Türk Fizyoterapi ve Rehabilitasyon Dergisi 36 (Ek Sayı 4)

Turkish Journal of Physiotherapy and Rehabilitation 36 (Supp 4)

# THE 3RD INTERNATIONAL REHABILITATION AND ALLIED HEALTH SCIENCES CONFERENCE

# ABSTRACT BOOK

National Chapter: 16th October 2025 | Lahore, Pakistan

International Chapter: 7-8th November2025 | İstanbul, Türkiye

# 3rd RASCON 2025

## International Rehabilitation & Allied Health Sciences Conference

SUPERIOR UNIVERSITY


Theme

## Sustainable Rehabilitation and Allied Health Sciences: AI, Ethics, and Multidisciplinary Innovations

## Join Pakistan's Premier Allied Health & Rehabilitation Gathering!

## Why You Should Attend?

- Renowned National & International Speakers
- 6 CPD Credit Hours (UK)
- Focused Scientific Sessions
- Interactive Workshops & Panel Discussions
- Networking with Interdisciplinary Healthcare Leaders
- Lavish Lunch & Premium Hospitality

## Who Should Attend?

All Rehabilitation and Allied Health Care Professionals, including but not limited to

- Policymakers
- Scientists
- Scholars
- Researchers
- Academicians
- Alumni
- Clinicians
- Postgraduate and Undergraduate Students

6 CPD CREDIT HOURS AWARDED

## Important Dates

- **Registration Started**
  15th April 2025
  registration@rasconpk.org
- **Last Date for Registration**
  Early Birds: PKR 5,000/-
  Deadline: 31st August 2025
  Regular: PKR 8,000/-
  Deadline: 30th September 2025
- **RASCON (National Chapter)**
  16th October 2025 – Lahore, Pakistan

**Call for Abstracts**
Deadline: 30th June 2025
abstract@rasconpk.org

**In Partnership With**

EURAS
Eurasian Universities Union

**RASCON (National Chapter)**
16th October 2025
Pearl Continental (PC) Hotel, Lahore, Pakistan

**RASCON-25 SECRETARIAT**
Faculty of Allied Health Sciences
Superior University, 17 KM Raiwind Road, Lahore
Info@rasconpk.org

**CHAIRMAN RASCON**
Prof. Dr. Muhammad Naveed Babur
Dean - Faculty of Allied Health Sciences
Superior University, Lahore
Email: rascon@superior.edu.pk

**For Registrations, Please Contact** +92 331 5111322 +92 333 6979114

FACULTY OF ALLIED HEALTH SCIENCES ORIC ANCRD ERC Skinovation WFNR /SUPERIOR_FAHS

# 3rd RASCON 2025

## International Rehabilitation & Allied Health Sciences Conference

SUPERIOR UNIVERSITY


Theme

## Sustainable Rehabilitation and Allied Health Sciences: AI, Ethics, and Multidisciplinary Innovations

## A Journey of Knowledge, Culture & Connection!

### Trip Highlights at a Glance:

**Destination:** Istanbul, Türkiye

**Duration:** 10 Days

**Date:** 4th-14th November 2025

6+12 CPD CREDIT HOURS AWARDED

### Package Inclusions:

- Return International Airfare
- 10 Days / 9 Nights Accommodation (Triple Sharing)
- Visa Documentation & Processing Fee
- Daily Complimentary Breakfast
- Official Registration to RASCON-2025 (2 Days)
- Visits to Top-Tier International Universities
- Guided Cultural Tour of Historic Bursa
- Luxury Bosphorus Cruise Dinner in Istanbul
- Meet Global Experts, Peers & Scholars
- Exposure to Medical Innovation & Global Networking

### Important Dates

- **Registration Started**
  15th April 2025
  registration@rasconpk.org
- **Last Date for Registration**
  Early Birds: PKR 350,000/-
  Deadline: 30th May 2025
  Regular: PKR 400,000/-
  Deadline: 31st July 2025
- **RASCON (International Chapter)**
  4th – 14th November 2025
  Istanbul, Türkiye

### Call for Abstracts

Deadline: 30th June 2025

abstract@rasconpk.org

**In Partnership With**

EURAS Avrasya Üniversiteler Birliği Eurasian Universities Union

**RASCON (International Chapter)**
4th- 14th November 2025
Istanbul Aydin University & UHS Istanbul, Türkiye
(2 Days Conference, 8 Days Adventure)

**RASCON-25 SECRETARIAT**
Faculty of Allied Health Sciences
Superior University, 17 KM Raiwind Road, Lahore
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**CHAIRMAN RASCON**
Prof. Dr. Muhammad Naveed Babur
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FACULTY OF ALLIED HEALTH SCIENCES ORIC ANCRD ERC Skinovation NEWS HD WFNR Expo /SUPERIOR_FAHS

## SCIENTIFIC COMMITTEE

| No | Name Surname | Designation |
|---|---|---|
| 1 | Dr. Uqba Mehmood | Convenor |
| 2 | Dr. Tehreem Adnan | Member |
| 3 | Dr. Hafiz Shehzad Muzammil | Member |
| 4 | Dr. Junaid Zaidi | Member |
| 5 | Dr. Samyyia Abrar | Member |
| 6 | Sana Tariq | Member |
| 7 | Tayyaba Ayub | Member |
| 8 | Fatima Zahid | Member |
| 9 | Laiba Naveed | Member |
| 10 | Dr. Nazia Kanwal | Member |
| 11 | Dr. Farah Javed | Member |
| 12 | Amina Saeed | Member |
| 13 | Azka Mubeen | Member |

# SCIENTIFIC PROGRAMME

**RASCON-25 National Chapter**
16th October 2025 | 8:00 AM – 04:00 PM
Venue: Ball Room, Pearl Continental, Lahore

| Activity | Time | Venue |
|---|---|---|
| On spot Registration | 08:00 AM-09:00 AM | Registration Desk* |
| Inaugural Ceremony | 09:00 AM-10:15 AM | Ball Room |
| | **Time** | **Program Rundown** |
| | 9:00 AM | Guests to be seated |
| | 9:05 AM | Arrival of the Chief Guest |
| | 9:10 AM | Recitation from the Holy Quran |
| | 9:15 AM | National Anthem |
| | 9:20 AM | Welcome Address by Chairman- RASCON-25-Prof Dr M Naveed Babur |
| | 9:30 AM | Address by Rector Superior University-Prof. Dr. Sumaira Rehman |
| | 9:40 AM | Address by Chief Guest |
| | 9:50 AM | Souvenir Presentation |
| Networking Tea | 10:00 AM- for guests (Dining Area) | |

| Session Number | Time | Venue | Session Domain |
|---|---|---|---|
| **Session I** | **10:00AM-10:50 AM** | **Hall 1** | **Physical Therapy** |
| **SESSION-I** | | | |
| Chair: | **Prof Dr Ashfaq Ahmad,** Dean FAHS University of Lahore, Lahore | | |
| Discussant: | **Prof Dr Rabiya Noor,** Professor Rehabilitation Sciences, Ripha University, Lahore | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| NKS1 | 10:00-10:10AM | **Dr Muhammad Salman Bashir**<br>Dean SHS<br>UMT Lahore | Human-Centered Innovation: Balancing Ethical AI with Sustainable Rehabilitation and Allied Health Synergy. |

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| NKS2 | 10:10-10:20AM | **Prof. Dr. Ahsan Javed**<br>Dean FAHS,<br>University of South Asia, Lahore | Reimagining Physical Therapy: AI, Ethics, and Multidisciplinary Pathways for Sustainable Rehabilitation |
| NKS3 | 10:20-10:30AM | **Hafiz Syed Ijaz Ahmed Burq**<br>Physiotherapist<br>Lahore General Hospital, National Hospital | Optimizing Gait Recovery in Stroke Survivors: A Roadmap for Clinical Practice |
| NKS4 | 10:30-10:40AM | **Prof Dr. Muhammad Umar**<br>Director, Institute of Allied Health Sciences.<br>Rawalpindi Medical University | Digital Transformation in Allied Health Sciences: Ethics, Sustainability, and Multidisciplinary Collaboration |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session II** | **10:00 AM-10:50 AM** | **Hall 2 Parallel** | **Biological Sciences** |
| **SESSION-II** | | | |
| Chair: | **Prof. Dr. Muhammad Afzal,** Pride of Performance/Deputy Chief Scientist NIBGE | | |
| Discussant: | **Prof. Dr. Abdul Qayyum Rao** Professor, CEMB, University of the Punjab, Lahore | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| NKS5 | 10:00-10:10AM | **Prof. Dr. Muhammad Afzal,**<br>Pride of Performance<br>Deputy Chief Scientist NIBGE | Phytoremediation and Wastewater Treatment |
| NKS6 | 10:10-10:20AM | **Prof. Dr. Amer Jamil**<br>Professor,<br>Department of Biochemistry/ Dean Faculty of Sciences/<br>University of Agriculture, Faisalabad | From Silos to Synergy: AI and STEM for Sustainable Health |
| NKS7 | 10:20-10:30AM | **Dr. Adnan Arshad**<br>Associate Professor<br>Molecular Pathology and Genomics<br>IFBA Certified Professional in Bio risk Management<br>Consultant Family Physician | Medicine, Oncology, Radiobiology of normal tissues and Tumors, Tumor Microenvironment,<br>Circulating Tumor cells and Circulating Tumor DNA |
| NKS8 | 10:30-10:40AM | **Prof. Dr. Saba Riaz**<br>Professor<br>Institute of Microbiology and Molecular Genetics, University of Punjab, Lahore, Pakistan. | Expanding the One Health Perspective: The Role of Biological Vectors in Spreading<br>Antimicrobial Resistance |

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| NKS9 | 10:40-10:50AM | **Muhammad Rehan Gul**<br>Radio pharmacy Head & Quality Assurance Representative,<br>Nuclear medicine department, SKMCH & RC Lahore, Pakistan. | Advancing Allied Health Sciences with Nuclear Medicine: The Role of Radio pharmacy in Precision Oncology |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session III** | **10:50 AM-11:40 AM** | **Hall 1** | **Emerging Health Technologies** |
| **SESSION-III** | | | |
| Chair: | **Dr Muhammad Aslam**, MS surgery, Principal Azra Naheed Medical College. | | |
| Discussant: | **Dr Tallat Faridi** Associate Professor Public Health, The University of Lahore | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| NKS10 | 10:50-11:00AM | **Dr. M Zeeshan Sarwar**<br>Associate Professor<br>King Edward Medical University, Lahore | Appendectomy, Hernia Repair and Treatment of Hemorrhoid Latest Techniques |
| NKS11 | 11:00-11:10AM | **Dr. Shehla Javed Akram**<br>CEO<br>Don Valley Pharmaceuticals<br>Akram Medical Complex<br>JS developers<br>Member Lahore chamber of Commerce | Future of Public Health and Sustainable Development Goals |
| NKS12 | 11:10-11:20AM | **Dr. Waqas Ashraf**<br>Consultant in Pain Management and Anesthesia Interventional Pain Associates<br>Surgimed Hospital, Lahore<br>Bashir NeuroSpine Institute (BNI), Lahore | Latest Techniques of Pain Management Procedure |
| NKS13 | 11:20-11:30AM | **Dr. Muhammad Abdul Jabar Adnan**<br>PhD Sports Medicine<br>Vice President Pakistan Powerlifting Federation<br>Assistant Professor<br>University of the Punjab, Lahore | Anti-Doping |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session IV** | **10:50 AM-11:40 AM** | **Hall 2 Parallel** | **Emerging Health Professional Technologies (Aesthetics)** |
| **SESSION-IV** | | | |
| Chair: | **Dr Sadia Munir,** Dermatologist at Skinovation, Superior University Lahore | | |
| Discussant: | **Dr. Aiman Sheikh** MBBS, PG Dip in Dermatology Fellow of American Board of Aesthetic Medicine & Surgery CEO of Ace Skin Solutions Faculty AARM & CAM - UOL | | |

| Code | Time | Speaker | Presentation Titles |
|---|---|---|---|
| NKS14 | 10:50-11:00AM | **Dr. Foquia Tasser Hunan**<br>(MBBS, CHPE from University college of Medicine and Dentistry, Lahore)<br>Consultant Aesthetician | Myths About Sunscreen You Should Stop Believing |
| NKS15 | 11:00-11:10AM | **Dr Mizna Ashiq**<br>(MS Aesthetic Medicine from Med Tech University Spain.)<br>Aesthetic Medicine Specialist<br>M.Aesthetic Clinic and Training Center, Lahore, | Future Horizons: Artificial Intelligence in Aesthetic Practice. |
| NKS16 | 11:10-11:20AM | **Dr Shah Bano**<br>(MBBS, FCPS Dermatology)<br>Consultant Dermatologist<br>The skin and Laser Clinic, Lahore. | Traditions, Trauma and the Skin: a South Asian BDD Perspective |
| NKS17 | 11:20-11:30AM | **Ms. Seerat Hashim**<br>(International certified Medical Aesthetician)<br>Founder and President<br>Founder – International Skills Academy of cosmetology & Aesthetics<br>President – ISA Group of Companies<br>Convener – Standing Committee on Skill Training & Business Development, LCCI<br>Founder – Seehetics Pharmaceuticals<br>CEO – Obssez ( A personal Care brand) | The Future of Non-Invasive Beauty: Where Science Meets Confidence. |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session V** | **11:40AM-12:30 PM** | **Hall 1** | **Medical Lab Technologies** |
| **SESSION-V** | | | |
| Chair: | **Prof.Dr Hidayat Rasool**, Director, Institute of Microbiology GCUF Faisalabad | | |
| Discussant: | **Dr Muna Malik**, Assistant, Professor Microbiology, King Edward Medical University, Lahore | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| NKS18 | 11:40-11:50AM | **Prof. Dr Farhan Rasheed**<br>Professor of Pathology, Post Graduate Medical Institute/ Ameer Ud din Medical College, Lahore | Use Of AI in Pathology and Future Challenges |

