criteria.

Results: A total of 144 articles were retrieved from the systematic database search strategy. 34 records were identified as potentially eligible. After full text analysis, of the remaining full text articles did not meet the inclusion criteria and were excluded. A total of eleven articles reporting findings from unique investigations, including all were randomised controlled trials in this review. The methodological quality of the included studies was generally moderate to good.

Conclusion: All included RCTs reported a significant improvement in fall risk, including exercise programs and balance training, are effectively in reducing the risk of falls in geriatric population.

Keywords: Proprioception training, Balance training, Risk of fall, Geriatric Population.

PG-132. Knowledge, Use and Perceptions of Artificial Intelligence Chatbots among Physiotherapy Students

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ABSTRACT

Introduction: AI-based chatbots, such as digital assistants that provide information and help with tasks, are increasingly being used by physiotherapy students in educational settings. However, there is limited evidence on students' awareness of these tools, how they use them, and how they perceive their benefits and limitations. **Aim:** To explore the knowledge, usage patterns, limitations and perceptions of AI chatbot technology among physiotherapy students. **Method:** A cross-sectional study was conducted using an online survey adapted from a previous study was administered through a Google Forms. Data were collected between 01 December 2025 and 21 December 2025. A total of 301 physiotherapy undergraduate and postgraduate students with good internet connection participated in the study. The survey included items assessing demographic characteristics, knowledge and usage of AI chatbots, perceived benefits, and perceived limitations. **Result:** In this study, 301 students completed the survey. Females constituted 62.5% (n = 188) of the participants, with a mean age of 21 years (SD = 1.20). 96% of students (n = 289) had heard about AI chatbots, and 95.0% (n = 286) reported using them for academic purposes. Learning support was the most commonly reported use, selected by 64.5% (n = 194) of students. More than half of the participants (56.8%, n = 171) strongly agreed that AI chatbots have limitations in performing complex tasks. Additionally, 55.5% (n = 167) agreed that AI chatbots can produce inaccurate results and have a noticeable impact on academic performance. **Conclusion:** Physiotherapy students are generally aware of AI-based chatbots and often use them to support their learning. While these tools are helpful, students also recognize their limitations and ethical concerns, highlighting the need for responsible use in academics.

Keywords: Artificial intelligence, Chatbots, Digital assistant

PG-133: Breathing in the Dark: The Unseen Consequences of Prolonged Sitting on Diaphragm Muscle Action Potential

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ABSTRACT

Introduction: Prolonged sitting has become an unavoidable part of modern work life, particularly among office-based professionals. While the musculoskeletal consequences of sedentary behaviour are well documented, its impact on respiratory muscle function—especially the diaphragm—remains largely underexplored. The diaphragm plays a critical role in ventilation, and postural changes associated with prolonged sitting may adversely affect its neuromuscular function. **Aims & Objective:** To investigate the effect of prolonged sitting duration on diaphragm compound muscle action potential (CMAP) in healthy office workers using a phrenic nerve conduction study. **Materials and Methods:** A cross-sectional study was conducted on 180 healthy office workers (122 males and 68 females), aged 25–40 years. Participants were grouped based on daily sitting duration: Group 1 (2–4 hours), Group 2 (4–6 hours), and Group 3 (≥ 6 hours). Bilateral phrenic nerve conduction studies were performed to assess diaphragm CMAP amplitude and latency using standard electrophysiological protocols. Statistical analysis was carried out using one-way ANOVA with Bonferroni post hoc testing. **Results:** Significant differences were observed in diaphragm CMAP parameters across the three groups. Participants with longer sitting durations demonstrated a significant reduction in CMAP amplitude and a significant increase in latency ($p < 0.001$). The most pronounced alterations were observed in individuals sitting for more than six hours daily, indicating reduced diaphragm muscle activation and delayed neural conduction. **Conclusion:** Prolonged sitting is associated with measurable impairments in diaphragm neuromuscular function, even in otherwise healthy individuals. These findings highlight the importance of reducing sedentary time and incorporating regular movement and postural correction strategies to preserve respiratory muscle health in office workers.

Keywords: Prolonged sitting, diaphragm, phrenic nerve conduction, CMAP, sedentary behaviour, respiratory function

PG-134: Impact of Diabetes on Muscle Strength: A Narrative Review

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ABSTRACT

Diabetes mellitus (DM) is a prevalent metabolic disorder associated with multiple complications, including impairments in skeletal muscle function. Skeletal muscle plays a major role in glucose uptake, and diabetes-related factors such as insulin resistance, hyperglycaemia, intramuscular fat infiltration, and oxidative stress may contribute to reduced muscle strength. This narrative review aims to summarize the existing literature showing impact of DM on muscle strength. A comprehensive literature search was conducted using electronic databases including PubMed, Scopus, Web of Science, and Google Scholar focusing on studies published between 2005 to 2025. Studies investigating muscle strength, muscle mass, muscle quality, physical function, and exercise interventions in individuals with diabetes were included. Most studies demonstrated a significant reduction in muscle strength among individuals with diabetes compared to non-diabetic controls. Lower limb muscles, particularly the quadriceps and plantar flexors, were most commonly affected. Reduced handgrip strength was also reported. Contributing factors included reduced muscle mass, increased intramuscular fat infiltration, peripheral neuropathy, poor glycaemic control, longer disease duration, and physical inactivity. Individuals with DM exhibit significant reductions in muscle strength, especially in the lower extremities. These impairments are influenced by metabolic control, neuropathic complications, and lifestyle factors. Early identification and targeted physiotherapy interventions, particularly resistance training, are essential to improve muscle strength and functional outcomes in this population.

Keywords: Diabetes Mellitus, Muscle Strength, Glycaemic Control, Resistance Training

PG-135: Robotic Assisted Neurophysiotherapy versus Conventional Neurophysiotherapy in Stroke Patients: A Literature Review

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ABSTRACT

Stroke is a leading cause of long-term disability, commonly resulting in impaired gait, balance, and coordination. Restoration of these functions is a primary goal of neurophysiotherapy in stroke rehabilitation. Conventional physiotherapy has been widely used for this purpose; however, recent technological advancements have introduced robotic-assisted neurophysiotherapy as an alternative or adjunctive intervention. The primary aim of the study was to determine the effect of robotic assisted neurophysiotherapy versus conventional neurophysiotherapy in stroke patients. The secondary aim was to assess improvements in gait parameters, balance and coordination. Electronic searches were performed using databases Medline, Google Scholar, Research Gate, Pub Med and Cochrane Library. Patients diagnosed with ischemic or haemorrhagic stroke, aged between 40 and 70 years, in the subacute or chronic stage of stroke, with the ability to stand with or without assistance and follow simple verbal commands were included. Patients with severe cognitive impairment, severe musculoskeletal deformities, other neurological disorders were excluded. Preliminary evidence indicates that robotic-assisted therapy provides greater improvements in gait speed, walking endurance, and lower-limb motor recovery, particularly in early rehabilitation stages. Conventional neurophysiotherapy, however, continues to demonstrate superior benefits in functional task performance, balance training, and skill-based motor control. Overall, both interventions are effective, but robotic-assisted therapy may offer additional advantages in repetitive motor relearning and intensive gait rehabilitation. This review highlights the need for more high-quality, long-term trials to determine which intervention is most effective for stroke populations. The findings may support clinicians in making informed decisions regarding the integration of robotic systems into routine rehabilitation.

Key words: Robotic-assisted neurophysiotherapy, conventional neurophysiotherapy.

PG-136: Effects of Neuromodulation via Transcranial Direct Stimulation on Neurological Conditions: A Narrative View

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ABSTRACT

Transcranial Direct Current Stimulation (tDCS) is a non-invasive neuromodulation. The aim of the study is to review and synthesize the available evidence for the effect of Neurological and Neuropsychiatric conditions. Databases like PubMed, Cochrane, Google Scholar, and ResearchGate were searched to find articles that met the inclusion criteria. A total of 9 Randomized Controlled trials, 3 Case Reports, 6 observational studies, and 2 case studies were included. The reviewed studies evaluated the effects of tDCS in individuals with stroke, Parkinson's disease, Multiple sclerosis, Dementia, Alzheimer's disease, Amyotrophic lateral sclerosis, Cerebral palsy, Depression, Diabetic neuropathy, Acquired brain injury, Insomnia, Spinal cord injury, Epilepsy, Attention-deficit/Hyperactivity disorder, Myasthenia gravis, Autism spectrum disorder, Inflammatory myopathies, Schizophrenia, Down Syndrome and Tinnitus were identified. Outcomes included motor function, cognitive performance, pain, sleep quality, neurobehavior outcomes, and quality of life. The reporting of the study conforms to SANRA (the Scale for Assessment of Narrative Review Articles) guidelines. Overall, the included studies demonstrated that tDCS produced favorable effects across multiple domains, particularly motor recovery in stroke and cerebral palsy, cognitive impairment in Dementia and Alzheimer's disease, symptom modulation in Parkinson's disease and Multiple sclerosis, pain reduction in diabetic neuropathy and improved sleep and neuropsychiatric symptoms. Considerable heterogeneity was observed in stimulation parameters, interventions, sample size, and outcome measures. In conclusion, tDCS appears to be safe and potentially effective for adjunctive interventions across a broad range of neurological conditions.

Keywords: Transcranial direct current stimulation, neuromodulation; neurological conditions; rehabilitation.

PG-137: Evidence Based Physiotherapy Protocol for Temporomandibular Joint Disorders

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ABSTRACT

Temporomandibular joint (TMJ) is considered the most complex structure of the human body. TMJ disorders (TMJD) are characterized by functional or pathological changes affecting the TMJ which may impair masticatory muscles and adjacent segments. The signs and symptoms of TMJD vary from sensitivity to palpation, pain referral to the neck and head, limitation of the movements of the jaw or its deviations and TMJ noises. It is estimated that 40 to 75% of population has at least one TMJD and at least one symptom, such as facial pain or TMJ. The interventions such as electrotherapeutic modalities, manual therapy, home based exercises and cervical mobilization techniques are used in the field of Physiotherapy but there is lack of standardized physiotherapy intervention protocol for its management. Thus, a protocol developed following a comprehensive review of published clinical trials from 2014 to 2025 across databases such as PubMed, Google Scholar and Research Gate. Outcome measures include VAS, Pressure Algometer, Research Diagnostic Criteria (RDC) for TMJD. Mandibular functions were evaluated with the Mandible Functional Impairment Questionnaire (MFIQ) and WHOQOL-BREF. The rehabilitation program will be delivered over 12 weeks. Weeks 0–3 will focus on pain relief and mobility restoration. Utilizing cryotherapy/moist heat, active ROM exercises, LASER, TENS. Weeks 4–8 emphasize restoration of functional ROM with Dry needling, Manual therapy, cervical mobilization, MFR and strengthening. Week 9–12 will focus on maintenance of ROM and Strengthening of masticatory muscles. Beyond 12 weeks involves maintenance through a home-based program daily ROM exercise, strengthening exercises. This structured protocol promotes progressive pain relief, mobility restoration, and functional recovery in TMJ disorders.

Keywords: Temporomandibular Joint, Disorder, Physiotherapy, Manual Therapy, Protocol

PG - 138: Effect of Transcutaneous Auricular Vagus Nerve Stimulation in Subjects with Insomnia and Anxiety: A Literature Review

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ABSTRACT

Insomnia is a major health care problem, defined as a sleep continuity disorder with various daytime complaints, including excessive sleepiness, fatigue, mood and cognitive disturbances, as well as concerns and dissatisfaction with sleep, which affects approximately one-third of the global adult population. Anxiety disorders are characterized by symptoms that include worry, social and performance fears, unexpected and/or triggered panic attacks, anticipatory anxiety, and avoidance behaviours. Vagus nerve stimulation (VNS), particularly transcutaneous auricular vagus nerve stimulation (taVNS), has emerged as a non-invasive neuromodulatory intervention with potential benefits for affective and sleep disorders. The objective of the study was to determine the effect of vagus nerve stimulation in patients of insomnia and anxiety. Electronic searches were performed using databases Google Scholar, Research Gate, Pub Med. Vagus nerve stimulation demonstrated significant improvements in subjective sleep quality, insomnia severity, and anxiety scores compared with baseline and, compared with sham stimulation. taVNS was associated with reductions in Pittsburgh Sleep Quality Index and anxiety scale scores, along with improvements in fatigue and quality of life. Neurophysiological findings indicated enhanced parasympathetic activity, reflected by increased heart rate variability, and showed modulation of brain regions involved in emotional regulation and sleep-wake control. The intervention was generally safe and well tolerated, with minimal adverse effects. Vagus nerve stimulation appears to be a safe and effective therapeutic option for reducing anxiety and improving sleep in patients with insomnia.

Keywords: Vagus Nerve Stimulation, taVNS, Anxiety, Insomnia.

PG-139: Emerging Applications of Artificial Intelligence in Cerebral Palsy Assessment and Rehabilitation

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ABSTRACT

Cerebral Palsy (CP) is a common neurodevelopmental disorder characterized by impairments in movement, posture and functional abilities, requiring long term assessment and rehabilitation. Conventional assessment methods and therapy delivery are often time-consuming, subjective and resource intensive. The aim of study is to explore emerging applications of artificial intelligence in the assessment and rehabilitation of children with cerebral palsy and to examine their relevance to physiotherapy practice and cerebral palsy units. Articles were searched via different databases focusing on AI-based motor assessment, rehabilitation technologies and digital health interventions for cerebral palsy. The selected studies examined machine learning and computer vision technologies, AI-based rehabilitation, recommendation systems, and mobile health tools, developed to support clinical decision-making, caregiver engagement, and rehabilitation outcomes. These reviewed studies indicate that AI-based assessment tools can enhance the efficiency and reliability of standardized motor evaluations, including gross motor function assessment, by reducing assessment time while maintaining clinical validity. Tools which are used involving artificial intelligence includes machine learning approaches, deep learning approaches, computer vision for movement and posture analysis, AI-based robotic system for rehabilitation, mobile health platforms for home guide exercises. Emerging applications of artificial intelligence demonstrate significant potential to enhance cerebral palsy assessment and rehabilitation by supporting physiotherapists, empowering caregivers, and improving the efficiency of cerebral palsy units. While current evidence suggests beneficial effects on assessment accuracy, rehabilitation engagement, and functional outcomes, further large-scale validation, ethical governance, and clinician-led implementation are required to ensure safe and effective integration of AI into routine cerebral palsy care.

Keywords: Artificial intelligence, Cerebral Palsy, Rehabilitation, Motor Assessment, Physiotherapy.

PG-140: Effectiveness of Music Therapy on Stroke Survivors: A Review

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ABSTRACT

Stroke is a leading cause of long-term adult disability worldwide. It is one of the major diseases that severely damage human health because of its high morbidity, disability rate, and mortality. Music therapy is a systematic treatment that utilizes music elements as an intervention to improve patients' neurological function and mood status. Music therapy is of two types, active and passive. Active music therapy refers to when patients directly participate in singing, playing instruments. Passive music therapy, allows patients to listen to familiar music. The aim of this study was to evaluate the effectiveness of music therapy in stroke patients. The electronic searches are performed using database Medline, Pub Med, Google Scholars, Research Gate. Stroke survivors participated in a structured music therapy program incorporating vibroacoustic stimulation and auditory musical inputs. Vibrations were delivered low-frequency vibroacoustic music (30–120 Hz) through seating or limb-based devices. Sessions were given for 30–45 minutes per session, 3–5 sessions per week, over 4–6 weeks. Active music therapy included singing, rhythmic tapping, while passive therapy involved listening to rhythmically structured music with or without vibration. Cognitive function was assessed using standardized cognitive assessment tools pre- and post-intervention. Music therapy demonstrated improvements in motor coordination, attention, memory, and executive function. Active music therapy showed greater enhancement in cognition and task engagement compared to passive listening. Vibroacoustic stimulation contributed to improved sensory awareness, relaxation, and motor response. Increased number of sessions was associated with better functional and cognitive outcomes.

Keywords: Music therapy, stroke survivors, neuroplasticity, motor recovery, cognitive function,

PG-141: Reliability and Validity of Software Applications for Measuring Gait Kinetics and Kinematics

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ABSTRACT

Human locomotion, or gait, may be described as a translatory progression of the body as a whole, produced by coordinated, rotatory movements of body segments. This is influenced by variety of factors including an individual's age, gender, health, and physical ability. Gait analysis is the study of human movement, specifically the study of walking or running patterns. It involves observing and measuring various aspects of a person's gait, including stride length, cadence, foot position and movement of different joints in the body. In recent years, human gait has become of particular interest in health conditions and research because of its link to individuals' quality of life and personal autonomy. This review aims to evaluate the available evidence on the validity and reliability of commonly used gait analysis softwares. In addition, it highlights the merits and demerits of each type of software to help clinicians choose the most appropriate tool for their setting. A structured search of PubMed, Scopus, IEEE Xplore, and Google Scholar was conducted to identify studies assessing measurement properties of commonly used software such as Vicon Nexus, OpenSim, GAITRite, Microsoft Kinect, CvMob, Dartfish, and Kinovea. Findings show that 3D motion-capture systems provide excellent validity and reliability with reasonable accuracy. Wearable IMU-based systems demonstrate good reliability but may have slight accuracy limitations in joint angle measurement. Walkway systems such as GAITRite are highly reliable for spatiotemporal parameters, whereas low-cost 2D video software shows variable performance depending on camera setup. Overall, this review provides a clear and practical understanding of how different gait analysis software performs, along with their advantages and limitations, supporting better decision-making in physiotherapy practice and research.

Keywords: Gait, Validity, Reliability, Kinetic Gait Analysis, Motion Analysis

PG-142: Impact of Smartphone Usage on Neck Muscle Endurance and Hand Grip Strength in Young Adults: Pilot study

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ABSTRACT

Introduction: There has been a noticeable rise in global smartphone use, resulting in prolonged neck flexion. Excessive use of smartphones puts stresses not only on the neck but also on the hand and wrist owing to repetitive motions, leading to pain in the thumb, wrist, and fingers that negatively affects activities of daily living. However, there is a lack of substantial evidence regarding correlation of neck muscle endurance and hand grip strength. Therefore, a pilot study is suggested to evaluate the association between them. **Aim & Objectives:** The aim of this study is to identify the impact of smartphone usage on neck muscle endurance and hand grip strength among physiotherapy graduates. The objective of the study include measuring neck muscle endurance using a neck inflator dynamometer, evaluating hand grip strength using a hydraulic hand-held dynamometer, and examining the association between smartphone usage, neck muscle endurance, and hand grip strength. **Materials and Methods:** 29 normal, healthy adult students with ages between 18 to 25 years meeting the inclusion criteria, will be recruited via convenience sampling. The assessment of smartphone usage will be done by a structured questionnaire. Neck muscle endurance will be evaluated using a neck inflator dynamometer whereas forward head posture (CV angle) will be assessed using Kinovea software. Hand grip will be measured with a Hydraulic handheld dynamometer. Descriptive statistics will be utilized to interpret the data. **Results:** It is anticipated that greater smartphone usage will correlate with lower neck muscle endurance and reduced hand grip strength. Additionally, the research will assess the practicality of evaluation tools and methods for a potential large-scale study. **Conclusion:** This study will provide initial insights into the relationship between smartphone usage, neck muscle endurance, and hand grip strength, and will serve as a foundation for further research.

Keywords: Smartphones; muscle strength; hand grip strength; CV angle; young adults

PG 143: Effectiveness of Dry Needling in Treatment of Cervicogenic Headache: Randomized Controlled Trial Protocol

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ABSTRACT

Cervicogenic headache is a common clinical condition characterized by unilateral head pain originating from musculoskeletal or neuromuscular dysfunction in the cervical spine particularly the upper three cervical segments. This condition of cervical spine often leading to significantly disability and reduced quality of life. The effectiveness of Dry Needling (DN) and Conventional Physiotherapy in managing this condition has been explored with varying outcomes on pain intensity, cervical range of motion and functional disability. **Objective:** The objective of the study is to evaluate the efficacy of Dry Needling with Conventional Physiotherapy for Cervicogenic Headache. **Methods:** 52 subjects aged 18-40 years, both male and female will be recruited. Subjects with neurological symptoms, inflammatory/infective pathologies, acute neck pain or injury to the neck will be excluded. This study is a single blind randomized controlled trial with concealed allocation and 1:1 allocation ratio and will be conducted at Physiotherapy OPD of Sri Guru Granth Sahib World University, Fatehgarh Sahib, Punjab, India. The Ethical Approval for the trial will be sought followed by Clinical Trial Registry. Informed consent will be obtained and the participants will be randomized into two groups. Group A (DN + Conventional Therapy) and Group B (Conventional Therapy). Outcomes will be assessed using Headache Impact Test along with Neck Disability Index and Headache Diary for headache related parameters (headache frequency, headache intensity, and headache duration). All outcomes measured will be evaluated at week 0 (baseline), after week 4 (post intervention) and after 6 week follow up.

Result and Conclusion: We hypothesize that DN with conventional therapy will give superior results as compared to dry needling alone.

Keywords: Cervical spine, Cervicogenic, Headache, Physiotherapy, Dry needling.

PG-144: Exploring the Efficacy of Vestibular Rehabilitation in Managing Vertigo: A Scoping Review

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ABSTRACT

Vertigo is a common and disabling condition that adversely affects balance, mobility, and quality of life. Vestibular dysfunctions, particularly benign paroxysmal positional vertigo, are among the leading causes. Although pharmacological management and repositioning maneuvers are commonly employed, vestibular rehabilitation exercises have gained recognition as an effective non-pharmacological intervention. These exercises are designed to facilitate central vestibular compensation, reduce dizziness, and improve postural control. This scoping review aimed to explore the efficacy of vestibular rehabilitation exercises in managing vertigo and improving functional outcomes. A literature search was conducted using PubMed and Google Scholar databases for studies published between 1990 and 2024. Fourteen studies that met the inclusion criteria were analyzed. The findings indicate that vestibular rehabilitation exercises significantly reduce vertigo symptoms, enhance balance, and improve quality of life. Studies also reported better outcomes when vestibular rehabilitation was combined with adjunct therapies such as yoga or medication, compared to vestibular rehabilitation alone. Yoga additionally contributed to improved relaxation and accessibility of treatment. Overall, vestibular rehabilitation exercises are effective in the management of vertigo, and their therapeutic benefits are enhanced when used in combination with other treatment approaches. Further large-scale, multicentric studies are recommended to strengthen the evidence and establish standardized rehabilitation protocols.

Keywords: Vertigo, Vestibular Rehabilitation, Balance, Physical Therapy Modalities.

PG-145: Robot-Assisted Hand Therapy after Stroke: A Review of Functional and Fatigue-Related Outcomes

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ABSTRACT

Stroke commonly results in persistent hand dysfunction and early fatigability, which significantly limit upper-limb use, independence in daily activities, and overall quality of life. Conventional rehabilitation often provides limited task-specific repetition, prompting growing interest in technology-assisted interventions. The objective of this literature review was to examine recent evidence on the impact of robotic hand rehabilitation on hand function and fatigue outcomes in individuals with stroke, with particular emphasis on emerging therapeutic advancements and clinical applicability. A comprehensive electronic literature search was conducted using databases including PubMed, PEDro, Scopus, Web of Science, and Google Scholar. keywords such as “stroke”, “robotic hand rehabilitation,” “hand function”, “fatigue,” “upper limb robotics”, “robot-assisted therapy,” and “post-stroke hand training” were applied, with filters set for recent publications. Relevant studies evaluating robotic or device-assisted hand rehabilitation, either as a standalone intervention or in combination with conventional therapy, were screened or analyzed. The reviewed literature indicates that robotic hand rehabilitation enables high-intensity, repetitive, and task-oriented training, leading to notable improvements in hand strength, dexterity, coordination, and functional use of the affected limb. Several studies also reported reductions in perceived fatigue, which may be attributed to adaptive assistance, graded workload progression, and enhanced patient engagement provided by robotic systems. The integration of visual, auditory, and performance-based feedback further appears to support motor relearning and sustained participation. Despite these positive outcomes, variability in robotic device design, treatment dosage, outcome measures, and fatigue assessment methods remains evident across studies. Overall, recent advancements suggest that robotic hand rehabilitation represents a promising adjunct to conventional stroke rehabilitation by enhancing functional recovery while addressing fatigue-related barriers.

Keywords: Stroke, Robotics, Rehabilitation, Upper Extremity, Muscle Fatigue

PG-146: Biomechanical and Neuromuscular Consequences of Heel Height in Women: A Narrative Review

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ABSTRACT

Women across the world commonly use high-heeled footwear, and its use has been consistently associated with altered lower limb mechanics and increased musculoskeletal demands. The aim of this narrative review was to synthesize current evidence on the biomechanical and neuromuscular consequences of heel height in women, with particular emphasis on balance, gait, functional tasks, and muscle activation patterns. A narrative literature search was conducted to identify studies investigating the effects of heel elevation on kinetics, kinematics, and neuromuscular control in females. The reviewed literature indicates that increasing heel height shifts joint loading proximally toward the knee, restricting ankle dorsiflexion and redistributing plantar pressure anteriorly. Additional effects include increased postural stability demands and altered movement strategies during static and dynamic tasks. To maintain postural control, neuromuscular adaptations such as increased muscle activation and enhanced co-contraction around the ankle and knee joints appear to act as compensatory mechanisms. However, these adaptations may reduce movement efficiency, increase fatigue, and elevate the risk of musculoskeletal injury. Long-term effects include muscle-tendon structural adaptations, impaired venous return, and increased ligamentous strain. In conclusion, these findings highlight the importance of incorporating footwear-related biomechanical considerations into clinical assessment, injury prevention strategies, and patient education.

Keywords : High-heeled shoes; Biomechanics; Neuromuscular control; Postural balance; Gait

PG-147: Understanding the Sensory Contributions to Postural Control in Children: A Narrative Review

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ABSTRACT

Postural control in children is a complex motor skill that depends on the effective integration of visual, vestibular, and somatosensory inputs. To maintain balance and stability during static and functional activities, the maturation and appropriate use of these sensory systems are essential. Evidence from recent pediatric studies indicates that sensory contributions to postural control develop progressively with age and may be altered in children with neurodevelopmental conditions. Research involving typically developing children demonstrates that postural control improves with sensory system maturation, along with age-related changes in sensory weighting strategies. In contrast, children with Autism Spectrum Disorder and Cerebral Palsy commonly show altered sensory processing patterns, leading to increased dependence on somatosensory input and reduced adaptability when sensory information is modified. Postural control is largely governed by sensory reweighting and the integration of inputs from multiple sensory systems. Several experimental and observational studies reveal that children with sensory processing difficulties exhibit significant instability under altered sensory conditions despite near-normal performance on functional balance scales, suggesting limitations of conventional clinical assessments. Intervention-based evidence further supports that sensory-motor and psychomotor rehabilitation programs can improve postural control by enhancing sensory integration and adaptive balance responses. Overall, the reviewed literature highlights that sensory processing plays a critical role in postural stability in children.

Keywords : Sensory processing; Postural control; Sensory integration; Pediatric physiotherapy; Motor development.

PG-148: Footwear Modifications as Preventive Strategies for Lower-Limb Injuries in Court and Turf Sports: A Scoping Review

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ABSTRACT

This study Maps footwear modifications studied for preventing lower-limb injuries in court and turf sports and identify evidence gaps. Lower-limb injuries are common in multidirectional sports requiring cutting and rapid direction changes. Shoe features are modified to alter traction and loading, but evidence is scattered across biomechanics, field studies and a few trials and lacks cross-sport synthesis. Empirical human studies performing or simulating court- or turf-sport tasks that evaluate footwear modifications aimed at injury risk. Designs include experimental, observational and biomechanical studies reporting injury outcomes or proxies. Theses, conference papers and technical reports with retrievable full text will be considered; pure running studies without court/turf tasks will be excluded. Following JBI scoping methods and PRISMA-ScR reporting, this search major databases and targeted grey literature. Reviewers will screen and chart data on design, sport, participants, footwear features, comparators, outcomes (injury incidence, traction/rotation, plantar pressure, kinematics, comfort) and implementation. Results will be summarised in descriptive tables and thematic maps. The study will present counts by sport, population and design; tables linking footwear features to outcomes; and narrative themes on patterns and methods. Anticipated gaps include few long-term field trials, limited female and youth data, inconsistent metrics, and sparse implementation evidence. This scoping review will organise dispersed evidence on sport footwear modifications to inform practitioners, prioritise research translating biomechanics into injury prevention.

Keywords: Torque, Traction, Basketball, Ankle, Running.

PG-149: Prevalence of piriformis syndrome in postpartum women

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ABSTRACT

Background: Piriformis syndrome is a neuromuscular condition caused by irritation of sciatica nerve from the piriformis muscle, which results pain in buttock and lower limb. The prevalence of piriformis syndrome ranges from 0.3% to 6% in patients with low back pain and is more common in females. Postpartum musculoskeletal and biomechanical changes may increase the risk of piriformis dysfunction, highlighting the need for early screening.

Aim: To determine the prevalence of piriformis syndrome among postpartum women aged 20–35 years.

Materials and Methods: A cross-sectional study was conducted among postpartum women attending Maharaja Agrasen Medical College, Agroha (Hisar). A total of 104 participants who met the eligibility criteria were recruited for the study. Inclusion criteria comprised postpartum women aged between 20 and 35 years, within 3 months postpartum and who were willing to participate in the study.

Piriformis syndrome was assessed using the FAIR (Flexion, Adduction, and Internal Rotation) test along with the modified Pace test. Data obtained were used to determine the prevalence of piriformis syndrome in the study population.

Result: The result was obtained from 104 participants. The overall prevalence of piriformis syndrome among postpartum women was 21.5%.

Conclusion: This study suggests that piriformis syndrome is relatively prevalent among postpartum women. Postpartum musculoskeletal and biomechanical changes may contribute in the development of piriformis tightness and dysfunction. Routine screening using specific clinical tests may help in early detection and management in this population. Further large- scale studies are recommended to confirm these findings and explore associated risk factors.

Keywords: Piriformis syndrome; Postpartum women; Prevalence; FAIR test.

PG-150: A Cross-Sectional Study Protocol on Bladder, Bowel, and Sexual Dysfunction as Determinants of Quality of Life in Chronic Spinal Cord Injury

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ABSTRACT

Background: Bladder, bowel, and sexual dysfunction are common and persistent complications of chronic spinal cord injury (SCI) and are known to adversely affect quality of life (QoL). While these dysfunctions have been studied individually, evidence on their combined impact on QoL remains limited.

Objective: To evaluate the prevalence and severity of bladder, bowel, and sexual dysfunction in individuals with chronic SCI and to examine how their combined burden predicts overall quality of life.

Methods: This cross-sectional study will recruit approximately 120 adults with chronic SCI through consecutive sampling over a 3-month period. Quality of life will be assessed using the Spinal Cord Injury–Quality of Life (SCI-QoL) scale. Bowel dysfunction will be measured using the Neurogenic Bowel Dysfunction (NBD) Score, and sexual function using the Integrated Index of Sexual Function (IISF). Bladder symptoms will be documented using a structured urinary dysfunction checklist.

Statistical Analysis: Descriptive statistics will be used to summarize participant characteristics and dysfunction burden. Associations between bladder, bowel, and sexual dysfunction and QoL will be examined using correlation analysis. Multiple linear regression will be performed to assess the combined predictive effect of dysfunction domains on QoL, with statistical significance set at $p < 0.05$.

Conclusion: This study protocol aims to provide a comprehensive understanding of how bladder, bowel, and sexual dysfunction collectively influence quality of life in individuals with chronic SCI, supporting the need for integrated and multidisciplinary rehabilitation approaches.

Keywords: Spinal Cord Injuries; Quality of Life; Neurogenic Bladder; Neurogenic Bowel; Sexual Dysfunction

UG- 001: Evaluation of Foot Plantar Pressure Distribution Parameters Among Recreational Dancers as Compared to Age-Matched Healthy Controls: A Study Protocol

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ABSTRACT

Introduction: Foot pressure distribution reflects how weight is transmitted through the lower limbs during standing and movement. Recreational dancing involved repetitive movements that may alter normal loading patterns on the feet. Continuous participation in such activities may cause biomechanical changes that affect balance and lower limb function. However, limited evidence is available comparing recreational dancers and non-dancers' plantar pressure. Therefore, this study will compare plantar pressure distribution parameters in recreational dancers and healthy people of similar ages.

Aim: The study aims to compare differences in foot plantar pressure distribution between recreational dancers and age-matched healthy controls.

Materials and Methods: The study will recruit 100 participants, males and females, aged between 18 and 28 years. The study group will include 50 recreational dancers with a minimum of six months of dancing experience, while 50 healthy non-dancers will serve as controls. Participants with a history of any lower limb surgery, those with recent musculoskeletal injuries, any degenerative conditions, acquired or congenital deformities of the lower limb, subjects with flat foot, BMI ≥ 25 kg/m² or ≤ 18 kg/m² will be excluded. Static plantar pressure will be recorded in a standing position using the HarrisMat and PodiaScan system that measures things like pressure distribution and the contact area. Plantar pressure will be represented in the form of descriptive statistics for both groups, and the results will be compared using an independent t-test or Mann–Whitney U test as per the normality ratio.

Results: It is expected that recreational dancers will demonstrate altered static plantar pressure patterns compared to non-dancers, indicating adaptive changes in foot posture and load distribution due to regular dance activity.

Conclusion: This study will enlighten how recreational dancing influences static foot biomechanics and may help physiotherapists in developing preventive footcare strategies.

Keywords: Dance, recreational dancers, plantar pressure distribution, lower limb.

UG- 002 : Test-retest reliability of BESS on post-menopausal women: A Study Protocol

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ABSTRACT

Introduction: Menopause is a natural biological transition marked by the permanent cessation of menstruation because of decrease in ovarian follicular activity and estrogen production. Systems like musculoskeletal, cardiovascular, vestibular, and neurological systems, which increases the risk of falls in post-menopausal women due to demineralization and changes in neuromuscular control linked to estrogen loss. With advancing age, additional factors compound balance difficulties, making early assessment essential. Approximately one-third of women older than 60 years fall at least once a year. Therefore, postmenopausal women often show some amount of balance impairment, emphasizing the need for a reliable tool to assess balance issues in this population.

Aim: The aim of study is to evaluate the test-retest reliability of the Balance Error Scoring System (BESS) in post-menopausal women.

Materials and Methods: This cross-sectional study protocol will be conducted at Department of Physiotherapy, MMIPR, MMDU, Ambala, Haryana, India, from December 2025 to March 2026. Total 51 participants will be recruited as per inclusion criteria. All the participants balance will be evaluated in a firm surface, first in double limb stance, single limb stance and then tandem stance with eye open and closed. The same procedure will repeat on a foam surface by a single rater at two consecutive time points to determine test-retest reliability. Descriptive statistics will be used to represent the demographic characteristics of the participants. Reliability will be examined using both Intraclass Correlation Coefficients (ICCs) and Cronbach's alpha will be calculated to assess internal consistency.

Results: The study will include participants above 50 years of age. This study will evaluate the reliability of BESS in post-menopausal women.

Keywords: Menopause; Cardiovascular Health; Endurance

UG 003: Brain-Computer Interface-Integrated Soft Robotic Gloves for Upper limb Rehabilitation in Stroke Patients: A Systematic Review Protocol

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ABSTRACT

Stroke is one of the leading causes of motor disability all around the globe. There are many treatment approaches consisting of traditional and modern techniques which are used by both clinicians and researchers to treat stroke patients. Though traditional treatment practices are preferred mostly, new edge cutting technological advancement like Brain-Computer Interface and Soft robotic gloves has proven to enhance motor recovery among stroke patients. This review will evaluate the effectiveness of Brain-computer interface-integrated soft robotic gloves in upper limb rehabilitation in stroke patients. A thorough search will be conducted using database such as Pubmed, Scopus, Web of science and Cochrane Library. The articles that use both Brain-computer interface and soft robotic gloves or any other exoskeleton together and studies involving patients with stroke condition will be included. Then all the eligible articles will be assessed by using PEDro scale and the CONSORT checklist will be applied to evaluate the methodological quality and transparency of reporting. After which the review will be conducted by following the PRISMA guidelines and to evaluate the risk of bias, Cochrane RoB-2 tool will be used. Primary Outcomes will include Fugl-Meyer Assessment – Upper Extremity (FMA-UE/FMMA), Action Research Arm Test (ARAT), and Wolf Motor Function Test (WMFT). Secondary outcomes are as follows; Modified Ashworth Scale (MAS), Modified Barthel Index (MBI), BCI accuracy and classification metrics and Neuroplasticity measures.

This review shall conclude whether Brain-computer interface-integrated soft robotic hands are effective in upper limb rehabilitation or not. And will also compare the effectiveness of Brain-computer interface-integrated soft robotic hands with other interventions used in the articles.

Keywords: Brain Computer Interface, Soft robotic glove, Upper Limb rehabilitation, Stroke patients.

UG-004: Bengali Translation Validation and Test- Retest Reliability of “Activity Specific Balance Confidence (ABC)” scale- A Cross-Sectional Study Protocol

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ABSTRACT

Introduction: Stroke is a major cause of death and disability worldwide. The 16-item Activities Specific Balance Confidence (ABC) Scale, is a self-report tool that gauges an individual's self- efficacy in carrying out daily tasks without losing stability who have had stroke. The ABC Scale has so far been validated in Bengali. Closing this disparity could greatly improve the results of stroke rehabilitation.

Aim: The research purpose is to translate the ABC Scale into Bengali, verify the translation, and assess its test-retest reliability in stroke patients who speak Bengali.

Methods: The author's consent is necessary before the ABC Scale is painstakingly translated. Two translators (T1 and T2) from the medical and non-medical fields translated the ABC Scale from English into Bengali as part of the study methodology background, in turn. The recording observer sits down to produce a T12 version of the translated survey. After that, the T12 version is translated back into English. A panel of experts examines every step and item on the questionnaire to make sure there are no mistakes in the translated version before it has undergone field testing. The pre- final version is thoroughly tested and the content validity is assessed on patients. The validity of the scale is evaluated, and the translated survey is sent for approval by the committee on ethics. By measuring subjects twice and calculating the correlation, test-retest reliability is determined.

Results: Study anticipates successful translation of ABC Scale into Bengali. Delphi method will be used and high I-CVI and S-CVI/Ave scores are expected to indicate strong content validity in the Bengali version of the ABC scale. Test-retest reliability is assessed using Bland- Altman plots and intraclass correlation coefficients (ICCs).

Conclusion: Stroke patients who speak in Bengali, the Bengali ABC scale will facilitate evaluation. By guaranteeing linguistic sufficiency, this protocol improves clinical evaluation and rehabilitation techniques.

Keywords: Balance, Stroke, Falls, Translation, Test-Retest Reliability, Cross sectional study, Bengali, English.

UG-005: Effectiveness of Dry Cupping Therapy in Management of Neck Pain, Reduced Cervical Range of Motion, and Neck Disability Among Young Adults with Text Neck Syndrome: A Study Protocol

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ABSTRACT

Introduction: Text neck syndrome describes an overuse injury of the cervical spine resulting from prolonged forward head flexion while looking down on electronics devices. Dry cupping pulls the skin and underlying tissues in the cup without inducing bleeding and increase blood circulation and reduced muscle spasm and tightness that reduces pain. Research indicates that dry cupping effectively reduces pain, improves cervical range of motion, and enhances overall function.

Methods: Patients will be recruited based on selection criteria age group between 18_44 years, VAS score more >4, SV-SAS, craniovertebral angle <50° and neck disability score >10. Subjects will be randomly allocated into two groups through computer based random allocation techniques. Group 1 will receive dry cupping therapy for 12 minutes per session, 3 days in a week combined with conventional group treatment and group 2 will receive conventional treatment only such as hot fomentation for 10 minutes per session, (levator scapulae muscle, upper trapezius muscle, scalene muscle stretching with 15 seconds hold 3 repetitions per session), neck isometrics with 10 seconds hold 3 repetitions. After completing of 3 weeks of treatment assessment will be done by using VAS, NDI. Outcomes between groups will be compared following standard principles of RCTs.

Results: Dry cupping will show significant benefits as compared to conventional group in reducing neck pain, improving cervical range of motion and neck disability among young adults with text neck syndrome.

Discussion: The study will test whether dry cupping therapy combined with conventional therapy shows significant difference between both groups in neck pain, cervical range of motion, and neck disability. If dry cupping therapy shows significant improvement it will contribute in clinical settings for management of neck pain, reduced cervical range of motion and neck disability.

Keywords: Text Neck Syndrome, Cervical Range of Motion, Neck Disability, Cupping Therapy

UG-006: Psychometric Properties of Outcome Measures Used to Quantify Lower Limb Muscular Strength: A Critical Review

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ABSTRACT

Muscle strength refers to the ability of a muscle to generate force, and lower limb strength is essential for mobility, balance, gait, and overall functional independence. Accurate assessment of lower limb muscular strength is crucial for clinical decision-making, monitoring progress, and research. Several outcome measures exist for quantifying lower limb muscle strength, and a critical review of their psychometric properties is necessary to guide clinicians in selecting reliable and valid tools. This review systematically searched databases including PubMed, Cochrane library and for studies published between 2010 and 2025 that evaluated the psychometric properties of outcome measures used to assess lower limb muscular strength. Studies reporting test-retest reliability, construct validity, responsiveness, feasibility, and clinical utility were included. A total of 15 relevant articles met the inclusion criteria. Hand-Held Dynamometry (HHD), Isokinetic Dynamometry (IKD), and functional strength tests such as the 30-second Sit-to-Stand and 5-repetition Sit-to-Stand tests were commonly identified. Sixteen studies utilized HHD, six assessed IKD, and four employed functional tests. Findings indicate that HHD demonstrates good to excellent reliability and validity, with high intra-class correlation coefficients across studies. IKD, although considered the gold standard due to its accuracy, is less feasible for routine clinical use because of its cost and limited accessibility. Functional tests are practical, easy to administer, and clinically useful but do not directly quantify muscle force. Overall, this review concludes that hand-held dynamometry is the most frequently used, reliable, and clinically feasible tool for assessing lower limb muscular strength in both clinical and research settings.