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| NKS19 | 11:50-12:00PM | **Dr. Mohsin Khursheed**<br>Associate Professor<br>Institute of Microbiology,<br>Government College University, Faisalabad, Pakistan | Beyond the Petri Dish: MLT Professionals on the Trail of Resistant Pathogens |
| NKS20 | 12:00-12:10PM | **Dr. Hasnain Javed**<br>Associate professor,<br>Lab Head & Focal Person<br>Public Health Labs, Punjab, Pakistan | Strengthening Biosafety and Biosecurity in Pakistan via Center of Excellence in Bio Risk Management Project |
| NKS21 | 12:10-12:20PM | **Dr. Inamullah**<br>Associate Professor and Coordinator, Department of Forensic Sciences,<br>Institute of Molecular Biology and Biotechnology (IMBB),<br>The University of Lahore, Pakistan | Reconstructing the Biological Affinities of Gujjars in Pakistan: Evidence from modern<br>and ancient human dental trait |
| NKS22 | 12:20-12:30PM | **Dr Syed Zeeshan Haider**<br>Director (HoD), IMBB/CRIMM<br>Associate Professor of Microbiology and Bio-Medical Sciences,<br>The University of Lahore | Sustainable Rehabilitation and Allied Health Sciences: AI, Ethics, and Multidisciplinary Innovations |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session VI** | **11:40AM-12:30 PM** | **Hall 2Parallel** | **Emerging Health Professional Technologies (Cardiac Perfusion)** |
| **SESSION-VI** | | | |
| Chair: | **Prof.Dr Irfan Azmatullah Khawaja** Chairman / Professor of Cardiac Surgery, Mayo Hospital Lahore, Head of Cardiac Surgery Department KEMU. | | |
| Discussant: | **Mr. Asif Mushtaq Khan** – Head of Perfusion Department & Chief Cardiac Perfusionist, Punjab Institute of Cardiology Lahore \| ECMO Specialist \| ANZCP Certified Clinical Perfusionist. | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| NKS23 | 11:40-11:50AM | **Dr. Adnan Haider**<br>Lecturer / Chief Cardiac Perfusionist,<br>Mayo Hospital Lahore – KEMU | The Art of Preserving Heart Muscle in Cardiac Surgery. |
| NKS24 | 11:50-12:00PM | **Ms. Mehwish Barkat Ali Khan**<br>(PPSC allocated,<br>Senior Cardiac Perfusionist<br>Cardiac Surgery Department Punjab Institute of Cardiology | Safe Cardiovascular Perfusion Practices in Pakistan. |
| NKS25 | 12:00-12:10PM | **Dr. Zeeshan Malik**<br>Assistant Professor,<br>Head of Cardiology at University of Lahore | Getting Down to Brass Tacks. |

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| NKS26 | 12:10-12:20PM | **Dr. Amna Batool**<br>Senior Registrar<br>MD, FCPS Anesthesia<br>Cardiac Anesthesia Department, KEMU Lahore | The Future of Cardiac Anesthesia: Emerging trends, technologies, and innovations shaping the field. |
| NKS27 | 12:20- 12:30PM | **Mr. Ijaz Hidayat**<br>Lead Educator/ECMO Specialist<br>Hammad Medical Complex, Doha Qatar | Physiological Principles of ECMO in Critical Care |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session VII** | **12:30 PM-01:20 PM** | **Hall 1** | **Optometry and Visionary Sciences** |
| **SESSION-VII** | | | |
| Chair: | **Prof. Dr. Muhammad Saeed** Director Clinics, Chaudhary Muhammad Akram Research & Teaching Hospital | | |
| Discussant: | **Faisal Rashid**, Senior Optometrist, Ophthalmology Department, Services Hospital Lahore | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| NKS28 | 12:30 -12:40PM | **Prof. Dr. Muhammad Suhail Sarwar**<br>Consultant Ophthalmologist<br>Founder & Director Suhail's Oculab Principal (Retired) College of Ophthalmology and Allied Vision Sciences, KEMU, Mayo Hospital, Lahore | Advances in Diagnostic Ophthalmology |
| NKS29 | 12:40-12:50PM | **Dr. Memoona Arshad**<br>Assistant Professor<br>The University of Faisalabad | AI for Sustainable Eye Health: Tackling the Growing Myopia Epidemic in Children |
| NKS30 | 12:50-1:00PM | **Dr. Kashif Jahangir**<br>Associate Professor,<br>Allama Iqbal Medical College Lahore | Surgical Management of Squit: Concepts and clinical practice |
| NKS31 | 1:00-1:10PM | **Dr. Kashif Raza Khan**<br>Consultant Ophthalmologist<br>Amanat Eye Hospital Lahore | Laser Vision Correction: Principles, Procedures, and Patient Care |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session VIII** | **12:30 PM-01:20 PM** | **Hall 2 Parallel** | **Emerging Health Professional Technologies (Emergency, Renal Dialysis Technology)** |
| **SESSION-VIII** | | | |
| Chair: | **Dr. Mohsin Riaz**, Associate Professor Transplant Physician, Head of Nephrology, Ali Fatima Hospital Lahore | | |
| Discussant: | **Dr. Rafiullah Khan** (PhD Disaster management from University of Peshawar) District Emergency Officer at Rescue 1122 (District of Swabi, KPK), Civil protection | | |

| Code | Time | Speaker | Presentation Titles |
|---|---|---|---|
| NKS32 | 12:30 -12:40PM | **Dr. Rana Muhammad Umar**<br>Senior Registrar, Nephrology<br>Sheikh Zayed Hospital Lahore. | Adequacy of Dialysis |
| NKS33 | 12:40-12:50PM | **Dr. Haris Naeem**<br>Senior Registrar, Nephrology<br>Services Hospital Lahore | Intradialytic Hypotension and Cramps. |
| NKS34 | 12:50-1:00PM | **Ms. Arfa Amir**<br>Associate Critical care officer<br>Ever Care Hospital, Lahore | Scope of Emergency Medical Technologist among Allied Health Sciences Globally. |
| NKS35 | 1:00-1:10PM | **Mr. Muhammad Rashid**<br>(Mphil Disaster Management from National University of Science and Technology)<br>Assistant Professor, Faculty of Disaster Management<br>GC University, Lahore, | Role of Simulation Training in Improving ICU Emergency Response. |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session IX** | **01:20PM-02:10PM** | **Hall 1** | **Human Nutrition and Dietitian, Food Technology** |
| **SESSION-IX** | | | |
| Chair: | **Dr. Ijaz Ahmad** Director General PCSIR Laboratories Complex, Lahore, Pakistan | | |
| Discussant: | **Dr. Hafiz Rehan Nadeem** President National Alliance for Safe food | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| NKS36 | 1:20-1:30PM | **Prof. Dr. Sanaullah Iqbal**<br>Professor and Chairman<br>University of Veterinary and Animal Sciences | Front-of-Pack Labelling (FOPL) in Pakistan: An urgent public health priority to address rising NCDs |
| NKS37 | 1:30-1:40PM | **Dr. Shinawar Waseem Ali**<br>Professor and Chairman<br>University of the Punjab | Quinoa-Wheat Composite Flour for a Functional Flatbread: A Novel Dietary Strategy to Combat Protein-Energy Malnutrition, Hyperglycemia and Hepatotoxicity |
| NKS38 | 1:40-1:50PM | **Dr. Muhammad Tauseef Sultan**<br>HoD<br>Bahaud-Din Zikriya<br>University Multan | Synergizing Traditional and Advanced Techniques for Bioactive Compound Recovery |
| NKS39 | 1:50-2:00PM | **Prof. Dr. Muhammad Umair Arshad**<br>Professor food sciences<br>Government college university Lahore | Pakistan's Food Systems in Transition: Pathways for Resilience and Learning |

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| NKS40 | 2:00-2:10PM | **Prof. Dr. Imran Pasha**<br>Professor/Director General<br>University of Agriculture Faisalabad | Application of Digital Technology and Gamification in Nutrition Education for Rehabilitation |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session X** | **01:20PM-02:10PM** | **Hall 2 Parallel** | **Emerging Health Professional Technologies (Respiratory Therapy)** |
| **SESSION-X** | | | |
| Chair: | **Dr. Zaheer Akhter** Professor of Pulmonology, Gulab Devi Teaching Hospital, Lahore. | | |
| Discussant: | **Dr. Waqas Aslam** Assistant Professor Pulmonology–Critical Care Intensivist, Sir Ganga Ram Hospital | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| NKS41 | 1:20-1:30PM | **Dr. Saqib Musharaf**<br>Associate Professor Pulmonology<br>Gulab Devi Chest Hospital / AAMC | Future of AI in Pulmonology. |
| NKS42 | 1:30-1:40PM | **Dr. Khawar Abbas Chaudhary**<br>**(**MBBS, MD, MRCP(UK), FCCP(USA), FACP)<br>Head of Pulmonary and Critical Care Department<br>Ever Care Hospital, Lahore | Transforming ICUs into 21st century. A humanized approach. |
| NKS43 | 1:40-1:50PM | **Dr. Asim Rana**<br>Consultant Physician, Internal, Respiratory & Critical Care Medicine,<br>Bahria International Hospital Lahore | Interpretation of Pulmonary Function Tests. |
| NKS44 | 1:50-2:00PM | **Dr. Imdad Ali Faruqi**<br>Senior Registrar, Pulmonology, Critical Care & Sleep Medicine,<br>Services Hospital Lahore | Non-Invasive Ventilation in Critical Care. |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session XI** | **02:10 PM-03:00 PM** | **Hall 1** | **Radiological Sciences and Medical Imaging Technology** |
| **SESSION-XI** | | | |
| Chair: | **Brigadier Dr. Tariq Mirza** Head of Department MIT, CMH | | |
| Discussant: | **Dr. Tuba Tariq** Assistant. Professor. Radiologist, CMA Hospital | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| NKS45 | 2:10-2:20PM | **Prof. Dr Zaheer Sherazi**<br>(FRCR UK, Interventional Radiologist)<br>Interventional Radiologist,<br>CMA Hospital, Head of Department, CMATH&RC | Multidisciplinary Innovations |

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| NKS46 | 2:20-2:30PM | **Dr Shehzad Karim**<br>MBBS, FCPS (Radiology), MCPS (Diagnostic Radiology), MSc (Pain Medicine), FAAOT (USA),<br>Head of Radiology Department Mayo Hospital Lahore.<br>Associate Professor Consultant Ozone Clinic | Artificial Intelligence and Pain Management |
| NKS47 | 2:30-2:40PM | **Dr Amir Khan**<br>(MBBS, FRCR, DMRD)<br>Associate Prof Consultant Radiologist<br>Sheikh Zaid Hospital, Lahore<br>Health Nox Medical Center, Lahore | Radiation Safety and Innovations in Radiology: Towards Patient-Centered Practice |
| NKS48 | 2:40-2:50PM | **Dr Mahrukh Latif**<br>(MBBS, PhD in Nuclear Medicine)<br>Associate Professor<br>University of Lahore | Beyond Imaging: AI and Nuclear Medicine for a Smarter, Safer, Sustainable Future |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session XII** | **02:10 PM-03:00 PM** | **Hall 2 Parallel** | **Emerging Health Professional Technologies (Panel Talk)** |
| **SESSION-XII** | | | |
| Moderator | **Rubab Andaleeb** Respiratory Incharge at Farooq Hospital, Lahore | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| Panelist 1 | 2:10-3:00PM | **Hafiza Maryam Idrees**<br>Incharge Respiratory Therapist<br>Shalamar Hospital Lahore | Digitalization in Health Care: Revolutionizing Holistic Patient Care through Technology and Collaboration. |
| Panelist 2 | | **Mr. Rehan Ahmed Qureshi**<br>Cheif Cardiac Perfusionist<br>Evercare Hospital Lahore | |
| Panelist 3 | | **Dr. Rafiullah Khan**<br>(civil protection specialist, PhD Disaster management from University of Peshawar)<br>District Emergency Officer Rescue 1122 (district of Swabi, KPK), | |
| Panelist 4 | | **Dr Mizna Ashiq**<br>(MS Aesthetic Medicine from Med Tech University Spain.)<br>Aesthetic Medicine Specialist,<br>M.Aesthetic Clinic and Training center Lahore, | |

| Closing Ceremony | 03:00 PM- 03:30 PM | Ball Room | |
|---|---|---|---|
| | : Time | Program Rundown | |
| | 3:00 PM | Guest to Be Seated | |
| | 3:00 PM | Arrival of Chief Guest | |
| | 3:03 PM | Tilawat | |
| | 3:05 PM | Overview of Conference by Chairman RASCON-25 Prof Dr M Naveed Babur | |
| | 3:10 PM | Address by Rector/Chairman Superior University | |
| | 3:15 PM | Address by Chief Guest | |
| | 3:20 PM | Reflection by Speakers | |
| | 3:25 PM | Award Distribution Ceremony | |
| Lunch | 03:30PM to 4:00PM (Dining Area) | | |

# SCIENTIFIC PROGRAMME

| RASCON-25 International Chapter DAY-1 | | | |
|---|---|---|---|
| 8th November 2025 \| 08:00 AM – 03:00 PM / Venue: Hall* Aydin University Istanbul, Turkey | | | |
| **Activity** | **Time** | **Venue** | |
| On spot Registration | 08:00 AM-09:00 AM | Registration Desk* | |
| Inaugural Ceremony | 09:00 AM-10:15 AM | Hall* | |
| | **Time** | **Program Rundown** | |
| | 9:00 ÖÖ | Guests to be seated | |
| | 9:05 ÖÖ | Arrival of the Chief Guest | |
| | 9:10 ÖÖ | Recitation from the Holy Quran | |
| | 9:15 ÖÖ | National Anthem (Both Countries) | |
| | 9:20 ÖÖ | Welcome Address by Prof. Dr. Mustafa Aydin - President - Istanbul Aydin University | |
| | 9:35 ÖÖ | Address by Mr. Chaudhary Hamza Rehman | |
| | 9:50 ÖÖ | Welcome Address by Chairman- RASCON-25-Prof Dr M Naveed Babur | |
| | 10:05 ÖÖ | Souvenir Presentation | |
| Networking Tea | 10:20 AM-10:45 AM **(Dining Area)** | | |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session I** | **10:45AM-12:00 PM** | **Hall *** | **Physical Therapy** |
| **SESSION-I** | | | |
| Chair: | Kamer Ünal Eren | | |
| Discussant: | Dr. Waqas Ashraf | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| IKS1 | 10:45 to 11:00AM | **Prof. Dr. Habibe Serap Inal**<br>Dean – Faculty of Health Sciences<br>Istanbul Galata University | Biomechanical Factors Effecting Pelvic Floor in Athletes and Non-Athletes |

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| IKS2 | 11:00-11:15 AM | **Dr. Kenan Zafer Aksungur**<br>President<br>Turkish Physiotherapy Association | Physical Therapy and Rehabilitation |
| IKS3* | 11:15-11:30 AM | **Murat Ermiş** | Early Intervention Strategies in Pediatric Rehabilitation: Evidence-Based Approaches |
| IOP1 | 11:30-11:35 AM | **Mariam Javaid**<br>Lecturer<br>Lahore College Women University | Comparative Effects of Cryotherapy and Airflow Stimulation Versus Controlled Breathing Exercises on Dyspnea in Obstructive Lung Disease Patients |
| IOP2 | 11:35-11:45 AM | **Zainab Hassan**<br>Assistant Professor<br>Department of Physical Therapy & Rehabilitation<br>School Of Health Sciences (SHS)<br>University of Management and Technology | Conjunct effects of Transcranial Direct current stimulation and Whole body vibration therapy on Balance, Gross motor function and Manual Dexterity in spastic CP children. |
| IOP3 | 11:45-11:55 AM | **Maryam Afzal**<br>The Superior University Lahore, (Lecturer at University of Sialkot, Faculty of Pharmacy & Allied Health Sciences, Department of Doctor of Physical Therapy, Sialkot, | Clinical Effectiveness of Open versus Closed Chain Exercises in Managing Knee Osteoarthritis: A Systematic Review |
| IOP4* | 11:55-12:00PM | **Dr Makhdoom Muhammad Hamza**<br>Superior University, Lahore. | Effectiveness of Proprioceptive Training Versus Standard Strengthening Exercises on Ankle Instability: A Randomized Controlled Trial" |
| Lunch | 12:00PM to 1:00PM **(Dining Area)** | | |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session II** | **1:00 PM-02:00 PM** | **Hall *** | **Emerging Health Professionals** |
| **SESSION-II** | | | |
| Chair: | Halit Tanju Besler | | |
| Discussant: | Dr. Aamir Saeed | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| IKS4 | 1:00 to 1:15 PM | **Prof. Dr. Yusuf Celik**<br>Professor<br>Acibadem University, Istanbul | Healthcare Management |

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| IKS5 | 1:15 to 1:30 PM | **Assist. Prof. Guzin Kaya Aytutuldu**<br>Biruni University<br>Faculty of Health Sciences | Comprehensive Rehabilitation Approaches in Multiple Sclerosis |
| IOP5 | 1:30-1:35 PM | **Muhammad Zubair Nazar**<br>Superior University | Anemia As A Risk Factor For Diabeticmacular Edema |
| IOP6 | 1:35-1:45 PM | **Dr Shamayem Aslam**<br>Manager<br>Business Development /HoD (Food & Agri Testing) Tti Testing Laboratories | Development and Evaluation of Hempseed-Based Granola Bars: Impact of Oven Baking vs. Roasted Frying |
| IOP7 | 1:45-1:55 PM | **Dr. Salwa Atta**<br>University of Okara | Lived experiences of physical, psychological, communication and social changes in early-stage cancer patients |
| IOP8 | 1:55-2:00PM | **Sahar Aslam**<br>Assistant Professor<br>Superior University | Rehabilitation and gender equity: a scoping review addressing the intersection of disability, gender, and sustainable development goal 5 |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session III** | **02:00 PM-03:00 PM** | **Hall *** | **Emeging Health Technologies** |
| **SESSION-III** | | | |
| Chair | Ahmet Genç | | |
| Discussant: | Prof. Dr. Uqba Mehmood | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| IKS6 | 2:00 to 2:15PM | **Prof. Dr. Asif Hanif**<br>Professor, Faculty of Medicine<br>Sakarya University | Biostatistics in Healthcare |
| IKS7 | 2:15 to 2:30PM | **Dr. Khadija Slimani**<br>Associate Professor<br>ESIEA Lab | AI Advancements in Healthcare |
| IOP9 | 2:30-02:37 PM | **Tehreem Mukhtar**<br>Assistant Professor<br>Superior University | AI-Driven Multimodal Rehabilitation Framework for Type 2 Diabetes: Integrating Digital Health Technologies, Intermittent Fasting, and Resistance Training to Optimize Metabolic and Functional Outcomes |
| IOP10 | 2:37-2:44 PM | **Dr. Ayesha Bashir**<br>Head of Department - Physical Therapy<br>Islamia University Bahawalpur | AI enabled prediction of non-communicable diseases in postmenopausal women: A strategic innovation to advance Sustainable Development Goals 3 and 5” |
| IOP11 | 2:44-2:51 PM | **Muhammad Baber Ikram**<br>Physiotherapist<br>DHQ, Gujrawala | Effectiveness of AI-Powered Interventions in Spinal Cord Injury Rehabilitation: A Systematic Review |

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| IOP12 | 2:51-3:00 PM | **Hassan Bin Akram**<br>Physiotherapist<br>Ghurki Hospital, Lahore | Leveraging Artificial Intelligence and Digital Biomarkers for Personalized Post-Operative Orthopedic Physical Therapy and Equitable Outcomes |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session IV** | **03:00 PM- 04:00 PM** | **Hall *** | **PANEL DISCUSSION** |
| **SESSION-IV** | | | |
| Moderator: Dr. Demet Demircioglu | | Dialogue 1-Physical Therapy and Rehabilitation – Trends & Challenges | |
| | **Panelists** | | **Dialogue 1-Physical Therapy and Rehabilitation – Trends & Challenges** |
| Panelist 1 | **Dr. Waqas Ashraf Ch.**<br>Pain Specialist<br>Ghurki Trust Hospital ; | | **Discussion Points:**<br>• Technological advancements in rehabilitation.<br>• Role of physiotherapy in sports and occupational health.<br>• Education and skill development for future physiotherapists.<br>• International standards and collaborative practices. |
| Panelist 2 | **Dr. Fatima Hamza**<br>Assistant Professor \| Physical Therapist,<br>Ziauddin College of Physical Therapy,<br>Ziauddin University. | | |
| Panelist 3 | **Prof. Dr. Asghar Khan**<br>Professor<br>Riphah University Lahore | | |
| Panelist 4 | **Prof. Dr. Muhammad Salman Bashir**<br>Dean & Professor<br>School of Health Sciences (SHS)<br>University of Management and Technology | | |
| Panelist 5 | **Assitant Prof. Rıdvan Seyhan**<br>Assistant Professor<br>Istanbul Aydin University | | |
| **RASCON-25 International Chapter DAY-2** | | | |
| 8th November 2025 \| 08:00 AM – 03:00 PM / Venue: Hall* Aydin University Istanbul, Turkey | | | |
| **Registration** | **Time** | **Venue** | |
| On spot Registration | 08:00 AM-09:00 AM | Registration Desk* | |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session V** | **09:00 AM-10:00 AM** | **Hall*** | **Medical Lab and Imaging Technologies** |
| **SESSION-V** | | | |
| Chair: | Duygu Şahin | | |
| Discussant: | Ms. Iqra Saeed | | |

| Code | Time | Speaker | Presentation Titles |
|---|---|---|---|
| IKS8* | 9:00 -9:15AM | Murat Kavruk | Aptamers: Versatile Tools for Biomarker Discovery and Imaging |
| IKS9* | 9:15-9:30AM | Meltem Ercan | Imaging and Detection of Viral Particles from Real Samples |
| IOP13 | 9:30-9:40AM | Sabiha Abbas<br>Riphah International University, Sahiwal Campus | Exploring Food Fortification Potential on Sesame and Wheat Flour for Sensorical and Nutritional Attributes of Doughnuts |
| IOP14 | 9:40-9:50AM | **Dr Mukhlis Ul Rehman**<br>Physiotherapist- Saleem Memorial Hospital | Topic Effect of ultrasound guided Botox A injection in spasticity among stroke Parkinson |
| IOP15* | 9:50-10:00AM | **Abrar Habib**<br>The Superior University Lahore, | Investigating the relationship between uterine and ovarian artery indices and follicle in PCOS through color Doppler |
| Networking Tea | 10:00 AM-10:30 AM (Dining Area) | | |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session VI** | **10:30 AM- 12:30 PM** | **Hall*** | **Rehabilitation Sciences** |
| **SESSION-VI** | | | |
| Chair: | Poyraz Kolluoğlu | | |
| Discussant: | Prof. Dr. Saima Zahid | | |
| **Code** | **Time** | **Speaker** | **Presentation Titles** |
| IKS10 | 10:30-10:45 AM | **Prof. Dr. Arzu Dinç Yavaş**<br>Associate Professor<br>Istanbul Aydin University | Regenerative Rehabilitation in Musculoskeletal Conditions |
| IKS11* | 10:45-11:00AM | **Dr Demet Demircioğlu** | Rehabilitation, Technology and Neuroplasticity |
| IOP16 | 11:00-11:10AM | **Anam Zafar**<br>Physiotherapist<br>Xavor Corporation | Proof-of-concept validation of an objective physical frailty index (OPFI) using a single-task mobility test. |
| IOP17 | 11:10-11:20AM | **Samrood Akram**<br>Physiotherapist<br>Riphah international university | Effects of Hip Abductor and Knee Strengthening Exercises versus Knee Strengthening Exercises alone on Muscle Strength and Functional Disability in Patients with Knee Osteoarthritis: a Systematic Review |
| IOP18 | 11:20-11:30AM | **Izzat Hassan**<br>Physiotherapist<br>Gurki Hospital Lahore | Comparative Effectiveness of Latarjet and Bankart Procedures in Treating Anterior Shoulder Instability: A Systematic Review of Clinical Evidence |
| IOP19 | 11:30-11:40AM | **Roohi Abbas**<br>Lecturer, LCWU | Pelvic Floor Disorders in Young Women: A Comparative Study Between University-Level Athletes and Non-Athletes |

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| IOP20 | 11:40-11:50AM | **AHMAD MIR SHAKEEL**<br>Lincoln University College, Faculty of Science, Department of Physiotherapy, Petaling Jaya,<br>Selangor, Malaysia<br>2 Ghurki Trust and Teaching Hospital, Lahore, Pakistan | The effects of Mir Shakeel Tele-integrated Therapy on pain, range of motion and patient satisfaction in patients of total knee arthroplasty: A pilot study |
| IOP21 | 11:50-12:00PM | **Dr Haroon Mansha**<br>Multan Medical and Dental College | A Pilot Study on the Effects of the Godelieve Denis-Struf (GDS) Method Delivered via Smartphone Application on Quality of Life in Patients with Chronic Lumbosacral Discogenic Pain |
| IOP22 | 12:00-12:10PM | **Miss Amnah Nouman Aftab**<br>CEO<br>Hum Mashal-e-Rah Foundation | A Brief Overview of Disability and Rehabilitation |
| IOP23 | 12:10-12:20PM | **Dr. Fatima Hamza**<br>Assistant Professor \| Physical Therapist, Ziauddin College of Physical Therapy, Ziauddin University. | Enhanced microstructural remodelling of large veins versus large artery; potential implication of moderate intensity continuous exercise for rehab plans. |
| IOP24 | 12:20-12:30PM | **Amna Zia**<br>Superior University, Lahore.<br>Mayo Hospital, Department of Physiotherapy, Lahore, Pakistan | Bone Health Beyond Medication: A Systematic Review of Non-Pharmacological Interventions to Improve Bone Mineral Density in Postmenopausal Women in the Context of Healthy Ageing and the Sustainable Development Goals |
| Lunch | 12:30 PM- 1:30PM **(Dining Area)** | | |
| **Session Number** | **Time** | **Venue** | **Session Domain** |
| **Session VII** | **01:30 PM-2:30 PM** | **Hall *** | **PANEL DISCUSSION** |
| **SESSION-VIII** | | | |
| Moderator: Ms. Fariha Ambreen Ch. | | Dialogue 2-Food Security in the 21st Century | |
| | **Panelists** | | **Dialogue 2-Food Security in the 21st Century** |
| Panelist 6 | **Prof. Dr. Muhammad Umair Arshad**<br>PROFESSOR, GC University Faisalabad | | **Discussion Points:**<br>• Climate change and sustainable agriculture.<br>• Biotechnology and food production.<br>• Global collaborations for combating hunger.<br>• Policy recommendations for developing countries. |
| Panelist 7 | **Prof. Dr. Shafaqat Ali**<br>PROFESSOR, GC University Faisalabad | | |
| Panelist 8 | **Ms. Mai Mumtaz Teg Eldin** | | |
| Panelist 9 | **Dr. Muhammad Abrar**<br>(Professor GC University, Faisalabad) | | |
| Panelist 10 | **Dr. Mohsin Bashir**<br>(Professor GC University, Faisalabad) | | |

| Closing Ceremony | 2:30 PM- 03:00 PM | Hall * | |
|---|---|---|---|
| | : Time | Program Rundown | |
| | 2:30 ÖS | Guest to Be Seated | |
| | 2:30 ÖS | Arrival of Chief Guest | |
| | 2:35 ÖS | Tilawat | |
| | 2:40 ÖS | National Anthem (Both Countries) | |
| | 2:45 ÖS | Overview of Conference by Chairman RASCON-25-Prof Dr M Naveed Babur | |
| | 2:50 ÖS | Address by Dean - Istanbul Aydin University | |
| | 2:55 ÖS | Award Distribution Ceremony | |
| CRUISE DINNER | 06:00PM-10:00PM | | |
| POSTER | | | |
| | | Bisma Shahid<br>The Superior University Lahore, | Ultrasonographic assessment of obesity-induced alterations in knee cartilage thickness |
| | | Fozia Nawaz<br>The Superior University Lahore,<br>Physiotherapist, Sheikh Zayed Medical College/Hospital, Rahim Yar Khan, Pakistan | EFFECTS OF MULLIGAN AND KALTENBORN TECHNIQUES FOR TREATMENT OF FROZEN SHOULDER |
| | | MARIA MUSTAFA<br>School of Health Sciences (SHS)<br>University of Management and Technology | “Virtual Reality–Driven Innovations in Stroke Rehabilitation: A Review on Enhancing Upper Limb Gross Motor Function and Dexterity in Support of Sustainable Development Goal 3 (Good Health and Well-being)” |
| | | Muhammad Aamir Saeed<br>The Superior University Lahore, | THE LEVEL OF ACCEPTANCE OF PHYSICAL THERAPY TREATMENT AMONG HEALTH CARE PROVIDERS Of Pakistan |
| | | Iqra Saeed[1], Maryam Javed[2]<br>[1]National University of Sciences and Technology, School of Mechanical and Manufacturing Engineering, Department of Biomedical Engineering and Sciences, Islamabad, Pakistan<br>[2] Riphah International University, Lahore, Pakistan | Automatic segmentation of intervertebral discs in multimodal MRI using ensemble<br><br>U-Net architecture |

# ORAL PRESENTATIONS

**OP1. A Pilot Study on the Effects of the Godelieve Denis-Struf (GDS) Method Delivered Via Smartphone Application on Quality of Life in Patients with Chronic Lumbosacral Discogenic Pain**
Haroon Mansha, Saleh Shah

**OP2. Comparative Effects of Cryotherapy and Airflow Stimulation Versus Controlled Breathing Exercises on Dyspnea in Obstructive Lung Disease Patients**
Mariam Javaid, Saima Riaz

**OP3. Effects of Pelvic Tilt Exercises Along with Hip and Knee Focused Exercises on Patients with Patellofemoral Pain Syndrome**
Zarmina Khan, Taimoor Hassan

**OP4. Anthropometric Predictors of Balance Outcomes in Sub-Acute Stroke Patients: A Regression Analysis Using CTSIB**
Hira Rehman, Tehreem Mukhtar