Keywords: Lower limb, Lower limb strength, Outcome measure

UG- 007: TECAR Therapy and Low-Level Laser Therapy in Type 2 Diabetic Peripheral Neuropathy Evidence, Efficacy, and Clinical Implications: A Narrative Review

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ABSTRACT

Diabetic Peripheral Neuropathy (DPN) is one of the most common complications of diabetes, with a prevalence of 50% and 11% in patients with type 2 and type 1 diabetes mellitus. DPN leads to pain, impaired functionality, sensations, and diminished quality of life. Existing non-pharmacological management includes lifestyle modifications, nutritional and physiotherapeutic interventions. There is a need for exploration of effective non-invasive physiotherapy interventions. Capacitive-resistive energy transfer (TECAR) therapy and low-level laser therapy (LLLT) have emerged as promising electromagnetic modalities in rehabilitation. This review aims to study the existing evidence regarding the efficacy of TECAR therapy and LLLT in DPN. A comprehensive electronic search of peer-reviewed literature published from 2015 to 2025 was conducted using PubMed/MEDLINE, Scopus, and CENTRAL databases, focusing on randomized controlled trials examining TECAR therapy and/or LLLT in Type 2 diabetic populations with confirmed peripheral neuropathy. The search strategy utilised MeSH keywords such as “Diabetic Neuropathies,” “Diabetes Mellitus,” “Low-Level Light Therapy,” “Tibial Nerve,” and “Nerve Conduction Studies,” combined using Boolean operators (AND, OR). A total of 627 relevant articles were identified across the databases. After duplicates were removed, articles were assessed for eligibility criteria. Three (n=3) articles met all criteria and were included in the final data synthesis. The results showed significant changes in tibial nerve conduction velocity (NCV) and

neuropathic symptoms with a p-value < 0.05 in patients with Diabetic peripheral neuropathy. The study concluded that LLLT and TECAR help in improving neuropathic symptoms, nerve conduction studies, and also improve the quality of life in patients with DPN.

Keywords: Diabetic Neuropathies, Diabetes Mellitus Type 2, Nerve Conduction Studies, Low-Level Light Therapy, Tibial Nerve.

UG-008: The Modern and Traditional Physiotherapy Interventions used in Treatment of Hemiparesis Patients: A Scoping Review

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ABSTRACT

Hemiparesis affects about 80% of stroke survivors, causing significant impairment in motor function and independence. Physiotherapy offers a range of interventions to enhance recovery; however, evidence on the comparative scope and effectiveness of modern versus traditional interventions remains limited. This scoping review systematically identifies and synthesises literature on both modern and traditional physiotherapy interventions for hemiparesis. Following the PRISMA-ScR guidelines, a comprehensive search of PubMed, Scopus, and Cochrane databases up to 2025 yielded 2351 studies, with 22 selected after removing duplicates and applying eligibility criteria. The included studies comprised randomised controlled trials and clinical guidelines focusing on interventions such as task-oriented training, functional electrical stimulation, neurodevelopmental treatment, reflex inhibition interventions, robotic-assisted rehabilitation, and mirror therapy. Data extraction focused on intervention protocols, patient demographics, clinical outcomes, and research gaps. Findings highlight promising advances in modern neurorehabilitation methods that enhance neuroplasticity and functional recovery, alongside traditional reflex-based approaches targeting abnormal motor synergies and reflex patterns. Integrating these interventions may optimise rehabilitation outcomes in hemiparetic patients. The review emphasises the need for combined, multidisciplinary therapeutic approaches and further research to establish standardised protocols that improve functional outcomes and quality of life.

Keywords: modern interventions, traditional interventions, hemiparesis, stroke rehabilitation

UG-009: Exploring Various Manual Release Techniques for Upper Trapezius Trigger Points: A Narrative Review

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ABSTRACT

Neck pain is very common, especially in the upper trapezius region, often caused by poor posture, lifestyle factors, or occupational strain. Nearly two out of three people experience it in their lifetime, with higher prevalence in middle-aged adults and women. A key cause is myofascial trigger point tender, hyperirritable spots in taut muscle bands that reproduce pain on palpation. There are many manual techniques to treat the upper trapezius trigger point but their comparative efficacy and application scope remain unclear. This narrative review will evaluate the different manual release techniques used to treat upper trapezius trigger points. A comprehensive search was conducted in the databases PubMed, Scopus, and PEDro for studies published between 2015 and November 2025. The search strategy utilized MeSH keywords such as “Neck Pain,” “Myofascial Neck Muscles,” “Trigger Points,” and “Soft Tissue Therapies,” combined using Boolean operators (AND, OR). A total of 4114 articles were identified across the databases. After removing duplicates and screening for eligibility, 8 studies met the inclusion criteria and were selected for the present review, as these studies provided evidence on the effects of manual release techniques for managing upper trapezius trigger points. The techniques reported included myofascial release, ischemic compression, strain counter-strain, muscle energy technique, deep friction massage, positional release therapy, active release therapy, and manual pressure release. The primary outcomes assessed were pain reduction, cervical range of motion, disability levels, and pressure pain threshold. Most techniques showed positive therapeutic effects, with some yielding greater improvements than others. Overall, manual release techniques are effective non-invasive options for upper trapezius trigger points, and combining them with stretching, exercise, and ergonomic correction may further enhance outcomes.

Keywords: neck pain, trigger points, superficial neck muscles, soft tissue therapy

UG-010: Effect of Barefoot versus Shoe-based Training on Ankle Stability and Dynamic Balance in the Geriatric Population: A Study Protocol

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ABSTRACT

Ankle stability and balance are important for older adults to move safely and avoid falls. With age, people often lose muscle strength and joint awareness (proprioception), increasing the risk of ankle instability. Exercises that improve ankle mobility, strength, and balance can help reduce this risk. Barefoot exercises may enhance ankle control more than training with shoes because they provide better sensory feedback from the feet. This study aims to compare the effects of barefoot and shoe-based balance and ankle strengthening exercises on ankle stability and dynamic balance in older adults living in the community. This randomized clinical trial will include older adults divided into two groups: a barefoot training group and a shoe-based training group. Both groups will train for three weeks, three times per week, for 45 minutes per session. Each session will include balance exercises such as single-leg standing, ball throwing, and controlled kicking. It will also include isometric ankle strengthening using resistance bands for movements like dorsiflexion, plantar flexion, inversion, and eversion. The Cumberland Ankle Instability Tool (CAIT) and Berg Balance Scale (BBS) will be used to assess ankle function and balance before and after training. Data will be analyzed to compare changes within and between the two groups. The goal of this study is to examine whether barefoot training enhances proprioception, muscle control, and ankle strength more effectively than shoe-based training. If barefoot training proves to be superior, it may offer valuable guidance for clinicians and older adults seeking strategies to improve balance and reduce fall risk. Such findings could support the use of barefoot training as a simple, low-cost approach to promote safe mobility and prevent falls in ageing populations.

Keywords: ankle, elderly, preventing falls, range of motion, shoe walking, exercises

UG-011: Impact of Active Release Technique and Positional Release Technique on Calf Muscle Trigger Points: A Narrative Review

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ABSTRACT

Myofascial trigger points in the calf muscles can lead to pain and dysfunction, including a reduction in ankle dorsiflexion. Although Active Release Technique (ART) and Positional Release Therapy (PRT) are common forms of manual therapy, their efficacy is limited. This narrative review aimed to assess the impact of ART and PRT on the treatment of calf muscle trigger points. A comprehensive literature search was performed across PubMed, Scopus, Cochrane, and PEDro for articles published between 2014 and 2025. The search strategy employed MeSH terms such as “Calf Muscle,” “Manual Therapy,” “Myofascial Pain,” “Range of Motion,” and “Trigger Points,” which were combined using Boolean operators (AND, OR). A total of 4000 articles screened included randomized controlled trials, and pilot studies, retrieved from different databases that met the inclusion and exclusion criteria, which focused on ART and PRT methods on calf muscle trigger points. Analysis of the considering study on effect of ART and PRT on Trigger Points in the calf muscle, Four Studies that met the criteria for inclusion. Each study indicated a considerable decrease in pain and an increase in ankle dorsiflexion after interventions that included ART and PRT. Through dynamic tissue mobilization and active patient movement, ART achieved effectiveness, while PRT achieved comparable pain relief through passive muscle positioning and relaxation. Throughout these articles, the clinical findings were congruent, with no distinguishable difference in effectiveness. These findings and the clinical experience justify the use of either ART or PRT in the treatment of myofascial pain and the functional impairment that accompanies trigger points in the calf muscle. This review concludes that both ART and PRT manual therapy methods are effective in managing calf muscle trigger points by reducing pain and increasing the range of motion. The choice of technique should depend on the patient’s choice and overall clinical context.

Keywords: Calf Muscle, Manual Therapy, Myofascial Pain, Range of Motion, Trigger Points

UG-012: Motor imagery as an effective approach to enable neuroplasticity among sports athletes: A scoping review

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ABSTRACT

Motor Imagery is the mental rehearsal of movements without physical execution, engaging the senses to athletic experiences. This approach activates neural pathways similar to those engaged during actual movement, supporting both training and rehabilitation in athletes. MI is applied across various sports-including football, basketball, swimming, and gymnastics etc. It is effective for athletes at all levels allowing them to rehearse skills, refine techniques, low-risk, and highly accessible method for. MI promotes neuroplasticity by stimulating the same brain regions. Through repeated mental practice, they reshape motor pathways by improving the efficiency. Previous research show links between MI practice and neural adaptation. Research on athletes has revealed improvements in reaction time, decision-making, accuracy, movement timing. The aim of this scoping review is to map and summarise the available evidence that how motor imagery contributes to neuroplasticity in athletes and to provide background evidence from previous researches. This research is performed on electronic databases such as PubMed, Google scholar for English published articles. Studies were included athletes who had received motor imagery training sessions. After screening and full assessment 11 articles are included in which 5 articles are experimental study, 4 are reviews (Systematic, Narrative and Literature). Outcome measures used MIQ-3, HLJT, Speed test, T-test. These shows adding MI to physical practice significantly enables neuroplasticity which improves concrete measures. Several reviews and meta-analysis articles clarify the mechanism showing MI’s effectiveness. The evidence mapped through this scoping review states that MI is an effective approach in neuroplasticity among sports athletes.

Keywords: Motor Imagery, Neuroplasticity, Athletes

UG-013: Psychometric properties of outcome measures used for analyzing functional performance among amateur athletes: A critical review

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ABSTRACT

The assessment of functional performance in amateur athletes is a vital concern in sports physiotherapy and athletic medicine. Even with the development and validation of several outcome measuring tools is used for athletic population but their psychometric properties are not well characterized for amateur athletes. This critical review aimed to identify outcome measures used for assessing functional performance in amateur athletes and critically evaluate their psychometric properties. A comprehensive literature search was conducted to identify full text articles exploring psychometric evaluations of outcome measures for functional performance published in English across PubMed, Google scholar, PEDro. Keywords like “Psychometric properties”, “outcome measures”, “functional performance”, “amateur athletes” along with Boolean operators (AND, OR) were used. A total of 15 studies were identified and analyzed to summarize the outcome measures and psychometric properties. The review found that the performance tests identified in the studies were reliable. However we couldn't find evidence to confirm that tests accurately measure their intended parameters in amateur athletes. Additionally, the psychological tests did not perform similarly for amateur and elite athletes, suggesting that the results may be biased when applied in settings with limited resources available to amateur athletes. So, Practitioners should be careful and use multi method assessment with psychological evaluation. More long-term validation studies are needed to determine the best evidence-based assessment procedures for amateur sports populations.

Keywords: Critical Review, Psychometric Properties, Outcome Measures, Amateur Athletes, Functional Performance.

UG-014: Effect of Transcranial Direct Current Stimulation (tDCS) on Cognitive Recovery in Stroke Patient: A Narrative Review

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ABSTRACT

Cognitive impairment is a frequent consequence of stroke, encompassing memory, attention, executive function, and execution of daily life activities. Recently, it has been suggested that tDCS administered in the clinic or at home under remote supervision can enhance neuroplasticity and improve cognitive and motor functions. This may be further optimized by combining tDCS with other rehabilitation approaches, including computerized cognitive training and/or mirror therapy. However, results will depend on stimulation protocols, timing, targeted brain areas, and training intensity. The following abstract is a review-based attempt at synthesizing findings from four clinical trials on the overall effectiveness of tDCS on post-stroke cognitive function, motor control, and performance of activities of daily living. It also assesses the feasibility, effects of timing, and differences in stimulation sites in tDCS-assisted neurorehabilitation. Relevant clinical studies were examined, including home-based remotely supervised tDCS, clinic-based tDCS combined with computerized cognitive training, and tDCS integrated with mirror therapy. These trials covered a very broad spectrum of patients, from subacute to chronic stroke survivors with either cognitive or motor impairment. Interventions consisted of anodal stimulation (2 mA for 20–30 minutes), usually targeted at the dorsolateral prefrontal cortex, primary motor cortex, or anterior temporal lobe, concomitantly administered with a structured cognitive or motor training program. Outcomes were standardized cognitive assessments, attention and memory tasks, motor function scales, daily living activity scores, and feasibility/safety evaluations. tDCS has yielded consistent beneficial effects across studies in improving post-stroke cognitive function, especially when combined with systematic cognitive training. Improvements were found in attention, memory, reasoning, global cognition, and reaction time. Stronger effects were seen in patients with baseline impairment of moderate degree and in cases where the stimulation site was the left hemisphere, an important region for cognitive processing. Added to mirror therapy, tDCS improved movement efficiency and daily function, but results were superior when stimulation was given before therapy than during therapy itself. It was also found that home-based, remotely supervised protocols demonstrated high feasibility and safety, with excellent adherence and without serious adverse events. The growing body of evidence supports tDCS as a promising and practical adjunct therapy for the improvement of cognition and functional performance after stroke. Its effects seem optimized if this technique is applied in combination with targeted rehabilitation methods and by making strategic choices regarding timing and stimulation sites.

Keywords: Transcranial Direct Current Stimulation (tDCS), Cognitive Recovery, Stroke

UG-015: Prevalence of Headache Among Turban-Wearing Males in North India: A Literature Review

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ABSTRACT

Headache caused by external mechanical pressure is increasingly recognized as a common condition. One potential cause is the tight tying of bands or cloth around the head. Academic research has specifically examined the prevalence of headaches among turban-wearing males. Turban wearing is a daily cultural and religious practice widely observed among the Sikh population in North India. Due to tight tying and prolonged wearing, the turban can exert compression on scalp structures, leading to headache. Existing evidence on head pain, external compression headache, and headgear-associated disorders indicates that sustained pressure from occupational headgear, bands, or helmets can induce altered muscular loading in the head and neck region, localized pain, and neural irritation. These mechanisms are comparable to those observed in turban-wearing individuals; however, epidemiological data and detailed demographic studies remain limited. The objective of this literature review was to summarize and analyze the prevalence of headache among turban-wearing males in North India. A literature search was conducted using electronic databases including PubMed, Scopus, Google Scholar, ResearchGate, and Web of Science. In total, seven relevant articles were identified: one cross-sectional study involving turban-wearing Sikh males, three studies on external compression headache (including one narrative review and one clinical case report), and three studies examining compression associated with tight headgear or hairstyles. The evidence indicates that tight headgear can cause pericranial muscle strain, superficial nerve compression, localized tenderness, and postural stress-symptoms also observed in turban wearers. However, there is a scarcity of prevalence studies in this population. Overall, the available data support a plausible association between prolonged turban wearing and headache symptoms. This review highlights the need for developing ergonomic guidelines to promote safer and more comfortable turban-tying practices.

Keywords: External compression, Cultural Practices, Adverse Effects

UG - 016: Age related changes in balance and agility among middle aged adults: A Narrative review

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ABSTRACT

For middle aged persons to maintain their functional independence and avoid falls, balance and agility are crucial. Due to neuromuscular, sensory, and biomechanical changes, early ageing processes frequently result in decrease in balance, agility and certain motor skills. Despite the importance, there is still not enough of sufficient studies that specifically address this age group. This review aims to summarize current evidence on age-related changes in balance and agility in middle-aged adults, exploring underlying physiological mechanisms and assessment tools. A thorough literature search was conducted across multiple databases, including PubMed, Google scholar, and Web of Science, focusing on peer-reviewed articles published in recent years (2020–2025). Studies included observational, longitudinal, and interventional research relevant to individuals aged 40–60. Data were integrated and analyzed to identify patterns, mechanisms, and treatment outcomes. A total of 50 articles were identified; following screening and full text assessment, 10 articles met the inclusion criteria and were included in this review. Emerging evidence indicates subtle declines in balance and agility begin in midlife, driven by muscular degeneration, sensory decline, and neural aging which can be measured with valid assessment methods such as Balance and agility tests. Middle age is when age-related deficits in balance and agility appear, affecting mobility and raising the risk of falls. Regular strength training and balance exercises can preserve or even enhance balance and agility in this age range, according to intervention studies. Early detection and management may lower the risk of falls and prolong functional independence, according to cross-sectional and longitudinal studies. To maximize results, future research should concentrate on longitudinal studies and customized intervention methods.

Keywords: middle aged, adults, motor skill, balance, aging, risk of fall, functional status

UG - 017: Establishing Reference values of Scapular Index among college students and their Gender-based differences: an observational study protocol

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ABSTRACT

Introduction: The scapular index helps determine the resting position of the scapula in an upright standing position.

Aims & Objective: The purpose of this study is to highlight the methodology to be undertaken to establish reference values for the scapular index among college students and to investigate differences between males and females.

Materials and Methods: This cross-sectional observational study will include healthy male and female participants aged 18–25 years, with no neurological, orthopaedic, or cardiothoracic disorders and not engaged in elite-level sports. While those with any shoulder, scapular, clavicular, or spinal injury or surgery within the past year, visible spinal deformities, or conditions affecting muscle tone or coordination will be excluded. Participants will be recruited through convenience sampling. Anthropometric data will be collected, and the Scapular Index will be measured using a digital vernier caliper by identifying standard anatomical landmarks with participants standing in a relaxed posture; each measurement will be taken thrice, and the average value will be used for analysis. Descriptive statistics, including measures of central tendency and dispersion, will be used to establish normative values for the Scapular Index. Prior to inferential analysis, data will be assessed for normality using Kolmogorov Smirnov test. Based on the distribution, gender differences will be evaluated using either independent test or Mann–Whitney U test. The level of statistical significance will be set at $p < 0.05$ for all analyses.

Conclusion: This study will deliver reliable reference values for the scapular index in healthy college students aged 18–25, while uncovering any meaningful differences between males and females.

Keywords: Posture, Reference Values, Scapula, Shoulder, Students

UG-018: Beyond the Glenohumeral Joint Characterizing Kinetic Chain Impairments in Non-Athletic Adults with Shoulder Pain: A Narrative Review

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ABSTRACT

In non-athletic people, shoulder discomfort is a frequent musculoskeletal problem that is often evaluated with a major focus on the glenohumeral joint. However, new research indicates that the coordinated movement of the complete kinetic chain—which includes the trunk, spine, pelvis, and lower limbs—is crucial for shoulder function. Even in people without athletic demands, impairments in these interrelated segments may lead to altered shoulder mechanics and chronic pain. The purpose of this study is to describe kinetic chain deficits in non-athletic adults who have shoulder pain and to investigate how these impairments relate to the degree of pain and functional limitation. Adults with unilateral shoulder pain of non-traumatic origin between the ages of 20 and 50 who were not athletes were included in the cross-sectional observational study design. Thoracic spine mobility, scapular placement and movement, core stability, pelvic alignment, and lower limb strength and flexibility were all assessed as part of a thorough kinetic chain study. The Visual Analogue Scale (VAS) was used to gauge the severity of shoulder discomfort, and a standardized shoulder outcome measure was used to gauge functional impairment. The findings showed that those with shoulder pain frequently had asymmetries in lower limb strength and flexibility, changed scapular kinematics, decreased core endurance, and decreased thoracic mobility. Rather, it indicates a break in the kinetic chain that affects upper limb movement efficiency and load transfer. The results of this study emphasize how crucial it is to treat shoulder discomfort in non-athletic individuals by using a comprehensive diagnostic strategy that goes beyond the glenohumeral joint. Targeted rehabilitation techniques and kinetic chain evaluation may enhance therapeutic results and lower the chance of chronicity. This study encourages a move towards integrated, whole-body management in physiotherapy practice for shoulder pain.

Keywords: Shoulder Pain, Kinetic Chain, Glenohumeral Joint, Scapular Dyskinesis, Non-Athletic Adults

UG-019: Proprioceptive and balance training for sprint performance and lower limb injury prevention: A narrative review

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ABSTRACT

Proprioceptive and balance training are widely used to improve neuromuscular control, joint stability, and overall movement quality in athletes. These exercises are now commonly added to training programs to enhance sprint performance and reduce the risk of lower-limb injuries. Research shows that such training can improve acceleration, change-of-direction ability, explosive power, and postural stability, indicating that better proprioception may help athletes run faster and maintain efficient sprint mechanics. Strong evidence also supports its role in injury prevention, especially for ankle sprains, with several studies reporting noticeably lower injury rates when proprioceptive training is included compared to traditional training alone. However, not all findings are consistent. Some studies, including a recent 12-week program in competitive fencers, found little or no improvement in performance measures such as jump height or ankle reaction time. These inconsistent results may be due to differences in athlete level, program duration, exercise difficulty, and research design. Overall, most evidence suggests that proprioceptive and balance training reliably improve stability and neuromuscular function but may not significantly increase sprint performance unless combined with sport-specific drills, polymetrics, and speed training. Therefore, coaches and therapists should use proprioceptive training mainly to improve stability and prevent injuries while continuing targeted sprint and power exercises for performance gains. Future research should focus on standardizing training methods, identifying the most effective exercise progressions, and studying long-term effects to better understand how proprioceptive training influences sprint ability and lower-limb injury prevention across different athletic groups.

KEYWORDS: Proprioception, Postural balance, Sprinting, Lower extremity injuries, Neuromuscular control, Injury prevention

UG-020: Myofascial Release of the Abdominal Wall for Endometriosis Pain

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ABSTRACT

Dysmenorrhea, dyspareunia, pelvic pain, and a decreased quality of life are the hallmarks of endometriosis, a chronic inflammatory disease. Even though physiotherapy is becoming more and more accepted as a non-pharmacological option, little is known about the function of the abdominal wall's myofascial release (MFR). To determine whether abdominal wall MFR will successfully lessen endometriosis-related pain, a systematic review will be required because fascial tightness, myofascial trigger points, and adhesions in the abdominal wall will all continue to be implicated in pain sensitization. This systematic review will aim to evaluate the effectiveness of abdominal wall myofascial release on pain, functional outcomes, and quality of life in women with endometriosis. This review will be conducted following PRISMA guidelines. Electronic databases including PubMed, CINAHL, PEDro, Scopus, Web of Science, and Google Scholar will be searched for randomized controlled trials, controlled clinical trials, and quasiexperimental studies that will investigate abdominal wall MFR for endometriosis-related pain. Studies involving pelvic MFR without abdominal focus will be included only if they will report abdominal wall techniques separately. Screening, data extraction, and risk-of-bias assessment will be performed independently by two reviewers. Primary outcomes will include pain intensity (VAS /NPRS), dysmenorrhea severity, dyspareunia, and pelvic pain frequency. Secodary outcomes will include functional disability, pelvic floor dysfunction, and quality-of-life measures (EHP-30, SF-36). It is anticipated that abdominal wall MFR will demonstrate a moderate to significant reduction in endometriosis-related pain compared to control or standard physiotherapy. Improvements will also likely be observed in dysmenorrhea, deep dyspareunia, abdominal myofascial tenderness, and quality of life. Heterogeneity in technique, duration, and treatment frequency is expected, which will limit pooled meta-analysis. This systematic review will aim to provide evidence that abdominal wall myofascial release may be an effective physiotherapy intervention for managing endometriosis-related pain. The findings will highlight the need for high-quality, large-scale randomized trials to standardize treatment protocols and strengthen clinical recommendations.

Key Words: Myofascial Release, Abdominal Wall, Endometriosis, Pelvic Pain, Physiotherapy, Manual Therapy, Systematic Review.

UG - 021: Clinical Efficacy of Ultrasound – guided Needling for Calcific Tendinitis of Shoulder: A Systematic Review Protocol

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ABSTRACT

Calcific tendinitis of shoulder (SCT) is a painful, self-limiting condition characterized by calcific deposits in the rotator cuff tendons, frequently requiring invasive treatment if conservative therapies fail. While minimally invasive options like Ultrasound-Guided Needling (UGN) are commonly used to treat these calcific deposits, its clinical and radiographic effectiveness, particularly in patients with chronic, symptomatic SCT requires focused assessment. This systematic review protocol, registered on PROSPERO with identification number: CRD420251174949, aims to comprehensively evaluate the clinical efficacy of UGN in adults suffering from chronic, symptomatic SCT. Following PRISMA-P guidelines, a systematic search of scholarly databases, including MEDLINE, PEDro, Cochrane CENTRAL, and Ovid Embase, from January 2010 to December 2025 will be done. Randomized clinical/controlled trials (RCTs) published in English language, exploring the efficacy of UGN in patients with SCT will only be included. The primary outcomes will be pain intensity, and functional improvement, assessed using validated measures. Two independent reviewers will screen titles and abstracts, perform full-text review, and extract data, resolving discrepancies through consensus, using Rayyan software. Methodological quality will be assessed using PEDro scoring and risk of bias will be assessed using the Cochrane Risk of Bias tool (RoB 2.0) for RCTs. If feasible, quantitative synthesis via meta-analysis using random-effects models will be conducted. Otherwise, a narrative synthesis will be performed. This review is expected to yield high-quality, synthesized evidence regarding the definitive role of UGN in the management algorithm for chronic SCT, thereby informing clinical guidelines and enhancing evidence-based decision-making.

Keywords: Interventional ultrasonography, Rotator cuff, Shoulder, Tendinopathy, Treatment outcome

UG-022: Effectiveness of Physiotherapy in Symptomatic management of Hirayama Disease: A Systematic Review Study Protocol

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ABSTRACT

Hirayama disease, also known as monomelic amyotrophy, represents an uncommon, self-restricting cervical myelopathy triggered by flexion that primarily impacts young male patients, characterized by uneven weakness and muscle wasting in the distal muscles of the upper extremities. Traditional treatment focuses on preventing disease advancement by restricting cervical flexion through rigid collar application, while physical therapy is being more frequently utilized to manage remaining motor impairments and functional restrictions. This planned comprehensive review therefore aims to assess how effective physical therapy interventions are in managing Hirayama disease symptoms. Electronic databases including PubMed, COCHRANE Library, PEDro, and ScienceDirect will be extensively searched for case studies, series, and reports, documenting physiotherapy or rehabilitation approaches in patients with clinically and radiologically verified Hirayama disease. Studies will be included if they described organized physiotherapy programs, whether used independently or alongside cervical collar treatment or other non-surgical approaches, and documented outcomes concerning muscle power, hand capabilities, posture, discomfort, or functional autonomy. Full-text articles published in English since inception, to December 2025 will be considered. To ensure methodological rigor, the quality of included studies will be evaluated using the Joanna Briggs Institute (JBI) critical appraisal checklists for case reports and case series. Risk of bias will be independently assessed by using the ROBINS-I tool. Two reviewers will independently conduct study selection, data extraction, and quality appraisal, with any disagreements resolved through discussion or by consulting a third reviewer. The overall strength of the evidence will be synthesized narratively, taking into account study quality, methodological limitations, and risk-of-bias profiles. This systematic review will provide a comprehensive evaluation of existing physiotherapy-based strategies for Hirayama disease and offer evidence-informed guidance to support clinical decision-making and future research in this rare neuromuscular disorder. The study protocol was registered in PROSPERO with identification number: CRD420251175779.

Keywords: Amyotrophy Monomelic, Spinal Cord Diseases, Physical Therapy Modalities, Muscles, Motor Disorders

UG - 023: Role of Extracorporeal Shockwave Therapy in Neurogenic Heterotopic Ossification: A Systematic Review Protocol

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ABSTRACT

Neurogenic heterotopic ossification (NHO) is a pathological bone development in soft tissues that occurs after an insult to the central nervous system. Extracorporeal shockwave therapy (ESWT) is widely regarded as a non-invasive treatment for musculoskeletal problems; however, its efficacy in NHO has been mostly determined through case studies with insufficient supporting evidence. This planned systematic review aims to consolidate existing evidence from case reports, case series, and observational studies on the efficacy and safety of ESWT in the management of NHO. A comprehensive search strategy will be implemented across major electronic databases including PubMed, COCHRANE Library, PEDro, and ScienceDirect to identify studies exploring ESWT intervention in individuals diagnosed with NHO secondary to central nervous system injuries. Eligible studies will include those that detail the use of ESWT as a therapeutic intervention, either alone or alongside other non-surgical management approaches, and report outcomes related to pain, joint range of motion, functional abilities, and radiographic changes in ossified tissue. Full-text articles published in English from database inception through December 2025 will be considered for inclusion. Data extraction will capture patient demographics, etiology of NHO, ESWT treatment parameters, outcome measures, and any reported adverse events. To ensure methodological robustness, the quality of studies will be assessed using the Joanna Briggs Institute (JBI) critical appraisal checklists. Risk of bias will be evaluated using the ROBINS-I tool. Two reviewers will independently undertake study screening, data extraction, and quality appraisal. Disagreements will be resolved through discussion with a third reviewer. A narrative synthesis of findings will be conducted. This systematic review will provide a comprehensive evaluation of the therapeutic role of ESWT in NHO and offer evidence-based insights to support clinical decision-making and guide future research directions. This systematic review protocol, is registered on PROSPERO with identification no: CRD420251176489.

Keywords: Heterotopic Ossification, Central Nervous System, Extracorporeal Shockwave Therapy, Spinal Cord Injuries, Stroke, Brain

UG-024The Biomechanical and Physiological Consequences of Smartphone Use: A Narrative Review on Forward Head Posture, Neck Disability, and Cardiopulmonary Health

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ABSTRACT

The rapid increase in smartphone use has led to prolonged neck-flexed postures, contributing to Forward Head Posture (FHP). It is a common postural deviation associated with cervical muscle imbalance, neck disability and functional limitations. Emerging evidence indicated that these postural alterations extend beyond musculoskeletal issues, influencing cardiopulmonary health by restricting expansion and altering autonomic regulation. This narrative review summarised current evidence on the relationship between smartphone-associated posture, neck disability, respiratory function, and cardiopulmonary parameters. To achieve this a structured search was conducted across databases PubMed, Web of Science followed by Gray Literature for English-language studies published between 2016 and 2025 examining musculoskeletal and cardiopulmonary health associated with smartphones use. Keywords including “forward head posture”, “smartphones addiction”, “neck disability”, “spirometry”, and “blood pressure” were used to conduct the search. Out of 240 records, 21 studies met the eligibility criteria, including randomized trials, cross-sectional research, and previously published reviews. To reduce bias and improve the review’s transparency, the literature was narratively synthesised and study quality was confirmed using the SANRA scale. Collectively, the evidence indicates that extended smart phone use contributes to musculoskeletal impairments such as weakened deep cervical flexors, altered scapular mechanics, reduced cervical mobility, and altered cardiopulmonary health parameters, such as heart rate, blood pressure, reduced forced vital capacity, and forced expiratory volume. Early physiotherapy intervention is recommended, emphasizing postural retraining, deep neck flexor strengthening, scapular stabilisation, thoracic mobility enhancement, respiratory muscle training, and ergonomic education to mitigate these adverse effects.

Keywords: Blood Pressure, Heart Rate, Internet Addiction Disorder, Smartphone, Ergonomics, Spirometry, Posture.

UG-025: Punjabi Translation, Validation and Test-Retest Reliability of the Foot Function Index Questionnaire in Patients with Plantar Fasciitis: A Cross-Sectional Study Protocol

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ABSTRACT

Background: Plantar fasciitis is a common foot condition that causes pain, disability and limitations in daily activities. The Foot Function Index (FFI) is an established tool used worldwide to assess foot pain and function. Although multiple translated versions of the FFI exist, no validated Punjabi version is currently available. Considering the large Punjabi-speaking population in North India, a culturally appropriate Punjabi translation is essential for accurate patient assessment. Therefore, this study aims to translate the Foot Function Index into Punjabi and examine its content validity and test-retest reliability in patients with plantar fasciitis.

Methods: Prior permission to translate and adapt the FFI will be obtained from the original author. Ethical approval will be secured before initiating the study. This cross-sectional study will follow standardised guidelines for translation and cross-cultural adaptation. Two translators (one medical, one non-medical) will independently produce Punjabi translations (T1 and T2), which will be synthesised into one version (T12). An expert committee will review all versions to ensure conceptual equivalence, clarity, and cultural suitability, resulting in the pre-final Punjabi FFI. This version will be pilot-tested on 30 patients with plantar fasciitis to assess comprehension. Content validity will be evaluated by 10 experts, and test-retest reliability will be assessed on 51 patients with plantar fasciitis by administering the final Punjabi FFI twice within a specified interval.

Discussion: The Punjabi version of the FFI fills a crucial gap by providing a culturally and linguistically appropriate tool for Punjabi-speaking individuals. The rigorous translation protocol ensured clarity and conceptual equivalence, supporting more accurate clinical assessment.

Keywords: Foot Function Index; Punjabi translation, Plantar fasciitis, Validity, Reliability

UG-026: Psychometric Properties of Outcome Measures Used to Assess Dynamic Balance in Athletes: A Narrative Review

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ABSTRACT

Dynamic balance is an important component of athletic performance and plays crucial role in maintaining postural stability, injury prevention and rehabilitation. Poor dynamic balance has been identified as a contributing factor to increased lower-limb injury risk, with ankle instability and knee injuries being most common in athletes. Accurate Assessment of Dynamic balance is vital for physiotherapists in sports practice, using a range of clinical and functional outcome measures. Several outcome measures for assessing dynamic balance measures frequently used in sports physiotherapy practice, including the Star Excursion Balance Test, Y-Balance Test, Functional Reach Test, Single-Leg Hop Tests, Dynamic Postural Stability Index, and sport-specific functional balance tests. The purpose of this narrative review is to synthesize and critically appraise the psychometric properties of commonly used outcome measures for assessing dynamic balance in athletes. A narrative review of the literature was conducted using electronic databases including PubMed, Cochrane library and PEDro published between 2010 and 2025 Studies reporting test–retest reliability, validity, responsiveness, feasibility, and clinical utility were included. After applying inclusion and exclusion criteria total of 10 relevant articles met the inclusion criteria. Overall, this review concludes that the SEBT and Y-Balance Test demonstrated good reliability and clinical applicability in athletic settings. These measures are cost-effective, easy to administer Selection of appropriate tools depends on the sport, level of competition, and purpose of assessment. Understanding these measures can assist physiotherapists in injury prevention, performance enhancement. We have concluded with this narrative review that the Y-Balance Test and modified Star Excursion Balance Test represent the most evidence-supported, clinically feasible outcome measures for assessing dynamic balance in athletes.

Keywords: psychometric properties, Dynamic balance, outcome measure, athletes, SEBT, Y-balance test, sports, Reliability, validity

UG-027: Impact of Gyro ball Training on pain, spherical grip strength and wrist radial deviation mobility in patients with lateral epicondylitis: A Narrative Review

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ABSTRACT

Lateral epicondylitis, commonly known as tennis elbow, is a widespread musculoskeletal condition marked by pain and diminished grip strength resulting from the degeneration of tendons in the elbow. Innovative rehabilitation devices like the Gyroball (Powerball) have recently attracted interest for their potential in promoting dynamic resistance training of the forearm and wrist muscles, addressing both pain issues and functional restrictions. This narrative review examines the impact of exercise interventions using the Gyroball on reducing pain, enhancing spherical grip strength, and improving wrist radial deviation mobility in individuals suffering from lateral epicondylitis. Gyroball training is associated with early improvements in grip strength and a notable decrease in pain, according to an analysis of the gathered data. Frequent Gyroball exercises increased proprioceptive feedback. A comprehensive literature search was conducted to identify full-text articles exploring the impact of Gyroball training on pain, spherical grip strength and wrist radial deviation mobility in patients with lateral epicondylitis, published in English across PubMed, Google Scholar, PMC, and relevant rehabilitation science journals. A thorough literature search covering publications from 2015 to 2025 was carried out. 'Gyroball training,' 'Powerball device,' 'lateral epicondylitis,' 'tennis elbow,' 'pain,' 'grip strength,' and 'wrist mobility' were used as the search terms along with Boolean operators (AND, OR). Priority was given to studies that reported changes in wrist range of motion as well as those with intervention designs, dynamometer-based outcome assessments, and validated pain scales. Gyroball training is a successful non-invasive treatment for wrist radial deviation, grip strength restoration, and pain reduction. More research is necessary for protocol optimisation and wider clinical use of this new modality.

Keywords: Hand Strength, Exercise Therapy, Pain, Range of Motion, Resistance Training, Wrist

UG -028: Screen Time–Induced Alterations in Deep Cervical Muscle Function and Their Relationship with Neck Mobility in Young Females: A Narrative Review

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ABSTRACT

Overuse of screens has been identified as a major behavioural risk factor for cervical musculoskeletal diseases, especially in young females who use smartphones and other digital devices extensively. The deep cervical muscle is continuously mechanically loaded by prolonged neck flexion and forward-head posture related to screen engagement. Prolonged screen time places repetitive strain on deep neck flexor muscles, leading to reduced endurance, impaired neuromuscular control, altered proprioception, and increased pain sensitivity. Higher screen exposure is associated with reduced pain pressure thresholds, decreased cervical range of motion, and poorer DNF performance. Observational, cross-sectional, and interventional studies involving females aged 18–30 years were included if they examined screen time exposure in relation to DNF function, cervical ROM, or PPT. Studies involving neurological disorders, cervical trauma, post-surgical conditions, or mixed populations without female-specific subgroup analysis were excluded. Through the search, 134 items were found. 54 articles were kept for full-text evaluation after title and abstract screening; 15 of them satisfied the inclusion requirements and were added to this narrative review. PubMed, Scopus, Web of Science and EMBASE were searched for publications between 2020 and 2025. Increased screen time in young females is associated with reduced deep neck flexor strength and endurance, restricted cervical range of motion, and lower pain pressure thresholds, reflecting heightened pain sensitivity and neuromuscular imbalance. These findings emphasize the need for early screening, ergonomic modifications, and targeted cervical stabilization programs. Further longitudinal studies are required to establish causal relationships and guide preventive strategies.

Keywords: Neck Pain; Cervical Vertebrae; Muscle Strength; Range of Motion, Articular; Cell Phone Use.

UG- 029: A Narrative review on Smartphone usage and its impact on cervical endurance and hand function

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ABSTRACT

The widespread use of smartphones among young adults has led to prolonged neck flexion and repetitive hand movements, which may adversely affect cervical muscle endurance and hand function. These postural and biomechanical changes are increasingly linked to musculoskeletal discomfort and functional impairment. To narratively review the existing evidence on the impact of smartphone usage on cervical muscle endurance and hand function in young adults. A narrative literature review was conducted using PubMed, Scopus, Web of Science, and the Cochrane Library database for studies published between 2020 and 2024. The selection criteria included: (1) studies involving young adults aged 18–35 years; (2) observational or experimental studies assessing smartphone usage; (3) studies reporting outcomes related to cervical muscle endurance, neck fatigue, grip strength, or pinch strength; and (4) full-text articles available in English. Exclusion criteria included review articles, case reports, studies involving participants with known cervical or upper limb pathology, and articles that did not report relevant outcomes. A total of 162 records were identified, and after screening titles, abstracts, and full texts, 28 studies were included in the final synthesis. Most studies reported a significant association between prolonged daily smartphone use and reduced endurance of deep cervical flexor and extensor muscles. Increased neck fatigue, forward head posture, and higher prevalence of neck pain were consistently observed among heavy users. Several studies have also demonstrated decreased hand grip and pinch strength, as well as increased thumb and wrist discomfort with longer screen time. Overall, higher smartphone exposure was negatively correlated with cervical endurance and hand function. Excessive smartphone use in young adults is associated with reduced cervical muscle endurance and impaired hand function, potentially increasing the risk of future musculoskeletal disorders. Postural education, ergonomic modification, and targeted strengthening exercises are recommended. Further long-term and intervention studies are needed to identify causal links and to develop preventive physical therapy methods focused on correcting posture, re-educating posture, training neck endurance, and rehabilitating hand strength.

Keywords: smartphone, muscle, hand grip, pinch strength, posture, musculoskeletal disorders, young adults

UG-030: Hindi Translation, Content Validation, and Test–Retest Reliability of the Chalder Fatigue Scale in Post-Stroke Patients: A Study Protocol

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ABSTRACT

Background: Fatigue is a persistent and disabling complication following stroke, negatively affecting physical capacity, cognitive performance, and engagement in rehabilitation. The Chalder Fatigue Scale (CFQ-11) is a widely used self-report measure designed to assess physical and mental fatigue. Despite its clinical utility, a validated Hindi version is not available, limiting standardized assessment in the large Hindi-speaking population. A culturally adapted Hindi CFQ-11 may improve fatigue evaluation and support evidence-based rehabilitation.

Aim: To translate the CFQ-11 into Hindi and evaluate its content validity and test–retest reliability in Hindi-speaking post-stroke patients.

Methods: The CFQ-11 will undergo a standardized forward–backward translation process following established international guidelines. Two bilingual translators will independently produce forward translations, which will be synthesized and then back-translated by a separate translator. A multidisciplinary expert committee will review all versions to ensure semantic equivalence, clarity, and cultural appropriateness. Content validity will be examined using item-level (I-CVI) and scale-level (S-CVI/Ave) indices, along with modified kappa statistics. The prefinal version will be pilot-tested for comprehensibility in a small group of stroke survivors. A separate cohort of post-stroke patients will complete the final Hindi CFQ-11 on two occasions to determine test–retest reliability. Statistical analysis will include the Shapiro–Wilk test, intraclass correlation coefficient (ICC), standard error of measurement (SEM), minimal detectable change (MDC), and Bland–Altman analysis.

Results: The Hindi CFQ-11 is expected to demonstrate high content validity with I-CVI values of 0.85–1.00, S-CVI/Ave 0.90, and strong expert agreement. Test–retest reliability is anticipated to yield ICC values of 0.85, low SEM, and MDC values within 10% of total score, with Bland–Altman plots showing narrow limits of agreement.

Conclusion: This protocol describes a comprehensive approach to producing a valid and reliable Hindi version of the CFQ-11, supporting improved assessment of fatigue in post-stroke rehabilitation.

Keywords: Stroke, Fatigue, Reliability, Validity

UG-031: Learning Methodologies Adopted by Learners: A Comprehensive Narrative Review

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ABSTRACT

In higher education, learning approaches play a crucial role in students' skill development and academic achievement. Over time, a wide range of learning methodologies has been adopted, from traditional lecture-based teaching to innovative, technology-assisted strategies. However, there remains a lack of comprehensive evidence clearly identifying which learning approaches are most effective, adaptable, and beneficial across diverse student populations. This narrative review aimed to provide a comprehensive overview of learning methodologies adopted by learners, with a focus on their effectiveness, advantages, limitations, and educational relevance. A literature search was conducted using PubMed and ScienceDirect databases to identify articles published between 2010 and 2025. A total of 132 records were initially identified, of which 28 articles were screened after the removal of duplicates, and 6 studies met the eligibility criteria and were finally included in the review. Studies comparing learning strategies, exploring student learning behaviors, or assessing learning outcomes related to traditional, active, or digital learning methodologies were considered. Review articles, randomized controlled trials, case studies, and comparative studies were selected based on relevance. The findings demonstrated strong support for active and student-centered learning approaches, including problem-based learning, flipped classroom models, and simulation-based techniques. These strategies consistently showed improvements in student engagement, critical thinking, and long-term knowledge retention. Digital and blended learning models offered enhanced flexibility, accessibility, and personalized pacing. Traditional lecture-based methods continued to play an important role in delivering structured theoretical knowledge. Additionally, self-directed and peer learning approaches were associated with increased learner autonomy, deeper conceptual understanding, and improved collaborative skills. The evidence suggests that integrating traditional, active, and technology-assisted learning methodologies provides a more comprehensive and effective educational experience. Incorporating multiple instructional approaches within academic curricula may improve learning outcomes, adaptability, and overall student satisfaction.

Keywords: Learning Methodologies, Traditional Learning, Active Learning, Problem-Based Learning, Student Learning Strategies.

UG-032: Influence of Pectoralis Stretching on Postural and Functional Shoulder Outcomes: A Literature Review

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ABSTRACT

Tightness of pectoralis major and minor contributes to altered scapular mechanics, limited shoulder range of motion (ROM), and rounded-shoulder. Stretching is often prescribed, but outcomes from stretching protocols differ across populations. The aim of this narrative review is to synthesise evidence from randomised and controlled studies evaluating the effectiveness of pectoralis major and minor stretching interventions on shoulder range of motion, muscle function, posture, and scapular biomechanics. A narrative review was performed using data from randomized controlled and placebo-controlled trials of pectoralis major and minor stretching. Selection criteria include randomized controlled trials or placebo-controlled trials, studies evaluated stretching or self-mobilisation of pectoralis major and minor and outcomes were primarily related to shoulder ROM, posture alignment, muscle stiffness, muscle strength. The initial search yielded approximately 145 records. after removing duplicates and screening titles and abstracts, 32 studies were assessed. based on the inclusion criteria, 5 full-text articles were finally included for qualitative synthesis. data extracted included study design, outcome measures, and key findings related to shoulder range of motion, posture, muscle function, and stiffness. A high-volume 7-week static stretching program for the pectoralis major significantly increased shoulder extension range of motion and maximal isometric force at long muscle lengths without affecting muscle stiffness. In rounded-shoulder populations, randomised trials demonstrated that pectoralis-minor stretching, either alone or in combination with shoulder-stabilization or lower trapezius strengthening, improved scapular posture, shoulder flexion range of motion, balance, and shoulder muscle strength. Placebo-controlled trials showed that self-mobilization of the pectoralis minor acutely improves muscle length and glenohumeral flexion. Earlier randomized comparative studies further supported that targeted pectoralis-minor stretching techniques effectively enhance muscle length and optimize scapular kinematics. Current randomized evidence supports pectoralis stretching as an effective intervention to enhance shoulder ROM, improve muscle function, and improve postural alignment. Combined stretching-and-strengthening approaches offer postural benefits, particularly in individuals with rounded-shoulder posture. These findings highlight the clinical value of targeted pectoralis stretching within rehabilitation and shoulder-health management.

Keywords: Muscle Stretching Exercise, Pectoralis Muscles, Muscle Strength, Range of Motion, Articular

UG - 033: Role of Manual Therapy in the Conservative Management of Meralgia Paresthetica: A Narrative Review

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ABSTRACT

Meralgia paresthetica (MP) is a neuropathic condition resulting from entrapment or compression of the lateral femoral cutaneous nerve, leading to pain, paresthesia, and sensory disturbances along the anterolateral thigh. Manual therapy has been increasingly used as a conservative management approach; however, evidence regarding its effectiveness remains scattered and primarily limited to case-based literature. This narrative review synthesizes the current evidence on manual therapy interventions for MP and evaluates their clinical utility in non-surgical rehabilitation. A comprehensive search was conducted in PubMed to identify full-text English-language studies examining manual therapy for MP. The search strategy employed MeSH terms such as “Conservative treatment,” “Manual Therapy,” “Meralgia Paresthetica,” “Lateral Femoral Cutaneous Nerve” and “Nerve entrapment” which were combined using Boolean operators (AND, OR). Out of 900 initially screened articles, only five case reports met the inclusion criteria. These studies incorporated various manual therapy techniques such as soft-tissue mobilization, myofascial release, pelvic and lumbar mobilizations, stretching interventions, and transverse friction massage. Across all included reports, consistent improvements were observed in pain intensity, sensory symptoms, and functional mobility. Although the methodological quality of the available evidence is low and limited to case-level designs, the clinical outcomes suggest that manual therapy may serve as a beneficial conservative intervention for MP. Nevertheless, robust randomized controlled trials are required to establish standardized treatment protocols and determine long-term effectiveness.

Keywords: Conservative treatment, Manual Therapy, Meralgia Paresthetica, Lateral Femoral Cutaneous Nerve, Nerve entrapment.

UG-034: Cardiopulmonary effects of Overtraining syndrome and Burnout syndrome among fitness club members: A Narrative Review

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ABSTRACT

Cardiopulmonary fitness is a fundamental indicator of physical health and performance across populations. Regular exercise enhances cardiopulmonary efficiency, but excessive training can lead to adverse outcomes. Overtraining Syndrome (OTS) is a maladaptive condition in which prolonged excessive training with inadequate recovery leads to reduced performance capacity, chronic fatigue, and physiological as well as psychological disturbances. Burnout Syndrome (BOS) is a multidimensional state characterised by persistent exhaustion, reduced sense of accomplishment, and devaluation of participation following chronic training-related stress. OTS and BOS are rising among fitness club members due to high-intensity group exercises, competitive environments, and poor recovery, potentially influencing cardiopulmonary function. This narrative review aims to evaluate the impact of overtraining and burnout syndrome on cardiopulmonary health among fitness club members. A primary literature search was performed using PubMed and Web of Science, followed by a secondary search of the Gray Literature for full-text English articles published between 2015 and 2025. A total of 140 studies were identified, of which 11 met the inclusion criteria after screening and full-text evaluation. Search terms included “Cardiopulmonary Fitness,” “Burnout Syndrome,” “Fitness Club Members,” “VO₂max,” “Heart Rate” and “Overtraining”. The findings show that overtraining and burnout negatively impact cardiopulmonary function. Consistent evidence indicates reduced heart rate variability, elevated resting heart rate, diminished stroke volume, and decreased VO₂max, all of which reflect impaired cardiovascular efficiency. Pulmonary involvement includes altered breathing mechanics, reduced respiratory muscle endurance, and decreased ventilatory efficiency, resulting in compromised exercise tolerance. Prolonged training stress also contributes to sympathetic dominance and inadequate parasympathetic recovery, further intensifying physiological fatigue and reducing overall performance capacity. Excessive training without rest significantly impairs cardiopulmonary systems. Early identification of training-related fatigue, appropriate load management, and physiotherapist-guided recovery strategies are essential to prevent cardiopulmonary decline and promote safe, sustainable exercise participation among fitness club members.

Keywords: Overtraining Syndrome, Burnout Syndrome, Respiratory Function, Heart Rate, Exercise Tolerance.

UG-035: Hindi Translation Validation and Test-Retest Reliability of Pulmonary Function Status And Dyspnea Questionnaire Modified PFSDQ-M in COPD Population: A Cross-Sectional Study Protocol

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ABSTRACT

Introduction: Dyspnoea and fatigue are among the most common and troubling symptoms faced by people living with COPD. PFSDQ-M tool includes a few general questions about breathlessness over the past month- such as how it feels on most days, today, and during everyday activities. Since Hindi version is currently unavailable, this study will make the assessment accessible to Hindi-speaking individuals ensuring it accurately reflects their understanding without bias and open up opportunities for research studies and clinical trials. **Aim:** This study aims to translate the Pulmonary Function Status and Dyspnoea Questionnaire Modified (PFSDQ-M) Scale into Hindi language. **Study design:** A cross-sectional study. **Methods:** The translation process will include forward translation by two bilingual translators -one with a medical background and the other with a nonmedical background (T1&T2). The synthesized version T12 will be back translated into English by two independent medical and nonmedical translators (BT1 &BT2) The final T12 will be reviewed by expert panel and content validity will be evaluated, and the pre-final version be fully tested on patients. The scale's validity will be assessed, and the translated questionnaire will be submitted for review by the ethics committee. Test-retest reliability shall be calculated by measuring subjects on two different occasions and computing the correlation. **Results:** The content validity of Hindi version of PFSDQ-M will be confirmed by experts using standardised cross-sectional guidelines, ensuring the scale is relevant and effectively captures the impact of dyspnoea and fatigue in patients with COPD in Hindi speaking population. **Conclusion:** The Hindi version of PFSDQ-M is valid and culturally appropriate tool for assessing dyspnoea patients and can be used for clinical practice to improve interventions and quality of life for COPD patient.

Keywords: Dyspnoea, Translation, Test-Retest Reliability, English, Hindi

UG-036: Prevalence of Upper Cross Syndrome Among Various Populations: A Literature Review

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ABSTRACT

Upper Cross Syndrome (UCS) is a postural imbalance characterized by tightness of the upper trapezius, levator scapulae, sternocleidomastoid, and pectoral muscles, accompanied by weakness in the deep neck flexors, serratus anterior, lower trapezius, and rhomboids. These muscular deviations contribute to forward head posture, rounded shoulders, thoracic hyper kyphosis, and altered scapular mechanics, making UCS increasingly relevant in sedentary and work-related musculoskeletal disorders. Despite its clinical importance, the recent prevalence patterns of UCS across different population groups remain unclear due to variations in assessment methods, diagnostic criteria, and study designs. This literature review aimed to determine the prevalence of UCS across diverse populations in the past five years. A comprehensive search of PubMed, Scopus, Web of Science and PEDro was conducted for studies published between 2021 and 2025 using Boolean terms such as "Upper Cross Syndrome AND prevalence," "postural dysfunction AND population," and "muscle imbalance AND epidemiology." The search initially identified 36 studies, of which 14 met the inclusion criteria, comprising cross-sectional, observational, and posture-analysis-based prevalence studies among students, office workers, healthcare professionals, bankers, and general adult populations. The included studies reported wide variability in UCS prevalence, ranging from 2.8% to 72.1%, with the highest rates observed among medical students, healthcare professionals and software professionals exposed to prolonged screen time and poor ergonomics. Physically active populations, including college students, demonstrated comparatively lower prevalence rates. Several studies also highlighted a positive association between UCS and musculoskeletal symptoms such as neck pain, shoulder tightness, and reduced functional capacity. Overall, findings from the last five years indicate that UCS remains highly prevalent in modern sedentary populations. Standardized assessment protocols and large-scale epidemiological research are needed to refine population-specific prevalence estimates and support targeted preventive interventions.

Keywords: Posture, Cross syndrome, Neck Pain, Prevalence, Screen Time

UG-037: Psychometric properties of LANSS scale translations into various languages: A Literature Review

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ABSTRACT

The Leeds Assessment of Neuropathic Symptoms and Signs (LANSS) scale, developed by Bennett in 2001, is a clinically established instrument designed to differentiate neuropathic pain from nociceptive pain by integrating symptom-based questions with brief sensory examination components assessing allodynia and pinprick threshold. Owing to its simplicity, rapid administration, and diagnostic accuracy, the LANSS scale has been widely adopted in both clinical practice and research, prompting translation and cultural adaptation into multiple languages. However, variability in translation procedures and validation methodologies has resulted in heterogeneous reporting of psychometric properties across versions. This literature review aimed to synthesize and compare the psychometric properties of translated versions of the LANSS scale across different languages. A comprehensive search was conducted across PubMed, Scopus, Web of Science, and PEDro, for studies published between 2019 and 2024, using Boolean terms including “LANSS scale,” “translation,” “neuropathic pain screening,” “psychometric properties,” “cross-cultural adaptation AND LANSS.” A total of 41 articles were identified, of which 15 studies fulfilled the inclusion criteria, comprising original validation and cross-cultural adaptation studies. Across included translations, internal consistency demonstrated acceptable to excellent reliability, with Cronbach’s alpha values generally ranging from 0.70 to 0.96, while test–retest reliability showed strong stability (ICC 0.78–0.92). Diagnostic accuracy was consistently high, with reported sensitivity ranging from 78% to 89% and specificity from 80% to 94%. The Self-LANSS version similarly exhibited good internal consistency (Cronbach’s alpha 0.76–0.83) and excellent test–retest reliability, confirming its utility as an independent patient-reported screening tool. Culturally adapted versions, including Hindi, Spanish, Turkish, and Italian translations, demonstrated robust reliability, validity, and diagnostic performance across diverse populations. LANSS scale and its translated versions possess strong and consistent psychometric properties, supporting their cross-cultural applicability for neuropathic pain screening. Nonetheless, further studies using standardized validation frameworks are recommended to enhance comparability and methodological uniformity across future translations.

Keywords: Hyperalgesia, Psychometrics, Reproducibility of Results, Neuralgia.

UG-038: Effectiveness of Aerobic exercise on Cardiopulmonary Endurance Among Individuals With Primary Hypertension: A Narrative Review

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ABSTRACT

Hypertension is a condition in which the blood Pressure in arteries remain elevated above the normal range, commonly defined as a systolic blood pressure of 140 mmHg or above and diastolic blood pressure of 90 mmHg or above. It affected an estimated 1.56 billion adults worldwide by 2015, up from 918 million in 2000. Known as a silent killer and is a major cause of morbidity and mortality, contributing to the burden of stroke, heart failure, and renal disease. Aerobic exercise has been widely recommended in clinical guidelines for its proven benefits in lowering blood pressure and improving cardiorespiratory health. The review seeks to explore and identify the benefits and potential applications of aerobic exercise in improving cardiopulmonary endurance among individuals with primary hypertension. Two databases: PubMed, Scopus were searched for experimental studies using Aerobic exercise as a treatment technique in individuals with primary hypertension between 2015-2025. Reviews, book chapters, conference proceedings and other language articles were excluded. 699 articles were retrieved, out of which 228 duplicates were removed via Mendeley. The remaining 471 articles were screened at level of title and abstract, from which 32 articles were retrieved. Out of 32 full texts only 6 articles were selected for review. We found out that treatment sessions in all 6 study were spanned between 6–12-week intervention period and all study assessed both blood pressure and cardiopulmonary endurance by VO_{2MAX} in adults with primary hypertension. Regular aerobic exercise reduces systolic and diastolic Blood pressure, improves Heart rate, cardiopulmonary endurance and supports hypertension management. This review conclude that home-based aerobic endurance exercise effectively lowers blood pressure and improves cardiopulmonary endurance in primary hypertension.

keywords: Aerobic exercise, Blood Pressure, Cardiovascular Disease, Essential Hypertension

UG- 039: Core Strengthening as a Strategy to Improve Knee Proprioception; Implication for Injury Prevention and Rehabilitation: A Narrative Review

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ABSTRACT

Knee injuries are frequently seen in young and physically active individuals, and many of these issues are linked to poor proprioception, which compromises joint stability and movement control. When proprioceptive function is impaired, the risk of both first-time and recurrent injuries increases. Given the role of the core musculature in trunk stability and coordinated lower-limb movement, improving core strength may enhance knee joint proprioception. Over the years, core-focused exercises have become common in rehabilitation settings, yet their specific effect on knee proprioception has not been clearly summarised in existing literature. This review brings together findings from randomized controlled trials that have explored how core-strengthening interventions influence knee proprioception, and their implication for injury prevention as well as postoperative and conservative rehabilitation. Relevant literature was identified through searches of PubMed, PEDro, Scopus, and the Cochrane Library. A total of 112 records were identified during the initial search, of which 18 articles met the inclusion criteria and were analysed. The included research covered a range of approaches, including trunk stabilisation and lumbopelvic control-based interventions across healthy groups, athletes, and individuals with knee-related conditions, using randomized controlled and controlled study designs. Key outcome measures included measures of knee proprioception, balance, neuromuscular control, and functional movement. Overall, the evidence suggests that core-strengthening interventions improve knee proprioception, movement quality, and dynamic stability. Based on current evidence, this narrative review offers a useful foundation for incorporating core-focused training into knee injury prevention and rehabilitation programmes.

Keywords: Core Strengthening, Neuromuscular Control, Dynamic Stability, Injury Prevention, Rehabilitation.

UG – 040: Effectiveness of Postural Re-education Programs for Patients with Lower Cross Syndrome: A Comprehensive Literature Review

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ABSTRACT

Lower Cross Syndrome (LCS) is a muscular imbalance characterized by tight hip flexors and lumbar extensors along with weak abdominals and gluteal muscles. These imbalances contribute to postural deviations as anterior pelvic tilt, altered lumbar lordosis, reduced strength and flexibility, pain, and functional limitations. Researches have evaluated the effectiveness of various postural re-education programs in addressing these impairments. Therefore, this review was aimed to gather all existing literature related to postural re-education among patients with LCS. A literature search of PubMed, Web of Science and Ovid initially identified 12 articles. After removal of duplicity 4 articles were found eligible for the inclusion. Keywords “Lower Cross Syndrome” OR “Pelvic Crossed Syndrome” AND Postural Correction” OR “Postural Re-Education” AND “Postural Training” were used. Boolean operators “AND” and “OR” were used to combine these keywords. Global Postural Re-education (GPR) is based on the viscoelastic properties of muscles and muscle chain theory. A single GPR session significantly reduced anterior pelvic tilt (mean difference 4.3°), lumbar lordosis, enhanced hip flexor flexibility, improved pain, and disability scores compared with traditional physiotherapy. These outcomes are attributed to GPR’s ability to elongate shortened muscles while strengthening weakened antagonists. Additionally, an eight-week supervised tensile-resistance corrective exercise program in middle-aged women with LCS demonstrated reductions in anterior pelvic tilt, lumbar lordosis and improved functional movement scores. Overall, evidence suggests that postural re-education programs combining stretching, strengthening, motor control retraining, and patient education effectively correct muscular imbalances, reduce pain, enhance function and quality of life in individuals with LCS.

keywords: Lower Cross Syndrome, Postural Re-education Program, Muscular imbalance.

UG-041: Effectiveness of Progressive Muscle Relaxation techniques on pain among females with Primary Dysmenorrhea: A Narrative Review

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ABSTRACT

Primary dysmenorrhea is defined as painful and spasmodic cramps in the lower abdomen that begin shortly before or at the onset of menstrual cycle in the absence of any pelvic pathology. The worldwide prevalence ranges from 45% to 95% in women of reproductive age. Primary dysmenorrhea is leading cause of absenteeism and reduced quality of life in adolescents and young women. This review aims to evaluate the efficacy of Progressive Muscle Relaxation Techniques (PMRT) in alleviating pain among females with Primary dysmenorrhea. This review followed the IMRAD (Introduction, Methods, Results, and Discussion) pattern for non-systematic reviews. A literature search was conducted on Scopus, PubMed, and Cochrane Library from 2015 to 2025. The PICO format was used to assess the eligibility of articles in which the Population was females with Primary Dysmenorrhea; the Intervention was Progressive Muscle Relaxation Techniques; the Comparator was a placebo or control group; and the Outcome was Pain, with Study design being Randomised controlled trials, clinical trials, or experimental studies. The Systematic reviews, non-systematic reviews and books were excluded from this review. 4867 results were identified, after duplicate removal and assessing eligibility criteria, 9 studies were included in this review. The tools used to assess pain in the included studies are Visual Analog Scale, Numeric pain rating scale and Modified behavioural pain rating scale. The cumulative results of the analysed studies indicate that progressive muscle relaxation techniques reduce pain intensity in primary dysmenorrhea. Research comparing PMRT with alternative interventions such as warm compresses, ginger powder, and endorphin massage indicates that although these techniques offer pain relief, PMRT produces superior or equivalent outcomes in reducing pain intensity. Progressive Muscle Relaxation Techniques constitute a secure, accessible, and efficacious non-pharmacological intervention for the management of primary dysmenorrhea symptoms.

Keywords: Female, Dysmenorrhoea, Absenteeism, Behavior

UG-042: Influence of Thoracic Spine Mobilization on Pain Intensity and Functional Performance in Individuals with Cervicogenic Headache

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ABSTRACT

Introduction: Cervicogenic headache (CGH) is a secondary headache disorder associated with dysfunction of cervical spine and related musculoskeletal structures. Restricted thoracic spine mobility may alter spinal biomechanics and increase cervical loading, contributing to pain and reduced functional performance. Thoracic spine mobilization is commonly used in clinical practice for neck related conditions however, its effects on pain and functional outcomes in individuals with CGH remain unclear.

Aims and Objective: To examine the influence of thoracic spine mobilization on pain intensity and functional performance in individuals with Cervicogenic Headache.

Materials and Methods: A pilot randomized controlled trial will be conducted. Individuals diagnosed with Cervicogenic Headache will be randomly allocated to either an experimental group receiving Maitland thoracic spine mobilization combined with conventional exercises or a control group receiving conventional exercises alone. Interventions will be administered four times per week over two-week period to examine early clinical changes. A total 20 participants (10 per group) will be included based on sample sizes commonly used in pilot manual therapy studies. Pain intensity will be assessed using the Numeric Pain Rating Scale (NPRS), Range of motion (Goniometer), and functional performance will be evaluated using the Neck Disability Index (NDI). Outcome measures will be obtained at baseline and following this intervention period.

Results: Changes in pain intensity, cervical range of motion and functional performance will be evaluated from baseline to post-intervention in both groups with the expectation of observable improvement following the intervention period.

Conclusion: This pilot study will examine the impact of thoracic spine mobilization on pain intensity, functional performance and cervical range of motion in individuals with cervicogenic headache.

Keywords: Cervicogenic Headache; Thoracic Spine Mobilization; Manual Therapy; Pain Intensity; Functional Performance

UG-043: Exploring the Role of Pain Neuroscience Education (PNE) in Chronic Low Back Pain (CLBP): A Systematic Review Protocol

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ABSTRACT

Chronic low back pain (CLBP), a major contributor to disability, is affected by biopsychosocial factors. Conventional biomedical approaches sometimes overlook these complex aspects. By helping patients understand the origins of pain, Pain Neuroscience Education (PNE) seeks to reduce fear avoidance beliefs, catastrophising, and disability. Even though PNE has shown promising results, the data varies across research, therefore necessitating the need for a systematic review. This systematic review protocol aims to methodically analyse PNE's efficacy in treating chronic low back pain by evaluating its effects on pain intensity, functional disability, psychological aspects and quality of life. The review is prospectively registered with the International Prospective Register of Systematic Reviews (PROSPERO; registration number CRD420251163399) and will be conducted in accordance with the PRISMA guidelines. Full-text English literature comprising randomised and non-randomized trials published between 2015 and 2025 will be searched using electronic databases such as PubMed, PEDro and the Cochrane Library. Studies involving PNE as a primary or supplemental intervention for individuals with CLBP will be included. The Cochrane ROB-2 tool will be used to evaluate bias risk for randomized studies and ROBINS-I for the non-randomized studies. Methodological quality will be evaluated using the PEDro scale. To summarise the efficacy of PNE across outcomes pertaining to pain, function, and psychosocial variables, a qualitative synthesis of the results will be carried out. PNE is expected to improve functional and psychosocial results, lessen maladaptive attitudes and increase patients' comprehension of pain. PNE may maximise recovery, lessen impairment and encourage improved self-management when combined with physiotherapy. The usefulness of PNE in the treatment of CLBP will be made clearer by synthesising the available data, which will also support its place in a biopsychosocial approach and offer insights to guide future research and clinical decision-making.

Keywords: Fear, Low Back Pain, Pain Neuroscience Education, Quality of life

UG- 044: Effect of Core Strengthening Exercises in Females with Primary Dysmenorrhea: A Scoping Review

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ABSTRACT

Primary dysmenorrhea is a common condition characterized by recurrent menstrual pain without any underlying pelvic pathology. It significantly affects academic performance, daily functioning and overall quality of life, especially among adolescent and young adult females. Exercise therapy is increasingly recommended as a safe and accessible non pharmacological approach, and core strengthening exercises may provide specific benefits through improved pelvic stability, enhanced blood flow and better neuromuscular control. This scoping review aimed to summarize and map the existing evidence on the effectiveness of core strengthening exercises in females with primary dysmenorrhea. A comprehensive search was conducted across PubMed, Scopus, CINAHL and Web of science following the Arksey and O Malley framework and PRISMA-ScR guidelines. Studies were included if they involved females with primary dysmenorrhea who received structured core strengthening exercise programs. After screening the identified literature, eight primary studies met the inclusion criteria including randomized controlled trials, quasi experimental designs and single group interventions. Data from these studies showed that core strengthening programs typically ranged from four to twelve weeks with a frequency of three to four sessions per week. Across all studies, participants demonstrated notable reductions in pain intensity and duration along with decreased reliance on analgesics. Improvements were also reported in functional capacity, postural control and general wellbeing. Although the evidence consistently supports the benefits of core strengthening, variability in exercise protocols, sample sizes and outcome measures limits comparability and long-term conclusions. Overall, current evidence indicates that core strengthening exercises are effective, safe and beneficial for females with primary dysmenorrhea. They offer a practical physiotherapeutic option for reducing menstrual pain and enhancing quality of life. More robust randomized trials with standardized methodology are needed to strengthen clinical recommendations.

Keywords: Dysmenorrhea, Menstruation, Female, Quality of life

UG-045: Effect of Relaxation Technique on Perceived Stress Among Young Adults

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ABSTRACT

The increasing demands of their social, academic, and recreational lives make young adults especially vulnerable to stress. Persistent stress during this stage is linked to emotional disorders, poor attention, and long-term health risks. Relaxation techniques such as progressive muscle relaxation, deep breathing and are commonly used to reduce stress by improving emotional regulation. Given the growing stress burden among young adults, evaluating the effectiveness of different relaxation techniques is essential for guiding preventive and supportive interventions. The aim of the review is to review and synthesize current evidence on the effectiveness of relaxation techniques in reducing perceived stress among young adults. This review followed the IMRAD (Introduction, Methods, Results, and Discussion) pattern for non-systematic reviews. A literature search was conducted on Scopus and PubMed from 2015 to November 2025. PICO format was used to assess the eligibility of articles where Population was young adults with perceived stress; Intervention was Relaxation Techniques; Comparator was a placebo or control groups; Outcome was Perceived Stress and Study design can be Randomized controlled trials, clinical trials, pretest-post-test experimental studies. 1487 results were identified, and after duplicate removal and assessing eligibility criteria, 8 studies were included in this review. The tools used to assess stress in the included studies are Perceived stress scale PSS-10. The reviewed studies consistently reported that relaxation techniques reduce perceived stress in young adults. The evidence strongly suggests that relaxation techniques are effective, easy to administer, and cost-efficient strategies for reducing stress among young adults. Deep breathing, guided relaxation, progressive muscle relaxation, and mindfulness-based relaxation significantly improve psychological and physiological indicators of stress. These methods can be integrated into academic programs, wellness initiatives, and self-care routines to promote mental well-being and resilience among young adults.

keywords: Relaxation Therapy, Perceived stress, Young Adults, Stress, Autogenic Training.

UG-046: Role of Physical Therapy in Preventing Post- Traumatic Osteoarthritis of the Wrist: A Narrative Review

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ABSTRACT

post-traumatic osteoarthritis (PTOA) of the wrist is a common long-term consequence of wrist injuries such as distal radius fractures, carpal fractures, and ligamentous instability. Articular cartilage damage and altered joint biomechanics play a significant role in the development of PTOA. While physical therapy is widely recognized as a key component of rehabilitation after wrist trauma, its potential role in preventing or delaying the onset of post-traumatic wrist osteoarthritis remains poorly defined. This narrative review aims to evaluate the existing literature on physical therapy interventions following wrist trauma and to identify gaps in evidence regarding their role in preventing post-traumatic osteoarthritis of the wrist. A narrative literature review was conducted using electronic databases including PubMed, Google Scholar, and Scopus. Articles published in English focusing on wrist trauma, cartilage injury, rehabilitation, physical therapy interventions, and post-traumatic osteoarthritis were included. Both clinical and review studies were analysed to summarize current evidence. The reviewed literature indicates that physical therapy interventions such as early mobilization, therapeutic exercises, manual therapy, proprioceptive training, and activity modification are effective in improving pain, range of motion, and functional outcomes following wrist injuries. However, direct evidence linking these interventions to the prevention or delayed progression of post-traumatic wrist osteoarthritis is limited. Most rehabilitation protocols focus on short-term functional recovery rather than long-term joint preservation. Additionally, there is a lack of standardized physical therapy guidelines specifically targeting cartilage protection and osteoarthritis prevention in the wrist. Physical therapy plays an essential role in post-traumatic wrist rehabilitation; however, its preventive effect on post-traumatic osteoarthritis of the wrist remains insufficiently explored. There is a clear need for high-quality longitudinal studies and the development of standardized rehabilitation protocols aimed at joint preservation. Future research should focus on defining the optimal type, timing, and intensity of physical therapy interventions to reduce the risk of post-traumatic wrist osteoarthritis.

Keywords: wrist joint, post traumatic osteoarthritis, physical therapy, cartilage injury

UG- 047: Effectiveness of Blood Flow Restriction Training on Chronic Obstructive Pulmonary Disease: A Scoping Review

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ABSTRACT

Chronic obstructive pulmonary disease (COPD), a progressive respiratory condition that reduces exercise capacity and quality of life, is characterised by peripheral muscle weakness and airflow restriction. Low-load BFRT integrates partial vascular occlusion with low-load resistance training, enabling high-load training's hypertrophy and strength gains while minimizing dyspnoea and fatigue in COPD. So, Partial vascular occlusion and low-load resistance training are combined in a novel rehabilitation. This training method induces muscle strength and hypertrophy adaptations comparable to traditional high-load resistance training despite using much lighter loads. This review aims to explore the efficacy of Blood Flow Restriction training in patients with COPD. This review followed the IMRAD (Introduction, Methods, Results, and Discussion) pattern for non-systematic reviews. A literature search was conducted on Scopus, PubMed, and Cochrane Library from 2015 to November 2025. PICO format was used to assess the eligibility of articles where Population was patients with COPD; Intervention was Blood Flow Restriction Training; Comparator was a placebo/sham or control groups; Outcomes were dyspnea and muscle strength and Study design can be Randomised clinical trials, pretest post-test experimental studies, etc. 7161 results were identified, and after duplicate removal and assessing eligibility criteria, 4 studies were included in this review. The combined result of the assessed studies indicates that low-load BFRT helps in decreasing the in-exercise dyspnea when compared to high-load strength training. When compared with moderate intensity traditional interval exercise, low intensity internal exercise under BFRT shows a significant reduction in cardiovascular workload and perceived breathing effort. BFRT has become an increasingly popular, accessible and useful adjunct method to increase skeletal muscle strength.

Keywords: Resistance Training, Blood Flow Restriction Therapy, Dyspnea, Pulmonary Disease, Chronic Obstructive, Muscle Weakness

UG-048: A critical review of sensory motor integration on social and motor skill development among children with autism spectrum disorders

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ABSTRACT

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by deficits in social communication and the presence of restricted interest and repetitive behaviors. Autism is generally manifesting in the first few years of life and tending to persist into adolescence and adulthood. The aim of this critical review is identifying the existing available evidence on Sensory motor integration on improving and promoting social and motor skill development among children with ASD. A comprehensive literature search was performed in following databases: PUBMED, CINAHL, EMBASE, and Physiotherapy evidence database (PEDro). This is a critical review of articles published in English between 2015 and 2025. Title and abstract screening were performed, and included articles were included based on the eligibility criteria. Qualitative analysis with six identified articles in this critical review includes descriptive statistics, frequency analysis of mythological aspects, data extraction, identify gaps, and guides future research. Among them studies related to the effects of sensory motor integration on social and motor skill development in children with ASD were included. Data collected from the identified studies were synthesised qualitatively, & quantitatively. Included studies in the review highlighted the importance of sensory and motor integration on developing social and motor skills of children with ASD. Standardized Sensory motor integration protocol should be followed globally to see improvement on social and motor skills among children with ASD. Future research can target specific paediatric age groups to see the specific effects of sensory and motor integration in particular paediatric age group.

Keywords: Autism; Children; Pediatric; Sensory; Motor

UG-049: Role of Proprioceptive Training in Meniscal Injury: A Literature review

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ABSTRACT

Meniscal injury disrupts knee joint mechanoreceptors and impairs proprioceptive feedback, contributing to neuromuscular control deficits, balance impairments, and functional instability. These deficits are clinically significant because they may alter movement strategies, reduce load distribution efficiency, and increase the risk of reinjury or degenerative progression. Although proprioceptive training is routinely incorporated into rehabilitation, its specific benefits following meniscal injury remain uncertain due to inconsistent findings and limited synthesis across studies. This review critically examines research evaluating the effects of proprioceptive or sensorimotor interventions on knee stability, proprioception, balance performance, and functional outcomes in individuals with meniscal pathology. A structured search of PubMed, Cochrane Library, PEDro, DOAJ, and Google Scholar identified studies published between 2015 and 2025. Search terms focused on meniscal injury, proprioception, sensorimotor training, neuromuscular control, and rehabilitation. The entire free full text original article, English language articles in explicitly explaining the role of proprioception training on meniscal injury were included, irrespective of study type. Letter- to- the editor comment, non-English papers, and duplicated studies were excluded. From 258 records, five studies met inclusion criteria, involving 154 participants assigned to proprioceptive or control protocols. The included randomized and quasi-experimental trials employed interventions such as balance training, joint-position sense exercises, perturbation tasks, and sensorimotor drills, often in conjunction with strengthening and mobility components. Across studies, proprioceptive training yielded greater improvements in joint-position sense, dynamic balance, and functional performance compared with standard rehabilitation, indicating short-term benefits for neuromuscular control and joint stability. Interpretation remains limited by the small number of trials, modest sample sizes, variability in training intensity and duration, and heterogeneity in outcome measures. Nevertheless, current evidence supports incorporating structured proprioceptive training within meniscal rehabilitation programs, while highlighting the need for larger, methodologically rigorous studies to establish optimal protocols and long-term effectiveness.

Keywords: Proprioception, Meniscal Injury, Balance Training, Knee Rehabilitation, Sensorimotor Control.

UG-050: The effect of strain-counterstrain technique and sciatic nerve mobilization on pain and mobility improvement in treating patient with piriformis syndrome: Randomized controlled Design.

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ABSTRACT

Background: Piriformis syndrome is also called as sciatica or buttock pain. It is a condition in which the piriformis muscle compresses or irritates the sciatic nerve which causes buttock pain which may radiate to lower down the leg. The muscle tightens or shortens, thus compressing the nerve and disturbing the impulses passing from it.

Aim: To find out the effect of strain-counterstrain technique and sciatic nerve mobilization on pain and mobility improvement in treating patient with piriformis syndrome.

Materials and Methods: Patient with piriformis syndrome will be recruited through convenience sampling method, and will be randomly allocated in two groups through lottery method. In each group 24 patients will be allocated. Experimental group will receive strain-counter strain technique and control group will receive sciatic nerve mobilization. The treatment protocol for both groups will be followed for a period of three time a week for two consecutive weeks. Pain will be assessed by Visual Analogue Scale, while hip adduction and internal rotation range of motion will be measured through a universal goniometer.

Result: Data will be analyzed via SPSS version 25. Based on normality, Data will be expressed in mean $\pm$ SD or Median and Inter-quartile range. If the data follows normal distribution independent t test will be used, and if not normal, Mann-Whitney U test will be used for estimating difference between the groups.

Conclusion: The effect of strain-counter strain technique and sciatic nerve mobilization in reducing pain and improving range of motion in patient with piriformis syndrome will be compared. It may provide an effective treatment protocol for treating symptoms in patient with piriformis syndrome.

Key words: Piriformis syndrome, strain-counter strain technique, sciatic nerve mobilization, range of motion.

UG-051: Effect of Cervical Traction on Inhibiting Accessory Muscle Activation During Diaphragmatic Breathing Technique: A Literature Review

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ABSTRACT

Cervical traction, used in conjunction with diaphragmatic breathing, is gaining attention as a method to enhance breathing efficiency by encouraging the diaphragm to work more effectively and reducing reliance on accessory muscles, such as the sternocleidomastoid, scalenes, and upper trapezius. Traction, whether manual or mechanical, improves cervical alignment and influences the C3-C5 nerve roots that supply the phrenic nerve, which can enhance diaphragmatic function and reduce unnecessary muscle activity. A comprehensive search of PubMed, Scopus and Cochrane databases from 2022 yielded 1725 studies, with 5 selected after removing duplicates and applying eligibility criteria. The included studies are randomised controlled trials. Research suggests that this combination can improve neck posture, stimulate phrenic activity, and increase measures such as forced vital capacity, Peak expiratory flow, and overall chest expansion. Electromyography findings show reduced activation of accessory muscles, indicating better breathing control. It may also help lower feelings of breathlessness and promote smoother, more coordinated respiratory patterns, especially in people with postural issues or weak diaphragm function. In clinical practice, therapists often report better relaxation, reduced neck tension and improved breathing rhythm when both techniques are used together. The results depend on choosing the right traction force, maintaining proper body alignment and preventing unwanted muscle activation. Overall, pairing cervical traction with diaphragmatic breathing appears to be a promising method to improve breathing mechanics, enhance respiratory performance and restore normal muscle activation; however, stronger evidence is needed to create standard treatment guidelines.

Keywords: Diaphragm, Phrenic Nerve, Traction, Respiratory Mechanics, Posture

UG-052: Wearable Sensor Technologies for Spinal Posture Monitoring and Correction: A Systematic Review

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ABSTRACT

Disorders of spinal posture are widespread and associated with chronic pain and functional limitation. Without instantaneous and real-time feedback, the assessment techniques are still based on traditional assessment methods and are subjective. This systematic review evaluated the accuracy, usability, and real-time application of IoT-based wearable sensor technologies for monitoring and correcting spinal posture. Electronic databases (PubMed, PEDro, IEEE Xplore, Cochrane Library) were searched for non-randomized studies between January 2020 and December 2024. Keywords including “Wearable sensors,” “Posture,” “Internet of Things,” “Feedback,” “Chronic Pain,” and related terms with Boolean operator were used to conduct search, following the PRISMA-DTA guidelines. Four observational studies were included, featuring wearable systems that comprised pressure sensor cushions, smart rehabilitation garments, and IMU-embedded clothing. The QUADAS-2 and GRADE were used to assess the Risk of Bias and the Levels of Evidence. The accuracy was between 89% and 100% and the participant’s acceptance level was also high, given that the System Usability Scale score was 86. Three of four systems offered real-time feedback via vibrotactile or mobile notifications. However, the studies had limitations, such as small sample sizes (1–20 participants), predominantly healthy young adult populations, a temporary or superficial nature of the study, and considerable methodological heterogeneity, which prevented a direct comparison of the studies. The limited evidence suggests that wearable sensor technologies can be utilized for spinal posture monitoring, and there is a need for larger, well-designed longitudinal studies involving various clinical populations and reliable outcome measures. Wearable technologies show promise for accurate, real-time posture correction and have potential for adoption in home-based rehabilitation and tele-physiotherapy. Long-term effectiveness, clinical validation, and real-world evidence are crucial for supporting clinical adoption in future research.