**OP5. Effect of Pilates Core Stabilization in Adjunct with Plyometric Shoulder Training on Low Back Pain in Fast Bowlers: A Randomized Controlled Trial**
Muhammad Tariq, Taimoor Hassan

**OP6. Effects of Obesity on Tear Film and Ocular Health Among Diabetic Patients**
Ayesha Sajid, Rubab Naqvi

**OP7. Effectiveness Of Guided Eye Exercises in Reducing Digital Eye Strain and Vision-Related Symptoms in Young Adults**
Malaika Ashraf, Sidra Anwar

**OP8. Bromfenac Versus Nepafenac: A Study on Managing Post-Operative Cataract Inflammation**
Alveena Aftab, Fatima Zahid

**OP9. The Impact of Hypothyroidism on Tear Production and Dry Eye Symptoms: Implications for Optometric Care**
Zunira Rasool, Hafiz Zohaib Rana

**OP10. Psychometric Evaluation of the Urdu Version of the Vision Related Quality of Life Questionnaire: Assessing Its Reliability and Validity in Low Vision Population**
Esha Bilal, Muhammad Naveed Babar

**OP11. Correlation between Vitamin D Levels and Functional Limitation in Adults with Chronic Non-Specific Low Back Pain**
Waqas Hanif, Tehreem Mukhtar

**OP12. Compare the Effect of Transcutaneous Vagus Nerve Stimulation (tVNS) Versus Noninvasive Vagus Nerve Stimulation (nVNS) on Pain Reduction and Quality of Life in Migraine Patients: A Randomized Controlled Trial**
Khadija Usman, Zohaib Shahid

**OP13. Evaluating the Diagnostic Performance of High-Resolution Computed Tomography (HRCT) in Detecting Idiopathic Pulmonary Fibrosis (IPF) in Suspected Cases**
Asbat Naseer, Tahira Batool

**OP14. Effectiveness of Trans-Arterial Chemoembolization (TACE) for Hepatocellular Carcinoma on Follow-Up Triphasic CT of the Liver**
Nawal Naseer, Rashida Perveen

**OP15. Application of ICF Framework in the Assessment of Children and Adolescents with Cerebral Palsy: A Systematic Review**
Roohi Abbas, Junaid Ejaz Gondal

**OP16. Effects of Cervicothoracic Self-Mobilization in Subacute Neck Pain: Randomized Controlled Trial**
Zunaira Shafaqat

**OP17. Evaluating the Effectiveness of Structured Psychosocial Counseling on Mental Health and Functional Independence in Individuals with Low Vision**
Mahnoor Saleem, Gulnaz Zaheer

**OP18. Comparative Efficacy of Lipid-Based Artificial Tears vs Aqueous-Based Artificial Tears in Managing Evaporative Dry Eye: A 6-Week RCT**
Haleema Masood, Muhammad Anwar Awan

**OP19. Application of Novel Food Processing Technologies for Tamarind (Tamarindus Indica): A Review on Functional and Technological Perspectives**
Seerat Saleem, Rashida Perveen

**OP20. The Effect of Mobilization with Movement versus Paraffin Wax Bath Therapy in Patients with Post-Traumatic Stiffness of The Knee Joint: A Randomized Clinical Trial**
Muhammad Khurram Shehzad

**OP21. Effectiveness of Modified Walk Flex DB Splint in Children with Congenital Talipes Equinovarus (CTEV): A Prospective Cohort Study**
Mehmood Ahmed, Saad Saleem

**OP22. Proof-Of-Concept Validation of an Objective Physical Frailty Index (OPFI) Using A Single-Task Mobility Test**
Anam Zafar, Saima Zahid

**OP23. The Role of Dietary Patterns and Lifestyle in Gastrointestinal Problems among Individuals Aged 18 to 30 Years Living in Hostels, Lahore, Pakistan**
Isra Rasheed, Farah Javed

**OP24. Liver Imaging Reporting and Data System Categorization of Benign and Malignant Tumors on Contrast-Enhanced CT**
Muhammad Wajid, Farah Javed

**OP25. Development of bioactive candy supplements using mixed seeds and dry fruits for emotional resilience and mental clarity**
Nida Saleem Baig, Farah Javed

**OP26. Development and Nutritional Characterization of Pumpkin Seeds and Kidney Beans-Based Bars for Protein-Energy Malnutrition in Children**
Sanam Zahra, Farah Javed

**OP27. Comparative efficacy of low-level laser and ultrasound therapy in reducing pain and disability among adults with text neck syndrome**
Danyal Ahmad, Hamza Zahid

**OP28. Effects of a High-Energy Nutritional Protein-Based Bar on The Performance of Young Athletes**
Ayesha Munir, Farah Javed

**OP29. Evaluating The Impact of Increased Fiber Intake on Gastrointestinal Discomfort Among Adults**
Azka Khalid, Farah Javed

**OP30. Effects of Progressive Resistance Training with and Without Core Stability Exercises in Fast Bowlers with Shoulder Injury**
Umair Mumtaz, Taimoor Hassan

**OP31. Prevalence of Sleep Quality Among MBBS and DPT Students in Medical Colleges of Lahore**
Anam Hanif, Zinnia Akram

**OP32. Application of Novel Food Processing Technologies for Tamarind (Tamarindus Indica): A Review on Functional and Technological Perspectives**
Seerat Saleem, Rashida Perveen

**OP33. Evaluation of Central Corneal Thickness in Patients with Vernal Keratoconjunctivitis Using Topical Steroids**
Ishfaq Ahmad, Ummara Shafiq

**OP34. Comparative Efficacy of Low-Dose Atropine versus Multifocal Spectacles in Slowing Myopia Progression in Children**
Muhammad Asif, Sidra Anwar

**OP35. Effects of Pelvic Clock vs Pelvic Tilt Exercises on Pregnant Women with Low Back Pain during Their Third Trimester**
Laraib Shabir, Raeesa

**OP36. Effects of Dynamic Stretching Versus Neural Mobilization Techniques in Early Middle-Aged Patients with Radicular Low Back Pain**
Muhammad Talha, Rubab Naqvi

**OP37. Comparison of Deep Neck Flexors Training and Muscle Energy Technique on Cervicogenic Headache**
Hira Naseem, Madiha Ali

**OP38. Effects of Hip Abductor and Knee Strengthening Exercises versus Knee Strengthening Exercises Alone on Muscle Strength and Functional Disability in Patients with Knee Osteoarthritis: A Systematic Review**
Samrood Akram, Zohaib Shahid

**OP39. Effects of Optimized Blinking Training on Ocular Performance Metrics in Individuals with Computer Vision Syndrome**
Muhammad Aleem Sabir Khan, Tehreem Mukhtar

**OP40. Recombinant Cloning of the Capsid Gene from Foot-And-Mouth Disease Virus in Pichia Pastoris for Vaccine Development**
Hafiz Ayaz Ahmad, Mazhar Munir

**OP41. Comparison of Airway Management Devices Laryngeal Mask Airway versus Endotracheal Tube during Respiratory Emergencies and Their Outcome**
Abid Ali, Tehmina Tariq

**OP42. Determination of Needle Stick Injury Regarding Bloodborne Pathogens among Healthcare Workers at Tertiary Care Hospital Dera Ismail Khan**
Fayyaz Muhammad Khan, Tehmina Tariq

**OP43. Potential of Silmitasertib in Targeting CK2 Mediated Phosphorylation for SARS-Cov-2 Inhibition**
Zubair Sharif, Summaiya Vakeel

**OP44. Impact of Personality Traits on Different Phases of Menstrual Cycle of Young Girls and Their Association with Pain, Stress, Sleep Patterns, and Physical Activity**
Hafiza Anaba Iftikhar, Luqman Ali

**OP45. Frequency of Portal Hypertension among Patients with Cirrhotic Liver with Ultrasound**
Muhammad Jalil, Rashida Perveen

**OP46. Investigating The Relationship Between Uterine and Ovarian Artery Indices and Follicle in PCOS Through Color Doppler**
Abrar Habib, Tahira Batool

**OP47. Effects of Kinesiology Taping and Yoga Therapy on Postural Correction for Sacroiliac Joint Dysfunction in Powerlifters**
Reffat Nizam, Syed Muhammad Aun

**OP48. Transformative AI Approaches in Amblyopia Care: A Scoping Review.**
Ubaid Ullah Jan, Saima Riaz

**OP49. AI Enabled Prediction of Non-Communicable Diseases in Postmenopausal Women: A Strategic Innovation to Advance Sustainable Development Goals 3 And 5**
Ayesha Bashir, Saima Riaz

**OP50. Comparative effects of Ischemic Compression with and Without Muscle Energy Technique on Cervical contra-lateral Lateral Flexion in Upper Trapezius Trigger Points**
Syeda Khadija Kazmi, Hamza Zahid

**OP51. Correlation of Pain and Functional Limitations Among Individuals with Ankle Sprain**
Ghulam Zahra Malik, Hira Khalil

**OP52. A Descriptive Study on Compliance of Patellar Tendon Brace in Post-Operative Patients of Tibial Fracture**
Ayeza Ashraf, Rubab Naqvi

**OP53. Efficacy Of Binocular Vision Therapy Versus Standard Occlusion Therapy In Improving Stereo-Acuity in Amblyopic Children**
Kashaf Rehman, Umara Shafiq

**OP54. Clinical Relevance and Diagnostic Value of Somatostatin Receptor Scintigraphy in Neuroendocrine and Inflammatory Disorders**
Maryam Khalid, Chanda Naseem

**OP55. Effects of Suboccipital Muscle Energy Technique and Sacroiliac Joint Manipulation Combined with Passive Hamstring Stretch in Females to Improve Hamstring Flexibility**
Mishal Shamsi, Muhammad Salman Bashir

**OP56. AI-Integrated Physical Therapy: Feasibility of A Smart Rehabilitation App for Bankart Lesion Recovery**
Izzat Hassan, Samreen Sadiq

**OP57. Bones in Balance: Physical Activity and Its Impact on Bone Mineral Density to Prevent Osteoporosis in Premenopausal Women. A Narrative Exploration Towards SDG3**
Rabia Jawa

**OP58. Effectiveness of Breathing Techniques in COPD Patients in Twin Cities**
Humera Ayub, Mamoona Tasleem Afzal

**OP59. Integrating Machine Learning and Wearable Technology for Real-Time Physiotherapy Assistance**
Amna Riaz, Nimra Tariq

**OP60. Impact of Digital Screen Time in Progression of Myopia in Children**
Mahrukh Fatima, Dr Saad Saleem

**OP61. Leveraging Artificial Intelligence and Digital Biomarkers for Personalized Post-Operative Orthopedic Physical Therapy and Equitable Outcomes**
Hasan Bin Akram, Mehwish Khalid

**OP62. Comparative Evaluation of Machine Learning and Ordinary Differential Equation Approaches for HIV Prognostication in Rehabilitation and Allied Health Practice**
Muhammad Azam, Sidra Siddiqui

**OP63. Effects of Fascial Manipulation Technique Versus Joint Cavitation on The Atlanto-Occipital Joint in Cervicogenic Headache Patients**
Ali Mushtaq

**OP64. Leveraging Socioeconomics and Cognitive Data for Dementia Stages Classification**
Rizwana Bibi, Sidra Siddiqui

**OP65. Rehabilitation and Gender Equity: A Scoping Review Addressing The Intersection of Disability, Gender, and Sustainable Development Goal 5**
Sahar Aslam, Saima Riaz

**OP66. Clinical Evaluation of Corneal Higher Order Aberrations in Trans Photorefractive Keratectomy and Femtosecond Laser in Situ Keratomileusis Patients with Myopia and Astigmatism**
Muhammad Zubair Nazar, Waleed Jameel

**OP67. Comparative Effects of Active Release Technique Versus Muscle Energy Technique for Treating Trigger Point Induced Mechanical Neck Pain in Young Adult Female Population**
Waleed Jameel, Muhammad Zubair Nazar

**OP68. Assessment of Tear Film Instability in Glaucomatous Patients Using Anti-Glaucoma Drugs**
Ijaz Hussain, Ummara Shafiq

**OP69. Evaluating The Impact of Presbyopic Eyewear on Driving Performance Among Commercial Drivers**
M. Khalil Talib, M. Anwar Awan

**OP70. Responsiveness and Minimal Clinically Important Difference of The Navicular Height Drop Test in Patients with Plantar Fasciitis**
Aasim Manzoor, Rubab Naqvi

**OP71. The Role of Antioxidants, Macronutrients, and Lifestyle Modifications in Breast Cancer Patients in Lahore, Pakistan**
Tahreem Amanat, Farah Javed

**OP72. Comparative Effects of Neurodynamic and Active Release Technique on Pain, Hand Grip, and Functional Status in Patients with Carpal Tunnel Syndrome**
Muhammad Shahzad

**OP73. Association Between Work-Related Stress and Peripheral Neuropathic-Pain in Post Chemotherapy Female Breast Cancer Survivors.**
Wasif Ameen, Adil Ur Rehman

**OP74. Rehabilitation Strategies for Post-Surgical Breast Cancer Survivors: Virtual Reality, Conventional Therapy, and Lifestyle Approaches. A Systematic Review**
Asima Irshad, M Naveed Babur

**OP75. Correlation of Plyometric and HIIT with Agility, Sprint Speed, and Power in Female Athletes**
Kiran Gillani, Muhammad Asad Ali

**OP76. The Effects of Mir Shakeel Tele-Integrated Therapy on Pain, Range of Motion and Patient Satisfaction in Patients of Total Knee Arthroplasty: A Pilot Study**
Mir Shakeel Ahmad, Chua Siew Kuan

**OP77. Lived Experiences of Physical, Psychological, Communication and Social Changes in Early-Stage Cancer Patients**
Salwa Atta, Mir Shakeel Ahmad

**OP78. Virtual Reality–Driven Innovations in Stroke Rehabilitation: A Review on Enhancing Upper Limb Gross Motor Function and Dexterity in Support of Sustainable Development Goal 3 (Good Health and Well-being)**
Maria Mustafa, Saima Zahid

**OP79. Assessment of Thyroid Hormone Levels and Potential Risk of Hypothyroidism in Healthcare Workers Exposed to Low-Dose Ionizing Radiation**
Mudssar Riaz, Rashida Parveen

**OP80. Exploring Food Fortification Potential on Sesame and Wheat Flour for Sensorical and Nutritional Attributes of Doughnuts**
Sabiha Abbas, Saqafat Ahmad

**OP81. Effects Of Cartoon Programs on Children's Language and Behavior: Working Mothers' Perspective**
Ayesha Saddiqa, Saba Aziz

**OP82. Psychometric Evaluation of the Urdu Version of the Glaucoma Symptom Scale: Assessing its Reliability and Validity in Low-Literacy Populations**
Iqra Akram, Taimoor Hassan

**OP83. Impact of Media, Socioeconomic, and Psychological Factors on The Adoption of Aesthetic Technology and Cosmetic Surgery Among Women in Punjab, Pakistan**
Rabia Tahir, Muhammad Shahram Tanveer

**OP84. Evaluating The Knowledge and Implementation of Evidence-Based Practices in Airway Management Among Respiratory Therapists in Critical Care Units Across Lahore**
Shakeel Ahmad, Tasra Bibi

**OP85. Rate and Predictor of Satisfaction After Noninvasive Cosmetic Procedures**
Maham Saleem

**OP86. Association Between Estimated Glomerular Filtration Rate Decline and Cardiovascular Risk Scores in Middle-Aged Adults: A Cross-Sectional Study**
Arishba Iftikhar, Laiba Naveed Khan

**OP87. Comparative Effects of Dynamic Cupping and PNF Stretching on Hamstring Tightness Among Football Players**
Muhammad Zeeshan, Zainab Ali

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**OP1**

http://dx.doi.org/10.21653/tjpr.2026.OP1

**A Pilot Study on the Effects of the Godelieve Denis-Struf (GDS) Method Delivered Via Smartphone Application on Quality of Life in Patients with Chronic Lumbosacral Discogenic Pain**

Haroon Mansha[1], Saleh Shah[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Chronic lumbosacral discogenic pain is a persistent condition that can severely impair a person's quality of life and daily functioning. This study aims to assess the preliminary effects of the GDS method on quality of life and pain levels in patients with chronic lumbosacral discogenic pain.