Keywords: Wearable sensors, Posture, Internet of Things, Feedback, Chronic Pain.

UG-053: Exploring the effect of Kinesiotaping in the management of De Quervain's Tenosynovitis: A Narrative Review

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ABSTRACT

De Quervain's tenosynovitis is a painful inflammatory condition of the first dorsal compartment of the wrist affecting the Abductor Pollicis Longus and Extensor Pollicis Brevis tendons. It causes pain, swelling, and limited movement. There are many ways to treat inflammatory musculoskeletal conditions, but Kinesiotaping is a newer method that works well. Kinesiotaping provides dynamic support, reduces inflammation, and enhances proprioception. This narrative review will investigate and synthesize the evidence on the effect of Kinesiotaping in the treatment of the patient with De Quervain's tenosynovitis. A narrative review was conducted using a systematic search of relevant databases (PubMed, Scopus, and Cochrane Library). Studies investigating the effect of Kinesiotaping in De Quervain's patients, published in English between 2010 and 2024, were included. A total of 6 studies met the inclusion criteria, focusing on Kinesiotaping as an intervention. The main goals were to lessen the patients' pain and improve the function of their hands and wrists. Evidence indicates that Kinesiotaping accelerates patient recovery and enhances grip strength. It makes the patients more functionally independent, reducing dependency on another person, making every task feasible for the patients, and increasing the patients' safety. The comprehensive study indicates that Kinesiotaping is efficacious in the treatment of patients with De Quervain's tenosynovitis.

Keywords: Athlete Tape, Hand Strength, Inflammation, Proprioception, Wrist, Tenosynovitis

UG-054: The 30-15 Intermittent Fitness Test: A Scoping Review of Evidence in Athletic, Non-Athletic, and College Student Populations

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ABSTRACT

Cardiorespiratory Fitness (CRF) is an important health metric that affects performance and physical health in a variety of populations. A range of assessment tests exists, including the 30-15 Intermittent Fitness Test (30-15 IFT), which is one of the most common field-based CRF tests developed by Martin Buchheit. The test requires participants to run for 30 seconds and then recover for 15 seconds by walking. It has been shown to be a reliable and valid measure of VO₂ max. This scoping review aims to map 30-15 IFT evidence across athlete and non-athlete populations, identifying research gaps in college-going individuals. Following Arksey and O'Malley framework to map evidence on the 30-15 IFT across populations, a search was conducted using keywords including "Cardiorespiratory Fitness," "Field-Based Tests," "Validity," "Reliability," "VO₂max," "30-15 IFT" and related terms with Boolean operator from PubMed, ScienceDirect, Embase, and Scopus for full-text English articles. Eight peer-reviewed studies (2015-2025) on the 30-15 intermittent fitness test were included. Data on validity, reliability, demographic characteristics and their utility in athletic and non-athletic populations were then retrieved from articles. Analysis of the retrieved articles suggested that Reliability was consistently excellent among elite and sub-elite athletes (ICC 0.84–0.97; CV 1.2–1.9%), with strong validity against VO₂ max and criterion tests (r=0.67–0.91). In non-athletic college students, validity was poor due to wide limits of agreement and systematic underestimation. This review maps available evidence on 30-15 IFT across elite and sub-elite athletes, revealing extensive validation and reproducibility across the population but critical gaps in non-athletic college-going individuals. The evidence remains limited with critical gaps: No studies assessed sedentary, overweight, non-athletic and recreational sports college populations. Results demonstrate potential for future research.

Keywords: Cardiorespiratory Fitness, Field-Based Tests, Validity, Reliability, VO₂max, 30-15 IFT.

UG-055: Effect of Buteyko Breathing in Elderly Patients with Asthma: A Scoping Review

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ABSTRACT

Asthma in older adults is often accompanied by age-related reductions in lung elasticity, weakened respiratory musculature, and multiple comorbidities, all of which make symptom control more challenging and increase sensitivity to medication side effects. These difficulties have encouraged interest in non-pharmacological approaches such as the Buteyko Breathing Technique (BBT), which aims to improve breathing efficiency and reduce symptoms associated with dysfunctional breathing. This scoping review was carried out following the PRISMA-ScR guidelines to synthesise evidence from four available studies that examined the effects of BBT in older or adult asthma populations. These studies were extracted from the databases Pubmed, Scopus, and Cochrane Library. Two quasi-experimental studies from Egypt involving elderly participants reported that structured BBT programmes led to significant improvements in asthma control, symptom severity, and health-related quality of life. Both studies also demonstrated meaningful increases in spirometric measures, including FEV₂, FVC, and FEV₂/FVC ratios, with improvements sustained for up to six months. A study from Indonesia involving older adults found that combining respiratory muscle stretching with BBT produced notable gains in peak expiratory flow, suggesting enhanced expiratory performance. In addition, a clinical case report described improved dyspnoea, peak flow values, and functional capacity in an adult patient participating in a rehabilitation programme incorporating BBT. Across all four studies, BBT was well tolerated, and no adverse events were reported. Collectively, these studies indicate that BBT may serve as a safe and beneficial adjunct to standard asthma management for older adults, offering improvements in pulmonary function, symptom burden, and overall well-being. However, larger, high-quality trials specifically targeting elderly populations are needed to confirm long-term effectiveness.

Keywords: Buteyko Breathing Technique, Elderly Asthma, Pulmonary Function, Asthma Control, PRISMA-ScR, Breathing Retraining

UG-056: Sensorimotor-Based Neuromuscular Training for Improving Dynamic Postural Stability after Anterior Cruciate Ligament Reconstruction: A Systematic Review Protocol

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ABSTRACT

Anterior cruciate ligament (ACL) reconstruction (ACLR) is one of the most common surgical interventions in young, active individuals. Return-to-sport rates remain only 55–65%, and reinjury risk is reported to be 2–4 times higher in younger athletes, highlighting functional challenges. Patients experience persistent dynamic postural stability deficits, which significantly increase secondary injury risk and limits functional activities. Multiple rehabilitation approaches including both traditional and modern techniques are employed to restore neuromuscular control and functional capacity post-ACLR. Though traditional strength training remains commonly used in clinical practice, sensorimotor-based neuromuscular training encompassing balance exercises, proprioceptive training, plyometric exercises, and core stabilization has demonstrated considerable effectiveness in improving neuromuscular function and dynamic stability. However, high-quality evidence on its effects on validated dynamic postural stability outcomes after ACLR remains limited. This protocol outlines the methodology for a systematic review evaluating the effectiveness of sensorimotor-based neuromuscular training for improving dynamic postural stability in adolescents and adults post-ACLR. The review will include randomized controlled trials on adolescents and adults who have undergone primary ACLR. Interventions will involve sensorimotor-based neuromuscular training compared with standard rehabilitation or usual care, with outcomes focused on dynamic postural stability measures. Adolescents and adults were selected due to higher functional demands, and RCTs were included to ensure stronger evidence quality. This protocol will follow PRISMA-P guidelines to ensure methodological rigor, transparency, and reproducibility. A systematic search of Cochrane Library, PubMed, Scopus, and ScienceDirect will be performed for studies published between January 2010 and December 2025. Methodological quality will be assessed using the PEDro scale, with risk of bias evaluated through the Cochrane RoB-2 tool, and certainty of evidence graded using the GRADE framework. Outcome measures include the Y-Balance Test, Star Excursion Balance Test, and Biodex Balance System.

Keywords: Anterior Cruciate Ligament, Neuromuscular Training, Postural Balance, Postural Control, Balance Training.

UG-057: Effect of Conch Shell Blowing versus Ballon Blowing Training on Lung Function and Chest Expansion among Active Smokers: A protocol of a Randomized Clinical trial

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ABSTRACT

Introduction and Purpose: Smoking reduces lung capacity, weakens the respiratory muscles, and restricts chest expansion. Conch-shell blowing and balloon blowing are respiratory exercises that increase expiratory pressure, strengthen respiratory musculature, and enhance chest mobility. This study aims to compare which of the two interventions produces greater improvement in chest expansion and lung function among active smokers.

Methods: This pretest-post-test two-group randomized clinical trial will include healthy active smokers aged 18–25 years with a smoking history of at least 3 years and no cardiovascular, respiratory, or neuromuscular disorders affecting respiration. Participants will be recruited through criterion-based purposive sampling after institutional ethical approval and written informed consent. They will be randomly assigned into two groups (Group A and Group B) in a 1:1 ratio. Sample size will be calculated after pilot testing. Pre- and post-intervention assessments will include Pulmonary Function Tests (Forced Vital Capacity, Forced Expiratory Volume in one second) and chest expansion measurements (chest circumference and diameter). Chest circumference will be assessed at the axillary level (4th rib), xiphoid level, and 10th costal cartilage using an inch tape, measured at maximum inspiration and expiration.

Group A will receive conch-shell blowing and Group B will receive balloon-blowing training. Both groups will undergo the intervention for 2 weeks, with 1 session per day, 5 days per week. Each session will consist of three blows, each 10 seconds.

Results: Both groups are expected to show significant improvements in chest expansion and lung function, as the exercises increase expiratory resistance and strengthen diaphragm and intercostal muscles.

Conclusion: Conch-shell blowing and balloon blowing are expected to improve chest expansion and lung function in active smokers. However, one intervention may demonstrate comparatively greater physiological benefits due to differences in expiratory resistance and respiratory muscle engagement.

Keywords: Smoking, Respiratory Muscles, Thorax, Respiratory Physiotherapy, Lung Function Test.

UG-058: Impact of EMG Biofeedback-Assisted Exercise Training on Postural Correction in Individuals with Upper Cross Syndrome: A Systematic Review Protocol

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ABSTRACT

Upper Cross Syndrome is one of a common postural dysfunction that results due to muscular imbalances around the neck, shoulders, and upper back. Though there are many traditional manual techniques that are used to treat upper cross syndrome, however the use of Electromyographic (EMG) biofeedback has introduced an advanced approach to treat upper cross syndrome more effectively. This review aims to systematically evaluate the impact of EMG biofeedback-assisted exercise training on postural correction and muscle balance in adults with Upper Cross Syndrome. A systematic search will be conducted using database such as PubMed, Scopus, Web of Science and the Cochrane Library. Randomized controlled trials (RCTs) and Pilot Studies that involves adult participants (18–50 years), diagnosed with Upper Cross syndrome or similar postural deviations and studies using EMG biofeedback-assisted exercises will be included in this review. Primary outcomes of this review will include posture correction (Craniovertebral Angle, Forward Head Angle, Forward Shoulder Angle, Thoracic Kyphosis Angle) and scapular posture measures. Followed by secondary outcomes such as movement pattern, Scapular dyskinesis and arm elevation EMG patterns. Two independent reviewers will perform study selection, data extraction, and methodological quality by using the PEDro scale and CONSORT checklist. Risk of bias will be assessed through the Cochrane RoB 2.0 tool. If feasible, a meta-analysis will be performed.

This review is expected to consolidate findings from various randomized controlled trials and determine whether EMG biofeedback-assisted exercise training truly enhances postural correction or not. It will also provide evidence-based recommendations for physiotherapists in treating upper cross syndrome.

Keywords: EMG biofeedback, upper cross syndrome, postural correction, neuromuscular re-education, cervical flexor strength, scapular stabilizers, physiotherapy rehabilitation

UG-059: Effect of Soft Tissue Mobilization in Temporomandibular Joint Dysfunctions: A scoping review

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ABSTRACT

The term temporomandibular disorder describes pathologies or dysfunctions affecting the masticatory muscles, temporomandibular joints related musculoskeletal and neurovascular tissues. Jaw pain, restricted mouth opening, and decreased function are all symptoms of temporomandibular joint dysfunction (TMD), which involves issues with the joint and the chewing muscles. For this the conservative management typically involves soft tissue mobilization procedures. For TMD, Soft tissue mobilization (STM) has been proposed as a non-invasive therapeutic method of treatment. The aim of this review was to collect data regarding the results of STM in the treatment of TMD, including myofascial release and other manual soft tissue methods. This scoping review following PRISMA-ScR guidelines, PubMed, Scopus, Web of Science, and Google Scholar were searched from 2015 to 2025 using terms like “soft tissue mobilization” and “temporomandibular dysfunctions”, “massage” and “temporomandibular dysfunctions.” Inclusion criteria covered RCTs, clinical studies, non-invasive STM in TMD patients. From 652 records, 25 studies were included (18 RCTs, 7 quasi-experimental) after dual screening. Data charting captured participant demographics (mostly young females), protocols (10-30 min sessions, 3-10 weeks), and outcomes, VAS pain, Maximum Mouth Opening (MMO). RCTs (e.g., El Hage et al., Akinoglu et al.) showed immediate MMO gains (3-10 mm, $p < 0.05$) and pain reduction (VAS 2-4 points) post-massage/ischemic compression on masseter/temporalis. Case reports (Kuc et al.) confirmed symptom relief in complex cases like Kimmerle anomaly. Benefits persisted short-term (4-12 weeks), outperforming controls, though long-term data (> 6 months) and protocol standardization are limited. STM provides safe, effective short- to mid-term relief in TMD as part of conservative care. High-quality RCTs with standardized protocols, diverse populations, and extended follow-up are needed alongside multimodal approaches (exercise, education).

Keywords: Soft tissue mobilization, myofascial release, manual therapy, jaw pain.

UG-060: A correlation study on Hamstring flexibility and plantar pressure distribution in young adults: A Study protocol

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ABSTRACT

Background: The hamstring muscle can be linked to abnormal gait, low back stiffness, and dysfunction in the lumbar spine, pelvis, and lower limbs. The relationship between foot posture and hamstring muscle tightness is under-researched, even though the foot influences proximal body regions and overall function.

Aim: This study aims to explore the correlation between hamstring flexibility and plantar pressure distribution during static stance and level-ground walking in healthy young adults.

Methodology: Participants with previous foot injuries, deformities, neurological or rheumatological disorders, or pain will be excluded. Hamstring flexibility will be assessed using the Active Knee Extension (AKE) test and the Sit-and-Reach Test (SRT), both proven reliable for measuring hamstring extensibility. Plantar pressure distribution will be recorded with a calibrated pressure platform while participants stand quietly and walk at their own pace. Key metrics include peak pressure, pressure-time integral, contact area, and the center of pressure (COP) path across rearfoot, midfoot, and forefoot regions.

Outcome Measures: Primary outcomes will include AKE angle (degrees) and SRT distance (cm) for flexibility, alongside regional plantar pressure parameters such as peak pressure, pressure-time integral, contact area, and COP excursion index in static and dynamic trials.

Data Analysis: Participant demographics and all outcome metrics will be summarized using descriptive statistics. Data normality will be assessed with the Shapiro–Wilk test. Associations between hamstring flexibility (AKE, SRT) and plantar pressure will be explored using Pearson or Spearman correlation coefficients. Multiple linear regression will adjust for potential confounders like sex, BMI, and physical activity levels ($p < 0.05$ is significant), using SPSS or similar software.

Conclusion: The results may support the integration of targeted hamstring flexibility interventions into preventive and rehabilitative approaches to optimize plantar loading and reduce the risk of lower limb overuse injuries.

Keywords: Biochemical phenomena, Hamstring muscles, Foot deformities, Gait, Rheumatic disease.

UG-061: Effect of Narrow heeled footwear on balance and ankle joint stability in women: A Narrative Review

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ABSTRACT

Women postural control and ankle stability are significantly impacted by narrow – heeled shoes such as high heeled styles. The ways in which these shoes alter ankle joint function balance techniques and gait mechanics are covered in this narrative review. Research shows that wearing narrow heels footwear increases forefoot loading shifts body weight forward and narrows women ankle stability and postural control are significantly impacted by narrow heeled shoes such as high heeled styles. Research shows that wearing narrow heels increase forefoot loading shifts body weight forward and narrow base of support all of which make it harder to stay balanced and cause fall. These shoes restrict natural joint movement and decrease overall stability increasing reliance on proprioceptive and muscular effort. Frequent use may result in reduced balance performance during both static and dynamic tasks fatigue and slower neuromuscular responses. Walking is altered by narrow heels footwear because they shorten steps increase mediolateral sway and decrease effective shock absorption and the base of support all of which make it harder to maintain balance. These shoes restrict natural joint movement reliance on proprioceptive. Narrow- heeled footwear change normal gait patterns and raise the risk of fall and ankle injuries because they shorten steps. Women should wear footwear that encourage safer movement and joint health because research generally indicates that narrow heels can negatively impact ankle stability and balance.

Keywords: Narrow heeled, Women, Ankle stability, Proprioception, Balance.

UG-062: Effectiveness of Neuromuscular Training and Resistance Training on Speed, Agility, Flexibility, Jump Smash and Drop Shot Among Badminton Players: A Systematic Review

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ABSTRACT

Badminton involves agility, power, balance, and efficiency of movements peculiar to the skill. Neuromuscular training (NMT) and resistance training (RT) are common types of training with the aim of improving these qualities, but the comparative impact of the two are scattered throughout the literature. This review was conducted as a systematic synthesis of experimental and interventional studies. Aim was to integrate existing research on the efficacy of NMT and RT intervention in enhancing speed, agility, flexibility, jump smash and drop shot in badminton players. A structured search strategy was applied across electronic databases including PubMed and Google Scholar, using keywords related to “badminton”, “neuromuscular training”, “resistance training”, “speed”, “agility”, “flexibility”, “jump smash” and “drop shot”, with studies screened based on predefined eligibility criteria. The evidence that was included consisted of randomized controlled trials, non-randomized interventions, pilot trials. The players were as young as 13 to 16 years and as old as high-profile adult players. Interventions consisted of integrated NMT programs, plyometric protocols, in-season RT, flywheel eccentric RT and combined EMS strength programs. Use of integrated NMT was effective in reducing asymmetries and improving coordination, whereas RT protocols were reliable in increasing strength, power and deceleration. Plyometric training led to rapid improvements in the short term and combined RT-NMT programs had the highest transfer to badminton specific skills. Both NMT and RT have a significant effect of enhancing the physical and skill determinants of badminton performance. The outcome measures should be standardized in future studies, there should also be research on the use of modalities that can be combined and research on dose response with different competitive levels.

UG-063: Prevalence of core instability among caregivers in a tertiary care hospital: A cross-sectional study protocol

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ABSTRACT

Introduction: Caregivers who work in tertiary care hospitals are frequently required to perform tasks that are physically demanding, including lifting, transferring and repositioning patients, under often poor ergonomic conditions. These types of activities are typically done repetitively and over sustained periods of time, creating a large amount of stress on the lumbopelvic area of the body, which increases the risk of developing core instability and subsequently low back pain. Caregivers may also exhibit a reduced functional capacity due to developing core instability and may exhibit increased absenteeism from the workplace. Therefore, it is important to identify the prevalence and the contributing factors of core instability in this population, especially in tertiary care facilities in India.

Aim: The aim of this study is to determine the prevalence of core instability among caregivers working in a tertiary care hospital.

Methods: This cross-sectional observational study will recruit full-time caregivers (aged 21–60 years, ≥ 6 month experience) from a tertiary care hospital using convenience sampling method. Participants will complete a structured questionnaire (socio-demographics, occupational details, associated medical conditions) and undergo standardized core stability tests (Prone Plank, Side Bridge, Bridge Test). Descriptive statistics will be used to determine the prevalence of core instability, and subgroup analysis will be performed based on gender and work profile.

Result: Findings of this study will highlight the proportion of caregivers demonstrating reduced endurance in one or more component of the Stuart McGill core endurance tests. The results may also identify trends related to demographics influencing core stability.

Discussion: Caregivers are routinely exposed to patient handling, prolonged standing, and repetitive physical tasks, which may predispose them to core muscle instability. Identify prevalence of poor core stability can help in early diagnosis of musculoskeletal risk factors in caregivers working in tertiary care hospitals.

Keywords: Core stability, Caregivers, Tertiary Care Hospital, Occupational health

UG-064: Role of Soft Tissue Manual Therapy in managing Hip Osteoarthritis: A Systematic Review Protocol

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ABSTRACT

Hip osteoarthritis (OA) refers to a long-term degenerative joint condition marked by pain, stiffness, increasing cartilage loss, and functional restrictions. Exercise therapy, medication, and activities adjustment are common components of conservative management; however, soft tissue manual treatments are becoming more and more popular as an additional intervention to lessen pain, increase muscle flexibility, along with restore joint function. Due to variations in procedure type, treatments intensity, and methodological quality, previous research has produced inconsistent results. Thus, a transparent and repeatable approach for summarizing the available information on this topic must be outlined in a systematic review process. The aim of this systematic review protocol to evaluate impact of soft tissue manual therapy in comparison to usual treatment, exercise therapy only, placebo, or various manual interventions on pain, movement, hip range of motion, and disability among individuals with hip osteoarthritis. The protocol follows PRISMA guidelines. The databases such as PubMed, PEDro, CINAHL, and Cochrane Library were searched to gather recent published literature starting the effect of soft tissue manual therapy in hip osteoarthritis. Eligible studies will include randomized controlled trials, Quasi Experimental Studies. The risk of bias will be assessed by using ROB-2 tool. This review will conclude which Soft Tissue Manual Therapy technique will be more effective in managing patients with Hip Osteoarthritis.

Keywords: Hip Osteoarthritis, Soft Tissue Manual Therapy, Manual Therapy, Physiotherapy, Exercise Therapy

UG-065: Impact of Blood Flow Restriction Training in Post-Meniscectomy Rehabilitation: Systematic Review Protocol

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ABSTRACT

Meniscectomy frequently results in quadriceps weakness, discomfort, and functional restrictions because of the early postoperative reduction in mechanical stress. Soon after surgery, joint inflammation and patient pain may make traditional high-load strengthening exercises impractical. Blood Flow Restriction (BFR) training is a potential approach in early rehabilitation because it enables low-load workouts to produce strength and hypertrophy results comparable to heavy-weight training. However, there is little data specifically relating to post-meniscectomy patients, needing a careful assessment. The purpose of this study is to develop a systematic Review protocol in order to investigate how BFR training affects meniscectomy patients undergoing rehabilitation in terms of muscular strength, functional recovery, pain, and results. This protocol was created in compliance with PRISMA-P standards. A thorough search of the literature will be conducted in PubMed, PEDro, CINAHL, and the Cochrane Library to find contemporary research on the effects of blood flow restriction (BFR) training during rehabilitation following meniscectomy. Randomised controlled experiments, controlled clinical trials, and quasi-experimental research that fit the qualifying requirements will all be reviewed. The risk of bias will be assessed by using the ROB-2 tool. The purpose of this review is to evaluate the effectiveness of BFR restriction training in improving strength and functional recovery after meniscectomy. It will provide evidence to guide postoperative rehabilitation practice.

Keywords: Blood Flow Restriction Training, Knee Rehabilitation, Meniscectomy, Muscle Strength, Postoperative Recovery.

UG- 066: Effectiveness of Motor Control Training on Chronic Shoulder Impingement Syndrome: A Literature Review

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ABSTRACT

Shoulder Impingement Syndrome (SIS) is one of the most prevalent causes of shoulder pain, characterized by rotator cuff tendon compression, altered scapular kinematics, and deficits in neuromuscular control. These dysfunctions lead to limitations in overhead movement, reduced muscle activation patterns, and compromised shoulder stability. Motor Control Training (MCT), which focuses on retraining coordinated muscle activation and restoring optimal scapulohumeral rhythm, has emerged as a targeted rehabilitation approach for SIS. However, the consistency of its effectiveness across studies and its impact on pain and function require further investigation. This literature review examined the effectiveness of MCT in managing chronic Shoulder Impingement Syndrome. A comprehensive search of PubMed, Web of Science, PEDro, and Scopus was conducted for studies published between 2020 and 2025, using Boolean terms such as “motor control training AND shoulder impingement,” “neuromuscular control AND rotator cuff,” and “scapular motor training AND chronic shoulder pain.” A total of 34 studies were identified and only 12 studies met the inclusion criteria, including randomized controlled trials, pilot trials, and neuromuscular training interventions involving adults with chronic SIS. Motor Control Training interventions commonly incorporate scapular stabilization, neuromuscular re-education, kinetic-chain integration, and progressive task-specific movement retraining delivered over 4–8 weeks. Across the included studies, MCT demonstrated significant reductions in pain intensity (mean improvement, 2.3 ± 0.7 on VAS, $p < 0.001$), improvements in shoulder function measured by the Shoulder Pain and Disability Index (mean change, -14.6 ± 4.2 , $p = 0.002$), and enhanced scapular muscle activation symmetry. Several studies have also reported meaningful gains in the range of motion and overhead movement efficiency. While the findings consistently support the clinical benefits of MCT, variations in training protocols and sample sizes limit uniform clinical recommendations. Overall, Motor Control Training appears to be an effective, targeted intervention for improving pain, neuromuscular control, and functional outcomes in chronic Shoulder Impingement Syndrome.

Keywords: Shoulder Impingement Syndrome, Motor Control, Neuromuscular Training, Scapular Dyskinesis, Rehabilitation.

UG- 067: Physiotherapy Analysis of Fascial Connectivity in Postural Control, Breathing Mechanics and Pain: A Narrative Review

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ABSTRACT

Fascia is a unified connective tissue network that support posture, movement and force transmission. Recent research has highlighted that when these fascial lines undergo fascial densification or reduced elasticity, it causes interruption in normal transmission of force. This review brings together the current research on anatomical, physiological, biomechanical and patient-centered clinical relevance of various myofascial lines. It explores how variations in fascial properties affect posture, spinal alignment, gait biomechanics and breathing dynamics.

A narrative literature review was carried out by using databases such as PubMed and Google Scholar. Literature published between 2015 to 2025 was searched. Studies including randomized controlled trial, review articles and observational studies addressing fascial anatomy, structural connectivity and force transmission were considered. Studies published in language other than English or not related to biomechanical aspect of fascia were excluded. The review methodology was conducted in accordance with SANRA guidelines.

The reviewed studies suggest that altered fascial properties may influence spinal alignment, breathing mechanism and movement pattern. Special emphasis is placed on diaphragm and deep front line because of their fundamental role in maintaining the core stability and supports efficient pulmonary function. Studies also reported the links between myofascial alteration, chronic pain and imbalances in kinetic chain integration hence the fascial connection serve as a useful framework for interpreting complex musculoskeletal relationship and mechanical factor underlying pain and functional limitation. This supports the relevance of fascia in physiotherapy assessment and treatment planning.

Keywords: Fascia, biomechanics, breathing, postural control and pain

UG-068: AI-Enhanced Trajectorial Advances in Cardiac Care: Innovations in Prevention, Prediction and Assessment: A Narrative Review

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ABSTRACT

Cardiovascular diseases remain the leading cause of global mortality, accounting for approximately 18 million lives each year, underlining the demand for innovative strategies for prevention and early detection of these morbidities. Artificial intelligence (AI) has shown promising results in this field by identifying latent patterns within multilayered datasets, predicting adverse events before clinical manifestation, and guiding precise clinical decision-making. AI not only enables the detection of subtle changes in biomarker variations but also acts as a screening tool for risk identification. This review aims to explore currently available AI-enhanced tools for dynamic cardiac health tracking using non-invasive wearable devices and integrated diagnostic modalities for the detection of diverse cardiovascular conditions. A narrative review of the literature was conducted using research databases such as Scopus and PubMed. The literature search covered studies published between January 2019 and November 2025. The inclusion criteria comprised observational studies, cohort studies, randomized controlled trials, and review articles focusing on AI applications in cardiac detection, monitoring, and risk prediction. Non-English articles and studies with irrelevant outcomes were excluded. The review was conducted and reported in accordance with the Scale for the Assessment of Narrative Review Articles (SANRA) guidelines. The evidence suggests that AI demonstrates substantial capability in the early identification of cardiac abnormalities, thereby aiding clinical decision-making and preventive strategies. Despite this remarkable potential, AI faces major challenges, as issues related to data privacy, algorithmic bias, and patient consent persist. In the world of diagnosis and proactive patient care, AI can substantially strengthen cardiovascular field by functioning as an assistive tool in clinical practice. AI-enabled devices can support early detection, continuous monitoring, and personalized risk assessment. However, strong interdisciplinary collaboration is necessary to bridge existing gaps and facilitate effective clinical adoption.

Keywords: Artificial intelligence, cardiovascular disease, wearable devices, electrocardiography, risk prediction, AI based diagnostics

UG- 069: Various Test Batteries to Assess Cardiovascular Fitness in Adults: A Narrative Review.

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ABSTRACT

Cardiovascular fitness is widely recognized as a major marker of adult health, playing a central role in daily physical functioning and offering strong protection against chronic diseases. Numerous test batteries have been developed to evaluate cardiorespiratory fitness in clinical, community, and sports settings; however, limited efforts have been made to identify which assessments are most valid, reliable, safe, and practical for adults. This narrative review aimed to provide a comprehensive overview of cardiovascular fitness tests used for adults aged 18–65 years, with particular emphasis on their scientific quality and clinical applicability. A structured search of PubMed, Scopus, Web of Science, and ResearchGate identified articles published between 2010 and 2024. Studies were included if they involved adult participants, used standardized cardiovascular fitness assessments, and reported outcomes such as validity, reliability, feasibility, or clinical usefulness. Based on these criteria, five major review articles met the inclusion criteria and were synthesized. Together, these reviews represented evidence from 126 primary studies, of which 38 studies underwent detailed full-text assessment for this narrative review. Among these 38 studies, the 20-meter shuttle run test was evaluated in 12 studies, the Cooper 12-minute run test in 8 studies, 1.5-mile run test in 6 studies, six-minute walk test in 7 studies, and step tests in 5 studies, consistently demonstrated good validity and reliability for estimating aerobic capacity. Laboratory-based treadmill and cycle-ergometer tests remain the gold standard due to their direct measurement of maximal oxygen uptake ($\text{VO}_{2\text{max}}$), although they require specialized equipment and trained personnel. Within these 38 studies, walk and step tests were highlights as safe and practical options for adults with lower fitness levels or chronic conditions. Overall, evidence suggests that combining multiple field-based measures within a structured test battery provides a more comprehensive assessment of cardiovascular fitness and enhances screening, training, and rehabilitation planning.

Keyword: Adult, Cardiovascular Fitness, Feasibility, Human, Physical activities.

UG-070: Role of Muscle Energy Technique in Managing Upper Cross Syndrome: A Systematic Review Protocol

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ABSTRACT

A Common postural imbalance brought on by extended sitting, poor ergonomics, using digital devices, and leading a sedentary lifestyle is called Upper Cross Syndrome (UCS). It causes weakness in the deep neck flexors, lower trapezius, and serratus anterior, as well as tension in the pectoralis major/ minor, upper trapezius, and decreased functional mobility are all consequences of this imbalance. MET aims to improve neuromuscular control, reduce muscle tension, increase range of motion, also correct postural alignment. Despite the widespread use of MET in physical therapy, existing studies still provide mixed finding on how strongly MET in producing consistent improvement in UCS. The aim of this study is to develop a systematic review protocol which assess how well the MET works for people with UCS in terms of pain reduction, postural correction, muscle length improvement, and improvement, and improved functional results, and to examine how these outcomes The review follows PRISMA guidelines. The database such as PubMed, PEDro, CINAHL, and Cochrane Library will be searched to gather recent published literature stating the effect of MET in UCS Eligible studies will include randomized controlled trials, Quasi Experimental Studies. The risk of bias will be assessed by using ROB-2 tool. This review will conclude which Muscle Energy Technique will be more effective in managing patients with Upper Cross Syndrome.

Keywords: Muscle Energy Technique, Upper Cross Syndrome, Pain, Dysfunction, Movement

UG- 071 : The Role of AI in Designing and Optimizing Foot Orthosis For Plantar Fasciitis – A Narrative Review

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ABSTRACT

Background: Plantar fasciitis also known as Jogger's heel, is mostly linked to Pes cavus, Pes planus, excessive femoral anteversion; along with tight Achilles tendon, obesity or prolonged weight bearing activities, all of which increases strain on plantar fascia. Customized orthoses relieve pain by redistributing the pressure; despite using 3D scanning and CAD-CAM systems, decision still depends heavily on clinician judgements. Recent development in Artificial Intelligence (AI) allows automated analysis, interpret gait and pressure data, and generate more precisely optimized orthoses.

Objective: To collect the recent clinical, biomechanical and AI- based evidences to understand how AI can improve the design and optimization of foot orthoses for Plantar Fasciitis.

Method: A narrative review methodology was conducted using Scopus, Web of Sciences and PubMed. Only English Language articles published from 2021 onwards were considered. Initially, the search yield approximately 95 articles; about 30 full- text articles were examined and 13 articles were considered for meeting criteria related to custom orthoses. Studies unrelated to custom orthosis, lacking digital methods or AI, pre-2021 publications, incomplete articles and non-English articles were excluded.

Results: Customized orthoses reduce pain and improve plantar pressure redistribution. Digital methods improve personalization, but remains manual. AI and Deep Learning/ Machine Learning models allow detailed pressure mapping and gait analysis and also have the ability to auto predict corrective parameters and generate printable orthoses.

Conclusion: Digital tools improve personalization, AI offers true optimization; offering more precise, automated and long- term symptom relief for plantar fasciitis.

Keywords: Plantar Fasciitis; Artificial Intelligence; Foot orthosis; CAD-CAM; Machine Learning; Deep Learning

UG- 072: AI-Integrated Neuro-Digital Reflex Mapping in Neurological Physiotherapy: A Conceptual Framework Based on a Narrative Review

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ABSTRACT

Introduction: Neurological disorders commonly result in impaired reflex activity and reduced proprioceptive awareness, posing challenges to effective rehabilitation. In routine neurological physiotherapy, reflex assessment is largely based on manual testing and visual observation, which are subjective and lack quantitative precision. Although wearable sensor technologies are increasingly incorporated into rehabilitation, most existing systems focus on voluntary movement analysis rather than reflex behaviour, limiting objective insight into nervous system responsiveness.

Objective: To develop a clinically feasible conceptual framework for AI-integrated neuro-digital reflex mapping using wearable sensors to objectively assess reflex activity in neurological physiotherapy.

Materials and Methods: A narrative review of recent literature was conducted focusing on surface electromyography (Semg), inertial measurement units (IMUs), pressure sensors, reflex-onset detection methods, and multimodal signal integration. Along with evidence synthesis, expert clinical reasoning was applied to ensure clinical feasibility. Based on this process, a conceptual framework was developed incorporating lightweight Semg electrodes, IMUs, and pressure sensors, supported by learning-based analytical approaches.

Results: The framework finalized four core domains of reflex assessment: reflex timing, reflex strength, bilateral symmetry, and inter-segmental coordination. Eight measurable reflex-related items were identified across these domains using multimodal sensor inputs. Outputs were translated into simplified visual reflex-mapping displays. Reviewed literature showed greater reliability of sensor-based assessments compared to manual observation; however, no existing system specifically targeted real-time reflex mapping in clinical practice.

Conclusion: The proposed framework offers an objective and structured approach to reflex assessment in neurological physiotherapy and may support personalised and responsive rehabilitation.

Keywords: Keflex; Neurological Rehabilitation; Electromyography; Wearable Electronic Devices and Physical Therapy Modalities

UG- 073: AI-Enhanced Proprioception Mapping Using Micro- Movement Signatures: A Conceptual Framework

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ABSTRACT

Introduction: Human motor control is characterized by subtle variability that reflects sensorimotor adaptability and proprioceptive integrity. Early sensorimotor decline often manifests as small alterations in movement quality before overt clinical symptoms become evident. Advances in wearable sensors and motion analysis have enabled continuous capture of fine kinematic changes that are not detectable through routine clinical assessment. Analyzing these micro-movement signatures may therefore offer a sensitive approach for early identification of proprioceptive and motor control alterations.

Objective: To develop a conceptual framework for AI-enhanced proprioception mapping based on analysis of micro-movement signatures derived from existing movement variability, sensor- based monitoring, and proprioception assessment literature.

Materials and Methods: A structured conceptual review was conducted across four domains: (1) nonlinear movement- variability research focusing on entropy and micro-fluctuations; (2) wearable-sensor studies identifying subtle motor deviations; (3) sensor-based early detection models using continuous motion monitoring; and (4) proprioception assessment methods employing inertial measurement units or motion-capture systems. Key constructs from each domain were extracted, compared, and synthesized through thematic integration to formulate the conceptual framework.

Results: The framework was finalized around three core domains: (i) micro-movement variability metrics, (ii) continuous kinematic monitoring, and (iii) proprioceptive accuracy indicators. Eight key components were identified, including entropy-based variability measures, fluctuation symmetry, movement consistency, low-amplitude instability detection, and AI-driven pattern recognition. Existing literature predominantly addresses these elements in isolation, with limited integration of micro-movement analysis into proprioceptive assessment.

Conclusion: The developed conceptual framework highlights the potential of integrating micro-movement signatures with AI-based analysis to enhance proprioception mapping. By combining identified domains and components, this approach may improve early detection of sensorimotor decline beyond conventional assessment methods.

Keywords: Proprioception; Motor Control; Wearable Electronic Devices; Sensors; Artificial Intelligence

UG-074: Determinants of Forward Head Posture and Associated Symptoms Among University-Affiliated Individuals in Northern Punjab: A Cross-Sectional Survey

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ABSTRACT

Introduction: Forward head posture (FHP) involves forward translation of the cervical spine and upper cervical hyperextension, often coexisting with musculoskeletal imbalances, neck pain, and dysfunction. Prolonged use of smartphones and computers is heavily implicated in promoting FHP through sustained positioning. Given that neck pain is a prevalent global issue, understanding the factors associated with FHP is essential for clinical management.

Aim & Objective: To examine the determinants of FHP among individuals at a northern Punjab university by analyzing survey responses regarding smartphone use, posture, symptoms, and ergonomics.

Materials and Methods: This cross-sectional survey analyzed 181 responses from university-affiliated participants. A structured questionnaire was utilized to assess demographics, technology use habits, posture, neck symptoms, and ergonomic awareness. Categorical responses were summarized using frequencies and percentages.

Results: Participants were primarily aged 17–25 years, with most exceeding three hours of daily smartphone use. While many were aware of their screen time, maintenance of upright posture was generally poor. Frequent neck and shoulder discomfort was reported during or after device use, and sleep disturbances related to stiffness were noted. While a substantial number of individuals had previously sought treatment such as physiotherapy, there remains a high expressed interest in learning exercises to improve postural alignment.

Conclusion: In this university sample, prolonged smartphone uses and poor posture habits were common and directly associated with neck discomfort. The high interest in ergonomic education highlights a significant opportunity for intervention. Preventive strategies should focus on promoting regular breaks, ergonomic posture training, and targeted exercises to mitigate the risk of FHP.

Keywords: Forward Head Posture, Smartphone Use, Neck Pain, Ergonomics, Physiotherapy

UG – 075: Computer Vision Syndrome and Associated Neck and Shoulder Pain: A Review of Evidence and Ergonomic Interventions

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ABSTRACT

The widespread use of digital devices in educational and occupational environments has resulted in a growing prevalence of computer vision syndrome (CVS), often accompanied by neck and shoulder musculoskeletal pain. CVS is characterized by ocular symptoms such as eye strain, dryness, blurred vision, and visual fatigue, while sustained static postures and suboptimal ergonomics contribute to upper body discomfort. The coexistence of these symptoms increases functional limitations and reduces work efficiency, highlighting the need for a comprehensive understanding of their association and management strategies.

A comprehensive literature search was conducted using electronic databases Iling PubMed, Google Scholar, and Scopus. Relevant studies published in English were identified using appropriate keywords and Medical Subject Headings (MeSH) related to computer vision syndrome, neck pain, shoulder pain, ergonomics, and digital screen use. Observational studies, experimental studies, and randomized controlled trials reporting both ocular and musculoskeletal outcomes were included. Studies focusing solely on ocular or musculoskeletal symptoms were excluded. Data extraction was performed systematically, and the methodological quality of included studies was assessed using standard critical appraisal tools.

The reviewed literature consistently reported a high prevalence of CVS and neck and shoulder pain among frequent screen users, particularly university students, office workers, and call-center employees. Several studies demonstrated a positive association between the severity of CVS symptoms and the intensity of neck and shoulder pain. Interventional studies indicated that ergonomic workstation modifications, posture correction, scheduled breaks, and exercise-based interventions led to significant reductions in both ocular discomfort and upper-body musculoskeletal symptoms.

The available evidence suggests that CVS and neck and shoulder pain frequently coexist and should be addressed through integrated ergonomic and behavioral interventions. Preventive strategies and physiotherapy-guided ergonomic education play a crucial role in reducing symptom burden among digital device users.

Keywords: Computer Vision Syndrome; Neck Pain; Shoulder Pain; Ergonomics; Musculoskeletal Disorders

UG -076: A Narrative Review of Emerging AI Approaches for recognizing stroke at an early stage

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ABSTRACT

Identifying a stroke in its earliest stage is difficult because non-contrast CT often shows very faint or non-specific changes. In the last few years, many AI tools have been introduced to support clinicians. These include systems for scoring early ischemic changes, detecting large-vessel occlusion, and estimating tissue risk using CT perfusion. Although these tools show promise, several issues continue to appear, such as uneven image quality, scanner-related differences, small datasets, and very few real-time clinical trials. The aim of this review is to present a clear summary of current AI techniques used for early stroke detection and to understand how well these methods perform when applied in clinical settings. A narrative literature review was conducted using PubMed, and Scopus. Criteria for selection of articles consists of English-language studies evaluating AI or machine-learning models for early stroke detection using NCCT, CT perfusion, MRI, or multimodal imaging. Model performance, imaging modality, and clinical applicability were also qualitatively analyzed. Case reports, editorials, non-English articles, and studies lacking outcome data were excluded. A total of 42 articles were identified, of which 18 met the inclusion criteria. Most studies reported improved accuracy in detecting early ischemic changes, with multimodal and clinically integrated AI models outperforming imaging-only approaches. Common limitations included small sample sizes and limited generalizability. AI has strong potential to enhance early stroke evaluation, but wider clinical use requires larger datasets, more uniform processing methods, and stronger real-world testing.

Keywords: Artificial Intelligence, Stroke, Computed Tomography, Perfusion Imaging, Machine Learning

UG-077: Physiotherapy Perspective on Neurocardiac Adaptation in Extreme Submarine Confinement: A Review

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ABSTRACT

Introduction: Submarine Service operators are exposed to isolated, confined and extreme (ICE) environments that subject them to significant physiological stress. Prolonged confinement, constrained physical activity and exposures to environmental stressors can lead to musculoskeletal deconditioning, chronic stress and impaired autonomic regulation; these factors are often underestimated in physiotherapy despite their potential impact on long-term cardiovascular, neuromuscular and functional outcome.

Aims & Objective This review examines the neurocardiac adaptation in submarine operators through Heart Rate Variability (HRV) and Baroreflex Sensitivity (BRS) as indicators of autonomic function and physiological resilience.

Materials and Methods: A comprehensive literature search was conducted from 2014 to 2024 using PubMed and Scopus with an additional search performed on Google scholar. Studies focuses on identifying physiological and autonomic adaptation in healthy military submarine crews and aquanauts under several environmental stressors were included. Studies involving clinical population or outcomes unrelated to physiological adaptation were excluded.

Results: From the initial search, 134 articles were identified. After screening titles, abstracts and full texts based on inclusion criteria, 16 studies were included in the final review. The findings indicate that prolonged confinement reduces both HRV and BRS reflecting increased sympathetic activity and reduced parasympathetic modulation. Understanding these neurocardiac adaptations enables physiotherapists to monitor functional capacity, autonomic dysfunction and design a targeted intervention to maintain cardiovascular, neuromuscular and musculoskeletal resilience in high demand occupational settings.

Keywords: Submarine Confinement, Heart Rate Variability, Baroreflex Sensitivity, Autonomic Adaptation, Physiotherapy

UG – 078: Review of Therapeutic Effectiveness of Pulsed Electromagnetic Field Therapy, Pulsed Ultrasound Therapy with Exercise Therapy in Knee Osteoarthritis

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ABSTRACT

Introduction: Knee OA is a progressive degenerative joint disorder and a leading cause of pain, stiffness and reduced quality of life in older adults. As limitations exist with long-term pharmacological management and surgical interventions, physiotherapeutic modalities—including Pulsed Electromagnetic Field (PEMF) Therapy, Pulsed Ultrasound Therapy (PUST), and Progressive Resistance Exercise (PRE)—have gained clinical relevance.

Aim & Objective: To compile the recent data of therapeutic effectiveness of PEMF only or in conjunction with exercise or ultrasound—in lowering pain, boosting function and strengthening muscles.

Material and Methods: This review included randomized controlled and comparative studies evaluating pulsed electromagnetic field (PEMF) therapy in patients with knee osteoarthritis (KOA). Participants were adults aged 30–75 years with Kellgren–Lawrence grade II–III KOA and chronic knee pain lasting more than 3–6 months. Individuals with recent knee surgery, intra-articular injections, inflammatory or neurological disorders, malignancy, or severe cardiovascular disease were excluded. Sample sizes ranged from 22 to 120 participants, with a higher proportion of females. PEMF was administered using clinically approved devices for 15–30 minutes per session over a period of 3–8 weeks. Interventions included PEMF alone, PEMF combined with exercise therapy, or comparisons with ultrasound therapy. Control groups received exercise therapy or pulsed ultrasound.

Primary outcomes included pain intensity assessed using the Visual Analog Scale (VAS) and functional status measured by the WOMAC index. Secondary outcomes comprised the Timed Up and Go test, 10-meter walk test, knee range of motion, quality of life (SF-36), and physical performance and mobility measures.

Results: The findings from all included studies showed that pulsed electromagnetic field (PEMF) therapy significantly improved clinical outcomes in patients with knee osteoarthritis. A marked reduction in pain intensity was observed, as measured by the Visual Analog Scale (VAS), with greater improvement in PEMF groups compared to control groups receiving conventional therapy.

Functional outcomes assessed using the WOMAC index showed significant improvement in pain, stiffness, and physical function. Mobility measures, including the Timed Up and Go test and 10-meter walk test, demonstrated improved gait speed and functional performance. An increase in knee range of motion was also reported, indicating reduced joint stiffness.

Conclusion: Based on the collective evidence, pulsed electromagnetic field (PEMF) is safe, non-invasive treatment for knee OA patients. It gives beneficial results when given in combination with PUST and exercises. It significantly reduces pain, improves functional performance, enhances mobility, and contributes to better quality of life. The therapeutic benefits are more pronounced when PEMF is combined with conventional exercise therapy. Therefore, PEMF can be recommended as a valuable adjunct to conventional physiotherapy in the rehabilitation of patients with knee osteoarthritis.

Keywords: Knee Osteoarthritis, Pulsed Electromagnetic Field, Pulsed Ultrasound Therapy, Exercise Therapy, Rehabilitation.

UG- 079: Design and Experimental Evaluation of an AI-Integrated Autonomous System for Patient Identification, Consultation Management, and Follow-Up in Healthcare Facilities

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ABSTRACT

Background: Automation of patient identification, consultation documentation, and follow-up remains a challenge in healthcare facilities due to fragmented digital systems and reliance on manual workflows. This study follows a system design and experimental evaluation approach to develop and assess an AI-integrated autonomous healthcare management system.

Methods: The proposed system was designed using facial recognition, audio-visual processing, natural language processing, and multilingual translation modules to autonomously manage patient identification, real-time queue handling, consultation recording, structured report generation, and post-consultation follow-up. The system was evaluated in a simulated clinical environment to measure identification accuracy, report generation accuracy, translation performance, and consultation processing time.

Results: Experimental evaluation demonstrated a facial recognition accuracy of 98.7%, structured consultation report accuracy of 95.3%, and contextual translation accuracy of 92%. The autonomous workflow reduced consultation processing time by approximately 60% compared to conventional manual documentation methods. User feedback indicated improved efficiency, reduced patient waiting time, and enhanced continuity of care.

Conclusion: The findings confirm that an AI-integrated autonomous system can significantly improve operational efficiency, accuracy, and patient experience in healthcare facilities. The proposed framework demonstrates the feasibility of end-to-end automation while maintaining data security and compliance with healthcare privacy standards.

Keywords: Facial recognition healthcare system, Autonomous medical documentation system, AI-generated clinical report

UG-80: Role of Physiotherapy and Rehabilitation in Pelvic Floor Strengthening Exercises For Primigravida Women – A Narrative Review

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ABSTRACT

Pelvic floor dysfunction particularly urinary incontinence is a frequent concern among primary gravida women during pregnancy and after childbirth. Physiotherapy led pelvic floor muscle training PFMT is recognised as an effective preventive and rehabilitation strategy to enhance pelvic floor strength and reduce pregnancy related complications. This narrative review examines the significance of physiotherapy and rehabilitation approaches in promoting pelvic floor health during the antenatal period. A comprehensive literature search was conducted using electronic databases including PubMed, and Google scholar. Evidence from randomised Pelvic control trial and systematic review consistently demonstrate that antenatal PFMT can significantly reduce the incidence and severity of urinary incontinence in late pregnancy and the postpartum period.

Physiotherapy plays a critical role by conducting detailed assessments to evaluate baseline pelvic floor strength, providing individualized exercise prescriptions, teaching correct contraction techniques, and offering ongoing supervision to ensure safe progression. Educational components- such as posture correction, coordinated breathing, and functional integration of pelvic floor activation- further enhance training outcomes. Additionally, adherence strategies such as scheduled follow ups, digital tools, and patient-centred counselling improve compliance and long-term benefits.

Pelvic floor muscle training is a safe, low-cost, and easily accessible intervention, making it highly suitable for inclusion in routine prenatal care. Ongoing guidance from a physiotherapist encourages better consistency with the exercises and helps women achieve more effective outcomes. Overall, this review emphasizes that physiotherapy-supervised pelvic floor strengthening is highly beneficial for primigravida women.

Keywords: Primigravida, Pelvic floor strengthening, Tele-Rehabilitation

UG- 081: Effect of Pilates Training on Genu Varum Alignment in Females having Knee Osteoarthritis: A Quasi-Experimental Study Protocol

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ABSTRACT

Knee osteoarthritis (OA) is a major source of pain and disability among Indian women, and its progression is often accelerated by genu varum. This deformity increases medial compartment loading, leading to faster cartilage degeneration and impaired mobility. Lifestyle patterns common among Indian females, such as frequent floor sitting, prolonged squatting and reduced lower-limb strength, further aggravate abnormal alignment. Pilates, with its emphasis on controlled movements, core stability, and postural correction, may help restore biomechanical efficiency and improve function.

To determine the effectiveness of Pilates training in improving knee alignment, pain and quality of life in Indian females with knee osteoarthritis.

A quasi-experimental pre-post design will be used. 15 women aged 40–65 years with medial compartment knee OA (Kellgren–Lawrence Grade I–III) and genu varum will be selected through purposive sampling. Participants will undergo a 12-week Pilates training program, conducted three times weekly. Sessions will include mat-based exercises targeting core stability, lower-limb alignment, and quadriceps strength. Outcome measures will include knee alignment (femoro-tibial angle), pain (Visual Analogue Scale), quadriceps strength (Isokinetic dynamometer), and quality of life (12-Item Short Form Survey).

Pre- and post-intervention scores will be compared using parametric tests if the data is normally distributed by Shapiro-wilk test, or non-parametric tests will be used if data follows not normal trend.

This study will determine whether Pilates training can help to improve knee pain, quadriceps strength, quality of life and reverse genu varum. These results will help to guide clinical physiotherapists, academicians and researchers about new approach for OA patients.

Keywords: Genu Varum, Osteoarthritis, Pain, Quality of Life

UG-082: Taekwondo Training for Improving Physical Fitness in Indian Elementary Students – A Narrative Review

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ABSTRACT

Taekwondo is emerging as a structured school-based physical activity that can improve strength, coordination, and overall fitness in children. Many Indian elementary students show declining physical fitness due to academic pressure, reduced outdoor play, and limited access to organized training. Taekwondo, with its repetitive kicking, stance work, and coordinated movement patterns, offers a progressive form of physical conditioning that challenges neuromuscular control. The aim of this review is to synthesize the current evidence of Taekwondo training on physical fitness among Indian school going children. Relevant studies published between 2015 and 2025 were searched through PubMed, Cochrane central, and PEDro. A total of 54 records were identified, of which 5 met the inclusion criteria. Studies were included if they involved healthy Indian children aged 6–12 years, used Taekwondo-based training, and reported at least one physical fitness outcome. The search strategy used Boolean combinations of terms such as “Taekwondo,” “martial arts,” “physical fitness,” “children,” and “India,” alongside controlled vocabulary where available to ensure comprehensive retrieval of relevant studies. Across the included studies, Taekwondo training was associated with improvements in aerobic capacity, anaerobic performance, muscular strength, flexibility, balance, and fundamental motor skills. Interventions that incorporated regular practice of structured kicking drills, footwork sequences, and controlled sparring showed the most consistent gains, particularly in balance and lower-limb strength. The available evidence also suggests that Taekwondo provides a motivating and culturally adaptable framework for school-based physical activity. Broader school-based implementation and controlled trials are required to clarify optimal training dosage and to establish Taekwondo as a practical component of physical education in Indian primary schools.

Keywords: Taekwondo training, Physical fitness, Martial arts, Youth Physical activity, Motor development.

UG-083: Staying in the Game: A Scoping Review of Football Injury Prevention

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ABSTRACT

Football players' injury prevention is a significant public health problem because of the sport's popularity, high participation rates, and the significant effects of musculoskeletal injuries on healthcare systems, player wellbeing, and performance. Football-specific movement demands such as cutting, jumping, and rapid accelerations and decelerations, along with high training and match loads, previous injury history, poor neuromuscular control, and inadequate recovery, are key contributors to injury risk. This scoping review objective was to compile and map the body of research on football players, musculoskeletal injury risk factors and injury preventive techniques. The approach used was a scoping review. A systematic search of peer-reviewed literature was conducted using electronic databases including PubMed, PEDro, and Google Scholar between the article published in the year of 2010-2025. Only journal articles such as randomized controlled trials, systematic reviews, case control studies, cohort studies published in English were included. Grey literature, conference abstracts, editorials, and non-peer-reviewed sources were excluded. After screening titles, abstracts, and full-text articles based on predefined inclusion and exclusion criteria, a total of 42 studies were included in the final synthesis. Following further analysis based on the selection criteria and PRISMA-ScR guidelines, we selected 42 papers for review. Data extraction focused on identifying musculoskeletal injury risk factors and evaluating the effectiveness of injury prevention interventions in football players. The findings were synthesized narratively. The review summarizes evidence on both primary and secondary injury prevention strategies, with particular emphasis on load management, protective equipment, rule enforcement, strength and balance training, structured neuromuscular warm-up programs, and education of players and coaches. Evidence from randomized controlled trials indicates that multicomponent injury prevention programs, particularly those incorporating neuromuscular exercises and implemented with high adherence, significantly reduce overall injury incidence and specific injuries such as knee, ankle, and hamstring injuries in youth and adult football players. In order to achieve long-term, population-level reductions in football-related injuries, the results highlight the significance of efficient implementation, compliance monitoring, and contextual adaption of evidence-based injury prevention initiatives. For long-term success, injury prevention techniques must be included into regular coaching procedures and organizational guidelines.

Keywords: Football, risk factors, ankle, adolescent, injury prevention

UG-084: Effectiveness of proprioceptive Training in patients with Diabetic Peripheral Neuropathy: A review

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ABSTRACT

Diabetic Peripheral Neuropathy (DPN) is one of the most common and disabling complications of diabetes mellitus, characterised by sensory loss, impaired proprioception, balance deficits, gait instability, and an increased risk of falls. Damage to peripheral sensory nerves disrupts afferent feedback from the lower limbs, leading to reduced joint position sense and compromised postural control. Conventional management of DPN primarily focuses on glycaemic control and pharmacological symptom relief; however, these approaches have limited effects on functional impairments. Proprioceptive training, which aims to enhance sensory input and sensorimotor integration through targeted balance, joint position, and postural control exercises, has emerged as a promising rehabilitation strategy for individuals with DPN. This review aimed to synthesise recent evidence on the effectiveness of proprioceptive training in improving balance, functional performance, and sensory-motor outcomes in patients with diabetic peripheral neuropathy. A comprehensive literature search was conducted across PubMed, Scopus, Web of Science, PEDro, and the Cochrane Library for studies published between 2019 and 2024, using keywords related to diabetic peripheral neuropathy, proprioception, balance training, and sensorimotor rehabilitation. The search yielded 32 articles, of which 11 studies met the eligibility criteria and were included in the review, comprising randomized controlled trials and controlled clinical studies. Across the included studies, proprioceptive training interventions—such as balance exercises on unstable surfaces, joint position sense training, weight-shifting tasks, and functional sensorimotor activities—demonstrated consistent improvements in balance performance, functional mobility, and postural stability. Several studies reported significant gains in clinical balance measures and reductions in fall risk indicators following structured proprioceptive training programs. Although variations were observed in intervention protocols and outcome measures, the overall findings support the beneficial role of proprioceptive training as an adjunct to standard care. In conclusion, current evidence from high-quality studies suggests that proprioceptive training is an effective, non-pharmacological intervention for improving balance and functional outcomes in individuals with diabetic peripheral neuropathy. Further large-scale trials with standardized protocols are recommended to strengthen clinical recommendations.

Keywords: Diabetic Peripheral Neuropathy; Proprioception; Balance Training; Sensorimotor Rehabilitation; Functional Mobility.

UG-085: Effects of inspiratory muscle training on improving pulmonary function and balance in chronic smokers: A Narrative Review

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ABSTRACT

Chronic smoking weakens the respiratory muscles and reduces lung function, which also contributes to poor balance and reduced physical stability. Inspiratory muscle training is emerging as an effective intervention to strengthen breathing muscles, improve pulmonary function, and enhance balance in chronic smokers one of the leading preventable causes of respiratory impairment worldwide. Continuous exposure to tobacco smoke results in structural and functional changes within the respiratory system, including inflammation of the airways, destruction of alveolar walls, increased mucus production, and weakening of respiratory muscles. These alterations contribute to reduced pulmonary function, decreased ventilatory capacity, and a progressive decline in overall respiratory efficiency. The aim of this study is to evaluate the effects of inspiratory muscle training on pulmonary function and balance. Relevant articles were identified by searching major databases (PubMed, PEDro, Cochrane Central) published between 2015 and 2025. A total of 78 studies were identified of which 8 met the inclusion Criteria after screening and full-text evaluation. search term included “inspiratory muscle training,” and “improving pulmonary function” and “balance,” and “chronic smokers”. The findings All randomized controlled trials, clinical trials, quasi experimental studies and observational studies published in English language were included. Search strategy includes keywords Smokers, Respiratory Muscles, Inflammation, Separated by Boolean operators like OR, AND. This review included various studies, highlighting the effectiveness of inspiratory muscle training on improving pulmonary function and balance among chronic smokers. This narrative review comprehensively evaluated the effectiveness of Inspiratory muscle training demonstrates significant potential in improving both pulmonary function and balance in chronic smokers. While some studies demonstrated significant benefits others showed mixed results, indicating that further research is needed to confirm the efficacy of these approaches. **Keywords:** Smokers, Respiratory Muscles, Inflammation,

UG-086: Mapping the Evidence on Craniosacral Therapy for Individuals with Autism Spectrum Disorder: A Scoping Review

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ABSTRACT

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition characterized by deficits in social interaction, communication difficulties, and restricted or repetitive behaviours. As conventional treatment approaches often yield limited results, complementary therapies such as Craniosacral Therapy (CST) are gaining attention. CST is proposed to improve neural regulation and sensory processing through gentle manual techniques aimed at restoring balance in the craniosacral system. The search was conducted from 2015 to 2025 three electronic databases. the review screened a total of 262 articles were identified through searches in databases like PubMed, CINAHL and web of Science. Duplicate removal using Mendeley resulted in the exclusion of 180 records, 82 articles remained for title and abstract screening. Out of these, 79 were excluded, leaving 3 for full-text review. Ultimately, 3 studies met the inclusion criteria, comprising randomized controlled trials and survey-based investigations. The review was compiled in accordance to PRISMA extension for scoping review (PRISMA-ScR) Guidelines. Studies were included if they evaluated CST as an intervention in individuals diagnosed with ASD. The included studies reported potential improvements in anxiety reduction, sensory regulation, social interaction, and communication following CST. However, most studies were limited by small sample sizes, absence of control groups, combined treatment protocols, and reliance on subjective outcome measures. Despite some positive trends, current evidence remains insufficient to establish CST as an evidence-based therapy for ASD. Further large-scale, high-quality randomized trials with standardized assessment tools are required to clarify its clinical value and mechanism of action.

Keywords: Craniosacral Therapy, Autism Spectrum Disorder, Sensory Modulation, Communication, Complementary Therapy

UG - 087: Physical and Psychological consequences of Internet Addiction Among College Going Students: A Narrative Review

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ABSTRACT

Internet addiction has emerged as a growing concern among college going students, due to increasing academic, clinical, and social reliance on digital platforms. Excessive and uncontrolled internet use can adversely influence both physical and psychological wellbeing, potentially affecting students' academic performance and future clinical competencies. This narrative review aims to synthesize current evidence on the physical and psychological consequences of internet addiction among college going students. Literature published in the past 10–12 years was searched ScienceDirect, and web of science' for studies published from 2013-2025. Relevant observational, cross-sectional, randomized trails and review studies assessing health outcomes associated with problematic internet use in college students or similar health-professional student populations were included. Out of 200 identified articles, 15 met the criteria for this review. Findings indicate that internet addiction is associated with multiple adverse outcomes among college going students. Physical consequences commonly include musculoskeletal discomfort, reduced physical activity, eye strain, sleep disturbances, and increased fatigue. Psychological consequences frequently reported include stress, anxiety, depressive symptoms, reduced attention span, emotional dysregulation, and impaired academic functioning. Students with higher levels of internet addiction exhibit poorer health behaviors and greater psychological distress compared to moderate or non-addicted users.

Keywords: Internet Addiction, College Going Students, Physical Health, Psychological Outcomes.

UG - 088: Hindi Translation, Content Validity and Test–Retest Reliability of the Sedentary Behavior Questionnaire (SBQ) Among University Students: A Study Protocol

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ABSTRACT

Background: University students often spend prolonged periods sitting due to academic work, online learning, and screen-based study habits. High sedentary time is linked with reduced physical fitness, lower energy levels, and increased health risks. The Sedentary Behavior Questionnaire (SBQ) is a widely used tool to quantify time spent in sedentary activities. However, the absence of a validated Hindi version limits its applicability among Hindi-speaking university students.

Aim: To translate the SBQ into Hindi and evaluate its content validity and test–retest reliability among university students.

Methods: After obtaining permission from the original authors, the SBQ will be translated into Hindi using a standardized forward–backward translation process. Two independent bilingual experts—one with a medical background and one without a medical background—will conduct the forward translation. The same procedure will be applied for backward translation, with translators blinded to the original version. An expert panel comprising physiotherapists, medical experts (including neurologists), or other healthcare professionals with more than five years of clinical or academic experience will review all versions to ensure semantic, conceptual and cultural equivalence. Content validity will be assessed using the Item-Level Content Validity Index (I-CVI) and Scale-Level Content Validity Index (S-CVI/Ave). The prefinal version will be pilot-tested among university students to assess clarity and comprehension. For test-retest reliability, a separate sample will complete the final Hindi SBQ twice with a 7–14-day interval. Reliability will be evaluated using the intraclass correlation coefficient (ICC), standard error of measurement (SEM), minimal detectable change (MDC), and Bland–Altman analysis. Data distribution will be assessed using the Shapiro–Wilk test.

Results: The Hindi SBQ is expected to demonstrate strong content validity, excellent test-retest reliability ($ICC \geq 0.80$), minimal measurement error, and consistent agreement between repeated assessments.

Conclusion: This study outlines a systematic approach for developing a reliable and culturally appropriate Hindi version of the SBQ for assessing sedentary behavior among university students.

Keywords: Sedentary behavior, SBQ, Hindi translation, content validity, test-retest reliability, university students, questionnaire validation.

UG -089 : Hindi Translation, Content Validation and Test–Retest Reliability of the Postural Assessment Scale for Stroke Patients (PASS): A Study Protocol

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ABSTRACT

Introduction: Stroke commonly results in significant postural instability that affects sitting, standing, and transitional movements. The Postural Assessment Scale for Stroke Patients (PASS) is widely used to evaluate postural control, but no validated Hindi version exists. Developing a reliable Hindi PASS will support accurate assessment and rehabilitation planning for the large Hindi-speaking stroke population.

Aim and objectives: To translate the PASS into Hindi, evaluate its content validity, and establish its test–retest reliability.

Materials and Methods: Permission from the original developer will be obtained before translation. Two bilingual experts will complete independent forward translations, which will be synthesised into a single version. This will then undergo two independent back-translations by translators blinded to the original scale. A multidisciplinary expert panel in neurological rehabilitation will evaluate all items using the Delphi method for clarity, relevance, and cultural suitability. Content validity will be assessed using I-CVI, S-CVI, and modified kappa (κ). Pretesting will be conducted on 15 stroke patients to confirm linguistic clarity and feasibility. For test–retest reliability, 50–60 stroke patients will be assessed twice by the same rater with a 7 ± 2 -day interval. Statistical analysis will include Shapiro–Wilk normality testing, ICC, SEM, MDC, and Bland–Altman analysis.

Results: The Hindi PASS is anticipated to demonstrate strong content validity, high expert consensus, excellent test–retest reliability, low measurement error, and narrow Bland–Altman limits of agreement, indicating score stability.

Conclusion:- This study will produce a culturally adapted, linguistically clear, and statistically robust Hindi version of the PASS, supporting precise assessment and rehabilitation of Hindi-speaking stroke survivors.

Keywords: Stroke, Neurological rehabilitation, Postural balance, Posture.

UG-090: Psychometric properties of Aerobic fitness tests used for adolescent population: A Scoping Review

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ABSTRACT

Aerobic fitness assessment is an essential component of the overall health and physical performance evaluation of adolescents. Several field-based and laboratory-based aerobic fitness tests have been commonly applied to the adolescent age group, such as the 20-m shuttle run test, Rockport walking test, Cooper 12-minute run test, step tests, treadmill protocols, and cycle ergometer tests. However, there is great variability in the psychometric quality, in terms of reliability, validity, and responsiveness, among these tools. Therefore, a comprehensive synthesis of the available evidence is needed to inform clinicians, physical educators, and researchers regarding appropriate assessment instruments. The aim of this scoping review was to systematically map and summarize the psychometric properties of aerobic fitness tests used in adolescents aged 10–19 years, regarding reliability, validity, measurement error, and responsiveness. A scoping review was conducted according to the Arksey and O'Malley framework and the PRISMA-ScR guidelines. Electronic databases, such as PubMed, Scopus, Web of Science, SPORT Discus, and were searched from the date of inception up to the present. The search terms combined keywords from three areas: adolescents, aerobic fitness testing, and psychometric properties, such as reliability, validity, measurement error, and responsiveness. Eligible studies assessed any aerobic fitness test in adolescents and reported at least one psychometric property. The data were charted on characteristics of the test, population details, and psychometric outcomes. Findings were summarized in a descriptive manner. The review identified a wide range of aerobic fitness tests, with the 20-m shuttle run test the most frequently studied field-based assessment. This test demonstrated high test-retest reliability (ICC generally >0.85) and moderate to strong criterion validity against laboratory-measured VO_2 max. The Cooper 12-minute run test and step tests showed acceptable reliability, though validity varied due to protocol heterogeneity and environmental influences. Laboratory-based treadmill and cycle ergometer protocols demonstrated excellent criterion validity, though their feasibility in large or school-based settings was limited. Measurement error and responsiveness were inconsistently reported across studies, indicating gaps in the psychometric evaluation for many commonly used tests. Most field-based aerobic fitness tests used in adolescents have demonstrated acceptable levels of reliability and moderate levels of validity; however, psychometric reporting remains considerably limited with respect to measurement error and responsiveness. To date, the 20-m shuttle run test has the strongest overall evidence base supporting its use for adolescent aerobic fitness assessment in field-based settings.

Keywords: Adolescents; Aerobic fitness; Field fitness tests; Psychometric properties; Validity; Reliability; Measurement error; Responsiveness; Scoping review.

UG-091: Impact of blood flow restriction training on pain and quadriceps strength in Patellofemoral Pain Syndrome: A Narrative Review

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ABSTRACT

Patellofemoral pain syndrome (PFPS) is a general musculoskeletal condition identified by anterior knee pain and diminished functional capacity, with a frequent accompanying quadriceps muscle weakness. Blood Flow Restriction (BFR) training has become an innovative method of rehabilitation that involves performing low-load resistance exercise in conjunction with partial restriction of arterial blood flow, which enables strength gains similar to high-load training with reduced joint stress. The aim of this narrative review was critically synthesizing the long-term impacts of the BFR training on pain reduction and quadriceps strength in patients having PFPS. Total 228 studies were found in which 10 studies met the selection criteria of the review. The literature was searched on three electronic databases PubMed, Cochrane central, and PEDro by keywords “blood flow restriction training”, “pain”, “quadriceps strength”, “Patellofemoral Pain Syndrome”. Only English language papers that explored the contribution of BFR training on pain, muscle strength, and functional outcomes in PFPS were considered. All randomized controlled trials, clinical trials and observational studies were identified. The synthesis of data was qualitative in nature because it summarized the details on the intervention protocols and outcome measures of interest and therapeutic efficacy. The reviewed evidence suggests that BFR training added to low-load resistance exercises significantly reduces anterior knee pain and improves quadriceps strength in patients with PFPS. A number of the studies mentioned also found comparable strength gains between BFR and conventional high-load training with better tolerance and lower mechanical stress on the patellofemoral joint in the BFR groups. Improvement in pain scores, muscle activation, and functional performance was a common feature after short-term interventions lasting from 4 to 8 weeks. BFR training seems to be a safe and effective rehabilitative strategy for the management of Patellofemoral Pain Syndrome, improving the strength of the quadriceps while reducing pain with minimal loading of the joint.

Keywords: Blood Flow Restriction; Patellofemoral Syndrome; Quadriceps Strength.

UG- 092: Exploring the impact of Cell Phone Engagement on Lifestyle and Physical Fitness among University Students: A Scoping Review

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ABSTRACT

Cell phone usage has become pervasive and an essential part of everyone's life, especially among students, who spend a significant amount of time on cell phones for recreational activities, resulting in cell phone addiction. Uncontrolled use of cell phones negatively impacts students' health (such as neck pain, fatigue, and eye strain). It reduces opportunities for physical activity, which consequently promotes sedentary behaviour, affects lifestyle habits, and diminishes physical fitness. This scoping review aimed to examine and summarize the literature on the impact of cell phone usage on lifestyle habits and physical fitness among university students. A total of 12 relevant articles involving students aged 18-27 years were identified through PubMed, Google Scholar, and ResearchGate using keywords such as “cell phone,” “addiction,” “physical fitness,” “lifestyle,” and “students”. The articles were selected based on predefined inclusion and exclusion criteria. Data analysis was performed to identify associations between cell phone use, physical fitness, and lifestyle. This review found a negative relationship between cell phone dependence and physical fitness. Extreme smartphone use was associated with reduced physical fitness levels, including shorter vertical jump scores, weaker hand-grip and pinch strength, shorter sit-and-reach test scores, lower scores in dynamic balance tests, fewer side-steps, fewer pull-ups among males, and fewer sit-ups among females. A significant relationship was observed between smartphone dependence and lifestyle habits. Due to smartphone overuse, students had poor eating behaviors, skipped breakfast, and reduced sleep quality, which led to daytime sleepiness, high stress levels, and decreased daily walking, thereby causing a decline in physical activity. Overall, excessive smartphone use is associated with lower physical fitness outcomes, reduced physical activity, and an unhealthy lifestyle among students including disrupted sleep, poor eating habits, and depression. Limited studies have explored the impact of cell phones on physical fitness and lifestyle.

Keywords: Cell phone, Physical fitness, Lifestyle, Addiction.

UG-093: Title: Effectiveness of exercise therapy on motor functions among individuals with Becker muscular dystrophy: A Scoping Review

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ABSTRACT

Becker muscular dystrophy is one of the most frequent among neuromuscular diseases, affecting approximately 1 in 18000 male births. It is linked to a genetic mutation on the x chromosome. Progressive muscle weakness, most notably of the proximal lower limbs, is the primary manifestation of this condition. The onset of Becker muscular dystrophy symptoms varies widely between 5 and 60 years. The aim of the scoping review is to identify the existing available evidence on the effectiveness of exercise therapy on motor functions among individuals with Becker muscular dystrophy. Primary outcomes were functioning and health-related quality of life. Secondary outcomes were muscular strength, endurance and lung function. A comprehensive literature search was performed in the following databases: PUBMED, CINAHL, EMBASE, Pedro and SCIENCE DIRECT. This is a scoping review of articles published in English between 2000 and 2025. Title and abstract screening were performed, and included articles were included based on the eligibility criteria. A total of 223 articles obtained of which 4 randomized controlled design were included articles, among them studies related to the effectiveness of exercise therapy on motor functions among individuals with Becker muscular dystrophy. Data collected from the identified studies were synthesized qualitatively, and quantitatively. Standardized exercise therapy protocol should be followed globally to see improvement in motor functions among individuals with Becker muscular dystrophy. Exercise training may be beneficial in Becker muscular dystrophy, but the evidence remains uncertain. Further research is needed on exercise training to promote functioning and health-related quality of life in Becker muscular dystrophy.

Keywords: Becker Muscular Dystrophy, Exercise Therapy, Genetic Mutation, Male, X Chromosome

UG-094: Patient Education Program for improving adherence to Cardiac Rehabilitation: A Literature Review

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ABSTRACT

Patient education programs are widely acknowledged as essential components of cardiac rehabilitation (CR), a proven secondary prevention strategy that reduces morbidity and mortality in individuals with cardiovascular disease. Despite clear benefits, adherence to CR remains suboptimal, limiting its overall impact. Patient education seeks to improve adherence by strengthening patients' knowledge, self-efficacy, and motivation to engage in structured exercise, lifestyle modification, and appropriate medical management. This literature review assessed the effectiveness of patient education interventions in improving adherence to cardiac rehabilitation. A comprehensive search of PubMed, Web of Science, PEDro, and Google Scholar identified studies published between 2015 and 2025. Initially total 85 studies retrieved, in which 07 met the inclusion criteria after screening and full-text review using Boolean terms such as "patient education and cardiac rehabilitation," "adherence and secondary prevention," and "health literacy and cardiac rehabilitation participation." Three key randomized controlled trials were included, involving adults with ischemic heart disease, heart failure, or acute coronary syndrome. The evaluated interventions included individualized learning and coping strategies, supervised lifestyle counselling, and multimodal communication approaches such as mailed information and follow-up telephone calls. Across studies, patient education consistently improved adherence to exercise and educational sessions, with reported adherence rates between 73% and 80%, and increased completion of CR programs. Tailored and interactive education appeared particularly beneficial for patients with lower socioeconomic status, limited educational background, or heart failure. In addition, education-based interventions were associated with better adherence to dietary and physical activity guidelines, fewer hospital readmissions, reduced complications, and lower rates of revascularization. Overall, the findings indicate that structured, patient-centred, and ongoing education is an effective and targeted approach to enhance adherence to cardiac rehabilitation, support healthy lifestyle behaviours, and improve clinical outcomes.

Keywords: Cardiac Rehabilitation, acute coronary syndrome, cardiovascular disease, lifestyle

UG-095: “Beyond Seizures and Scoliosis”: The Expanding role of Physiotherapy in Aicardi Syndrome

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ABSTRACT

Aicardi syndrome is an extremely rare neurodevelopmental condition characterized by the lack of the corpus callosum, chorioretinal lacunae, recurrent seizures, low muscle tone, progressive musculoskeletal deformities, and substantial developmental setbacks. Historically, medical treatment has focused on managing seizures and orthopedic issues such as scoliosis, yet the comprehensive rehabilitative needs of these children are frequently overlooked. This narrative review examines the increasing importance of physiotherapy as a vital component in the multidisciplinary treatment of Aicardi syndrome. Clinical literature from reviews, case reports, neurorehabilitation guidelines, and related epileptic encephalopathies was synthesized to identify physiotherapy domains relevant to functional improvement and quality of life. A structured literature search was conducted across PubMed, Scopus, and PEDro databases to identify English-language original studies published between 2016 and 2025. Broad search terms related to Aicardi syndrome, infancy, and physiotherapy interventions were applied. Despite this comprehensive approach, no studies fulfilled the predefined inclusion criteria. The lack of eligible literature reveals a significant gap in condition-specific rehabilitation evidence for infants with Aicardi syndrome. To address this deficiency, the present review draws upon indirect evidence from comparable neurodevelopmental and hypotonic populations to provide clinical context and inform physiotherapy practice. The aim of this narrative review is to emphasize the urgent need for collaborative research efforts aimed at establishing evidence-based oromotor and respiratory physiotherapy interventions for infants affected by Aicardi syndrome.

Keywords: Aicardi Syndrome, Corpus Callosum, Neurological rehabilitation, Quality of Life, Seizures

UG-096: “Managing the fragile airway”: Oromotor and Respiratory interventions in infants with Lissencephaly

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ABSTRACT

Infants with lissencephaly exhibit severe neurological impairment marked by profound muscle weakness, significant feeding issues, impaired airway protection, and frequent respiratory complications. The complex combination of multisystem challenges creates a delicate airway situation where problems with oromotor control and respiratory function difficulties come together, increasing the likelihood of aspiration, poor ventilation, and numerous hospital visits. These impairments' clinical significance notwithstanding, physiotherapy-led interventions are not consistently described and are insufficiently synthesized in the existing literature. This narrative review examines potential and emerging strategies within pediatric physiotherapy for addressing oromotor hypotonia, dysphagia-related instability, and respiratory vulnerability in infants with a diagnosis of lissencephaly. A comprehensive search strategy was conducted for past ten years with original researches published in English between 2016 and 2025. PubMed, Scopus and PEDro databases were searched for full text articles. Despite the use of broad search terms related to lissencephaly, infants, oromotor interventions and respiratory therapy, no studies met the inclusion criteria. This highlights the paucity of published evidence addressing targeted oromotor and respiratory interventions in infants with lissencephaly. The database search yielded no eligible studies that examined oromotor or respiratory interventions in infants diagnosed with lissencephaly. The absence of eligible studies underscores a critical research gap in the rehabilitation of infants with lissencephaly. Consequently, this narrative review synthesizes indirect evidence from closely related neurodevelopmental and hypotonic conditions to inform clinical practice. Hence, this review aims to guide clinicians toward safer, developmentally sensitive management of the fragile airway in infants with lissencephaly.

Keywords: Lissencephaly, Neonatology, Pediatric Physiotherapy, Respiratory Complications, Speech Therapy

UG-097: Untangling the Maternal Mind”: Brain Gym Exercises as a Tool for Pregnancy Brain Fog

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ABSTRACT

Pregnancy-related cognitive changes, commonly referred to as “maternal brain fog,” comprises difficulties with concentration, working memory, information processing, and executive functioning. Many pregnant women typically encounter mental shifts, yet very few scientific approaches exist that do not include medication to assist them. In educational and therapeutic environments, Brain Gym Exercises are set of simple, structured movements to improve neural integration and cognitive function - has been developed, yet its potential use for cognitive changes during pregnancy remains un-investigated. This narrative review synthesizes current knowledge on maternal brain fog, examines the neurophysiological mechanisms underlying it, and evaluates the theoretical and empirical evidence supporting Brain gym exercises as a potential intervention. Original articles published between 2016 and 2025 were searched in databases such as PubMed, Scopus, and PEDro using terms related to pregnancy, cognition, brain fog, brain gym exercises, cognitive enhancement, and movement-based therapy. Despite the use of broad search terms, none of the studies met the inclusion criteria. There is a lack of published research addressing the use of brain gym exercises as a supplementary measure for managing pregnancy fog. Meanwhile, a dearth of direct evidence exists among pregnant individuals, implying a significant research shortfall. As a result, this narrative review synthesizes indirect evidence from closely related conditions in which brain gym exercises are implemented to manage different conditions. The review highlights the benefits of Brain gym exercises as a safe, low-intensity, and accessible method that could potentially boost cognitive function during pregnancy, yet underscores the need for rigorous, well-designed clinical trials. Enhancing maternal well-being, daily functioning, and quality of life may be facilitated by comprehending how movement-based cognitive techniques can alleviate maternal brain fog.

Keywords: Attention, Brain Gym Exercise, Cognitive, Pregnancy, Quality of Life

UG-098: “Restoring Respiratory Muscle Synergy: An In-Depth Narrative Review of Diaphragm Sequencing Approaches in Physiotherapy”

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ABSTRACT

Diaphragm sequencing techniques have emerged as an advanced approach in respiratory physiotherapy, aiming to restore coordinated activation between the diaphragm and accessory respiratory muscles. Dysfunctional breathing patterns are increasingly recognized as contributors to reduced respiratory efficiency, altered biomechanics and impaired functional capacity in various cardiopulmonary and neurological conditions. This narrative review provides a detailed overview of the neurophysiological basis, therapeutic mechanisms and clinical relevance of diaphragm sequencing in modern physiotherapy practice. A comprehensive literature search was conducted across PubMed, Scopus, Web of Science, and CINAHL, regarding diaphragmatic neuromuscular control, respiratory muscle synergy, breathing retraining, manual therapy and sensorimotor facilitation. Findings suggest that thoracoabdominal mechanics, central pattern generators, cortical modulation of respiration and proprioceptive integration all influence effective sequencing. Interventions, such as manual diaphragm release, rib cage mobilization, targeted breathing exercises and sensory cueing techniques, have been shown to enhance diaphragmatic excursion, promote optimal rib cage expansion and improve neuromuscular coordination. Emerging evidence supports the ability of diaphragm sequencing to reduce accessory muscle overactivation, improve lung volumes, enhance ventilatory efficiency, and contribute to better autonomic balance. These benefits have been identified in populations including patients with COPD, postsurgical, athletes with dysfunctional breathing, and those with neuromuscular impairments. Despite promising findings, studies remain predominantly limited by heterogeneity in intervention protocols and small sample sizes. This therefore highlights the need for structured trials, which would assist in validating clinical effectiveness. In conclusion, diaphragm sequencing represents a comprehensive and neurophysiology-driven rehabilitation strategy capable of restoring efficient breathing patterns and improving functional outcomes. Its integration into physiotherapy practice holds substantial potential; however, further high-quality evidence is essential to standardize techniques and confirm long-term benefits.