**Methods:** One-Group Pretest–Posttest Design was selected between January 2025 and June 2025; a total of 15 patients were enrolled in the study (06 male and 09 female patients; mean age 45±9.0 years; range, 35 to 65 years). The 6-week GDS program was delivered through a custom smartphone application. The intervention included guided postural exercises, video instructions, and daily reminders. Outcome measures included the SF-36 Quality of Life Survey, ODI scale and Visual Analog Scale (VAS) for pain assessed at baseline and post-intervention. User engagement and adherence data were also collected.

**Results:** Preliminary findings showed statistically significant improvements in overall quality of life ($p<0.05$), particularly in physical functioning and pain domains of the SF-36. Mean VAS scores decreased by 2.3 points, and ODI scores improved by 15%, indicating reduced disability. The adherence rate to the application-guided sessions was 82%, and user satisfaction was high.

**Conclusion:** Our study results suggest that delivering the GDS method via a smartphone application appears to be a feasible and potentially effective approach for improving the quality of life in patients with chronic lumbosacral discogenic pain.

**Keywords**: Chronic Back Pain, Pilot Study, Quality of Life, Smartphone App, Vertebrogenic Pain

**OP2**

http://dx.doi.org/10.21653/tjpr.2026.OP2

**Comparative Effects of Cryotherapy and Airflow Stimulation versus Controlled Breathing Exercises on Dyspnea in Obstructive Lung Disease Patients**

Mariam Javaid[1], Saima Riaz[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Superior University, Lahore*

**Purpose:** Obstructive lung diseases, such as emphysema, bronchitis and small airway disease, are associated with partially reversible airflow limitation and debilitating dyspnea. Despite current treatment strategies, in chronic obstructive pulmonary disease (COPD) the symptom management is still challenging. This study aimed to compare the effects of icing and airflow stimulation versus controlled breathing exercises in reducing dyspnea in patients with COPD**.**

**Methods:** The study was a randomized trial conducted at DHQ Hospital, Khushab. A sample size of 126 COPD patients was obtained and selected by using a non-probability convenience sampling technique. The patients were randomly divided into two groups: a control group (n=65) receiving only controlled breathing exercises and an experimental or intervention group (n=61) receiving both icing and airflow stimulation as treatment. Outcomes measures were consistent of shuttle level, shuttle distance, $SpO_2$, Forced Expiratory rate ($FEV_1$) in one second, Forced vital Capacity (FVC), $FEV_1$/FVC, Respiratory rate (RR) and a questionnaire named St. George's respiratory questionnaire. The assessment of all patients was taken at baseline before treatment, after the first treatment session and after 4 weeks of treatment. For the statistical analysis SPSS version 21 was used.

**Results:** The mean age of participants ranged from 30 to 60 years. After the first treatment session, both groups showed improvements in $SpO_2$, $FEV_1$, FVC, and $FEV_1$/FVC. The differences were statistically significant for $SpO_2$ ($p < 0.001$) and $FEV_1$ ($p = 0.003$), whereas FVC ($p = 0.06$) and $FEV_1$/FVC ($p = 0.08$) were not statistically significant. In the SGRQ questionnaire, improvements were significant for the symptoms ($p < 0.001$) and activity ($p < 0.001$) domains.

**Conclusion:** The study concluded that both controlled breathing and icing with airflow stimulation were effective in the improvement of dyspnea and lung function in patients with COPD. However, in oxygenation and patient-reported outcomes, the experimental intervention demonstrated more significant improvements.

**Keywords:** Airway Obstruction, Breathing Exercises, Chronic Obstructive Pulmonary Disease, Dyspnea, Respiratory Therapy

**OP3**

http://dx.doi.org/10.21653/tjpr.2026.OP3

**Effects of Pelvic Tilt Exercises Along with Hip and Knee Focused Exercises on Patients with Patellofemoral Pain Syndrome**

Zarmina Khan[1], Taimoor Hassan[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan.*

**Purpose:** Patellofemoral Pain Syndrome (PFPS) is marked by anterior knee discomfort. Anterior pelvic tilt and hip-knee unequal muscles play an important role in PFPS. The symptoms can be improved by adjusting pelvic alignment and building the hip-knee muscles. This study aimed to analyze the effects of Pelvic Tilt Exercises along with Hip and Knee-Focused Exercises on patients with PFPS.

**Methods:** A randomized controlled trial was conducted at Siddique Sadiq Memorial Trust Hospital, Gujranwala, Pakistan. Forty-eight individuals aged between 35 and 55 years were assigned to either the intervention group or the control group. Both groups performed hip and knee strengthening programs, while pelvic tilt exercises were only provided to the intervention group. Measured outcomes included the Numeric Pain Rating Scale, Kujala Patellofemoral Score, Single Leg Squat Test, Q Angle, and Pelvic Tilt Angle.

**Results**: Significantly greater improvement was seen in pain (NPRS mean rank: 12.50 vs. 36.50), knee function (KPS: 36.50 vs. 12.50), limb stability (SLST: 29.25 vs. 19.75) and Q angle corrections (12.50 and 36.50) in the intervention group than the control group, with the p-value less than 0.05, whereas post-treatment pelvic-tilt angle did not show a significant difference (23.60 and 25.40) as the p-value for the pelvic tilt angle was 0.06.

**Conclusion:** Incorporating pelvic tilt exercises along with hip and knee-focused exercises significantly improves pain, knee function, lower limb stability and Q angle correction in patients with PFPS. However, it had minimal impact on pelvic tilt angle, indicating a limited effect on pelvic alignment.

**Keywords:** Joint Mobilization, PFPS, Pelvic Tilt, Rehabilitation, Strengthening Exercises

**OP4**

http://dx.doi.org/10.21653/tjpr.2026.OP4

**Anthropometric Predictors of Balance Outcomes in Sub-Acute Stroke Patients: A Regression Analysis Using CTSIB**

Hira Rehman[1], Tehreem Mukhtar[1]

[1]*Department of Physical Therapy and Rehabilitation and Sciences, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** Sensory and motor dysfunctions are frequent consequences of stroke, which is often connected with the issue of balance impairment. This study aims to investigate the feasibility of anthropometric variables, including limb heights, Body Mass Index (BMI), waist-to-hip ratio, and limb circumferences, as predictors of balance enhancement in sub-acute stroke patients through the Clinical Test of Sensory Interaction on Balance (CTSIB).

**Methods:** All study participants were stroke patients in the sub-acute phase (3 months to 6 months after stroke onset), with a total of 100 participants; the age range was 30 to 90 years. Patients were independent in ambulation and cognitively intact, participating in a neurorehabilitation program.

**Results:** There were non-significant results, and the regression model was 0.097 (R2=0.097), which indicated that the regression model explained 9.7% of the variance in the CTSIB scores. The strongest (but not significant) inverse relationship with balance performance was between the BMI and all other variables. This implies that there might be an estimated trend between raised BMI and postural instability impairment.

**Conclusion:** The anthropometric parameters exhibited a weak potential in predicting the balance results at the eighth week of stroke rehabilitation. Although the trend was slight in magnitude and merely relevant, it is expected that with an increased sample size (with greater diversity) and a wider variety of functional or neurological predictors used, a larger sample size can be realized.

**Keywords:** Stroke, CTSIB, Anthropometry, Balance, Regression, Rehabilitation

**OP5**

http://dx.doi.org/10.21653/tjpr.2026.OP5

**Effect of Pilates Core Stabilization in Adjunct with Plyometric Shoulder Training on Low Back Pain in Fast Bowlers: A Randomized Controlled Trial**

Muhammad Tariq[1], Taimoor Hassan[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** Low back pain (LBP) is common among cricket fast bowlers. To improve performance and lower the risk of injury, rehabilitation should focus on both core stability and upper limb strength. This study aims to assess the synergistic impact of Pilates core stability and plyometric shoulder training on pain, functionality, and performance in fast bowlers with persistent low back pain.

**Methods:** A randomized controlled trial was conducted with 36 male fast bowlers aged 17 to 25. The participants were randomly assigned to two groups: Group A had a six-week intervention including Pilates and plyometric shoulder training, while Group B received conventional physiotherapy treatment. The outcome measures included the Numeric Pain Rating Scale (NPRS), Oswestry Disability Index (ODI), Cricket Ball Throw Test (CBTT), Vertical Jump Test (VJT), and biomechanical accuracy (BMA), which were evaluated using Coach Eye and Hudl. Non-parametric tests were used because the data had a non-normal distribution.

**Results:** Group A demonstrated statistically significant improvements in all variables: NPRS ($p=0.001$), ODI ($p=0.002$), CBTT ($p=0.004$), VJT ($p=0.002$), and BMA ($p=0.003$). Although Group B showed minor improvements, Group A's outcomes were significantly superior at week six ($p<0.005$).

**Conclusion:** The integration of Pilates core stabilization and plyometric shoulder training proved more effective than conventional physiotherapy in reducing pain, enhancing functional capacity, and improving performance in fast bowlers with LBP. This combined approach is recommended in sports-specific rehabilitation programs.

**Keywords:** Athletic Performance, Low Back Pain, Plyometric Exercise, Rehabilitation, Shoulder Joint

**OP6**

http://dx.doi.org/10.21653/tjpr.2026.OP6

**Effects of Obesity on Tear Film and Ocular Health among Diabetic Patients**

Ayesha Sajid[1], Rubab Naqvi[1]

[1]*Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** To evaluate the effects of obesity on tear film and ocular health in diabetic patients.

**Methods:** This was a cross-sectional observational study conducted over six months at Alvi Hospital & Maternity Home, Lahore. A total of 120 diabetic patients aged 18 to 70 years were selected using purposive sampling. Participants were categorized into three BMI groups: normal, overweight, and obese. Only individuals with confirmed type 1 or type 2 diabetes and stable glycemic control (HbA1c recorded) were included. Tear film quality was assessed through Schirmer's test for tear production and TBUT using fluorescein dye and slit-lamp biomicroscopy. Ocular discomfort was evaluated using the OSDI questionnaire. P-value <0.05 was considered significant.

**Results:** Among 120 diabetic participants, 38.33% were males, 61.67% females; 20% had type 1, 80% had type 2 diabetes. 27.5% had normal weight, 36.67% were overweight, and 35.83% were obese. The most frequently reported ocular symptoms were dry eyes (40.8% sometimes), gritty sensation (40.8% sometimes), and blurred vision (48.3% sometimes). A significant negative correlation was found between BMI and TBUT ($r=-0.992$, $p<0.001$), BMI and Schirmer test ($r=-0.990$, $p<0.001$), indicating reduced tear stability and production with higher BMI. Kruskal-Wallis test showed significantly lower mean ranks of TBUT and Schirmer scores in obese participants compared to normal BMI, $p< 0.001$.

**Conclusion:** Diabetes patients with higher BMI had considerably worse tear film characteristics, which emphasizes how crucial weight control is to maintaining the health of the ocular surface.

**Keywords:** Diabetes, Obesity, Tear Film, Ocular Surface, Obese

**OP7**

http://dx.doi.org/10.21653/tjpr.2026.OP7

**Effectiveness of Guided Eye Exercises in Reducing Digital Eye Strain and Vision-Related Symptoms in Young Adults**

Malaika Ashraf[1], Sidra Anwar[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** Prolonged use of digital screens has led to a noticeable increase in eye-related problems among young adults. As digital use continues to grow, guided eye exercises are being explored as a practical method to ease these issues. This study aims to evaluate the impact of a structured eye exercise program on symptoms of digital eye strain, including eye fatigue, headache, and blurred vision, in young adults with prolonged screen exposure

**Methods:** A randomized controlled trial was conducted at Azhar Health Care Complex, Lahore; over four months (20 March–20 June) with 114 participants aged 18–35. The experimental group received structured eye exercises; the control group did not. Data normality was assessed using the Shapiro-Wilk test, symptom changes with the Wilcoxon signed-rank test, and between-group differences with the Mann-Whitney U test using SPSS version 27.

**Results:** The mean age was 25.31±2.70 years with 58 (50.9%) females and 56 (49.1%) males. Most (63.16%) used smartphones primarily. Data were non-normally distributed ($p<0.05$). Guided eye exercises led to significant improvement in all symptoms ($p<0.001$), with greater reduction in the intervention group ($p=0.004$). Over 92% followed exercises regularly, mainly blinking and the 20-20-20 rule. 73.6% reported moderate to significant improvement, and 89.5% believed exercises were effective.

**Conclusion:** Guided eye exercises significantly reduced digital eye strain symptoms among young adults, especially with consistent practice. The intervention proved to be a practical, low-cost solution with strong participant adherence and positive outcomes.

**Keywords:** Blinking, Eyestrain, Eye Fatigue, Screen Time

**OP8**

http://dx.doi.org/10.21653/tjpr.2026.OP8

**Bromfenac versus Nepafenac: A Study on Managing Post-Operative Cataract Inflammation**

Alveena Aftab[1], Fatima Zahid[1]

[1]*Department of Optometry and Vision Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To compare the efficacy of Bromfenac and Nepafenac ophthalmic solutions for post-cataract surgery inflammation.

**Methods:** This comparative cross-sectional study was conducted at The Superior University, Lahore, over four months. A total of 98 adult patients (≥40 years) undergoing uncomplicated cataract surgery were enrolled using a non-probability purposive convenience sampling technique. Participants were equally divided into two groups: one receiving Nepafenac and the other receiving Bromfenac. Baseline assessments included slit lamp and fundoscopic examination. After surgery, participants were prescribed either Nepafenac or Bromfenac and followed up at one week and one month. Data were analyzed by SPSS-26 version.

**Result:** Bromfenac showed significantly better postoperative anti-inflammatory effects compared to Nepafenac. On Day 1, patients in the Bromfenac group reported less pain ($p<0.001$), less redness ($p=0.027$), milder anterior chamber (AC) cell reactions ($p<0.001$), and a lower incidence of vitritis ($p<0.001$). The difference in AC cell reactions remained significant on Day 40 ($p=0.022$). While both groups showed complete resolution of pain and vitritis by Day 40, 10.2% of Nepafenac patients still had mild AC cells. The difference was statistically significant ($p=0.022$).

**Conclusion:** The study concluded that Bromfenac was more effective than Nepafenac in controlling early postoperative inflammation, particularly on Day 1, with significantly lower levels of pain, AC cells, and vitritis. While some differences persisted on Day 7, by Day 40, inflammation had resolved in all patients, and no significant differences remained between the groups.

**Keywords:** Bromfenac, Cataract, Nepafenac, Postoperative Inflammation

**OP9**

http://dx.doi.org/10.21653/tjpr.2026.OP9

**The Impact of Hypothyroidism on Tear Production and Dry Eye Symptoms: Implications for Optometric Care**

Zunira Rasool[1], Hafiz Zohaib Rana[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Lahore, Pakistan*

**Purpose:** To evaluate the impact of hypothyroidism on tear production and dry eye symptoms, and implications for optometric care

**Methods:** This analytical cross-sectional study was conducted at DHQ Hospital, Dera Ghazi Khan, over a period of six months. A total of 64 hypothyroid patients aged 20-60 years were selected using consecutive sampling. Data collection used the OSDI (ocular surface disease index) questionnaire, Schirmer 1 test, and tear break-up time test TBUT) to assess tear production and stability. Inclusion and exclusion criteria were applied to minimize confounding factors.

**Results:** Among 64 hypothyroid patients, 40 (62.5%) reported dry eye symptoms based on OSDI scores. Schirmer 1 test showed reduced tear production (≤10mm) in 30 patients (46.9%), with a mean value of 9.1 ±3.5 mm. Tear break-up time (TBUT) was <10 seconds in 38 patients (59.4%), indicating tear film instability, with a mean TBUT of 8.4±2.7 seconds. The Chi-square test showed a statistically significant association between hypothyroidism and dry eye (p=0.012). Females were more affected, comprising 81.2% (n=52) of the sample. These findings suggest a strong link between hypothyroidism and dry eye.

**Conclusion:** Due to decreased tear production, patients with hypothyroidism have a high burden of dry eye symptoms. Whereas TBUT did not correspond with the intensity of symptoms, Schirmer test findings did. For this demographic, comprehensive and customized dry eye care is essential.

**Keywords:** Hypothyroidism, Dry Eye, Schirmer Test, Tear Production, Tear Film Stability

**OP10**

http://dx.doi.org/10.21653/tjpr.2026.OP10

**Psychometric Evaluation of the Urdu Version of the Vision Related Quality of Life Questionnaire: Assessing Its Reliability and Validity in Low Vision Population**

Esha Bilal[1], Muhammad Naveed Babur[2]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** This study aimed to evaluate the reliability and validity of the Urdu-translated Vision Quality of Life Questionnaire (NEI-VFQ-25) in a low vision population.

**Methods:** An experimental study design was utilized, involving 71 participants between 18 and 80 years of age. During clinical visits, the Urdu-translated NEI-VFQ-25 questionnaire was administered to evaluate various aspects of vision-related quality of life. To determine test–retest reliability, a selected group of participants completed the survey twice. Internal consistency was analyzed through Cronbach's alpha, while reliability between test sessions was assessed using intraclass correlation coefficients (ICCs). Convergent validity was established by examining the correlations between NEI-VFQ-25 subscales and the corresponding domains of the SF-36 health survey using Pearson's correlation analysis

**Results:** The psychometric evaluation demonstrated that the Urdu NEI-VFQ-25 is a reliable and valid instrument. Internal consistency was good across most subscales, with satisfactory Cronbach's alpha values. Test-retest reliability showed moderate to strong ICCs, confirming stability over time. Validity was supported by significant correlations between NEI-VFQ-25 and SF-36, indicating convergent validity. Inter-subscale correlations further confirmed the multidimensional structure of the questionnaire. Some floor and ceiling effects were noted in specific subscales, suggesting limited sensitivity in those areas.

**Conclusion:** The Urdu-translated NEI-VFQ-25 is a psychometrically sound tool for assessing vision-related quality of life in low vision patients. It is suitable for clinical and research applications within Urdu-speaking populations, providing reliable and valid measures of functional vision impact.

**Keywords:** NEI-VFQ-25, Psychometric Evaluation, Low Vision, Urdu Translation, Quality of Life

**OP11**

http://dx.doi.org/10.21653/tjpr.2026.OP11

**Correlation between Vitamin D Levels and Functional Limitation in Adults with Chronic Non-Specific Low Back Pain**

Waqas Hanif [1], Tehreem Mukhtar[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** To find out the correlation between vitamin D levels and functional limitation in chronic non-specific low back pain (CNSLBP) patients.

**Methods:** A correlation study was conducted with 52 patients aged 25–45 years diagnosed with CNSLBP. Functional limitation was measured with the Oswestry Disability Index (ODI), and serum vitamin D levels via 25-Hydroxyvitamin D testing. After evaluating the normality of the data Pearson test was applied to find out the correlation between these variables. Data were analysed by using SPSS 25

**Results:** The mean age of the CNSLBP patients was 32.17±1.085 years. BMI was 23.46±0.884 (kg/m$^2$) study showed that there was a significant association (p=0.004) and moderate positive correlation (r=0.365) between vitamin D and functional limitation in adults with CNSLBP.

**Conclusion:** The study showed there was a significant association between vitamin D level and functional limitation among adults with CNSLBP.

**Keywords:** Adults, Low Back Pain, Exercise, Musculoskeletal, 25-Hydroxyvitamin D

**OP12**

http://dx.doi.org/10.21653/tjpr.2026.OP12

**Compare the Effect of Transcutaneous Vagus Nerve Stimulation (tVNS) Versus Noninvasive Vagus Nerve Stimulation (nVNS) on Pain Reduction and Quality of Life in Migraine Patients: A Randomized Controlled Trial**

Khadija Usman[1], Zohaib Shahid[1]

[1]*Faculty of Allied Health Sciences, Superior University, Faculty of Allied Health Sciences, Lahore, Pakistan*

**Purpose:** This study sought to determine how individuals with episodic migraine without aura responded to non-invasive vagus nerve stimulation (nVNS) and transcutaneous vagus nerve stimulation (tVNS) in terms of pain intensity and quality of life (QOL).

**Methods:** A randomized controlled trial included 28 patients divided into two groups: tVNS (auricular branch via TENS) and nVNS (cervical via VNS device). Pain intensity was quantified using the Visual Analogue Scale (VAS), while headache-related disability and influence on daily life were measured using the Migraine Disability Assessment (MIDAS) and Headache Influence Test (HIT-6), respectively. Using SPSS version 25, the Wilcoxon Signed-Rank test was used for within-group comparisons and the Mann-Whitney U test for between-group differences when comparing scores before and after treatment.

**Results:** Both groups experienced significant improvements in all three outcomes after intervention (VAS, HIT-6, and MIDAS; p<0.001). The tVNS group had a higher reduction in VAS (median pre=8.00, post=5.00, p<0.001) and HIT-6 scores (pre=61.50, post=51.00, p<0.001) than the nVNS group (VAS post=7.00, p<0.01; HIT-6 post=55.50, p<0.001). A between-group study indicated significant improvement in VAS (p=0.050) and HIT-6 (p=0.030), with the tVNS group outperforming. However, no significant change was seen in MIDAS (p=0.140).

**Conclusion:** Both tVNS and nVNS treatments were successful in lowering migraine impairment and symptoms. But tVNS was more successful in lowering the severity of the pain and the impact of headaches on daily living.

**Keywords:** Migraine, Vagus Nerve Stimulation, Quality of Life, Transcutaneous Vagus Nerve Stimulation

**OP13**

http://dx.doi.org/10.21653/tjpr.2026.OP13

**Evaluating the Diagnostic Performance of High-Resolution Computed Tomography (HRCT) in Detecting Idiopathic Pulmonary Fibrosis (IPF) in Suspected Cases**

Asbat Naseer[1], Tahira Batool[1]

[1]*Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** IPF is a chronic, progressive fibrosing interstitial lung disease (ILD) of unknown etiology. HRCT plays a central role in the non-invasive identification of IPF. This study aims to evaluate the diagnostic accuracy and predictive value of HRCT in detecting IPF in patients with clinical suspicion of the disease.

**Methods:** A cross-sectional descriptive study was conducted involving 68 patients with suspected IPF at a radiology diagnostic center in Islamabad. All patients underwent HRCT scans, which were assessed for typical IPF patterns including honeycombing, GGO, and reticulation. Data were analyzed using SPSS v25.0. Diagnostic metrics were computed, and statistical tests, including logistic regression and ROC curve analysis, were applied.

**Results:** HRCT confirmed IPF in 91.2% of patients. Honeycombing was observed in 55.9%, reticular patterns in 60.3%, and GGO in 51.5% of patients. Patchy GGO was the most prevalent GGO subtype (22.1%). Honeycombing alone yielded a specificity of 100%, sensitivity of 61%, and PPV of 1.00. The ROC curve for honeycombing presented an AUC of 0.806 (95% CI: 0.687–0.926, p=0.014). Logistic regression identified honeycombing (p=0.004), GGO (p = 0.021), and reticulation (p=0.010) as significant predictors of IPF.

**Conclusion:** HRCT demonstrates high diagnostic accuracy in confirming IPF, especially through the identification of honeycombing, which showed excellent specificity and PPV. Although honeycombing alone is not sufficiently sensitive, its diagnostic utility is significantly enhanced when combined with GGO and reticular patterns.

**Keywords:** Idiopathic Pulmonary Fibrosis, High-Resolution Computed Tomography, Honeycombing, Ground-Glass Opacity, Reticulation, Interstitial Lung Disease

**OP14**

http://dx.doi.org/10.21653/tjpr.2026.OP14

**Effectiveness of Trans-Arterial Chemoembolization (TACE) for Hepatocellular Carcinoma on Follow-Up Triphasic CT of the Liver**

Nawal Naseer[1], Rashida Perveen[1]

[1]*Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Hepatocellular carcinoma (HCC) is a leading global cause of cancer-related mortality, often diagnosed at intermediate stages unsuitable for curative treatments. Trans-Arterial Chemoembolization (TACE) is the standard of care for Barcelona Clinic Liver Cancer (BCLC) stage B patients. This study evaluates TACE effectiveness in HCC using follow-up triphasic CT imaging and modified RECIST (mRECIST) criteria.

**Methods:** This retrospective observational study was conducted at CMA Hospital, Lahore, from February to July 2025, involving 50 patients who underwent TACE. Triphasic liver CT scans (arterial, portal venous, and delayed phases) were analyzed pre- and post-TACE to assess tumor vascularity, necrosis, and response. mRECIST criteria and statistical analyses, including Wilcoxon signed rank and chi-square tests, were used to determine lesion size change, response patterns, and associations with clinical/imaging predictors.

**Results:** Mean lesion size reduced from 5.33 cm pre-TACE to 2.77 cm post-TACE (mean reduction 45.2%, p<0.001). Complete Response (CR) was achieved in 66% of patients, Stable Disease (SD) in 24%, and Progressive Disease (PD) in 10%. High arterial phase enhancement and lipoidal uptake strongly correlated with CR (p<0.001). Portal hypertension features (ascites, splenomegaly, varices) were significantly associated with poorer outcomes. Gender, cirrhosis, and the presence of new lesions influenced response variability.

**Conclusion:** TACE demonstrates significant effectiveness in achieving tumor necrosis and control in HCC. Imaging biomarkers—especially arterial enhancement and lipoidal uptake-serve as strong predictors of therapeutic success. Portal hypertension adversely affects outcomes, emphasizing the need for individualized treatment planning.

**Keywords:** Trans-Arterial Chemoembolization, Tumor, Hepatocellular Carcinoma, Ascites, Necrosis

**OP15**

http://dx.doi.org/10.21653/tjpr.2026.OP15

**Application of ICF Framework in the Assessment of Children and Adolescents with Cerebral Palsy: A Systematic Review**

Roohi Abbas[1], Junaid Ejaz Gondal[1]

[1]*Superior University, Faculty of Rehabilitation Sciences, Department of Physical Therapy, Lahore, Pakistan*

**Purpose:** The International Classification of Functioning, Disability and Health (ICF) being a standardized, biopsychosocial approach to understanding disability, serves as a basis for assessing functioning and disability beyond a mere medical diagnosis of cerebral palsy. The purpose of this review is to critically analyze application of ICF framework in CP assessment by identifying most commonly measured ICF domains and evaluating clinical utility of assessment tools and outcome measures linked with ICF.

**Methods**: Studies between January 2015 and January 2025 from 4 databases were retrieved, out of 339 records,209 records were screened. Nine studies that met inclusion criteria of Children & adolescents with CP (4 to 18 years) and outcome measures mapped with ICF were included.

**Results**: Total 74 outcome measures linked with ICF domains were identified (33"Body Structure/Function", 22 "Activities", 12 "Participation" and 3 as classification system). GMFM, COPM, and PEDI were the most common outcome measures. "Contextual factors" was the least measured domain of ICF (only one study addressing "personal factors"). The most frequently addressed category across all domains were Muscle tone functions (b735) 66.7% in Body function/structure, Walking (d450) 59% in activity, and Recreation & leisure (d920) 35% in participation.

**Conclusion**: Participation and personal factors are currently underrepresented but critical for improving outcomes as interventions directly targeting participation (rather than impairment/activities) were significantly more effective at improving participation outcomes**.** ICF-CY needs to be explored and cross culturally validated in future studies.

**Keywords:** Cerebral Palsy, Child, Adolescent, Outcome Assessment, International Classification of Functioning, Disability and Health

**OP16**

http://dx.doi.org/10.21653/tjpr.2026.OP16

**Effects of Cervicothoracic Self-Mobilization in Subacute Neck Pain: Randomized Controlled Trial**

Zunaira Shafaqat[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Subacute neck pain is a common musculoskeletal condition that can significantly affect daily functioning and quality of life. Traditional treatments often provide temporary relief, leading to a growing interest in alternative approaches such as cervicothoracic self-mobilization. This technique is believed to alleviate pain, improve mobility and restore function through patient-directed movements.