Keywords: Breathing exercises, Diaphragm, Musculoskeletal manipulations, Neurophysiology

UG-099: “Moving beyond the cortex”: Role of Physiotherapy Interventions in children with Miller Dieker Syndrome”

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ABSTRACT

Miller–Dieker Syndrome is a rare condition that affects brain development, typically presenting with lissencephaly, severe muscle weakness, feeding problems, breathing difficulties, and significant delays in overall growth and development. Early physiotherapy intervention is a potentially impactful but under-researched aspect of supportive care, despite its complex clinical presentation and unfavorable prognosis. This narrative review examines the potential role, therapeutic basis, and developing prospects for physiotherapy in children with Miller Dieker Syndrome by integrating findings from connected neuromotor, respiratory, and oromotor rehabilitation fields. Targeted physiotherapy interventions, focusing on issues such as impaired airway clearance, oromotor dysfunction, contractures, postural instability, scoliosis progression, and limited sensory-motor experiences, may greatly improve comfort, function, and overall quality of life for individuals with Miller Dieker Syndrome. The aim of this review was to map the physiotherapy interventions for infants with Miller Dieker Syndrome. For this, a comprehensive literature search was conducted between 2016 and 2025 using the databases PubMed, PEDro and Scopus. The objective of the search strategy was to identify studies which explore the role of physiotherapy interventions in Miller Dieker Syndrome. The search terms included Miller Dieker Syndrome, Infant, Rehabilitation and Physiotherapy intervention. However, no single study met the inclusion criteria for the review. There is a lack of targeted physiotherapy interventions for infants with Miller Dieker Syndrome. Narrative analysis reveals the existence of gaps in clinical evidence stemming from the syndrome’s scarcity and severity, leading to reliance on extrapolated data from conditions with comparable neuromechanical profiles. This review highlights the importance of working together across different disciplines and tailoring physiotherapy treatments to individual needs within a family-focused approach. By moving beyond the cortex and addressing peripheral, respiratory, and musculoskeletal systems, physiotherapy may serve as a valuable adjunct in improving everyday function and enhancing the caregiving experience in children with Miller–Dieker Syndrome.

Keywords: Chest wall mobilization, Feasibility studies, Miller Dieker Syndrome, Muscle weakness, Quality of life

UG-100: Multimodal Physiotherapy Strategies for Improving Functional Capacity in Pediatric Pulmonary Arterial Hypertension: A Comprehensive Literature Review

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ABSTRACT

Pediatric pulmonary arterial hypertension (PAH) is a progressive cardiopulmonary condition intolerance. Physiotherapy is increasingly recognized as a powerful, non-pharmacological strategy that restores or enhances physical, psychological, and social functioning.

This review delivers into the integration of aerobic conditioning, interval and low-intensity endurance training, inspiratory muscle training, chest physiotherapy techniques, therapeutic play-based exercise, and the role of wearable devices, online home-based therapy, and early physiotherapy with family support in boosting patient motivation and long-term recovery outcomes. An evidence-based search was conducted on PubMed, Medline, and Google Scholar to identify clinical trials and rehabilitation programs that incorporate exercise protocols to manage shortness of breath and fatigue, improve blood oxygen saturation, and enhance cardiopulmonary endurance. A total no of seven published articles were identified on physiotherapy and exercise-based interventions in pulmonary hypertension, including three studies specifically in pediatric patients

The physiological rationale for all treatment modalities, functions in enhancing ventilator efficiency, increasing oxygen utilization, improving blood flow to working muscles, and fostering adaptive autonomic responses. The key clinical factors for this group include risks like exercise-induced fainting spells, unstable blood pressure, medication-related exhaustion, and growth-related changes. To create a secure, tailored rehabilitation program, these factors must be considered.

Hence, the existing research is still limited because the studies are small and use different methods. This shows the need for standard guidelines and better-quality studies. Research suggests that holistic physiotherapy when adapted and carried out helps in enhancing exercise endurance, physical movement capabilities, and overall quality of life. This review brings together what we currently know to help improve physiotherapy led rehabilitation for children with PAH, supporting safer and more complete improvements in their physical abilities.

Keywords: Blood Pressure, Dyspnea, Endurance, Training, Oxygen Saturation

UG-101: Correlation of Upper Cross Syndrome with scapulohumeral rhythm and chest expansion among young adults: A Study Protocol

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ABSTRACT

Background: Upper Cross Syndrome (UCS) is a crossing pattern of muscles and postural imbalance in which certain upper body muscles become weak and others become overtight. These muscle imbalances alter scapular kinematics and thoracic mobility, which may negatively affect scapulohumeral rhythm and chest expansion. Limited evidence exists on how these three components interrelate in young adults, making early correlation-based assessment.

Aim: To determine the correlation between upper cross syndrome, scapulohumeral rhythm, and chest expansion among young adults.

Methodology: This correlational observational study will be conducted in the Department of Physiotherapy, MMIPR, Mullana. Young adults aged between 18–25 years showing clinical features of UCS will be taken through convenience sampling. Postural analysis, muscle length and strength testing will be used for UCS assessment. The Lateral Scapular Slide test and video analysis (Kinovea software) will be used to assess scapulohumeral rhythm. A tape measure will be used to measure chest expansion at axillary, xiphoid and subcostal levels. To assess the relationship between these three variables. Outcome Measures: Primary outcomes include degree of scapulohumeral rhythm, as measured by LSST values. Secondary outcomes include chest expansion, determined by the difference in centimetres between maximal inhalation and exhalation. It will be used to quantify UCS.

Data Analysis: Descriptive statistics will be used to summarize the participant characteristics. To assess the association between these three variables, such as UCS, scapulohumeral rhythm and chest expansion. Significance level will be set at $p < 0.05$. It is expected that greater postural analysis of upper cross syndrome will be associated with altered scapulohumeral rhythm and reduced chest expansion among young adults.

Conclusion: Understanding these relationships facilitates early identification and physical treatment, which can improve shoulder mechanics, address muscle imbalance, and protect young adults from long term problems.

Key words: Humans, young adults, shoulder mechanics, muscle imbalance, physical therapy modalities.

UG-102: Effect of IASTM in combination with Cervical Traction on Patients with Cervical Radiculopathy

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ABSTRACT

Introduction: Cervical radiculopathy in adults may results in headaches, pain, and functional disabilities. Although IASTM and cervical traction are frequently used clinically to treat cervical radiculopathy, their combined efficacy has not been thoroughly studied, and the outcomes are unclear.

Aim: In cervical radiculopathy comparison of IASTM alone Vs IASTM combined with cervical traction in symptoms such as pain, functional disability and headache in several patients.

Material and method: 30 patients with cervical radiculopathy were divided into 2 groups using basic randomized sampling techniques. Fifteen individuals in group A received only IASTM treatment, while fifteen people in group B underwent a mix of IASTM and cervical traction testing. Outcomes measure CRIS, NPRS, and HIT-6 were used to measure the results.

Result: Both groups experienced significant improvements following therapy; however, group B experienced a greater decrease in pain (NPRS) and both groups' CRIS and HIT-6 values increased equally. $p = 0.005$.

Conclusion: When combined with cervical traction, IASTM is more effective than IASTM alone at reducing pain, headaches, and functional disability.

Keywords: Cervical Radiculopathy, IASTM, Cervical traction, NPRS, HIT-6, CRIS

UG-103: Behavioral Interventions and Physical Exercise for Stereotypical Behavior in Autistic Children: A Review Author Affiliation

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ABSTRACT

Stereotypy is defined as involuntary, repetitive, abnormal, and inappropriate behavior, and it is one of the core symptoms of Autism. These behaviours not only characterize the condition but can restrict participation in typical childhood activities. Movement of any body part, object manipulation and vocal stereotypy are common examples. The persistence of stereotypes reduces opportunities for learning, building relationships and adapting to new environments, and can hinder a child's social communication, interaction and skill development. The objective of this study is to evaluate the effect of behavioral interventions and physical exercises in reducing stereotypical behavior in autistic children. The literature search was done using the Cochrane Library, Google Scholar, PEDro and PubMed databases, including studies from the year 2007 to 2021. The Medical Subject Headings (MeSH) terms, "stereotypic behavior", "children", "autism spectrum disorder", "behavioral therapy" were used. Following screening of 44609 articles, 28275 duplicates were removed, leaving 16334 records for evaluation. Of these, 527 underwent full-text review, and 8 articles met the inclusion criteria. Behavioural interventions like differential reinforcement, response interruption and redirection, exposure-response prevention, are effective in reducing repetitive behavior by promoting adaptive response. Similarly, structured physical exercises such as ball tapping, jogging and other matched-movement exercises helps to reduce stereotypic behavior by providing competing sensory input and enhancing self-regulation. In conclusion, current evidence indicates that behavioral interventions effectively reduce stereotypic behavior, whereas physical exercises show effects particularly when matched to the child's specific stereotypy. However, further studies are needed due to the lack of long-term follow-up, short sample sizes and limited evidence that compare or combine these therapeutic approaches.

Keywords: Child, Autistic Disorder, Stereotypic Behavior, Behavior Therapy

UG-104: Core Stabilization in improving Balance in children with Cerebral Palsy: A Review

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ABSTRACT

Cerebral palsy is a group of permanent and non-progressive neurological disorders that primarily affects movement, muscle tone, and balance. Core stabilization is defined as ability to maintain the position and movement of the body's core, which helps in improvement of balance. The objective of the study is to evaluate the impact of core stabilization on balance in children with cerebral palsy. The literature search was done using the Cochrane library, Google Scholar, PedRo and PubMed databases including recent studies from the year 2019 to 2025. The Medical Subject Headings (MeSH) terms, "core stabilization", "balance", "cerebral palsy" were used. A total of 88916 articles were reviewed, removing 50784 duplicates, 560 qualified for full text screening from which 6 articles were found relative according to the inclusion criteria of the study. Existing studies on core stabilization in children with cerebral palsy focus on specific types of CP (such as only hemiplegic or ataxic CP), short single protocols, and varied measures. This narrative review focus on different types of CP (e.g., hemiplegic, spastic, diplegic, and ataxic). In conclusion, core stabilization exercises can enhance balance in individuals with cerebral palsy. However, the research is limited because the studies include small sample size, varied protocol, and lack of long-term follow-up.

Keywords: Cerebral Palsy, Nervous System Diseases, Hemiplegia, Ataxia

UG-105: Exercise Protocol to enhance Balance & Proprioception for Ankle Instability

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ABSTRACT

Introduction: People with chronic ankle instability (CAI) frequently have ankle sprains, decreased joint awareness (proprioception), and impaired balance. These difficulties can have long-term consequences for daily activities. According to research, performing particular balance exercises, proprioception training, and strengthening activities can help to stabilise the ankle and increase the body's capacity to control movement.

Aim: The study aims is to develop a rehabilitation program that improves proprioception, balance, and stability in people with ankle instability.

Methodology: Full-text studies published between 2015 and 2025 were searched using the databases Google Scholar, PubMed, PEDro, and Cochrane Library. In this study, patients aged 18-25 years with a history of at least one substantial ankle sprain, multiple episodes of the ankle 'giving way', and recurrent sprain. will be included. People will be excluded with any recent fractures. The sample size will be calculated by using the G-power method. Intervention protocol may include Single-leg stance (eyes open → eyes closed), Semi-tandem and tandem stance, Balance board (wobble board) stances, and Star Excursion Balance Test (SEBT). The outcome variables are balance, measured by the Y balance test, and proprioception, measured by the Joint Position Sense Test (JPS)

Keywords: Proprioception, Ankle Injuries, Sprain and Strain

UG-106: Role of Non-Invasive Brain Stimulation in Progressive Supranuclear Palsy: A Literature Review

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ABSTRACT

Progressive Supranuclear Palsy (PSP) is a rare, progressive neurodegenerative disorder characterized by postural instability, supranuclear gaze palsy, gait dysfunction, and cognitive decline. Due to the limited effectiveness of pharmacological management, non-invasive brain stimulation (NIBS) has emerged as a potential adjunctive therapeutic approach. The aim of the study is to evaluate the effects of non-invasive brain stimulation techniques on motor, gait, balance, and cognitive outcomes in individuals with Progressive Supranuclear Palsy. A narrative literature review was conducted using electronic databases including PubMed, Scopus, PEDro, and Cochrane Library. A structured search strategy employing Boolean operators was applied using the terms "Progressive Supranuclear Palsy" AND "non-invasive brain stimulation", rTMS, tDCS, tACS, and galvanic vestibular stimulation. Articles published between 2019 and 2025 were included. Studies were refined through title and abstract screening, followed by full-text screening for eligibility. Randomized controlled trials, clinical trials, and case reports evaluating the effects of NIBS in individuals with PSP were included, while studies involving invasive stimulation techniques, animal models, or non-PSP populations were excluded. Eight studies met the inclusion criteria. Repetitive transcranial magnetic stimulation was the most frequently studied modality and demonstrated short-term improvements in gait, postural stability, bradykinesia, and selected cognitive functions. Transcranial direct current stimulation showed modest benefits in executive function and balance. Noisy galvanic vestibular stimulation improved postural sway and gait stability, while limited evidence from transcranial alternating current stimulation suggested improvements in gait rhythmicity and motor coordination. Non-invasive brain stimulation appears to be safe, well tolerated, and potentially beneficial for improving motor and cognitive symptoms in individuals with Progressive Supranuclear Palsy. However, heterogeneity in stimulation protocols and outcome measures limits definitive conclusions.

Keywords: Progressive Supranuclear Palsy, NIBS, tDCS, rTMS, Transcranial Alternating Current Stimulation

UG – 107: Physical Therapy and Voyage to Space: ‘A Spinach Can’ earth, humans and beyond

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ABSTRACT

Humanity came to a long way from igniting woods to igniting rockets. And we're the first humans pioneering the spread of human consciousness to planets such as Mars and to Deep Space. But this mission is not an easy task exposure to Microgravity, Space and such Planetary environments could encumbered serious adverse health effects which critically affect missions and safety of astronauts compromised. The physical therapists provide training to astronauts for space flight and monitors there performance and rehab when they return to terrestrial environment. This review surveys around 15 existing literatures and uses official NASA website, Pubmed and Google Scholar as its databases and light up the negative effects of space exposure and such missions over musculoskeletal, nervous systems etc. and Pre & In flight training and Post flight rehabilitation of astronauts to counteract the effects. Implications from these findings on terrestrial population have been discussed. Future and scope of Space Physiotherapy have been highlighted. Space Physiotherapy plays the same role as Spinach Can plays for Popeye by giving strength to astronauts. We still don't know much about space and what effects it can cause on human anatomy and physiology, multiple questions remain about such effects. Physical therapy and coordination of other fields can counteract such effects and ensure safe and secure missions in future.

Keywords: Mars, microgravity, space travel, space exposure, physical therapy.

UG- 108: Impact of Exercise Tolerance in Cardiac Rehabilitation Patients

A Narrative Review

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ABSTRACT

Exercise tolerance is an important part in the recovery process as well as the management of a patient undergoing cardiac rehabilitation. Cardiac rehabilitation is a well-structured program designed for the goal of restoring the best possible physical, psychological, and social function in a person suffering from a cardiovascular disorder or disease. IT is highly significant for a person suffering from coronary artery disorder or heart diseases that exercise tolerance exercises, in fact, directly affects their everyday activities in terms of their ability to do their normal tasks without any hindrances due to health problems, as enhanced exercise tolerance indicates their improved myocardial efficiency, as well as an increase in their peripheral muscle strength. Heart rehabilitation patients demonstrate a marked change in endurance capacity, strength, and metabolism effects associated with carefully measured and incremental levels of exercise and physical activity. Increased tolerance levels also establish a direct correlation with improvement in ventricular function along with symptom reduction of breathlessness and yet fatigue. Physical functioning has a positive impact on psychological factors, which in turn reduces levels of anxiety and depression and improves life quality. Careful monitoring of tolerance levels in terms of stress tests or six-minute walk tests proves to be a very effective method of assessing specific exercising programs in heart rehabilitation.

Age, co-morbidity, motivation, and compliance are some of the factors that affect the levels of improvement of exercise tolerance among patients with cardiac rehabilitation. Personalized exercise programs, nutrition, and behavioral modifications will further improve the levels of effectiveness of exercise tolerance among patients. In a general sense, the effects of exercise tolerance on the levels of effectiveness of patients with cardiac rehabilitation go beyond physical health.

Keywords: Exercise tolerance, cardiac rehabilitation, cardiovascular function, functional capacity, exercise training

UG- 109 : Effect of Cawthorne-Cooksey Exercises and Semont Maneuver on Balance Control and Fall Risk among Geriatric Population: A Study Protocol

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ABSTRACT

Introduction: Age-related decline in vestibular function is a common problem in older adults and contributes to dizziness, imbalance, and an increased risk of falls. These impairments negatively affect mobility, independence, and quality of life in the geriatric population. Cawthorne–Cooksey Exercises (CCE) are commonly used in vestibular rehabilitation and have been reported to improve balance, vestibular function, and dizziness. Benign Paroxysmal Positional Vertigo (BPPV), which is frequently seen in older adults, further increases fall risk and responds well to repositioning techniques such as the Semont maneuver. Although both interventions are effective, direct comparison of their effects in older adults is limited.

Aims & Objective: The aim of this study is to evaluate and compare the effects of Cawthorne–Cooksey Exercises and the Semont maneuver on balance control and fall risk in older adults.

Materials and Methods: A total of 60 older adults will be recruited and randomly assigned into two equal groups (n = 30 each). Group 1 will receive Cawthorne–Cooksey Exercises (CCE), while Group 2 will undergo the Semont maneuver. Both interventions will be delivered four times per week for a duration of three weeks. Outcome measures for balance and fall risk will include the Timed Up and Go Test (TUG), Berg Balance Scale (BBS), and Morse Fall Scale (MFS). Assessments will be conducted at baseline and after completion of the intervention. Changes within and between groups will be analyzed to determine the comparative effectiveness of both interventions.

Results: The study is expected to show improvements in balance and a reduction in fall risk following both interventions, as indicated by changes in TUG, BBS, and MFS scores. It is also possible that one intervention may produce greater improvements than the other.

Conclusion: The finding will clarify whether the semont maneuver or Cawthorne-Cooksey Exercise will offer greater benefits for balance enhancement and fall-risk reduction in older adults. The results will support more informed clinical decision-making in vestibular rehabilitation for the geriatric population.

Keywords: Cawthorne-Cooksey Exercises, Semont Maneuver, Vestibular Rehabilitation, Geriatric Balance, Fall Risk.

UG-110: Treatment Challenges affecting Rehabilitation Outcomes among Stroke Survivors: A Scoping Review

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ABSTRACT

Stroke survivors encounter multiple challenges during treatment and many of them are not properly addressed which can limit rehabilitation progression and reduce quality of life. This review aimed to examine the challenges commonly experienced during stroke treatment and the strategies used to overcome these challenges. A structured search of Google Scholar, Scopus, and PubMed identified studies published between 2015 and 2025. Using MeSH terms, related keywords, and Boolean operators (“OR,” “AND”), the search produced approximately 3,500 records, of which 10 studies met the inclusion criteria. Search terms included treatment challenges, exercise, physical therapy, qualitative study, experience, perception, rehabilitation, and stroke survivors. Findings across the selected studies revealed consistent physical, psychological, and rehabilitation-related barriers. Three studies reported that emotional distress, cognitive difficulties, and physical limitations reduced participation in therapy and slowed functional recovery. Caregivers also experienced considerable stress, which further influenced patient engagement. Four studies highlighted mobility impairments, inadequate support services, and limited access to rehabilitation resources as major barriers to improvement. Additionally, three studies identified social, environmental, and individual factors such as lack of support, physical constraints, and restricted service availability as contributors to low adherence to rehabilitation programs. Overall, the evidence indicates that stroke survivors face interconnected environmental, social, cognitive, and physical barriers that affect both daily functioning and rehabilitation outcomes. Supportive factors such as motivation, caregiver involvement, effective communication with healthcare providers, structured rehabilitation programs, and recovery in familiar environments were associated with better outcomes. Conversely, limited resources, insufficient information, and inadequate support systems constrained effective rehabilitation, emphasizing the need for accessible, individualized, and well-supported rehabilitation plans.

Keywords: Stroke survivors, Treatment challenges, Physical therapy, Perception, Qualitative study.

UG- 111: Impact of Deep Cervical Flexor Training Using Pressure Biofeedback on Neck Pain, Range of Motion, and Disability in Office Workers: A Study Protocol

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ABSTRACT

Introduction: Neck pain is common among office workers due to long hours of sitting, computer use, and poor posture. These factors can reduce cervical mobility and contribute to functional limitations. Weakness or reduced activation of the deep cervical flexor (DCF) muscles, which helps in stabilizing the cervical spine, has been reported in individuals with neck discomfort. Office workers are particularly affected, with high annual rates of neck pain and the greatest incidence of neck disorders among occupational groups. So, the aim of this study is to examine whether deep cervical flexor training using pressure biofeedback can influence neck pain, cervical range of motion, and disability in office workers.

Aims & Objective : The aim of this study is to examine whether deep cervical flexor training using pressure biofeedback can influence neck pain, cervical range of motion (ROM), and disability in office workers.

Materials and Methods: This pilot quasi-experimental study will recruit 30 participants aged 25–45 years who have at least five years of computer-based work experience and are experiencing neck pain, using purposive sampling. Individuals with a history of cervical injury or surgery, neurological or vestibular disorders, systemic inflammatory diseases, or those undergoing neck rehabilitation in the last six months will be excluded. A deep cervical flexor training program using pressure biofeedback in combination with conventional neck exercises will be administered 4 times per week for 3 weeks. Outcome measures will include the Numerical Pain Rating Scale (NPRS) for neck pain, goniometric assessment for cervical range of motion, and the Neck Disability Index (NDI) for disability. All outcome measures will be assessed at baseline and post-intervention.

Results: The study is expected to examine changes in neck pain, cervical range of motion, and disability following the deep cervical flexor training program using pressure biofeedback and conventional neck exercises. The findings may indicate improvements in outcomes post-intervention.

Conclusion: The results are anticipated to provide insight into the potential role of deep cervical flexor training using pressure biofeedback in the management of neck pain among office workers. The findings may contribute to informed clinical decision-making regarding the inclusion of targeted cervical stabilization exercises in rehabilitation programs for work-related neck pain

Keywords: Pressure biofeedback, Neck pain, Range of motion, Posture, Disability.

UG-112: Understanding Text Neck in the Digital Era: A Narrative Review of Posture, Duration, and Device Use Among Young Adults

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ABSTRACT

The rapid rise in smartphone and laptop use has led young adults to adopt sustained forward-head posture, increasing stress on the cervical spine. Prolonged screen time and poor ergonomic habits have been strongly associated with neck pain and altered musculoskeletal health, commonly termed Text Neck Syndrome. As digital dependence intensifies, understanding how posture and duration of device use contribute to this growing condition is essential for prevention and early intervention. The objective of this review is to analyse how posture, screen-time duration, and digital device use contribute to the development of Text Neck Syndrome among young adults. It also aims to synthesize existing evidence to guide prevention, awareness, and early intervention strategies. A narrative review approach was used, and studies were searched in PubMed, Scopus, Web of Science, and Google Scholar for research published between 2023 and 2025, total 32 studies included in this review. Keywords related to text neck syndrome, posture, screen-time duration, Musculoskeletal disorder, cervical spine, forward head posture and digital device use were used to identify relevant studies. After screening and assessing full texts, the articles that focused on posture, device use, and musculoskeletal outcomes in young adults were included in the review. Young adults with longer device-use duration and poor forward-head posture showed a higher likelihood of neck pain, postural changes, and related musculoskeletal symptoms. Text neck is strongly linked to prolonged device use and sustained forward-head posture, making young adults particularly vulnerable to cervical strain and discomfort. Strengthening awareness, improving ergonomics, and encouraging healthier digital habits are essential to reduce long-term musculoskeletal risks.

Keywords: Text Neck Syndrome, Forward Head Posture, Smartphone Use, Screen Time, Cervical Spine, Neck Pain, Musculoskeletal Disorders, Young adults, Digital Device Use.

UG-113: Neurorehabilitation approaches for improving ankle joint proprioception in stroke patients: A Narrative Review

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ABSTRACT

Ankle joint proprioception plays a crucial role in balance, postural control, and gait stability, all of which are commonly impaired following a stroke. Deficits in proprioceptive feedback contribute to gait asymmetry, increased fall risk, and reduced mobility, making proprioceptive rehabilitation an essential component of stroke recovery. This narrative synthesizes current evidence on neurorehabilitation approaches aimed at improving ankle joint proprioception in stroke patients, with a focus on their effectiveness, underlying mechanisms, and clinical applicability. A systematic search of the literature identified 140 studies, of which 8 met the inclusion criteria for qualitative synthesis. Literature search database (PubMed, PEDro, Cochrane Central) All Randomized controlled trials, clinical trials, and observational studies were identified. Findings were qualitatively synthesized, focusing on intervention protocols, outcome measures, and therapeutic effectiveness. Search term included “Neurorehabilitation approaches”, “ankle joint proprioception”, “stroke patients” used for searching the literature separated by Boolean operators like “OR”, “AND”, “NOT”. The reviewed evidence suggests that neurorehabilitation interventions targeting ankle proprioception effectively enhance joint position sense, improve balance performance, and contribute to better functional mobility in stroke patients. Several studies included in this review also reported comparable improvements in ankle joint proprioception between traditional rehabilitation methods and advanced neurorehabilitation approaches, with the newer techniques demonstrating better patient tolerance and reduced physical strain on the affected lower limb. Task-specific neurorehabilitation appears to be a safe and effective strategy for improving ankle joint proprioception in stroke patients, enhancing sensorimotor control and functional stability while placing minimal mechanical stress on the affected limb.

Keywords: Ankle joint proprioception, Stroke rehabilitation, Neurorehabilitation approaches.

UG-114: Impact of Early Postoperative Rehabilitation protocol on Pain and Functional Outcomes after Lumbar Laminectomy: A Study Protocol

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ABSTRACT

Introduction: Lumbar laminectomy is a commonly performed surgical procedure for the management of lumbar spine pathologies associated with neural compression. Although the procedure effectively relieves nerve compression, many patients experience postoperative pain, muscle weakness, reduced mobility, and functional limitations. These postoperative issues may delay recovery and return to daily activities. Early initiation of a structured postoperative rehabilitation program focusing on pain management, mobility restoration, and strengthening may facilitate early recovery, improve functional independence, and enhance overall quality of life.

Aims & Objective: The aim of this study is to evaluate the effects of an early postoperative rehabilitation program on pain and functional disability in individuals undergoing lumbar laminectomy.

Materials and Methods: This quasi-experimental study will include 24 individuals who have undergone lumbar laminectomy and are recruited through purposive sampling based on predefined inclusion criteria. Participants will receive an early postoperative rehabilitation program for a duration of two weeks. The rehabilitation program will focus on pain management, mobility exercises, strengthening, and functional training. Pain intensity and functional disability will be assessed at baseline and after two weeks using the Numerical Pain Rating Scale (NPRS) and the Oswestry Disability Index (ODI).

Results: It is anticipated that individuals receiving early comprehensive postoperative rehabilitation will demonstrate a significant reduction in pain levels and improvement in functional disability, as reflected by post-intervention NPRS and ODI scores.

Conclusion: Early implementation of a comprehensive postoperative rehabilitation protocol may be effective in reducing pain and improving functional outcomes in individuals following lumbar laminectomy. The findings of this study may provide evidence to support the incorporation of early structured rehabilitation into routine postoperative care to optimize recovery.

Keywords: Lumbar laminectomy, Postoperative pain, Pain management, Functional independence, Quality of life.

UG-115: Influence of Lower Limb Flexibility Training on Pain Levels Among Overweight Adults with Plantar fasciitis

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ABSTRACT

Introduction: Plantar fasciitis is a leading cause of heel pain and is particularly prevalent among overweight adults due to increased mechanical loading on the plantar fascia. This excessive strain often leads to pain, reduced functional mobility, and limitations in daily activities. Although lower-limb stretching and flexibility exercises are commonly prescribed to reduce musculoskeletal tension, their effectiveness in overweight adults with plantar fasciitis remains inadequately explored.

Aims and Objective: To evaluate the effect of a structured lower-limb flexibility training program on pain intensity and functional mobility in overweight adults diagnosed with plantar fasciitis.

Materials and Methods: A quasi-experimental single-group pre-test/post-test design will be used. 30 overweight adults diagnosed with plantar fasciitis will be recruited through purposive sampling following screening with a positive Windlass test. Outcome measures will include the Numeric Pain Rating Scale (NPRS) to assess pain intensity and the Six-Minute Walk Test (6MWT) to assess functional mobility, as it reflects pain-related limitations during weight-bearing walking in individuals with plantar fasciitis. Participants will undergo a structured lower-limb stretching program focusing on the gastrocnemius and hamstring muscles. Post-intervention assessments will be conducted using the same outcome measures. Paired statistical analyses will be performed to evaluate pre- and post-intervention changes.

Results: Participants are expected to demonstrate reduced pain intensity and improved functional walking capacity following the flexibility training program. These findings may suggest that targeted lower-limb stretching reduces plantar fascial tension and enhances functional mobility.

Conclusion: This study is expected to support the effectiveness of structured lower-limb flexibility training as a conservative intervention for overweight adults with plantar fasciitis by reduction in pain intensity and an improvement in functional mobility

Keywords: Heel pain, Stretching, Flexibility, Planter fasciitis, Overweight

UG-116: Exploring the Role of Cervical Sensorimotor Training in Temporomandibular Disorder: A Scoping Review

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ABSTRACT

Temporomandibular disorders (TMD) are multifactorial conditions commonly presenting with jaw pain, limited mouth opening, neck discomfort, and headaches, which negatively affect daily activities and quality of life. Evidence increasingly supports a functional relationship between the temporomandibular region and the cervical spine, mediated by shared musculature, neural pathways, and sensorimotor and postural control mechanisms. Cervical sensorimotor dysfunction has therefore been proposed as a contributing factor to altered mandibular movement and persistent TMD symptoms. Cervical sensorimotor training, targeting cervical motor control, proprioception, and postural regulation, has emerged as a potential therapeutic approach; however, its effects on TMD-related outcomes remain unclear. This scoping review explored existing evidence on the role of cervical sensorimotor training in individuals with TMD, focusing on pain, jaw-related function, and cervical sensorimotor outcomes. A structured search of PubMed/MEDLINE, Scopus, Web of Science, CINAHL, PEDro, and Google Scholar identified studies published between 2015 and 2025. Out of 328 records screened, six studies met the inclusion criteria by incorporating cervical sensorimotor training as a primary intervention component and reporting Temporomandibular or cervical-related outcomes. Three studies reported reductions in Temporomandibular or Orofacial pain, while two demonstrated improvements in jaw-related function or mandibular mobility, such as increased mouth opening or reduced functional limitation. One study primarily reported improvements in Cervical Sensorimotor outcomes, including motor control and Proprioceptive performance, with limited assessment of jaw-related clinical outcomes. Some studies used combined cervico-mandibular exercise approaches and reported concurrent improvements across multiple outcome domains. Overall, findings were variable, likely due to heterogeneity in study design, intervention protocols, and outcome measures. The available evidence suggests that Cervical Sensorimotor training may contribute to improvements in pain and function in individuals with TMD; however, the limited number of studies and methodological variability restrict the strength of conclusions, highlighting the need for further standardized and high-quality research.

Keywords: Temporomandibular Joint Disorders, Neck Pain, Proprioception, Postural Balance, Exercise Therapy

UG-117: Current Trends in Physiotherapy for Promoting Motor Skills in Children with Cerebral Palsy: A Scoping Review

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ABSTRACT

Cerebral palsy is a major cause of motor impairment in children and frequently affects movement, posture, and participation in daily activities. Physiotherapy plays an essential role in supporting motor development in this population. In recent years, clinical practice has shifted toward more functional, task-focused, and technology supported approaches aimed at enhancing engagement and motor performance. The aim of this scoping review was to identify current physiotherapy strategies used to improve motor skills in children with cerebral palsy. A structured literature search was conducted using PubMed, Embase, Scopus, and the Cochrane Library. Studies published from January 2015 and November 2025 were considered for inclusion. The search strategy used keywords related to cerebral palsy, physiotherapy, motor skills, task-specific training, virtual reality, robotic therapy, and gait training. Study selection followed predefined inclusion criteria, and the quality of included studies was assessed using the PRISMA-ScR checklist. A total of fifteen studies met the eligibility criteria and were included in the review. Virtual reality-based interventions were the most commonly reported approach. Six studies reported improvements in motor performance, balance, or upper limb control when virtual reality was used as part of physiotherapy. Five studies examined robot assisted therapy and identified gains in gait measures or functional arm movement, particularly when robotic interventions were combined with conventional physiotherapy. Three studies focused on treadmill training or body-weight-supported gait training and demonstrated benefits in walking speed, endurance, or postural stability. One study investigated upper limb functional training and reported improvements in targeted limb use. Overall, the findings indicate a growing emphasis on functional and technology supported physiotherapy for children with cerebral palsy. Although the reported outcomes are promising, the evidence is limited by small sample sizes, variability in study design, and limited reporting of long-term outcomes. Further research is needed to determine optimal intervention dosage, evaluate sustained effects, and guide the effective clinical use of emerging physiotherapy technologies.

Keywords: Cerebral Palsy, Physical Therapy Modalities, Motor Skills, Task Performance, Pediatric Rehabilitation, Virtual Reality

UG-118: Psychosocial and Self-Image Outcomes of the Schroth Method in Individuals with Scoliosis: A Scoping Review

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ABSTRACT

Idiopathic scoliosis is a three-dimensional spinal deformity that affects posture, trunk symmetry, and appearance, which can influence self-image and emotional well-being, especially in adolescents. The Schroth method, based on three-dimensional postural correction and rotational breathing, is widely used as a conservative physiotherapy approach. While its physical effects are well described, less is known about how Schroth influences self-image and psychosocial outcomes. This scoping review aimed to map existing evidence on the psychosocial effects of Schroth physiotherapy with attention to self-image, emotional well-being, and related quality-of-life factors. A structured search of PubMed, Scopus, Web of Science, and PEDro identified studies published between 2015 and November 2025. From 317 records, eight studies met the inclusion criteria by using Schroth as the main intervention and reporting psychosocial or self-image outcomes. Across these studies, two reported improvements in self-image measured by the Scoliosis Research Society-22 Revised Questionnaire (SRS-22r) or the Trunk Appearance Perception Scale (TAPS). Three studies described broader psychosocial or quality-of-life benefits using tools such as the Bad Sobernheim Stress Questionnaire (BSSQ) or the Short Form Health Survey-36 (SF-36). These studies noted reduced concerns about appearance, greater body awareness, and improvements in emotional well-being. The remaining three studies showed mixed results, often due to short program duration or differences in outcome measures. Overall, the evidence establishes that Schroth physiotherapy contributes to improvements in self-image and emotional well-being in individuals with idiopathic scoliosis. However, the small number of studies and variations in methodology make it difficult to draw firm conclusions. More research using standardized questionnaires and longer follow-up is needed to better understand the extent and durability of psychosocial changes associated with Schroth treatment.

Keywords: Scoliosis, Adolescent Idiopathic Scoliosis, Exercise Therapy, Postural Balance, Quality of Life, Self Concept, Body Image, Emotions.

UG-119 Comparative Analysis of Cryotherapy, Compression, and Soft-Tissue Techniques in Athletic Recovery: A Scoping Review

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ABSTRACT

Athletic recovery is a key component of training and competition, as it influences performance, reduces post-exercise fatigue, and helps lower the risk of injury. Athletes and sports physiotherapists commonly rely on recovery modalities such as cryotherapy, compression, and soft-tissue techniques; however, clarity regarding their comparative effectiveness and appropriate clinical use remains limited. This scoping review aimed to summarize and compare existing evidence on the role of cryotherapy, compression, and soft-tissue techniques in post-exercise recovery among athletic populations. A comprehensive literature search was performed using PubMed, Scopus, Web of Science, CINAHL, and the Cochrane Library. Additional studies were identified through Google Scholar and manual screening of reference lists. Studies evaluating recovery-related outcomes following exercise using cryotherapy, compression, or soft-tissue interventions in athletes were included. After systematic screening of titles, abstracts, and full texts, 27 relevant studies were selected for analysis. The findings suggest that cryotherapy is effective in reducing tissue temperature, inflammation, and delayed onset muscle soreness during the acute recovery phase. Compression techniques demonstrated benefits in improving venous return, reducing edema, and enhancing perceived recovery. Soft-tissue techniques, including sports massage and myofascial release, were associated with reduced muscle stiffness, improved flexibility and range of motion, and increased relaxation. Comparative analysis indicated that no single recovery modality was superior across all outcomes. The effectiveness of these interventions varied depending on protocol, timing, individual athlete characteristics, and sport-specific demands. Evidence also suggested that combining recovery strategies may provide additional benefits. Despite widespread clinical use, variations in application and limited evidence on long-term effects remain, highlighting the need for further high-quality, sport-specific research to guide evidence-based recovery practices in sports physiotherapy.

Keywords: -Cryotherapy; Compression Therapy; Soft-Tissue Techniques; Athletic Recovery; Delayed Onset Muscle Soreness

UG- 120 Intermittent Theta Burst Stimulation in Reducing Spasticity in Multiple Sclerosis: A Scoping Review

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ABSTRACT

Multiple Sclerosis (MS) is a long-term immune-related disease of the central nervous system and often leads to muscle spasticity, which makes movement, walking, and daily activities difficult. Spasticity occurs because damage to the corticospinal pathways increases muscle stiffness, strengthens reflexes, and reduces voluntary control. Although medicines and physiotherapy are commonly used to manage spasticity, their effects are sometimes limited, short-lasting, or associated with side effects. There has been increased interest in newer treatment methods such as Intermittent Theta Burst Stimulation (iTBS), a patterned form of repetitive transcranial magnetic stimulation that can influence brain activity and promote helpful changes in motor pathways. This scoping review aims to summarize existing research on how effective iTBS is for reducing spasticity in people with MS. A detailed search was performed on PubMed, Scopus, Web of Science, PEDro, and ScienceDirect using MeSH-based terms (“Intermittent Theta Burst Stimulation” OR “iTBS”) AND (“Multiple Sclerosis”) AND (“Muscle Spasticity”), along with manual checking of reference lists. Studies that measured spasticity using the Modified Ashworth Scale, Tardieu Scale, EMG activity, or reflex-based tests were included. The available evidence shows that iTBS delivered over the primary motor cortex may help reduce muscle spasticity, improve voluntary muscle activation, and support better functional movement. Some studies also report that combining iTBS with regular physiotherapy produces better results than either treatment alone. However, differences in treatment settings—such as stimulation intensity, number of sessions, and sample sizes—make it difficult to form firm conclusions. Overall, this review suggests that iTBS is a promising additional option for managing spasticity in MS, but more large-scale, high-quality studies are needed to confirm the best treatment methods and long-term benefits.

Keywords: Multiple Sclerosis, Muscle Spasticity, Transcranial Magnetic Stimulation, Neuromodulation, Motor Cortex.

UG-121: A Review on Advanced Electrotherapeutic Modalities in the Management of Chronic Plantar Fasciitis

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ABSTRACT

Chronic plantar fasciitis is a common musculoskeletal condition characterized by persistent heel pain, reduced foot function, and difficulty performing daily activities. While traditional physiotherapy methods such as stretching, soft tissue techniques, and orthotic support remain widely used, technological progress has increased attention toward electrotherapeutic modalities. However, there is limited consolidated evidence summarizing their outcomes, mechanisms, and comparative benefits. This narrative review aims to evaluate the effectiveness, benefits, limitations, and clinical relevance of advanced electrotherapeutic methods for chronic plantar fasciitis within modern physiotherapy practice. A structured literature search was performed using PubMed and ScienceDirect for studies published between 2015 and 2025. Of the initially identified 30 records, 20 articles were screened, and 6 met the inclusion criteria. These consisted of clinical trials, cohort studies, review articles, and randomized controlled trials investigating electrotherapy-based interventions. The modalities reviewed include extracorporeal shockwave therapy (ESWT), low-level laser therapy (LLLT), therapeutic ultrasound, radiofrequency ablation, microcurrent electrical nerve stimulation (MENS), transcutaneous electrical nerve stimulation (TENS), and high-intensity focused electromagnetic therapy (HIFEM). Strong evidence supports ESWT and LLLT in improving vascularity, promoting tissue repair, reducing plantar fascia thickness, and alleviating chronic heel pain. TENS and ultrasound demonstrate moderate short-term improvements in function and pain. Novel approaches such as radiofrequency therapy, MENS, and HIFEM show promising outcomes but require further long-term trials. Overall, findings suggest that integrating advanced electrotherapeutic techniques with exercise-based rehabilitation may provide a more comprehensive management plan for persistent plantar fasciitis. Individualized treatment selection should consider symptom severity, chronicity, and patient response. More high-quality studies are required to establish standardized treatment protocols and enhance evidence-based physiotherapy practice.