**Methods:** A randomized controlled trial was conducted with 66 participants diagnosed with subacute neck pain. Participants were randomly assigned to either a control group (receiving standard physical therapy or an experimental group (undergoing cervicothoracic self-mobilization). Pre and Post treatment assessments included the Numeric Pain Rating Scale, Neck Disability Index and cervical ROM measurements (flexion, extension, right/left side flexion). The intervention was carried out over six weeks, with the experimental group performing self-mobilization exercises 3-5 times per week.

**Results:** Significant improvements were observed in the experimental group, with pain intensity decreasing from 7.81 to 4.51 ($p=0.001$), neck disability reduced from 28.86 to 18.86 ($p<0.001$), and cervical ROM improving in flexion and extension ($p<0.001$).

**Conclusion:** Cervicothoracic self-mobilization is an effective intervention for reducing pain, improving cervical ROM, and decreasing neck disability in patients with subacute neck pain. This technique offers a practical, low-cost treatment option for improving functional outcomes.

**Keywords:** Cervicothoracic Self-Mobilization, Subacute Neck Pain, Pain Reduction, Cervical Range of Motion, Neck Disability, Rehabilitation

**OP17**

http://dx.doi.org/10.21653/tjpr.2026.OP17

**Evaluating the Effectiveness of Structured Psychosocial Counseling on Mental Health and Functional Independence in Individuals with Low Vision**

Mahnoor Saleem[1], Gulnaz Zaheer[1]

[1]Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan

**Purpose:** Low vision is a significant public health issue that affects daily functioning and mental well-being. Psychosocial support is often overlooked in vision rehabilitation programs. This study aimed to assess the effects of structured psychosocial counselling on mental health and functional independence in individuals with low vision.

**Methods:** A randomized controlled trial (NCT06914076) was conducted at Sial Hospital, Ali Pur Chatha, over four months (20 March–20 June) 32 low vision patients aged 18–65. The experimental group received structured psychosocial counselling; the control group did not. DASS-21 and VFQ-25 were used. Shapiro-Wilk test for normality, Repeated Measures ANOVA for within-group analysis, and Dunn-Bonferroni test for post-hoc comparisons (SPSS v27).

**Results:** The mean age of Group A was 37.44±14.39 and Group B was 39.69±6.71, with balanced gender distribution. Baseline data were normally distributed ($p>0.05$). Repeated measures ANOVA showed significant 12-week improvements in depression, anxiety, stress, and visual functioning in Group A ($p<0.001$). Post-hoc Dunn-Bonferroni tests confirmed significant between-group differences for depression ($p<0.001$), anxiety ($p=0.005$), stress ($p=0.005$), and VFQ-25 ($p<0.001$), favoring the intervention group.

**Conclusion:** Structured psychosocial counselling led to notable improvements in mental health and daily functioning among individuals with low vision. The intervention group experienced reduced levels of depression, anxiety, and stress. These results support the value of counselling as part of low vision rehabilitation.

**Keywords:** Anxiety, Depression, Functional Independence, Low Vision, Psychosocial Counselling

**OP18**

http://dx.doi.org/10.21653/tjpr.2026.OP18

**Comparative Efficacy of Lipid-Based Artificial Tears vs Aqueous-Based Artificial Tears in Managing Evaporative Dry Eye: A 6-Week RCT**

Haleema Masood[1], Muhammad Anwar Awan[2]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan*

[2]*College of Ophthalmology & Allied Vision Sciences, King Edward Medical University, Mayo Hospital, Lahore, Pakistan*

**Purpose:** This trial aimed to compare the effectiveness of lipid-based artificial tear (Recuro) against aqueous-based artificial tear (Softeal) in managing Evaporative Dry Eye (EDE) symptoms.

**Methods**: This prospective, double-blind, randomized clinical trial (RCT) was conducted at Mughal Eye Hospital, Lahore. A sample size of 60 participants (30 per group) was determined using G*Power. Participants (18-55 years, both genders) were assigned 1:1 to Recuro or Softeal for 6 weeks using block randomization (block size 4) generated by Research Randomizer. Primary outcomes included OSDI (Ocular Surface Disease Index) and SANDE (Symptom Assessment in Dry Eye) scores; secondary outcomes were Tear Break-Up Time (TBUT), Schirmer's test, and Meibomian gland expression. Data were analyzed by SPSS-23.

**Results:** Paired Sample t-test for within-group analysis and independent t-test for between-group analysis. The Recuro group achieved a larger mean reduction in OSDI scores (50.50 vs 30.43, $p<0.001$) and SANDE scores (40.95 vs 32.63, $p=0.037$) compared to Softeal. Mean increases were observed in TBUT (4.75 vs 3.92, $p<0.001$), Schirmer's test (6.16 vs 4.08, $p<0.001$) and meibomian gland expression for both right eye (mean reduction: 5.48 vs 2.32, $p<0.001$) and left eye (mean reduction: 6.02 vs 2.26, $p<0.001$) for the Recuro group. Both treatments were well-tolerated.

**Conclusion:** Recuro artificial tears are significantly more effective than Softeal tears in improving subjective symptoms and objective signs of EDE.

**Keywords:** Artificial Tear, Dry Eye Disease, Evaporative Dry Eye

**OP19**

http://dx.doi.org/10.21653/tjpr.2026.OP19

**Application of Novel Food Processing Technologies for Tamarind (Tamarindus Indica): A Review on Functional and Technological Perspectives**

Seerat Saleem[1], Rashida Perveen[1]

[1]*Department of Human Nutrition and Food Technology, Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Tamarindus indica L. (tamarind) is a tropical fruit valued for its distinct sweet-sour flavour, high nutritional value, and therapeutic potential. Despite its bioactive properties, tamarind remains underutilized in industrial applications due to reliance on conventional processing methods such as boiling, hand pulping, and sun drying, which often compromise its nutritional and sensory quality. This review aims to explore the application of novel food processing technologies to enhance the functional and technological properties of tamarind-based products.

**Methods:** Recent literature on innovative food processing techniques such as cold plasma, pulsed electric fields, ohmic heating, high-pressure processing, microwave-assisted extraction, and ultrasound-assisted extraction was critically reviewed. Studies were analyzed for their impact on product quality, nutrient retention, bioactive compound preservation, and process efficiency, with emphasis on sustainability and commercial applicability.

**Results:** Emerging technologies demonstrated superior performance in maintaining thermolabile nutrients, improving extraction efficiency, extending shelf life, and reducing energy consumption compared to traditional processing methods. Enhanced functional attributes were observed in tamarind-based products such as concentrates, syrups, jams, and functional beverages. Furthermore, novel packaging and clean-label approaches were identified as key factors improving consumer acceptance and market potential.

**Conclusion:** Novel food processing technologies offer promising solutions for optimizing the nutritional, sensory, and functional properties of tamarind products while ensuring environmental sustainability. Future research should address bioavailability, techno-economic feasibility, and industrial scalability to establish tamarind as a functionally superior and scientifically validated ingredient in modern food systems.

**Keywords:** Tamarind, Functional Nutrition, Novel Food Processing, High-Pressure Processing, Antioxidant Foods, Clean-Label

**OP20**

http://dx.doi.org/10.21653/tjpr.2026.OP20

**The Effect of Mobilization with Movement versus Paraffin Wax Bath Therapy in Patients with Post-Traumatic Stiffness of the Knee Joint: A Randomized Clinical Trial**

Muhammad Khurram Shehzad[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To determine the effect of mobilization with movement (MWM) versus paraffin wax bath therapy in patients with post-traumatic stiffness of the knee joint.

**Methods:** Participants were divided into two groups: mobilization with movement (MWM) and paraffin wax bath therapy. Outcomes were assessed over 8 weeks using the Visual Analogue Scale (VAS) for pain, a goniometer for range of motion (ROM), and the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) for stiffness and function. Data were analysed using SPSS version 23. Paired sample t-tests were used for within-group analysis, and independent sample t-tests for between-group comparisons.

**Results:** In the paraffin wax bath therapy group, the mean difference in VAS was 1.486, and in WOMAC, it was 12.048. The mean knee joint ROM before treatment was 36.38±8.4° for flexion and –8.14±1.19° for extension, while after treatment it improved to 118.24±11.3° for flexion and –2.43±1.43° for extension. In the mobilization with the movement group, the mean difference in VAS was 1.6, and in WOMAC was 8.143. The mean ROM before treatment was 30.14±6.9° for flexion and –6.57±1.6° for extension, improving to 100.1±10.4° for flexion and –4.10±1.7° for extension after treatment. The differences were statistically significant ($p<0.05$).

**Conclusion:** Paraffin wax bath therapy group demonstrated superior outcomes in terms of pain reduction, functional ability, and improvement in range of motion.

**Keywords:** Paraffin Wax, Mobilization with Movement, Pain, Trauma, Stiffness

**OP21**

http://dx.doi.org/10.21653/tjpr.2026.OP21

**Effectiveness of Modified Walk Flex DB Splint in Children with Congenital Talipes Equinovarus (CTEV): A Prospective Cohort Study**

Mehmood Ahmed[1], Saad Saleem[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To assess the effectiveness of the modified Walk Flex DB splint in children with congenital talipes equinovarus (CTEV) through clinical outcomes and parental satisfaction.

**Methods:** A prospective quantitative study was conducted on 15 children diagnosed with CTEV. The Pirani Score was used to evaluate deformity severity before and after splint application, while parental satisfaction was assessed using the Client Satisfaction Questionnaire-8 (CSQ-8). Statistical analyses included paired sample t-tests and one-sample t-tests, conducted using standard statistical software.

**Results:** The mean Pirani Score decreased significantly by 1.42 ($p<0.001$), indicating substantial clinical improvement. Parental satisfaction was high, with the mean CSQ-8 score significantly exceeding the neutral value ($p<0.001$). No adverse effects or complications were reported during the study period.

**Conclusion:** The modified Walk Flex DB splint effectively maintains correction in children with CTEV and achieves high caregiver satisfaction. It enhances compliance and clinical outcomes compared to traditional post-correction bracing methods.

**Keywords:** CTEV, Clubfoot, Pirani Score, CSQ-8, Orthotic Splint, Parental Satisfaction, Post-Correction Bracing

**OP22**

http://dx.doi.org/10.21653/tjpr.2026.OP22

**Proof-Of-Concept Validation of an Objective Physical Frailty Index (OPFI) Using A Single-Task Mobility Test**

Anam Zafar[1], Saima Zahid[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University, Lahore.*

**Purpose:** Frailty is a multidimensional syndrome, with physical frailty being one of the most observable and modifiable components. This study aimed to develop an initial validation of an Objective Physical Frailty Index (OPFI) derived from motion analysis data collected during the Timed Up and Go (TUG) test. The index is designed to streamline frailty assessment into a brief test with future potential for portable, rapid screening applications.

**Methods:** Thirty-four community-dwelling older adults (≥60 years) were recruited using convenience sampling. Each participant performed the TUG test while gait and joint motion parameters were recorded using the Qualisys 3D motion capture system. Additional components of the Short Physical Performance Battery (SPPB), including chair stand and balance tests, were performed separately. A recent fall history (past 12 months) data was also collected. A composite frailty score was calculated from the captured motion parameters, generating a three-level classification: robust, pre-frail, or frail.

**Results:** The mean frailty score was 1.78 ± 1.74. OPFI showed a strong correlation with TUG performance ($r=0.710$, $p<0.001$), indicating alignment with functional mobility limitations. A non-significant but positive trend was observed between frailty and history of falls ($p=0.079$). Correlation with total SPPB score was weak ($r=–0.183$, $p=0.300$), may be due to ceiling effect.

**Conclusion:** These preliminary findings support the index's potential to capture clinically meaningful changes in mobility within a short, objective test. It may support future scalable, time-efficient screening models.

**Keywords:** Aging, Frailty, Gait Analysis, Mobility Limitation, Motion Capture

**OP23**

http://dx.doi.org/10.21653/tjpr.2026.OP23

**The Role of Dietary Patterns and Lifestyle in Gastrointestinal Problems among Individuals Aged 18 to 30 Years Living in Hostels, Lahore, Pakistan**

Isra Rasheed[1], Farah Javed[1]

[1]*Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** A healthy gastrointestinal tract is crucial for maintaining overall health. Gastrointestinal problems are common among young adults, particularly those living in hostels where dietary habits and lifestyle choices are often compromised. This study aimed to evaluate the effects of dietary patterns and lifestyle on gastrointestinal problems and to assess the knowledge, attitude, and practices related to nutrition and eating habits among hostel residents.

**Methods:** A cross-sectional study was conducted among 300 hostel residents aged 18–30 years. A structured questionnaire was used to collect data on demographic details, dietary habits, physical activity, and socioeconomic status. The data were analysed using GraphPad Prism version 7.

**Results:** The most prevalent gastrointestinal problems among hostel residents were abdominal pain (82.3% in males, 90.8% in females), constipation (80.5% in males, 85.2% in females), diarrhea (85.3% in males, 88.4% in females), heartburn (88.5% in males, 90.6% in females), and unintentional weight gain (82.5% in males, 87.4% in females). The main contributing factors included frequent consumption of fatty and spicy foods, inadequate water intake, eating late at night, skipping meals, and excessive caffeine use.

**Conclusion:** The findings indicate a strong association between gastrointestinal problems and unhealthy dietary patterns and lifestyle habits among hostel residents. Promoting nutritional awareness and lifestyle modification may help prevent these issues.

**Keywords:** Gastrointestinal Problems, Dietary Patterns, Lifestyle, Hostel Residents, Nutritional Status

**OP24**

http://dx.doi.org/10.21653/tjpr.2026.OP24

**Liver Imaging Reporting and Data System Categorization of Benign and Malignant Tumors on Contrast-Enhanced CT**

Muhammad Wajid[1], Farah Javed[1]

[1]*Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** Hepatocellular carcinoma (HCC) is one of the leading causes of cancer-related mortality worldwide, commonly developing in individuals with cirrhosis or chronic liver disease. This study aimed to evaluate the diagnostic accuracy of LI-RADS using contrast-enhanced computed tomography (CT) for differentiating benign and malignant liver lesions.

**Methods:** A cross-sectional analytical study was conducted on 132 patients with clinically suspected liver lesions who underwent triphasic contrast-enhanced computed tomography (CECT) at the radiology departments of THQ Hospitals, Khanpur and Sadiqabad. Statistical analysis was performed using SPSS, applying the Chi-square test to determine the correlation between LI-RADS categories and final diagnoses. Diagnostic accuracy was evaluated through sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV).