Keywords: Plantar Fasciitis, Electrotherapy, Shockwave Therapy, Low-Level Laser Therapy, Ultrasound, Chronic Heel Pain, Physiotherapy.

UG-122 Non-Pharmacological Physiotherapy management for Iliotibial Band Syndrome: A Systematic Review Protocol

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ABSTRACT

Iliotibial Band Syndrome (ITBS) is a frequent overuse condition characterized by lateral knee pain and commonly observed in runners and active individuals. Despite its high prevalence, consistent clinical guidelines for physiotherapy management remain lacking. This systematic review protocol outlines the methods to evaluate the effectiveness of non-pharmacological, physiotherapy-based interventions for ITBS. Searches will be performed in PubMed, Scopus, PEDro, and the Cochrane Library, adhering to PRISMA 2020 standards. Key search terms will include “Iliotibial Band Syndrome,” “lateral knee pain,” “runner’s knee,” “exercise therapy,” “manual therapy,” “hip abductor strengthening,” “myofascial release,” “dry needling,” “foam rolling,” “stretching,” and “shockwave therapy.” Randomized controlled trials involving adult participants with clinically diagnosed ITBS will be eligible. Two reviewers will independently complete screening, data extraction, and methodological appraisal using the Cochrane RoB 2.0 tool. Primary outcomes of interest include pain intensity, functional performance, hip abductor strength, lower-limb biomechanics, and iliotibial band properties. The review will examine the relative effectiveness of modalities such as strengthening exercises, manual therapy, and adjunct treatments including dry needling and myofascial release. By synthesizing current evidence, this review aims to clarify which physiotherapy approaches offer meaningful clinical benefit and identify areas where further high-quality research is needed to establish optimal rehabilitation protocols. This protocol has been registered with PROSPERO (CRD420251172665).

Keywords: Iliotibial band syndrome, Myofascial release, Non-pharmacological intervention, Exercise therapy, Manual therapy.

UG-123: Correlation between BMI and Balance in Young Adults: A Narrative Review

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ABSTRACT

Young adults increasingly present with elevated body mass index (BMI), which can shift the centre of gravity, overload the lower limbs and compromise static and dynamic balance, predisposing them to coordination problems and future musculoskeletal injuries. Observational studies in this age group have linked higher BMI with poorer performance on single leg stance and Y Balance. This study aims to synthesise current observational evidence on the relationship between BMI and balance in young adults and to describe how increasing BMI influences static balance, dynamic balance and postural control. A secondary aim is to explore how BMI interacts with foot morphology, particularly flexible flat foot, in relation to dynamic balance performance. Evidence from case-control, cross sectional and pilot studies involving young adults (approximately 18–35 years), classified as normal weight, overweight or obese using standard or Asia Pacific BMI criteria, was reviewed. Participants were typically healthy, able to stand and walk independently, and free from major neurological, vestibular, musculoskeletal, visual, cardiovascular or systemic conditions that could independently impair balance. Balance outcomes included Single Leg Stance and Y Balance. Across studies, higher BMI was consistently associated with reduced single leg stance duration and shorter Y Balance reach distances, indicating poorer static and dynamic balance. These associations were stronger in young adults with flexible flat feet, in whom BMI explained a substantial portion of the variance in dynamic stability. Overall, elevated BMI in young adults appears reliably linked to compromised postural control and balance, supporting early weight management and physiotherapy-based balance and foot interventions to reduce future fall and injury risk.

Keywords: Body Mass Index, Young adults, Balance, Postural Control, Dynamic Balance, Static Balance, Flexible Flat foot

UG- 124: Effect of Physiotherapy Intervention on Ankle Dorsiflexion Range of Motion, and Pain Severity in Runners with Medial Tibial Stress Syndrome: A Narrative Review

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ABSTRACT

Medial tibial stress syndrome (MTSS) is an overuse injury that causes pain along the posteromedial border of the tibia during activity. The pain is spread over a region of at least 5cm along the middle to lower third of the shin. It affects military personnel, long distance runners, and athletes involved in jumping activities. The Global prevalence of MTSS in runners ranges from 13.5% to 20. %, with the highest prevalence reported among recreational marathon runners in India (69.5%). Repeated stress on the tibia during running causes tiny bone injuries and pain, while restricted ankle dorsiflexion may alter lower-limb mechanics, placing extra strain on the tibia. Therefore, physiotherapy approaches focusing on improving dorsiflexion are essential to relieve pain and enhance functional performance in runners with MTSS. This Narrative review explores and synthesizes Physiotherapy treatments protocols aimed at targeting ankle dorsiflexion range of motion (ROM) and to critically assess their impact on pain reduction and functional outcomes in runners with suffering from (MTSS). A through literature search was conducted using key database such as PubMed, Pedro, CENTRAL between 2015 and 2025. search terms included “Medial Tibial Stress Syndrome”, “Ankle dorsiflexion”, ROM”, “Physical Therapy”, “Pain”, “Runner” employing Boolean operators (AND, OR) “A total 6 studies were identified through the data base search and met the inclusion criteria all 6 study were included in the final analysis. Non-English language articles were excluded. The results indicated that physiotherapy interventions, particularly manual therapy using fascial mobilization, significantly reduced pain and improved ankle dorsiflexion ROM and functional activity in individuals with MTSS. Participants reported improved ankle mobility and reduced discomfort during physical activity. Fascial mobilization appears to be an effective hand- on intervention for relieving pain and enhancing functional performance in individuals with MTSS.

Keywords: Ankle, Medial Tibial Stress Syndrome, Military Personnel, Pain, Range of Motion, Tibia

UG-125: The Effectiveness of Blood Flow Restriction Training for Post-Operative Management in Patients with Distal Radius Fracture: A Narrative Review

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ABSTRACT

Distal radius fracture (DRF) is one of the most common upper limb injuries, often resulting in muscle weakness, diminished grip strength and delayed post-surgical recovery. Blood flow restriction (BFR) training is a modern way of treatment in which cuff partially restricts blood flow during low intensity strengthening exercises. It enables in improving muscles strength with low load training, make it effective for post-surgical rehabilitation when high load exercises are restricted and helping to close the gap between immobilization and conventional strengthening. The efficacy and safety of BFR training in individuals with surgically treated DRF were evaluated in this review. A thorough search of the literature was conducted using the three database that is PEDro, PubMed, and Cochrane Central. Only English language articles published between year 2018 to 2025 were included. Only 4 studies met the inclusion criteria and were included in this review. Across the included studies, addition of BFR training to standard rehabilitation led to faster reduction in pain during daily activities and significant improvement in grip strength. Improvements in pinch strength and wrist range of motion were variable or less consistent. No negative effects on bone healing or radiographic outcomes were reported. Events like thrombosis or pain aggravation were not observed and BFR training well tolerated throughout the treatment period. In conclusion, BFR appears to provide early benefits for patients recovering from DRF surgery, especially by easing pain and recovering grip strength when heavy loading is not yet allowed. Overall, the current evidence suggests that BFR can be a useful addition to early rehabilitation, although larger and higher quality studies are required to determine its optimal use and long-term benefits.

Keywords: Blood Flow Restriction Therapy, muscle weakness, Pinch strength, Range of Motion, Wrist fracture.

UG - 126: Effectiveness of Extracorporeal Shockwave Therapy for Patients with Myofascial Pain Syndrome in Trapezius Muscle: A Narrative Review

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ABSTRACT

Myofascial pain syndrome (MPS) is a clinically prevalent condition characterized by referred pain, palpable taut bands, regional muscle discomfort, and muscle spasms. Its prevalence is estimated at 12 %, occurring mainly in upper extremity muscles like trapezius due to changes in lifestyle, work routines, and frequent use of electronic devices. Various therapies exist to treat MPS, including invasive (e.g.; dry needling) and non- invasive (e.g.; exercise and electrical stimulation) methods. Extracorporeal shockwave therapy (ESWT) is a non-invasive modality commonly used in the management of musculoskeletal disorders. ESWT works on principle that high air pressure generates mechanical energy, which propagates through the tissues. It uses sources that induce tissue regeneration and stem cells activity while decreasing neurotransmitters in the affected region, thereby promoting patient improvement. The aim of this review is to explore the current evidence regarding the effectiveness of extracorporeal shockwave therapy in the management of trapezius myofascial pain syndrome. A literature search was conducted using key databases such as PubMed, CENTRAL, science direct for articles published between 2015 and 2025. Search terms such as “Extracorporeal”, “Shockwave Therapy”, “Trapezius Muscle”, “Myofascial Pain Syndromes” employing Boolean Operators (AND, OR). A total of 6 studies were identified through the database search and met the inclusion criteria and were selected for this review; non- English articles were excluded. The majority of trials found that pain scores significantly decreased following a brief course of treatment (two to four sessions). Additionally, ESWT increased the pressure – pain threshold, making the treated muscle less sensitive and able to withstand higher pressure without pain. ESWT can be regarded as supplemental therapy, particularly for individuals who do not respond to traditional treatments.

Keywords: Extracorporeal, Myofascial pain syndromes, Shockwave Therapy, Superficial Back Muscles, Trapezius Muscle, triggered Points.

UG-127: Aquatic Exercise and Cognitive Health: A Narrative Review

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ABSTRACT

Cognitive health is a critical component of overall well-being, with growing interest in non-pharmacological interventions that can enhance mental agility and prevent cognitive decline. Aquatic exercise, characterized by its low-impact, adaptable nature, has gained attention as a potential strategy for promoting both cognitive and physical benefits across various populations. This narrative review aims to synthesize current evidence on the effects of aquatic exercise on cognitive health, highlighting key findings, methodological considerations, and implications for practice. A comprehensive search was conducted in PubMed, Google Scholar, and Science Direct using the keywords “Aquatic exercise,” “water-based exercise,” “hydrotherapy,” “cognition,” “cognitive function,” “memory,” “executive function”. Only free-full texts, available in English language and published within the last 10 years were considered for the review. The initial search yielded an aggregate of 17,488 studies. After applying the inclusion criteria, 8,820 studies remained. Following titles and abstract screening, 8,802 irrelevant studies and duplicates were excluded. Consequently, eighteen studies met the inclusion criteria and were reviewed according to the SANRA guidelines. The studies were reviewed and analyzed to understand the impact of aquatic exercises on cognition. Aquatic exercise emerges as a promising, accessible intervention for supporting cognitive health across diverse groups. The reviewed studies consistently reported positive associations between aquatic exercise and improvements in global cognition, executive function, and neural efficiency. Further research with larger, more diverse samples and longer follow-up periods is recommended to strengthen the evidence base.

Keywords: Aquatic exercise, cognitive health, executive function, global cognition

UG- 128: Impact of Scapulo Thoracic Mobility and Rib mechanics on Scapular dyskinesis: A Scoping Review

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ABSTRACT

Scapular dyskinesis refers to abnormal scapular motion that is often associated with shoulder pain, muscle imbalance, and impaired function. Because the scapula must move in coordination with the thoracic cage, limitations in scapulothoracic mobility or rib mechanics may influence scapular behaviours during arm elevation. Restricted thoracic extension, reduced thoracic expansion, altered rib motion, and changes in breathing mechanics have all been suggested as factors that could disrupt normal scapular rotation and stability. Although these concepts are frequently discussed in clinical practice, the evidence supporting these relationships has not been clearly organized. Therefore, the aim of this scoping review was to identify and summarize research exploring the impact of scapulothoracic mobility and rib mechanics on scapular dyskinesis. A structured search of PubMed, Scopus, and Google Scholar identified 142 records published between 2018 and 2025. After screening against predefined criteria, ten studies met the inclusion requirements. Among these, five studies showed that limited thoracic mobility, such as reduced thoracic expansion or restricted extension, was linked to alterations in scapular motion, including decreased upward rotation or changes in scapulothoracic rhythm. Three studies reported that interventions targeting thoracic or scapulothoracic mobility improved shoulder function and changed scapular movement patterns, indicating therapeutic potential. Two studies connected altered rib mechanics or disordered breathing patterns with reduced scapular control, supporting a role for rib cage dynamics in normal scapular function. These findings collectively support the idea that scapulothoracic mobility and rib mechanics meaningfully influence scapular dyskinesis, though variability in study design and measurement limits direct comparison. Overall, this review highlights thoracic and rib mobility as important factors in scapular movement and suggests they should be considered in both assessment and rehabilitation planning.

Keywords: Scapulothoracic mobility, Rib mechanics, Scapular movement, Thoracic spine, muscle imbalance

UG-129: Comparative Study to Evaluate Immediate Effects of Swimming and Cycle Ergometer on Cognitive Performance and Reaction Time among College Students

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ABSTRACT

Background: Sedentary lifestyles, especially among young adults, are linked to cognitive decline and reduced academic performance. Acute aerobic exercise is recognized for its potential to enhance cognitive functions, including attention, memory, and reaction time.

Purpose: This study aimed to compare the immediate effects of swimming and cycle ergometer exercise on cognitive performance and reaction time in college students.

Methodology: A comparative study was conducted at Chitkara University, Punjab, India, with 40 students aged 18-24 years. Participants were divided into groups: swimming (n=20) and cycle ergometer (n=20). Baseline assessments included anthropometric data, physical activity levels, and cognitive function using the Montreal Cognitive Assessment Cognitive performance – attention (Trail Making Test), memory (Rey Auditory Verbal Learning Test), and reaction time (Deary-Liewald Reaction Time Task) – was measured before and after a 15-minute intervention of either swimming or cycling.

Results: Both interventions produced measurable changes in attention, memory, and reaction time; however, statistical comparisons revealed no significant differences between swimming and cycling groups ($p > 0.05$). Both groups demonstrated comparable enhancement across all measured domains.

Conclusion: A single session of either swimming or cycle ergometer exercise provided immediate cognitive benefits for college students. Both forms of aerobic activity are equally effective in improving attention, memory, and reaction time, supporting their inclusion in routines aimed at cognitive enhancement.

Keywords: Acute effects, Aerobic exercise, Cognitive performance, Cycle ergometer, Swimming, Attention, Memory, Reaction time

UG-130: Integrating Proprioceptive Neuromuscular Facilitation into Scoliosis Management: A Comprehensive Review

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ABSTRACT

Proprioceptive neuromuscular facilitation (PNF) has emerged as a promising therapeutic approach for managing scoliosis. This narrative review synthesizes current evidence on PNF's application in scoliosis rehabilitation, exploring its biomechanical rationale, clinical efficacy, and integration with conventional treatments. PNF techniques, rooted in neurophysiological principles, utilize diagonal patterns, rhythmic stabilization, and hold-relax contractions to enhance proprioceptive feedback, muscle strength, and neuromuscular control. In scoliosis, these methods target asymmetric muscle imbalances, aiming to improve postural alignment and spinal mobility. A comprehensive literature search was conducted in PubMed, and Google Scholar using the keywords "PNF," "Proprioceptive Neuromuscular Facilitation," and "Scoliosis". The initial search yielded 1,571 studies. Full-text English articles published within the last 10 years were included. After applying the inclusion criteria, 1,019 remained. Following the screening of titles and abstracts, 16 studies were included. Studies reviewed indicate that PNF, often combined with Schroth exercises or bracing, yields significant reductions in Cobb angle enhanced vital capacity, and improved quality of life metrics. Key findings highlight short-term benefits in adolescents with idiopathic scoliosis. However, evidence remains heterogeneous due to small sample sizes, lack of randomized controlled trials, and variability in PNF dosing. This review underscores PNF's potential as an adjunctive, non-invasive intervention, emphasizing patient-specific adaptations and multidisciplinary approaches. Future research should prioritize standardized protocols and longitudinal studies to solidify its role in scoliosis management.

Keywords: Proprioceptive neuromuscular facilitation, Scoliosis, Schroth, Physiotherapy

UG-131: Artificial Intelligence in Sports Physiotherapy: A Comprehensive review of its applications in the detection, assessment, and rehabilitation of shoulder deformities

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ABSTRACT

Introduction: Artificial intelligence (AI) has emerged as a transformative technology in sports physiotherapy, offering innovative approaches for the detection, assessment, and rehabilitation of shoulder deformities commonly observed in athletes. Issues such as rotator cuff injuries, scapular dyskinesis, and shoulder instability frequently result from repetitive overhead activities and are traditionally assessed through subjective clinical methods, often leading to variability and limited biomechanical precision.

Aims & Objective: This review's objective was to examine and compile the most recent research on the use of artificial intelligence in sports physical therapy for the identification, evaluation, and treatment of shoulder deformities. The objective was to evaluate the effectiveness of AI-driven tools in improving diagnostic accuracy, movement analysis, and rehabilitation outcomes.

Materials and Methods: A comprehensive literature review was conducted using a structured search of PubMed, Scopus, Web of Science, IEEE Xplore, and Google Scholar. Studies published between January 2019 and December 2024 were included to capture recent advancements in AI-based physiotherapy applications. Inclusion criteria consisted of peer-reviewed original research articles, systematic reviews, and clinical studies examining AI-based assessment, detection, or rehabilitation of shoulder deformities in athletic or physically active populations. Articles not published in English, conference abstracts without full-text availability, and studies unrelated to shoulder biomechanics or physiotherapy applications were excluded.

Results: The review identified significant growth in the use of AI-driven technologies such as computer vision systems, deep learning models, and sensor-integrated wearable devices. AI frameworks including TensorFlow, PyTorch, OpenPose, Mediapipe, and MATLAB's Deep Learning Toolbox supported the development of automated motion analysis and patient-specific diagnostic models. These systems enabled objective measurement of joint angles, scapular movement, muscle activation patterns, and movement symmetry. In rehabilitation, AI-based platforms provided real-time feedback, adaptive exercise progression, and remote monitoring of patient compliance.

Conclusion: Artificial intelligence demonstrates substantial potential to enhance the objectivity, accuracy, and personalization of shoulder assessment and rehabilitation in sports physiotherapy. Despite challenges such as limited sport-specific datasets, variability in imaging standards, and the need for robust clinical validation, current evidence supports AI as a valuable adjunct to conventional physiotherapy practice. Continued research and standardization are essential for its widespread clinical integration.

Keywords: Artificial intelligence; Sports physiotherapy; Shoulder deformities; Computer vision, and Rehabilitation technology.

UG-132: Mind-Body Practices and Neurological Disorders: A Scientific Synthesis of Qigong, Yoga, and Tai Chi Interventions

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ABSTRACT

Mind-body practices such as Qigong, yoga, and Tai Chi have gained recognition as non-pharmacological interventions for managing neurological disorders. This narrative review synthesizes evidence from 17 randomized controlled trials (RCTs) published between 2015 and 2025, identified through a PubMed search yielding 673 initial results. After applying filters for free full-text availability and English language, 30 articles remained; title and abstract screening led to the review of 17 RCTs. To assess the risk of bias, two independent reviewers evaluated the studies before considering them for the narrative review. The selected studies primarily examined these practices in neurological conditions. Findings demonstrate significant improvements in motor function, balance, gait stability, and quality of life metrics, alongside reductions in fatigue and spasticity. Yoga showed particular efficacy in enhancing neuroplasticity and mood regulation, while Tai Chi excelled in fall prevention and coordination, and Qigong supported autonomic nervous system balance. Despite promising outcomes, heterogeneity in protocols, participant demographics, and outcome measures limits direct comparisons. The review highlights the need for standardized dosing, long-term follow-up RCTs, and investigations into underlying mechanisms like neuro-inflammation modulation. This synthesis supports integrating Qigong, yoga, and Tai Chi into multidisciplinary neurological rehabilitation, offering accessible, low-risk options to complement conventional therapies.

Keywords: Tai chi, Qigong, Yoga, Neurological conditions, Mind-body practices

UG-133: Comparison of Music Therapy and Guided Meditation in Reliving the Severity of Premenstrual Symptoms in Young Females

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ABSTRACT

Background: Premenstrual syndrome (PMS) is a common condition among young women, characterized by physical, emotional, and behavioural symptoms that can significantly affect daily functioning and quality of life. Non-pharmacological interventions such as guided meditation and music therapy have gained attention for their potential role in alleviating PMS symptoms.

Purpose: The purpose of this study was to evaluate and compare the effectiveness of music therapy and guided meditation in reducing the intensity of PMS symptoms in young women.

Methodology: A randomised comparative study was conducted on 62 participants aged 18-25 years with PMS symptoms. The participants were divided randomly into two groups: guided meditation (n=31) and music therapy (n=31). The Premenstrual Symptom Questionnaire (PMSQ) and the Premenstrual Symptoms Screening Tool (PSST) were used to measure PMS symptoms. Over the course of six weeks, assessments were conducted three times a week to track changes in the severity of the symptoms after the intervention.

Results: Both intervention groups demonstrated a reduction in PMS symptoms over the study period. In contrast to the music therapy group, the guided meditation group demonstrated a statistically significant reduction in symptom severity. Despite these encouraging results, constraints such as small sample size and short intervention period were noted, which might have an impact on the finding's long term viability and generalizability.

Conclusion: Guided meditation and music therapy are effective non-pharmacological approaches for reducing PMS symptoms, with guided meditation showing significant improvement in results. The findings highlight the complexity of PMS and the need for multifaceted therapeutic approaches. Future studies with larger and more diverse samples, longer intervention periods, and appropriate control groups are recommended to enhance generalizability and minimize self-reporting bias.

Keywords: Premenstrual syndrome, guided meditation, music therapy, PMS symptoms, young women.

UG- 134 : Pilot Study on Effectiveness of Jacobson's Progressive Muscle Relaxation in Non-specific Low Back Pain

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ABSTRACT

Introduction: Nonspecific low back pain (NSLBP) is widespread in adults and is a leading cause of activity limitation and reduced work participation. When no structural lesion is identified, NSLBP is often related to posture, muscle imbalance and lifestyle, and is frequently accompanied by stress, anxiety and depressive symptoms, which can increase disability as reflected in Oswestry Disability Index (ODI) scores.

Aim: To examine the effect of adding Jacobson's Progressive Muscle Relaxation (PMR) to conventional physiotherapy on pain, disability and psychosocial status in people with NSLBP.

Materials and Methods: A prospective singlegroup pilot study was undertaken on 15 individuals aged 18–40 years with NSLBP attending a physiotherapy outpatient department. Participants completed a supervised 14day programme, five sessions per week, comprising stretching and strengthening exercises plus Jacobson's PMR. Pain intensity (Visual Analogue Scale), disability (ODI) and stress, depression and anxiety (DASS21 total score) were recorded at baseline and after 14 days. Pre and postintervention values were compared using the Wilcoxon signedrank test with significance set at $P < 0.05$.

Results: Mean VAS scores decreased from 5.1 ± 1.5 to 2.3 ± 1.3 (55.3% reduction; $P = 0.0007$). DASS scores reduced from 16.9 ± 6.0 to 12.4 ± 6.3 (26.5% reduction; $P = 0.0021$). ODI scores improved from 30.0 ± 17.1 to 22.0 ± 13.7 (26.5% reduction; $P = 0.0037$).

Conclusion: A brief programme combining Jacobson's PMR with conventional physiotherapy produced statistically significant improvements in pain, disability and psychosocial outcomes in this NSLBP pilot sample, supporting further evaluation in larger controlled studies.

Keywords: Nonspecific low back pain, Jacobson's progressive muscle relaxation, Progressive muscle relaxation

UG - 135: Immediate Effects of Myofascial Line-Based Physiotherapy Intervention in Early Knee Osteoarthritis (Grade 1 And 2): A Preliminary Pre-Post Pilot Study

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ABSTRACT

Introduction: Knee osteoarthritis (OA) is a prevalent musculoskeletal disorder characterized by pain, stiffness, and functional limitations. Conventional physiotherapy typically adopts a region-specific approach; however, emerging evidence on myofascial connectivity suggests that dysfunction along specific myofascial lines may influence knee symptoms. Clinical evidence exploring the immediate effects of myofascial line-based physiotherapy in early knee OA remains limited.

Aim & Objective: To evaluate immediate pre- and post-treatment changes in pain and function following a myofascial line-based physiotherapy intervention in individuals with early knee osteoarthritis.

Materials and Methods: A preliminary single-group pre-post pilot study was conducted involving nine participants diagnosed with grade I-II knee OA, recruited through convenience sampling. The predominantly affected myofascial line was identified through clinical assessment, and a targeted, non-invasive physiotherapy intervention was administered. Outcomes were assessed immediately before and after treatment using the WOMAC Index and Oxford Knee Score to capture short-term clinical responses. Data were analyzed using descriptive statistics and paired t-tests. Informed consent was obtained, and confidentiality was maintained.

Results: Post-treatment findings demonstrated a reduction in mean WOMAC scores from 38.78 ± 19.47 to 10.33 ± 8.11 , reflecting a 73.4% improvement in pain, stiffness, and functional limitation. The mean Oxford Knee Score improved from 33.78 ± 4.92 to 43.00 ± 3.91 , indicating a 27.3% enhancement in knee-related function. Paired t-test analysis revealed statistically significant differences between pre- and post-treatment scores ($p < 0.05$), suggesting a favorable immediate clinical response.

Conclusion: Myofascial line-based physiotherapy demonstrated favorable immediate effects on pain and functional outcomes in individuals with early knee osteoarthritis. The findings should be interpreted cautiously due to the small sample size and absence of follow-up assessment. Nevertheless, this preliminary evidence supports further large-scale, controlled studies with longitudinal follow-up to establish sustained clinical effectiveness.

Keywords: Knee Osteoarthritis; Myofascial Lines; WOMAC Index; Oxford Knee Score

UG-136: Effect of Myo – fascial release technique and Self stretching of Tibalis anterior muscle on shin pain

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ABSTRACT

Background: Severe pain, a decrease in normal range of motion, coordination, and soft tissue extensibility are all caused by fibrous adhesion. Shin pain is mostly caused by fibrous adhesion in the tibialis anterior muscle. A foam roller was used to apply pressure beneath active soft tissue. It facilitates and administers massage, which relaxes the muscle and reduces discomfort. The pain may be lessened by an increased blood flow.

Aim: To find the effect of Myo – fascial release technique and self-stretching of tibialis anterior muscle on shin pain.

Method: In this study, 30 patients were chosen using a simple randomised sample technique based on inclusion and exclusion criteria. They were then divided into two groups: a self-stretching group and a myofascial group. A goniometer and a VAS were used to quantify flexibility and discomfort, respectively. Statistical analysis was used to get the results.

Result: Thirty volunteers, equally divided between the MRT and self-stretching groups, had similar baseline characteristics. Pain and flexibility improved in both groups after therapy ($p < 0.05$). It's interesting to note that the MRT and self-stretching groups differed statistically significantly ($p < 0.05$) in terms of reduced flexibility and pain severity.

Conclusion: The conclusion of the study is that Myo-fascial release help to improve shin pain.

Keywords: Shin pain myofascial release, self-stretching, ROM

UG- 137: Relationship between Sleep deprivation, Pain Sensitivity and Myofascial trigger points: A Systematic Review

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ABSTRACT

Sleep plays a critical role in pain perception, pain modulation and neuromuscular health and growing evidence suggests that there exists a bidirectional relation between sleep deficiency and pain mechanism. Myofascial trigger points (MTrPs) are common source of regional and referred pain, frequently observed in musculoskeletal pain conditions, but the correlation between sleep deficiency, altered pain sensitivity and myofascial trigger points is still not comprehensively synthesized. The need for this systematic review arises from the increasing prevalence of sleep disorders and chronic pain conditions, particularly among individuals with myofascial pain syndromes, and the lack of integrated understanding linking sleep deprivation, trigger point sensitivity, and pain perception. This systematic review has included research studies done on healthy subjects and patients affected by conditions like chronic low back pain, mechanical neck pain, knee osteoarthritis and the alteration due to sleep deficiency. A comprehensive literature search was performed in databases like PUBMED, SCOPUS, WEB OF SCIENCE and MEDLINE using keywords “Sleep Deprivation”, “Pain”, “Pain sensitivity”, “Myofascial trigger points”. The systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta -Analysis (PRISMA) guidelines. Out of the selected articles from database and based upon abstract and title screening, the study was included and excluded considering the eligibility criteria which is as follows. Inclusion criteria: Studies relating sleep quality with pain or myofascial trigger points in human participants were included. Studies which were either of observational or experimental nature published in English language and with full text availability were included in the study process. Studies without the comprehensive assessment for sleep or pain outcome measures. Studies with subjects who were undergoing any pharmacological interventions and had history of trauma (emotional, physical) to cranial region, pregnant ladies and with pre-diagnosed autoimmune disorders were also excluded from current review. For Quality assessment of articles: PEDro (Physiotherapy Evidence Database) was done for Experimental studies and NOS (Newcastle Ottawa scale) assessment was performed for Observational studies. Studies revealed that total or partial sleep deprivation increases pain sensitivity, reduces pain inhibition, impairs endogenous pain modulation, and lowers pain tolerance thresholds and established significant correlations between poor sleep quality, higher pain intensity, increased disability, and greater prevalence or sensitivity of MTrPs. Overall findings indicate that sleep deficiency exacerbates pain perception and is strongly associated with increased myofascial trigger point sensitivity. This review concludes that assessing and addressing sleep deficiency should be considered as a critical component in the assessment and management of myofascial pain, chronic musculoskeletal disorders and pain disorders with important implications for physiotherapy and multidisciplinary pain management.

Keywords: Humans, Low back pain, Trigger point, Myofascial pain syndrome, Sleep deprivation, Pain

UG- 138: Integrating Vestibular Rehabilitation Therapy in the Management of Vestibular Paroxysmia: Rationale and Clinical Application – A Narrative Review

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ABSTRACT

Vestibular paroxysmia (VP) is an uncommon vestibular disorder marked by brief and repeated episodes of vertigo and dizziness. These episodes are most often caused by neurovascular compression of the vestibular nerve. At present, the management of VP mainly relies on pharmacological treatment, while the role of physiotherapy-based interventions has received limited attention. As physiotherapists, it is important to explore conservative approaches that can complement medical management and improve patient outcomes and here the need for this narrative review arise to explore the rationale for incorporating Vestibular Rehabilitation Therapy (VRT) into the management of VP by drawing parallels with other vestibular nerve-related pathologies. For the designing of this narrative review, an extensive search was performed using keywords like “Vestibular Rehabilitation Therapy”, Vestibular Paroxysmia”, “Dizziness”, “Vestibular Nerve”, “Physiotherapy” on different databases like Scopus, Pubmed, Web of Science and Medline. Articles related to keywords which correlated VRT, cranial nerve pathologies and Physiotherapy, articles with full text availability and strong rationale behind the application of VRT were included in the study. Time frame of articles included for study purpose range from 2012 to 2025. VRT is a well-established physiotherapy intervention that has shown positive results in various vestibular disorders such as vestibular neuritis, unilateral vestibular hypo function, persistent postural-perceptual dizziness, and other chronic vestibular conditions. VRT focuses on promoting central compensation through specific exercises aimed at improving gaze stability, balance, postural control, and functional mobility. Although VRT has been widely used in these conditions, its application in vestibular paroxysmia has not been clearly studied. Adjunct approaches

such as neuro-modulation techniques have also shown encouraging results in reducing symptom severity and fall risk. Factors like early intervention, patient compliance, and individualized exercise programs play a crucial role in rehabilitation success. Despite these benefits, there is a lack of structured VRT protocols specifically designed for vestibular paroxysmia. Considering the similar pathophysiology and symptoms shared with other vestibular disorders, VRT may serve as an effective adjunct to pharmacological treatment in VP. Further clinical research is needed to develop standardized guidelines and establish the effectiveness of VRT in patients with vestibular paroxysmia.

Keywords: Humans, Vestibular Neuronitis, Vertigo, Postural Balance, Vestibular Nerve

UG-139: Efficacy of Exercise Based Protocol for Shin Splint Pain: A Study Protocol

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ABSTRACT

Introduction: Medial Tibial Stress Syndrome commonly called “shin splint”- results from repeated stress on the tibia and associated soft tissues, often in runners and other athletes. It seems as diffuse discomfort along the posteromedial aspect of tibia and commonly associated with persistent loading, poor biomechanics and diminished muscle flexibility. Manual therapy like Myofascial Release for enhancing soft-tissue mobility and reduce fascial tension, involves deep superficial or deep myofascial release. It utilizes the stretching of the fascia and muscle to help increase range of motion or decrease pain by breaking up these adhesions in the fascia.

Aim: The study aims to evaluate the effect of Myofascial Release technique with exercise protocol in reducing pain and improving lower limb function in athletes with shin splint pain.

Methodology: In this study, athletes aged 18-25 years, both male and female, who had experienced shin splint, lasted for more than two months but less than six months will be included. Players will be excluded with recent fractures, and with any surgery before 6 months. The sample size will be calculated by using G power method. Players who met the selection criteria will select for the study. Myofascial release technique with Exercise based protocol includes Bulgarian split squat, single leg bridge, single leg deadlift. Outcome measures will include pain measured by Numeric Pain Rating Scale (NPRS), and range of motion measured by Goniometer.

Keywords: Medial Tibial Stress Syndrome, Myofascial Release therapy, Fascia, Athletes.

UG-140: Falls and Secondary Injury Prevention in people with Spinal Cord Injury: Review of Rehabilitation Based Strategies

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ABSTRACT

Spinal cord injury (SCI) leads to highly variable functional outcomes depending on the level and severity of injury, with individuals demonstrating diverse mobility statuses ranging from independent ambulation to full-time wheelchair use. Regardless of mobility level, people with SCI experience a disproportionately high incidence of falls compared with other neurological and aging populations, with falls arising from multifactorial physical, neurological, and environmental risks. These falls frequently result in secondary injuries such as fractures and head injuries, along with significant psychosocial consequences, contributing to reduced participation, loss of independence, fractures, head injuries, pain, fear of falling, reduced mobility, and prolonged rehabilitation. Individuals with SCI are at increased risk of falls due to neuromuscular weakness, impaired balance, sensory deficits, spasticity, environmental barriers, and difficulties during transfers and wheelchair mobility. This study aimed to examine falls and secondary injury prevention in people with SCI with a focus on rehabilitation-based strategies. Various databases including PubMed, Google Scholar were examined to explore current literature on falls and prevention on secondary complications after SCI. The literature consistently reports a high incidence of falls among both ambulatory and wheelchair-dependent individuals with SCI, with falls most commonly occurring during transfers, ambulation, and activities of daily living and frequently resulting in secondary injuries that negatively affect functional outcomes and quality of life. Rehabilitation-based strategies identified include early and repeated fall risk assessment, individualized physiotherapy focusing on balance, strength, and mobility training, safe transfer and wheelchair skills training, appropriate assistive device prescription, environmental modification, patient and caregiver education, and structured post-fall management protocols within rehabilitation settings. The review shows that combining fall risk screening with regular monitoring, focused education for patients and families, and coordinated, task-specific rehabilitation leads to safer care and better functional recovery.

Keywords: Wheelchair, Walking, Physiotherapy, Quality of life

UG-141: Impact of Different Types of Pillows on Human Body

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ABSTRACT

Human spend roughly one third of their lives sleeping. Sufficient sleep helps reinvigorates the body and mind, while insufficient sleep causes fatigue and disturbs our daily lives. Lack of sleep causes symptoms like being in daze throughout the day, low levels of concentration, and slower speeds in performing tasks. While sleep is affected by internal physical factors, it is also affected by external factors, such as bedrooms, pillows and beds. In particular, research reports that pillow height and size is closely related to quality of sleep. In a reclining position, pillows of appropriate height support the body and head in a stable and natural condition, facilitating various bodily movements that occur during sleep. However, when people use pillows of inappropriate height, blood circulation in the neck is hindered, thereby increasing the risk of neurological disorders, such as cerebral hemorrhage. The aim of the study is to review different pillows and the impact on musculoskeletal system of human body. A computer-based search on Google Scholar, PUBMED, Research gate was done to receive articles 2000-2024. In conclusion, this study concludes that there is a variability in the shapes and sizes of the pillows available in the market which are useful and have a necessary role in various pathologies such as Sleep apnea, Gastroesophageal reflux disease, Intraocular pressure, cervical and lower back pain.

Keywords: -Pillows, sleeping pillows, pillow shape, comfort, Cervical pain, pillow height, GERD, Sleep apnea.

UG-142: Effect of Core Strengthening Exercises Along with Conventional Treatment on Pain and Function in Knee Osteoarthritis: A Literature Review

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ABSTRACT

Knee osteoarthritis is a chronic, progressive joint disease of the knee characterized by structural and functional deterioration of multiple joint tissues including articular cartilage, subchondral bone, synovium and other periarticular structure. It can develop due to several reasons such as injury, abnormal joint stress, inflammation, chemical changes and metabolic issues. The symptoms include swelling in the joint that has been affected, along with restricted and painful movements. Traditional physiotherapy for knee osteoarthritis mainly aims to strengthen the quadriceps and other lower limb muscle, improve flexibility and provide functional training. Weak core muscles and lumbopelvic instability can change lower limb biomechanics, increase stress on the knee joint and worsen functional performance. The aim of the study is to review the effects of core strengthening exercises along with traditional physiotherapy on pain and function in knee osteoarthritis patients. A literature review was conducted using articles from databases such as PubMed, Google Scholar and Research Gate, including studies published between 2006 and 2025. The studies indicated that adding core strengthening exercises to traditional physiotherapy led to greater pain relief and better functional outcomes compared to conventional treatment alone. These improvements were linked to enhanced trunk and pelvic stability and improved lower limb alignment, which reduced stress on the knee joint. By adding core strengthening exercises to conventional physiotherapy provides additional benefits in treating patients with knee osteoarthritis compared to conventional physiotherapy alone.

Keywords: Knee osteoarthritis, Core strengthening exercises, Conventional physiotherapy treatment.

UG-143: Treadmill: Friend And Foe- A Literature Review

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ABSTRACT

Treadmill training is widely used in physiotherapy for enhancing cardiovascular fitness, gait, and functional mobility, particularly in neurological and orthopedic rehabilitation. The dual nature of treadmill uses as both a therapeutically and a potential source of harm when misused or overused. Regular treadmill exercise is associated with improvement in cardiorespiratory fitness, which has a direct correlation with long term mortality and overall health outcomes in adults. This review aims to evaluate the role of treadmill in-patient rehabilitation (benefits, adverse effect and potential risk). A search was conducted from databases such as Google Scholar, PubMed, Science direct and ResearchGate. The review of the results will indicate that treadmill-based gait training will be helpful in rehabilitation, particularly in improving walking speed, endurance, overall movement, and cardiovascular fitness. It will be found to be generally safe, with minimal side effects. However, the benefits will not be the same for all areas of recovery, and the level of improvement will differ across outcomes. Overall, the review conclude that the Treadmill-based gait training will be a safe and helpful rehabilitation method that will improve walking ability and physical fitness. It will not show equal benefits for all aspects of functional recovery. Treadmill-based gait training will be most effective when it is used according to the individual needs of the patient and combined with conventional physiotherapy.

Keywords: Treadmill, cardiovascular fitness, rehabilitation, physiotherapy, overtraining

UG-144: The Combined Effect of Neurodynamic Mobilization and Soft Tissue Mobilization for the Management of Lumbar Radiculopathy: A Case Report

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ABSTRACT

A common musculoskeletal condition called lumbar radiculopathy is characterized by low back pain that radiates to lower limbs as a result of compression or irritation of the lumbar nerve roots. It frequently manifests as discomfort, decreased range of motion, paraesthesia, tightness in the muscles, and functional restrictions that interfere with day-to-day activities. Affected people's quality of life is greatly diminished by these symptoms. In the conservative treatment of lumbar radiculopathy, physiotherapy is crucial. Neurodynamic mobilization and soft tissue mobilization procedures are two of the many physiotherapeutic therapies used to alleviate symptoms and enhance function. Nevertheless, there is little data comparing these two methods' efficacy in clinical settings. The purpose of this case study is to determine how neurodynamic mobilization and soft tissue mobilization techniques work together to treat lumbar radiculopathy. A 56-year-old male patient presented with complaints of pain radiating from the lower back to the right lower limb from the past three months, associated with tingling sensation and difficulty in prolonged sitting, standing, and walking. Clinical examination revealed restricted lumbar active range of motion (ROM), positive Straight Leg Raise test, tenderness, and reduced functional ability. The Numerical Pain Rating Scale (NPRS), Goniometer for lumbar range of motion, and the Oswestry Disability Index (ODI) for functional disability are the outcome measurements. After soft tissue mobilization and neurodynamic mobilization, more improvement was observed after intervention was completed. There was a significant decrease in the Oswestry Disability Index (56% pre-assessment and 19% post-treatment), lumbar range of motion (flexion 30 degrees pre and 53 degrees post, extension 10 degrees pre and 21 degrees post), and pain severity (8/10 before-treatment and 3/10 post-treatment). This case study concludes that patients with lumbar radiculopathy had improved range of motion, decreased discomfort, and improved overall functional performance by neurodynamic and soft tissue mobilization.

Keywords: Lumbar Radiculopathy, Outcome Measures, Range of Motion, Pain Intensity, Functional Performance.

UG-145: Effectiveness of Mime Therapy along with Task Oriented Training for Facial Palsy: A Case Study

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ABSTRACT

A neurological disorder known as facial palsy results in weakening or paralysis of the muscles of face due to malfunction of facial nerve. Facial asymmetry, trouble expressing emotions, and functional issues including eating, drinking, speaking, closing eyes, and dribbling saliva are all consequences of this disorder. By enhancing facial muscle control, coordination, and functional usage, physiotherapy is crucial to the rehabilitation of people with facial palsy. The combination of task-oriented training and mime treatment for facial palsy has not been studied. The purpose of this case study was to assess how mime treatment and task-oriented training affected a patient with facial palsy. A 26-year-old man with left-sided facial palsy complained of having trouble eating and drinking, dribbling saliva, having his left eye partially closed, and having trouble smiling. A clinical examination showed diminished voluntary facial movements on the left side, lowering of the mouth angle, flattening of the left nasolabial fold, and facial asymmetry. The House-Brackmann Scale (Facial Nerve Grading System), Sunnybrook face Grading System, Facial Disability Index, and functional facial activities were used to evaluate face disability and functional limits. A mime therapy program emphasizing expressive face motions, mirror-guided exercises, respiratory regulation, and facial awareness was included of the physiotherapy intervention. Task-oriented training that focused on functional face activities was added to this. The patient's facial function significantly improved after the intervention, the Sunnybrook Facial Grading System score increased from 39 to 77 out of 100, the House-Brackmann grade improved from Grade IV to Grade II, and the Facial Disability Index significant improvement in physical function (from 35 to 85), while social function scores decreased from 65 to 35. This study demonstrates that mime therapy and task-oriented training improve facial motor recovery, functional facial activities, and quality of life in facial palsy patients.

Keywords: Facial Palsy, Facial Asymmetry, Physiotherapy, Quality of Life, Patient.

UG-146: Effect of Proprioceptive and Vestibular Training on Balance, Gait and Quality of life in Patient with Parkinson's Disease: A Case Report

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ABSTRACT

Parkinson's disease is a progressive neurodegenerative disorder characterized by extrapyramidal dysfunction, leading to balance and gait impairments. Evidence indicates that impaired central integration of proprioceptive and vestibular inputs, rather than motor deficits alone, contributes substantially to postural instability and fall risk. Although there are various treatment approaches available for Parkinson's disease but limited clinical evidence exists on rehabilitation programs that simultaneously target both sensory systems. This case report aims to evaluate the effects of Proprioceptive and Vestibular training on balance, gait, and quality of life in a patient with Parkinson's disease that may enhance sensory integration, improve balance and gait stability, and positively influence functional independence and quality of life in patients with Parkinson's disease. A 68-year-old patient diagnosed with Parkinson's disease (Hoehn and Yahr stage III) participated in the study. He experienced stooped posture, reduced arm swinging while walking, shuffling steps, difficulty starting to walk and slowed movements throughout his body. Patient was given structured protocol combining Proprioceptive exercises with Vestibular exercises for the duration of 4 weeks. Pre and Post intervention assessment was done for measuring balance using Berg balance scale, Timed up and go test and Functional reach test, gait by Freezing of Gait Questionnaire and quality of life by Parkinson's Disease Questionnaire-39 (PDQ-39) to measure the impact of Parkinson's disease on a patient's health-related quality of life (QoL). After four weeks of combined proprioceptive and vestibular training, the patient showed notable improvements in balance, gait, and quality of life, evidenced by better balance scores, reduced freezing of gait, and improved PDQ-39 outcomes. This case suggests that sensory-based rehabilitation targeting proprioceptive and vestibular integration can enhance postural control and functional mobility in Parkinson's disease. This approach may represent an effective adjunct to conventional physiotherapy in Parkinson's disease.

Keywords: Parkinson's disease, Postural Balance, Quality of life

UG-147: Effectiveness of Proprioceptive Neuromuscular Facilitation (PNF) techniques in Bell's Palsy: A Systematic Review

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ABSTRACT

Bell's palsy is an acute, idiopathic unilateral facial nerve paralysis that results in impaired facial symmetry, coordination, and functional expression, thereby affecting quality of life. Proprioceptive Neuromuscular Facilitation (PNF) is a neurophysiological rehabilitation approach that employs specific movement patterns and facilitation techniques to enhance neuromuscular control and functional recovery of facial muscles; however, evidence supporting its effectiveness remains heterogeneous. This systematic review was conducted in accordance with PRISMA guidelines to critically appraise the effectiveness of PNF techniques in individuals with Bell's palsy. A comprehensive literature search was performed across PubMed, Cochrane Library, PEDro, Google Scholar, and clinical trial registries, supplemented by manual reference screening. Randomized controlled trials, quasi-experimental studies, controlled clinical trials, case series, and case reports involving PNF interventions and reporting outcomes related to facial function, symmetry, coordination, synkinesis, or disability were included. Methodological quality was assessed using the PEDro scale, and due to clinical and methodological heterogeneity, findings were synthesized narratively. Of the 70 studies initially identified, five met the inclusion criteria. Across the included studies, PNF was predominantly implemented as part of multimodal physiotherapy programs rather than as a standalone intervention. Consistent improvements were observed in facial functional recovery, neuromuscular coordination, and reduction in facial disability, while direct evaluation of facial muscle strength was limited and inconsistently reported. Overall, the evidence suggests that PNF is a beneficial adjunct in the physiotherapeutic management of Bell's palsy; however, the absence of high-quality trials examining PNF in isolation limits definitive conclusions regarding its independent effectiveness, highlighting the need for rigorously designed randomized controlled studies.

Keywords: Bell's palsy; Proprioceptive neuromuscular facilitation; Facial nerve paralysis; Physiotherapy; Facial rehabilitation; Neuromuscular re-education

UG-148: Telerehabilitation Bridging Gap in Remote Health Care: A Narrative Review

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ABSTRACT

Telerehabilitation has emerged as an important component of digital healthcare, enabling the remote delivery of rehabilitation services to improve patient access and treatment outcomes. Its application extends across multiple clinical areas, including physiotherapy, neurological rehabilitation, and post-operative care, highlighting its growing relevance in modern healthcare systems. This review evaluates the effectiveness, benefits, and limitations of telerehabilitation, with a focus on its impact on patient care and the overall healthcare system. A review of studies was conducted using databases such as PubMed, Research Gate and Google Scholar, covering studies published between 2008 and 2025. The reviewed evidence suggests that telerehabilitation is a valuable and innovative approach that enhances patient engagement, treatment adherence, and clinical outcomes while offering cost-effective and personalized rehabilitation solutions. However, challenges such as technological limitations, regulatory concerns, and disparities in digital literacy continue to restrict its widespread adoption. Addressing these barriers through technological advancements, supportive policy reforms, and targeted educational initiatives is essential for successful integration into routine healthcare practice. Further research is required to optimize delivery models and evaluate long-term effectiveness to maximize the potential benefits of telerehabilitation.

Keywords: Telerehabilitation; Digital healthcare; Remote rehabilitation; Neurological rehabilitation; Healthcare accessibility

UG-149: A Review of Tendon Neuroplastic Training and Its Effects on Motor Cortex Excitability in Patellar Tendinopathy

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ABSTRACT

Patellar tendinopathy (PT) is a prevalent condition among jumping athletes, characterized by chronic pain and a significant reduction in knee extension maximal voluntary force (MVF). Emerging research indicates that these functional deficits are not solely due to local tendon pathology but also involve complex neural adaptations within the motor cortex and corticospinal tract. Tendon Neuroplastic Training (TNT) has emerged as a novel therapeutic approach by altering the motor program and reducing cortical inhibition. The aim of the study was to determine the effect of tendon neuroplastic training and its effect on motor cortex excitability in patellar tendinopathy. Electronic searches were performed using databases Google Scholar, Research Gate, Pub Med. Patellar tendinopathy in jumping athletes was associated with chronic pain and reduced knee extensor strength, showed altered corticospinal function with increased inhibition (longer cortical silent periods), and preliminary evidence suggested that externally paced Tendon Neuroplastic Training reduced cortical inhibition while improving muscle activation and pain. Patellar tendinopathy involved both peripheral tendon pathology and central nervous system adaptations that impaired motor control and strength. Tendon Neuroplastic Training offered a promising approach by targeting corticospinal inhibition through externally paced exercise.

Keywords: Patellar Tendinopathy, Tendon Neuroplastic Training, Motor Cortex Excitability.

UG-150: Physiotherapy Interventions for Kinesiophobia in Lower Limb Amputees Using Prostheses: Systematic Review

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ABSTRACT

Kinesiophobia is an excessive and irrational fear of movement that leads to avoidance of activity reduced physical participation, and functional limitations. People with lower limb amputation experience many physical and psychological difficulties during rehabilitation. Physiotherapy plays an important role in post-amputation rehabilitation by addressing both physical problems and psychological factors related to kinesiophobia. This systematic review aims to assess physiotherapy interventions used to reduce kinesiophobia in lower limb amputees using prostheses. This systematic review follows the PRISMA guidelines. Databases such as Google Scholar, PubMed and Cochrane library are used to identify relevant research articles. Randomized controlled trials published in English and involving adult lower limb amputees using prostheses are included. The findings of the included studies will show that physiotherapy interventions, especially graded exposure and functional training, help reduce fear of movement and improve confidence during prosthetic use. In conclusion, physiotherapy approaches that combine physical training with psychological support will be effective in managing kinesiophobia and may improve prosthetic acceptance, functional independence, and overall rehabilitation outcomes in individuals with lower limb amputation.

Keywords: Kinesiophobia, Lower limb amputation, Prosthetic rehabilitation, Physiotherapy interventions

UG-151: The Comparison of Biofeedback and Extracorporeal Magnetic Innervation for Pelvic Floor Muscle Rehabilitation in Women with Stress Urinary Incontinence: A Narrative Review

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ABSTRACT

Stress urinary incontinence (SUI) is a common pelvic floor disorder in women, characterized by pelvic floor muscles and inadequate urethral support, its leading to functional limitations and reduced quality of life. Pelvic floor muscle training (PFMT) is widely recommended as the first-line conservative treatment; however, its effectiveness is often limited because many women struggle to correctly identify and voluntarily contract their pelvic floor muscles. To overcome these challenges, therapeutic modalities such as biofeedback and extracorporeal magnetic innervation (ExMI) have been introduced, where biofeedback supports neuromuscular re-education through real-time visual cues, and Extracorporeal magnetic innervation produces involuntary pelvic floor muscles contractions by stimulating the sacral nerve roots electromagnetically. This reviewed aimed to compare the biofeedback and extracorporeal magnetic innervation for pelvic floor muscle rehabilitation in women with SUI. A search conducted using databases including Google Scholar and Research Gate, covering studies published between 2008 and 2025, reviewed the effectiveness of these two modalities in managing SUI. The reviewed evidence suggests that both biofeedback and extracorporeal magnetic innervation are effective in improving urinary incontinence symptoms, pelvic floor muscle's function, and quality of life in women with SUI. Both modalities contribute in reducing the severity and frequency of urine leakage. Overall, the choice between these modalities should be individualized based on patient capability, preference and clinical presentation.

Keywords: Biofeedback, Extracorporeal magnetic innervation, Stress urinary incontinence, Pelvic floor muscles training.

UG-152: Rehabilitation Advancements in Guillain Barre Syndrome: A Narrative review

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ABSTRACT

Guillain-Barre syndrome, the most common form of neuromuscular paralysis, is an autoimmune polyneuropathy, predominantly motor, with an acute onset that affects multiple peripheral nerves. Advances in GBS research have increased diagnostic and treatment options, potentially leading to better patient outcomes. Recent studies attempted to improve the diagnosis and management. The primary goal is to review recent advances in the study and treatment of Guillain-Barré syndrome. Databases such as PubMed, Google Scholar, ResearchGate, and ScienceDirect were searched for papers that satisfied the inclusion criteria and were considered relevant. Twelve recent papers were examined, with an emphasis on developments in immunopathogenesis, diagnostics, and treatment approaches. To assess the effectiveness of various therapy strategies on GBS patients, RCTs, crossover studies, pilot studies, and systematic reviews, among others, were discovered. This research showed that treatment options for Guillain-Barré Syndrome focused on rehabilitation include monitored exercise regimens, intense workouts, neuromuscular electrical stimulation, active balance therapy, anaerobic strength training, deep breathing techniques, resistance exercises, and proprioceptive neuromuscular facilitation (PNF), all of which aid in restoring function. Different physical therapy methods assist GBS patients in reducing fatigue and improving their physical well-being. Advances in GBS research have increased diagnostic and therapeutic options, with the potential to improve patient outcomes. Further research is required to validate developing treatments.

Keywords: GBS; Rehabilitation; Exercise Therapy; NMES; Balance Training

UG-153: Quadratus Lumborum Dysfunction and its association with Chronic Low Back Pain: A Literature Review

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ABSTRACT

Chronic low back pain (CLBP) is a leading cause of disability worldwide, arising from complex interactions between structural and myofascial factors. Among deep trunk stabilizers, the quadratus lumborum (QL) muscle plays a crucial role in lumbar stability, lateral flexion, and respiratory support. Increasing evidence suggests that QL dysfunction contributes to the persistence and severity of CLBP. Biomechanically, impaired QL function disrupts lumbopelvic load transfer and frontal-plane stability, leading to asymmetric spinal loading and increased mechanical stress on lumbar structures. This review aimed to synthesize current evidence on the association between quadratus lumborum dysfunction and chronic low back pain. A comprehensive literature search was conducted over six months using PubMed, Google Scholar, and ResearchGate, including English-language studies published between 2000 and 2023 that examined QL-related myofascial trigger points, muscle stiffness, altered activation patterns, and functional impairments in individuals with CLBP. The findings indicate that QL dysfunction is commonly associated with repetitive mechanical stress, prolonged poor posture, and asymmetric functional demands. Myofascial trigger points, increased muscle stiffness, and impaired neuromuscular control of the QL are linked to persistent pain, functional limitations, and delayed recovery. Targeted assessment and therapeutic interventions addressing QL dysfunction demonstrate promising effects in reducing pain and disability. The quadratus lumborum dysfunction represents a significant yet under-recognized contributor to CLBP, and its integration into routine clinical assessment and management may improve long-term outcomes.

Keywords: Quadratus lumborum; Chronic low back pain; Biomechanics; Myofascial trigger points; Muscle stiffness; Lumbopelvic stability.

UG-154: Outcome Measures Used in the Assessment and Evaluation in Dequervain Tenosynovitis: A Literature Review

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ABSTRACT

De Quervain's Tenosynovitis (DQT) is a common stenosing tenosynovitis affecting the first dorsal compartment of the wrist, primarily involving the abductor pollicis longus and extensor pollicis brevis tendons, and is characterized by radial wrist pain, reduced grip strength, and functional limitation of the hand. Accurate assessment and evaluation are essential for determining disease severity, planning appropriate interventions, and monitoring treatment outcomes. This literature review aimed to identify and summarize outcome measures used for the assessment and evaluation of patients with De Quervain's Tenosynovitis in the existing literature. A literature review was conducted using clinical trials, observational studies, and review articles retrieved from electronic databases including PubMed, Google Scholar, and the Cochrane Library. Studies reporting outcome measures related to pain, functional disability, grip and pinch strength. The findings indicate that pain intensity measured using the Visual Analog Scale (VAS) is the most consistently reported outcome measure. Functional disability is commonly assessed using region-specific patient-reported outcome measures such as the Disabilities of the Arm, Shoulder and Hand (DASH/QuickDASH) questionnaire and the Patient-Rated Wrist Evaluation (PRWE). Clinical tests including the Finkelstein test, along with objective measurements of grip and pinch strength, are often used to complement patient-reported outcomes. Overall, the literature demonstrates significant improvements in pain reduction and functional recovery following conservative interventions. The assessment of DQT relies on a combination of pain scales, functional questionnaires, and clinical measures, with evidence supporting the use of VAS for pain assessment and PRWE or QuickDASH for functional evaluation as a core outcome set. Standardization of outcome measures would enhance comparability across studies and strengthen evidence-based clinical decision-making in the management of DQT.

Keywords: Dequervain Tenosynovitis, Outcome Measures, Pain Assessment, Functional Assessment.

UG-155: Effectiveness of Telerehabilitation-Based Endurance and Strength Training in Patients With COPD: A Literature Review

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ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) is a progressive respiratory disorder characterized by irreversible airflow limitation, leading to reduced functional capacity, muscle component of COPD management; however, many patients face barriers in accessing hospital-based programs. Telerehabilitation has emerged as an effective alternative, enabling delivery of endurance and strength training at home through digital platforms. This literature review aimed to assess the effectiveness of telerehabilitation based endurance and strength training in improving symptoms, functional capacity, and quality of life in patients with Chronic Obstructive Pulmonary Disease (COPD). Relevant studies published between 2015 and 2025 were identified from databases including Google Scholar, PubMed and ResearchGate. This study showed that telerehabilitation improves walking capacity, muscle strength and daily functioning in patients with COPD. Endurance training helped them walk farther, tolerate exercise better, and feel less breathless, while strength training made their muscles stronger and daily activities easier. When both types of training were combined, patients experienced greater overall improvement and a better quality of life. It was determined that telerehabilitation is a safe and effective method for delivering endurance and exercise training to patients with COPD and improves physical function and quality of life.

Keywords: COPD, Telerehabilitation, Endurance Training, Strength Training, Quality of Life.

UG-156: Effect of Brain Gym exercises on the Perceived Level of Stress among University Students

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ABSTRACT

Introduction: Stress is considered a major problem for university students because of heavy study load, frequent exams, and day-to-day life pressures. Brain Gym, a simple movement-based program with exercises, will be planned as a method to help reduce this stress and improve students' thinking and learning. These movements will be expected to improve communication between the two sides of the brain and support better emotional control and attention in young adults.

Aim: To evaluate the effect of Brain Gym exercises on the perceived level of stress among university students.

Methodology: A pre-post quasi-experimental design with purposive sampling will be used for this research. The study will be carried out over six months in a university setting among undergraduate students aged 18–23 years who show a moderate level of stress on the DASS-21 scale. Participants will take part in supervised Brain Gym sessions three times per week for one month, with each session lasting about 25–30 minutes. The exercise plan will include marching, cross crawl, positive points, step touch, neck circles, hook-up, brain button, thinking cap, lazy eight, trace X, Gravity glider, Arm activation, Belly breathing, Elephant, Bilateral drawing activity, Standing heel raise, Cross lateral stretching, Ear rolls. Perceived stress level will be measured using the Depression Anxiety Stress Scale-21 (DASS-21) and Perceived Stress Scale (PSS) before and after the intervention.

Result and Conclusion: It will be expected that after one month of Brain Gym exercises, students will show lower scores of stresses on the DASS-21 and Perceived Stress Scale. The study will be expected to show that Brain Gym is a simple, low-cost, and non-invasive method that can be used in universities to help students manage stress and improve their psychological well-being.

Keywords: Exercise, Students, Perceived Stress Scale

UG-157: Comparative Effects of Repetitive Transcranial Magnetic Stimulation Versus Transcranial Direct Current Stimulation on Post-Stroke Spasticity: A Comparative Review

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ABSTRACT

Stroke is a major cause of long-term disability worldwide, and many stroke survivors develop spasticity, leading to increased muscle tightness, pain, abnormal posture, and difficulty in performing daily activities. Conventional treatments for post-stroke spasticity may have limitations due to side effects or invasive procedures. Non-invasive brain stimulation techniques such as repetitive transcranial magnetic stimulation (rTMS) and transcranial direct current stimulation (tDCS) have emerged as promising approaches for reducing post-stroke spasticity by modulating cortical excitability. However, direct comparisons between rTMS and tDCS are limited, highlighting the need to evaluate their relative effectiveness. This comparative review aimed to determine the effectiveness of rTMS and tDCS in reducing post-stroke spasticity. Relevant studies published between 2015 and 2025 were identified from databases including Google Scholar, PubMed, and ResearchGate. The findings indicated that both interventions reduce post-stroke spasticity, and repetitive transcranial magnetic stimulation (rTMS) may demonstrate comparatively better outcomes than transcranial direct current stimulation (tDCS). In conclusion, both rTMS and tDCS are effective non-invasive treatment options for post-stroke spasticity management, with rTMS potentially offering more reliable spasticity reduction, although further well-designed comparative studies are required to determine optimal protocols and long-term outcomes.

Keywords: Stroke, Muscle Spasticity, Repetitive Transcranial magnetic stimulation, Transcranial direct current stimulation.

UG-158: Effectiveness of Physiotherapy Approaches for Greater Trochanteric Pain Syndrome among Postmenopausal Women: A Literature Review

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ABSTRACT

Greater Trochanteric Pain Syndrome (GTPS) primarily comprising gluteal tendinopathy and trochanteric bursitis is a significant cause of lateral hip pain and functional decline in postmenopausal women. The intersection of hormonal shifts, tendon degeneration, and altered biomechanics in this population leads to severe limitations in daily mobility and overall quality of life. This literature review aims to evaluate the effectiveness of different physiotherapy approaches used for managing GTPS in postmenopausal women. Databases such as Google Scholar, Pub Med and Research Gate were used to gather research papers. Studies done between 2015-2025 were included in the review. The review focuses on exercise based interventions, patient education, and commonly used passive treatment methods. The findings will show that structured exercise programs targeting hip abductor strengthening, load management, and movement control will be effective in reducing pain and improving function. The results will indicate that patient education regarding posture, activity modification, and avoidance of compressive positions will play a crucial role in long term symptom management. Passive treatments such as corticosteroid injections and shockwave therapy will provide short term pain relief but will not produce sustained functional improvement when compared to active physiotherapy approaches. This review will conclude that physiotherapy exercise therapy, combined with appropriate patient education will be the most effective intervention for achieving pain reduction and functional improvement in postmenopausal women with Greater Trochanteric Pain Syndrome.

Keywords: GTPS, Postmenopausal Women, Gluteal Tendinopathy, Exercise Therapy, Physical Therapy.

UG-159: The Efficacy of Task Oriented Training of Patient with Diabetic Neuropathy: A Review of Literature

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ABSTRACT

Diabetic neuropathy is a prevalent condition characterized by peripheral nerve dysfunction in individuals with diabetes mellitus. Pain is another characteristic of diabetic neuropathy, which is a loss of sensory function that starts distally in the lower extremities. According to epidemiological research, between 30 and 50 percent of people with diabetes eventually develop diabetic neuropathy. Other factors including burning, tingling, prickling sensations, and numbness in diabetic neuropathy. In the discipline of physiotherapy, a range of therapies are employed, including balance, gait training, strengthening exercises, and aerobic and endurance activities. Review studies demonstrating the effectiveness of task-oriented training for patients with diabetic neuropathy are lacking. This review aim is to assess the effectiveness of task-oriented training for diabetic neuropathy patients. With a focus on balance, gait features, and functional outcomes in both clinical and home settings, this review of the literature concludes by synthesizing information from 13 research (2006 to 2023) publications regarding the efficacy of task-oriented training programs in individuals with diabetic neuropathy. Databases like PubMed, Google Scholar, and Research Gate were searched for studies looking at task-oriented or motor-based training in patients with diabetic neuropathy. Articles that included interventions like task-oriented gait training, activity-specific balance practice, and home-based functional training and parameters, balance performance, lower limb function, and coordinated neuromuscular activity were included. Research indicates that among people with diabetic neuropathy, task-oriented training dramatically improves gait characteristics, such as stride length, gait speed, and symmetry, while lowering gait variability. There were also consistent reports of improvements in lower limb function and activity-specific balance perception. Exercises focused on tasks improved postural control and decreased the likelihood of falls. According to the review's findings, task-oriented training seems to be a viable and successful rehabilitation approach for treating patients with diabetic peripheral neuropathy who have aberrant gait, balance issues, or lower limb impairment.

Keywords: Diabetic Neuropathy, Pain, Physiotherapy, Patients, Numbness.

UG-160: Effect of Virtual Reality Based Intervention in the Management of Work-Related Musculoskeletal Pain among Office Workers: A Narrative Review

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ABSTRACT

Work-related musculoskeletal disorders (WMSDs) are among the most common occupational health problems affecting office workers due to prolonged sitting, repetitive computer use, and poor ergonomic practices. Globally, the prevalence of WMSDs among office workers ranges from 38.5% to 100%, with Indian studies reporting a 12-month prevalence of approximately 67–76%, commonly involving the neck, shoulders, and lower back. The growing burden of WMSDs highlights the need for innovative and engaging management strategies. Virtual reality - based interventions, including both immersive and non-immersive approaches, addressing the need for engaging and innovative strategies to reduce musculoskeletal pain and improve functional outcomes among office workers. VR is an immersive, computer-generated simulation that allows individuals to interact with realistic environments through specialized hardware and software, providing a sense of presence in environments that are otherwise difficult or impossible to access in real life. This narrative review aimed to evaluate the effectiveness of virtual reality (VR)-based interventions in reducing work-related musculoskeletal pain and improving functional outcomes among office workers. A comprehensive literature search was conducted using databases such as PubMed, Google Scholar, ResearchGate, and ScienceDirect, including English-language studies published between 2002 and 2025. The reviewed evidence indicates that VR-based interventions are effective in reducing pain intensity, improving mobility, posture, and functional performance, and enhancing motivation and adherence to exercise programs. VR interventions are well accepted by office workers and demonstrated better engagement when integrated with conventional exercise -based rehabilitation. In conclusion, virtual reality-based interventions appear to be a promising, non-invasive, and effective adjunct to conventional physiotherapy. However, further high-quality randomized controlled trials are required to establish standardized protocols, confirm its long-term effectiveness, economic sustainability, and feasibility.

Keywords: Musculoskeletal disorders, Virtual Reality, Interventions, Office Workers.

UG-161: The Application of Artificial Intelligence for Assisting and Predicting Fall Risk in Elderly Population

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ABSTRACT

Falls are a major health concern in the elderly population and are associated with serious injuries, reduced independence, and increased healthcare needs. Traditional methods such as clinical balance tests and questionnaires are commonly used to assess fall risk, but they often lack accuracy and cannot provide continuous monitoring. Recent studies have focused on the application of Artificial Intelligence (AI) to assist in fall detection and predict future fall risk among older adults. However, only a limited number of studies provide a comprehensive understanding of how AI systems such as machine learning models, wearable sensors, and vision-based technologies contribute to fall-risk assessment so aim of this study is to review the current applications of AI in assisting and predicting fall risk in the elderly population. Electronic searches using keywords such as Artificial Intelligence, fall prediction, elderly population, and machine learning were performed in Google Scholar, PubMed, and ResearchGate. Full-text articles published in English were included. The findings suggest that AI-based systems—especially those using wearable sensors, hospital records, and video analysis—are effective in early fall-risk identification and real-time monitoring. In conclusion, available evidence indicates that AI can significantly improve fall prevention strategies and support safer aging for older adults.

Keywords: Artificial Intelligence, Fall Prediction, Elderly Population, Machine Learning.

UG-162: Effectiveness of Proprioceptive Training Along With Conventional In Chronic Non-Specific Neck Pain: An Experimental Study Protocol

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ABSTRACT

Introduction: Chronic non-specific neck pain (CNSNP) is a common musculoskeletal condition which is often associated with altered cervical proprioception, poor postural control and functional disability. Conventional physiotherapy mainly focuses on pain relief and mobility but may not completely address the sensorimotor impairments seen in these patients. Hence, proprioceptive training using unstable surfaces like BOSU balance ball can be useful.

Aim: To evaluate the effectiveness of proprioceptive training using BOSU balance ball along with conventional therapy in reducing pain and improving functional ability in patients with CNSNP.

Methods and Materials: 38 subjects both male and female, aged 18 to 55 years with CNSNP of more than three months duration according to the selection criteria will be recruited and randomly allocated into two groups. Institutional Ethical Approval and informed consent form will be obtained before data collection. Group A (control group) will receive conventional physiotherapy consisting of cervical range of motion exercises, isometric exercises, 20 minutes of hot pack, 20 minutes of TENS and 5 minutes of ultrasound application. Group B (experimental group) will receive conventional therapy along with BOSU balance ball based proprioceptive training. The intervention will be administered for a period of 5 weeks, with 3–5 sessions per week. Outcome measures such as a Visual Analog Scale (VAS) for pain and Neck Disability Index (NDI) for functional disability, will be assessed at baseline and on completion of intervention. Statistical analysis using SPSS software will be done.

Results and Conclusion: Post intervention analysis will show reduction in pain intensity and improvement in functional ability in both the groups. However, proprioceptive training using BOSU balance ball along with conventional therapy is expected to be more effective than conventional therapy alone in reducing pain and improving functional outcomes in subjects with CNSNP by increasing endorphin levels and modifying catabolic processes brought by mobility.

Keywords: Chronic Nonspecific Neck Pain, Proprioceptive Training, BOSU Balance Ball, Neck Disability, Conventional Therapy

UG-163: Role of Artificial Intelligence in Enhancing Clinical Documentation in Physiotherapy Practice – A Literature Review

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ABSTRACT

Clinical documentation is a fundamental component of physiotherapy practice, serving as a foundation for patient assessment, treatment planning, progress evaluation, interprofessional communication, and legal accountability. However, traditional documentation methods are often time-consuming, contribute to clinician workload, and may reduce direct patient interaction, with the rapid integration of Artificial Intelligence (AI) into healthcare has introduced to enhance efficiency, improve clinician satisfaction and support patient -centered care. This literature review aims to evaluate the role of artificial intelligence in enhancing clinical documentation efficiency, accuracy, and usability within physiotherapy practice. A search was conducted from databases such as ResearchGate, PubMed, Google Scholar, and ScienceDirect. Studies focusing on AI-based clinical documentation tools, ambient scribe technology, natural language processing, and automated SOAP note generation in rehabilitation settings were included. The review of the results will indicate that AI-assisted documentation supports better patient progression, clinical decision-making, and data management for evidence-based practice. Overall, the review will conclude that Artificial Intelligence significantly enhances clinical documentation in physiotherapy by improving accuracy, efficiency, and consistency. It allows physiotherapists to focus more on patient care while maintaining high-quality records and improve overall clinical outcomes in physiotherapy practice.

Keywords: Artificial Intelligence, Clinical Documentation, SOAP Notes, Physiotherapy Practice.

UG-164: Artificial Intelligence in Post Stroke Rehabilitation and Clinical Practice: A Literature Review

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ABSTRACT

Stroke is a cerebrovascular disease with high morbidity and mortality rates, imposing a significant economic burden on families and society. Prevalence rates in India are currently between 105-152 cases per 100,000 population, and with an aging population, the number of stroke survivors and patients will sharply increase. Post stroke rehabilitation has increasingly incorporated artificial intelligence technologies to address limitations of conventional therapy and enhance recovery outcomes. The aim of the study is to explore the current evidence on artificial intelligence-based rehabilitation, focusing on its application in improving functional recovery and clinical practice. Relevant studies were identified through electronic database searches including Google Scholar, PubMed, PEDro, ResearchGate, focusing on AI-driven techniques such as robotic rehabilitation, wearable sensor systems, virtual rehabilitation, and telerehabilitation platforms. These reviewed studies indicate that applications of artificial intelligence in post stroke rehabilitation can enhance individualized therapy delivery by adapting exercises according to patient performance, improve patient engagement and enhance the objectivity of rehabilitation while also facilitating remote and home-based rehabilitation. By enabling personalized, adaptive and data driven interventions, AI supports improvements in motor function, balance, mobility, and overall functional independence. While current evidence suggests that Artificial intelligence has the potential to transform post-stroke rehabilitation by enabling personalized, data-driven therapy and guiding future research toward standardized, long-term clinical applications.

Keywords: Artificial intelligence, Stroke, Rehabilitation, Motor recovery, Functional independence

UG-165: The Role of Hippotherapy in Improving Motor and Postural Functions in Children with Cerebral Palsy: A Narrative Review

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ABSTRACT

Cerebral palsy (CP) is a group of permanent, non-progressive neuromotor disorders caused by disturbances in the developing brain during the prenatal, perinatal, or postnatal period. It primarily affects movement, posture, balance, and functional abilities, leading to limitations in motor and postural control in children. Physiotherapy is the mainstay of rehabilitation for children with CP and focuses on improving gross motor function, mobility, and postural stability. The hippotherapy has emerged as a complementary therapeutic intervention. Hippotherapy utilizes the rhythmic, repetitive, and multidimensional movement of a horse to provide sensory and motor input, which may facilitate neuromuscular control, balance, and postural responses. This review aimed to evaluate the role of hippotherapy in improving motor and postural functions in children with cerebral palsy. A comprehensive search was conducted using electronic databases including PubMed, Google Scholar, and ResearchGate. Studies published between 2003 and 2025 were included, comprising randomized controlled trials, experimental studies, surveys, and case studies involving children diagnosed with CP. Only full-text articles published in English were reviewed. The findings from the reviewed studies suggest that hippotherapy has a positive effect on motor and postural outcomes in children with cerebral palsy. Improvements were noted in postural control, balance, trunk stability, muscle symmetry, and gross motor function. However, it remains unclear whether balance improvements occur gradually during therapy or become evident after several months. Overall, hippotherapy, when combined with conventional physiotherapy, may enhance functional abilities and quality of life in children with cerebral palsy.

Keywords: Cerebral palsy, hippotherapy, motor function, postural control.

UG-166: Awareness and Perception of Artificial Intelligence in Physiotherapy Students: A Survey Study

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ABSTRACT

Introduction: Artificial Intelligence (AI) is increasingly being integrated into physiotherapy education and clinical practice, supporting learning, assessment, rehabilitation planning, and movement analysis. Educational tools such as digital platforms and AI-based chatbots are also being used to enhance student learning. Although some studies report interest and willingness to use AI among physiotherapy students, evidence regarding the level of awareness, trust, and ethical understanding among physiotherapy students remains limited. Therefore, it is important to assess their awareness and perception of AI to identify existing strengths and gaps.

Aim: To assess the awareness and perception of Artificial Intelligence among physiotherapy students.

Materials and Methods: A cross-sectional survey was conducted among 70 physiotherapy students over a period of six months using a structured online questionnaire. The sample size was calculated using the formula: $n = Z^2pq / d^2$. Data was analyzed using descriptive statistics.

Results: High awareness of AI (85.7%) and familiarity with generative AI (88.6%) were observed. Most students reported using AI for academic purposes (75.7%) and acknowledged its benefits in education (94.3%). Familiarity with physiotherapy-specific AI applications was reported by 70.0% of students. However, only 60.0% of participants expressed trust in the accuracy of AI-based information. Students also reported concerns related to ethical issues and expressed the need for formal training in AI.

Conclusion: Physiotherapy students show good awareness and a generally positive perception of Artificial Intelligence, particularly for academic learning. However, the lower level of trust in AI accuracy and reported ethical concerns indicate a gap in confidence and understanding. These findings suggest the need for structured training and ethical guidance within the physiotherapy curriculum to support confident, critical, and responsible use of AI in education and future practice.

Keywords: Artificial Intelligence, Physiotherapy Students, Perception

UG-167: A Physiotherapy Intervention Protocol for the Management of Adhesive Capsulitis

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ABSTRACT

Adhesive Capsulitis, commonly known as Frozen Shoulder is a debilitating musculoskeletal condition characterized by progressive shoulder pain and restricted range of motion. Epidemiological evidence suggests a prevalence of approximately 2-5% in the general population aged 40-60 years which markedly increases to 10-38% among individuals with metabolic conditions such as diabetes mellitus and thyroid dysfunction. The condition shows higher incidence in females compared to males and predominantly involves the dominant upper limb. A variety of interventions such as electrotherapeutic modalities, exercises and mobilization techniques are used in the field of Physiotherapy but there is lack of standardized and structured week wise physiotherapy intervention protocol for its management. The protocol developed following a comprehensive review of published clinical trials from 2010 to 2025 across databases such as PubMed (National Library of Medicine), Google Scholar and Research Gate. Outcome measures include VAS, Shoulder Range of Motion and functional disability scales (SPADI). The rehabilitation program is delivered over 16 weeks, with 3–5 supervised sessions per week and a concurrent home exercise program. Weeks 0–8 (Phase I) focus on pain relief and mobility restoration. Treatment includes moist heat, passive, active-assisted, and active ROM exercises, scapular mobilization (elevation, depression, protraction, retraction), and Kaltenberg Grade I–II glenohumeral traction and glides to reduce pain and capsular stiffness. ROM exercises are prescribed 3–5 times daily at home. Weeks 8–16 (Phase II) emphasize functional ROM and strengthening, using Kaltenberg Grade II–III mobilizations, rotator cuff and scapular stabilizer strengthening (8–12 repetitions, 3 sets), and progression to resisted exercises. Beyond 16 weeks (Phase III) involves maintenance through a home-based program daily ROM exercise, rotator cuff- Scapular strengthening performed three times per week. This structured protocol promotes progressive pain relief, mobility restoration, and functional recovery in adhesive capsulitis.

Keywords: Adhesive Capsulitis, Shoulder Range of Motion, Outcome Measures, Exercise Program, Physiotherapy.

UG- 168: ROLE OF PHYSIOTHERAPY IN PELVIC FLOOR DYSFUNCTION

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ABSTRACT

Introduction: Pelvic Floor Dysfunction (PFD) is a prevalent but under-recognized condition affecting individuals across all age groups and genders. It manifests as urinary and fecal incontinence, pelvic organ prolapses, pelvic pain, and sexual dysfunction, significantly impacting quality of life. Due to social stigma and lack of awareness, many patients delay seeking treatment. Recent evidence highlights physiotherapy as a first-line, non-invasive intervention for managing PFD.

Aims & Objective: To review and highlight the role of physiotherapy in the assessment, management, and prevention of pelvic floor dysfunction using evidence-based approaches.

Materials and Methods: This paper reviews current literature focusing on physiotherapeutic interventions such as pelvic floor muscle training (PFMT), electrical stimulation, breathing and core stabilization exercises, postural correction, and functional retraining.

Results: Pelvic floor muscle training demonstrated significant improvement in muscle strength, continence, and functional outcomes in patients with PFD. Physiotherapy interventions reduced symptom severity, improved quality of life, and decreased the need for surgical management.

Conclusion: Physiotherapy plays a vital role in the holistic management of pelvic floor dysfunction. Early referral, individualized treatment programs, and patient education are essential for optimal outcomes. Physiotherapy-led pelvic health rehabilitation is safe, cost-effective.

Keywords: Pelvic Floor Dysfunction, Physiotherapy, Pelvic Floor Muscle Training, Biofeedback, Pelvic Health Rehabilitation

UG-169: Physiotherapy in the Management of Acne Vulgaris

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ABSTRACT

Acne vulgaris is a chronic inflammatory skin disorder affecting adolescents and young adults, often leading to physical discomfort and psychological distress. While dermatological treatments remain the primary approach, physiotherapy has emerged as a supportive and non-invasive modality in acne management. Physiotherapeutic interventions focus on improving circulation, reducing inflammation, promoting tissue healing, and regulating stress-related hormonal imbalance. Commonly used modalities include low-level laser therapy (LLLT), ultrasound therapy, galvanic and high-frequency currents, cryotherapy, and facial massage techniques. LLLT has been shown to reduce sebaceous gland activity and inflammatory lesions, while ultrasound therapy enhances tissue repair and improves transdermal drug absorption. Facial lymphatic drainage assists in toxin removal and edema reduction, contributing to improved skin appearance. Clinical evidence and case-based studies suggest that the integration of physiotherapy with conventional dermatological treatment results in a significant reduction in acne severity, erythema, and post-acne scarring. Patients also demonstrate improved skin texture and overall satisfaction. In conclusion, physiotherapy serves as a safe, cost-effective adjunct in acne management. Its holistic approach enhances therapeutic outcomes and reduces dependency on long-term pharmacological interventions. Further research is recommended to standardize treatment protocols

Key words: Acne, Low Level Laser Therapy, Cryotherapy

UG-170: Outcome measures for measuring neck functional disability in smartphone users: A Narrative review

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Abstract

Smartphone use has become a routine part of daily life, especially among young adults, and prolonged use is frequently associated with neck pain and functional difficulty. In physiotherapy practice, neck pain related to smartphone use is not only a problem of discomfort but also a cause of limitation in daily activities. Accurate outcome measures are therefore essential to understand the level of functional disability, guide treatment planning, and monitor recovery. This narrative review aims to examine the outcome measures used for assessing neck functional disability in smartphone users experiencing neck pain. Literature search was performed on three databases (PubMed, Cochrane central and PEDro). Search strategy uses terms “Outcome measures”, “scales”, “functional disability”, “smartphone users”, “neck pain” separated by Boolean operators OR, NOT, AND. Total 95 studies were identified of which 9 met the inclusion criteria after screening and full-text evaluation. The selection criteria for this study including cross sectional studies, published in English language, smartphone using population, having outcome measures related to neck functional disability and experiencing neck pain. The findings indicate that higher smartphone usage is associated with increased levels of neck-related functional difficulty and pain perception. Functional disability scores show a gradual increase with rising pain intensity, suggesting a clear relationship between pain and reduced activity performance. Pain rating outcomes consistently align with functional restriction, indicating that pain alone does not fully represent disability unless combined with functional assessment. Combining functional disability assessment with pain intensity measurement provides a more complete understanding of neck problems related to smartphone use. These findings contribute to improved assessment quality, professional practice, and functional rehabilitation outcomes in contemporary physiotherapy care.

Keywords: Neck Pain, Smart phone, Disability, Pain perception