**Results:** A statistically significant correlation was found between LI-RADS categories and final diagnoses ($p < 0.001$). Lesions classified as LR-1 and LR-2 were entirely benign, whereas those categorized as LR-3 to LR-5 were predominantly malignant. The LI-RADS system demonstrated high diagnostic accuracy, with 100% sensitivity, 97.7% specificity, a PPV of 98.9%, and an NPV of 100%.

**Conclusion:** The use of LI-RADS categorization on contrast-enhanced CT imaging provides excellent diagnostic accuracy for distinguishing benign from malignant liver lesions. Incorporating LI-RADS into routine clinical practice enhances diagnostic consistency and supports effective treatment decision-making.

**Keywords:** Contrast-Enhanced Computed Tomography, Hepatocellular Carcinoma, Liver Imaging Reporting and Data System, Positive Predictive Value, Negative Predictive Value

**OP25**

http://dx.doi.org/10.21653/tjpr.2026.OP25

**Development of bioactive candy supplements using mixed seeds and dry fruits for emotional resilience and mental clarity**

Nida Saleem Baig[1], Farah Javed[1]

[1]*Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** Bioactive substances found in dried fruits and mixed seeds have shown potential benefits for supporting mental health. Nutrients such as polyphenols, omega-3 fatty acids, and essential minerals contribute to cognitive performance and emotional well-being. This study aimed to develop and refine bioactive candy supplements combining dried fruits and mixed seeds to enhance emotional resilience and mental clarity.

**Methods:** A developmental research design was employed to formulate bioactive candies with optimal nutritional balance, shelf stability, and sensory appeal. The product was evaluated for nutritional composition, consumer acceptability, and microbiological stability using SPSS version 21. Nutritional and microbiological analyses were conducted to ensure the product's stability, efficacy, and safety.

**Results:** Formulation L-1N exhibited the highest protein content (14.86%), while L-4N showed the highest carbohydrate content (63.98%) and antioxidant activity (56.98% DPPH inhibition). Polyphenol concentration was highest in L-5N (6.93 mg GAE/g). Microbial loads across all samples remained within acceptable limits for human consumption. Sensory evaluation confirmed high overall acceptability, with L-4N receiving the top scores for texture and taste.

**Conclusion:** The refined bioactive candy formulation demonstrated promising potential as a safe, nutrient-dense, and plant-based supplement to promote mental clarity and emotional resilience. It offers a natural, sugar-free alternative to conventional supplements, paving the way for further research into functional food innovations for mental well-being.

**Keywords:** Bioactive Candy, Functional Foods, Antioxidant Activity, Mental Clarity, Emotional Resilience

**OP26**

http://dx.doi.org/10.21653/tjpr.2026.OP26

**Development and Nutritional Characterization of Pumpkin Seeds and Kidney Beans-Based Bars for Protein-Energy Malnutrition in Children**

Sanam Zahra[1], Farah Javed[1]

[1]*Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** Protein-energy malnutrition (PEM) is characterized by unintentional weight loss and muscle wasting due to inadequate intake of protein and/or energy. It manifests as stunting (poor linear growth), wasting (acute weight loss), oedematous malnutrition (kwashiorkor), or underweight (low body mass index compared to healthy peers). This study aimed to develop and evaluate protein-enriched bars formulated from pumpkin seeds and kidney beans to address PEM in children.

**Methods:** Protein-enriched bars were prepared using varying formulations of pumpkin seeds and kidney beans. The bars were analysed for proximate composition (crude protein, crude fat, crude ash, moisture content, and nitrogen-free extract), phytochemical content, and microbial quality. Statistical analysis, including one-way ANOVA and mean comparison, was conducted to determine significance levels.

**Results:** An increase in kidney bean powder reduced the moisture, crude fat, and crude protein content of the bars, while crude fibre, ash, and NFE values increased. Total phenolic and flavonoid content showed an upward trend from T1 to T4, with DPPH values ranging from 4.83% to 7.96%. Mineral analysis revealed an increase in iron, zinc, calcium, and magnesium levels across formulations. Sensory evaluation indicated that bars from treatment T4 were the most acceptable.

**Conclusion:** Protein-enriched bars developed using pumpkin seeds and kidney beans demonstrated improved nutritional quality and consumer acceptability. These functional food bars hold promise as an effective dietary intervention for managing protein-energy malnutrition in children.

**Keywords:** Protein-Energy Malnutrition, Functional Food, Pumpkin Seeds, Kidney Beans, Nutritional Bars

**OP27**

http://dx.doi.org/10.21653/tjpr.2026.OP27

**Comparative efficacy of low-level laser and ultrasound therapy in reducing pain and disability among adults with text neck syndrome**

Danyal Ahmad[1], Hamza Zahid[2]

*[1]Department of Allied Health Sciences, The Superior University, Lahore, Pakistan*

*[2]Department of Physical Therapy, University of Management and Technology, Sialkot, Pakistan*

**Purpose:** To compare the efficacy of low-level laser therapy (LLLT) versus ultrasound therapy in reducing pain and disability among adults with text neck syndrome.

**Methods:** A randomized controlled trial was conducted at Bethania Hospital affiliated with the University of Management and Technology, Sialkot, from September 2024 to April 2025. Forty individuals aged 19 to 50 years (mean age: 34.6 years), including 60% females (n = 24) and 40% males (n = 16), diagnosed with text neck syndrome were randomly assigned to either the experimental group (LLLT) or the control group (ultrasound therapy). Both groups received a 3-week treatment regimen comprising six sessions, which included muscle energy techniques, postural advice, and stretching exercises. Follow-up assessments were conducted at 1, 2, and 3 months post-treatment. Outcome measures were the Neck Disability Index (NDI) and Visual Analogue Scale (VAS), evaluated pre- and post-intervention.

**Results:** The LLLT group showed a significant reduction in NDI scores, from 74.95 ± 5.09 to 48.45 ± 5.03 ($p < 0.001$), and in VAS scores, from 6.65 ± 0.87 to 2.90 ± 1.07 ($p < 0.001$). The ultrasound group also showed improvements, but the changes were less marked compared to the experimental group.

**Conclusion:** LLLT was more effective than ultrasound therapy in reducing pain and disability in adults with text neck syndrome. It may be considered a preferable treatment option in managing symptoms associated with excessive use of electronic devices.

**Keywords:** Adult, Laser Therapy, Low-Level, Neck Pain, Physical Therapy Modalities, Posture

**OP28**

http://dx.doi.org/10.21653/tjpr.2026.OP28

**Effects of a High-Energy Nutritional Protein-Based Bar on the Performance of Young Athletes**

Ayesha Munir[1], Farah Javed[1]

*[1]Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To evaluate the effects of a high-energy, protein-based nutritional bar on the performance of young athletes.

**Methods:** This study was conducted in Lahore using a non-probability convenience sampling technique. Participants were randomly assigned to two groups using computerized randomization. Group A received a normal diet, while Group B received a normal diet supplemented with protein bars. The study was completed over nine months, and data were analysed using SPSS version 25.

**Results:** The findings demonstrated positive effects of the protein bars on athletic performance. The developed bar contained 14.8% moisture, 22.8% protein, 10.8% fat, 4.9% fibre, 55.1% carbohydrates, and 4.5% ash, providing balanced macronutrients and minerals such as phosphorus (348 mg), potassium (248 mg), magnesium (85.5 mg), calcium (75 mg), iron (5 mg), and zinc (1.48 mg), with low sodium content (10.4 mg). Phytochemical analysis revealed strong antioxidant potential with 81.2 mg GAE/100 g phenolics, 2.01 mg GAE/100 g flavonoids, and 2.93 mg GAE/100 g DPPH activity. Sensory evaluation showed high scores for flavour (7.8), taste (7.6), texture (7.3), colour (7.5), and overall acceptability (7.8), with 60% rating the aroma as pleasant. A majority of participants (80%) indicated they would recommend the bar.

**Conclusion:** The high-energy, protein-based nutritional bar demonstrated excellent nutritional balance, antioxidant properties, and consumer acceptability. It serves as a functional, nutrient-dense snack suitable for active and health-conscious individuals, particularly young athletes seeking performance enhancement.

**Keywords:** Sports Nutrition, Athletes, Protein Bars

**OP29**

http://dx.doi.org/10.21653/tjpr.2026.OP29

**Evaluating the Impact of Increased Fiber Intake on Gastrointestinal Discomfort among Adults**

Azka Khalid[1], Farah Javed[1]

[1]*Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** A healthy gastrointestinal tract is essential for maintaining overall health and well-being. Despite improved living standards, gastrointestinal problems remain prevalent in developing countries like Pakistan due to poor dietary habits and unhealthy lifestyles. This study aimed to evaluate the gastrointestinal discomforts associated with increased dietary Fiber intake, specifically flatulence, bloating, and gas retention, among adults aged 18–24 years.

**Methods:** This cross-sectional study was conducted on 345 individuals attending various healthcare facilities in Lahore. A structured questionnaire was designed to collect data on demographic characteristics, dietary patterns, physical activity, and socioeconomic status. Data were analysed using SPSS.

**Results:** Among participants consuming high levels of dietary Fiber, 43.5% reported mild gastrointestinal symptoms, 38.0% experienced moderate symptoms, and 18.4% had severe symptoms. A p-value less than 0.05 indicated a significant relationship between increased Fiber intake and gastrointestinal discomfort, though symptoms tended to be short-term.

**Conclusion:**

Elevated dietary Fiber intake may lead to gastrointestinal conditions such as bloating, diarrhea, abdominal pain, nausea, and excessive gas. Although typically temporary, persistent symptoms may require dietary modification or medical attention to prevent complications.

**Keywords:** Gastrointestinal Discomfort, Lifestyle, Bloating, Flatulence

**OP30**

http://dx.doi.org/10.21653/tjpr.2026.OP30

**Effects of Progressive Resistance Training with and Without Core Stability Exercises in Fast Bowlers with Shoulder Injury**

Umair Mumtaz[1], Taimoor Hassan[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To investigate the effectiveness of progressive resistance training with and without core stability exercises on pain, shoulder range of motion, muscular endurance, and upper limb balance in cricket fast bowlers with shoulder injuries, emphasizing the role of kinetic chain integration for improved rehabilitation outcomes.

**Methods:** A randomized controlled trial (NCT07055685) was conducted across cricket clubs in Hyderabad and Jamshoro, Sindh, Pakistan. Forty-eight male fast bowlers with clinically diagnosed shoulder injuries were randomly assigned to two groups. Group A received a combination of upper limb progressive resistance training and core stability exercises, while Group B underwent resistance training alone. The intervention continued for a defined duration, and outcomes were measured using the Visual Analogue Scale (VAS), Shoulder Pain and Disability Index (SPADI), goniometric range of motion (ROM) assessment, hand dynamometry, Upper Quarter Y-Balance Test (UQYBT), and plank endurance test. Pre- and post-intervention data were analyzed for within- and between-group differences.

**Results:** Both groups demonstrated significant improvements in pain, function, and performance measures following the intervention. However, Group A showed significantly greater reductions in shoulder pain and disability, enhanced range of motion, improved core endurance, and superior upper limb dynamic balance compared to Group B ($p < 0.05$).

**Conclusion:** The integration of core stability exercises with progressive resistance training yields superior clinical outcomes compared to resistance training alone in the rehabilitation of shoulder injuries among cricket fast bowlers. A comprehensive, multi-dimensional rehabilitation approach addressing both local and global stability is recommended for optimal functional recovery.

**Keywords:** Core Stability, Cricketers, Progressive Resistance Training, Shoulder Injury

**OP31**

http://dx.doi.org/10.21653/tjpr.2026.OP31

**Prevalence of Sleep Quality among MBBS and DPT Students in Medical Colleges of Lahore**

Anam Hanif[1], Zinnia Akram[2]
[1]*Mars Institute of Health Sciences, Lahore, Pakistan*
[2]*Gosha Shifa Hospital, Lahore, Pakistan*

**Purpose:** Sleep plays a vital role in learning, memory consolidation, and overall health. Disturbances in sleep can have adverse effects on both physical and psychological well-being. Medical students are particularly vulnerable to poor sleep quality due to academic and clinical stress. This study aimed to determine the prevalence of poor sleep quality among MBBS and DPT students in medical colleges of Lahore.
**Methods:** A cross-sectional study was conducted on 282 medical students, including 141 MBBS and 141 DPT students from various medical institutes in Lahore. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI) questionnaire. Data were analyzed using SPSS version 22 to determine prevalence patterns and group differences.
**Results:** Among 282 participants aged 19–33 years, 117 (41.5%) were male and 165 (58.5%) were female. Overall, 241 (85.1%) students exhibited poor sleep quality, while only 41 (14.5%) demonstrated good sleep quality. Within subgroups, 130 (92.1%) of MBBS students had poor sleep quality compared to 111 (78.7%) of DPT students. The difference indicated that MBBS students experienced poorer sleep quality, likely due to higher academic and clinical workload.
**Conclusion:** The study concludes that poor sleep quality is highly prevalent among medical students, with MBBS students being more affected than DPT students. Persistent poor sleep may lead to reduced academic performance, psychomotor impairment, and hypersomnia, emphasizing the need for institutional measures to promote sleep hygiene and mental well-being.

**Keywords:** PSQI, Sleep Quality, Medical Students, Prevalence, Academic Stress

**OP32**

http://dx.doi.org/10.21653/tjpr.2026.OP32

**Application of Novel Food Processing Technologies for Tamarind (Tamarindus Indica): A Review on Functional and Technological Perspectives**

Seerat Saleem[1], Rashida Perveen[1]
[1]*Department of Human Nutrition and Food Technology, Faculty of Allied Health Sciences, Superior University, Lahore*

**Purpose:** To review and evaluate the application of novel food processing technologies for Tamarindus indica (tamarind), with emphasis on enhancing its functional, nutritional, and technological properties while addressing the limitations of conventional processing methods.
**Methods:** A comprehensive literature review was conducted using recent scientific studies on tamarind processing, focusing on both traditional and emerging technologies. The review examined the functional benefits, technological advancements, efficiency, and sustainability of novel methods such as cold plasma, pulsed electric fields, ohmic heating, high-pressure processing, microwave-assisted techniques, and ultrasound-assisted extraction. Studies evaluating quality retention, nutrient preservation, extraction efficiency, safety, and packaging innovations were systematically analyzed.
**Results:** Novel processing technologies demonstrated significant improvements over traditional techniques by enhancing extraction efficiency, preserving thermolabile bioactive compounds, reducing nutrient losses, and improving microbiological safety. These technologies also proved advantageous in maintaining energy efficiency and environmental sustainability. Applications highlighted include the development of value-added tamarind products such as concentrates, syrups, jams, dietary supplements, and functional beverages. Packaging innovations further improved product stability and consumer acceptance. However, research gaps persist in areas such as bioavailability enhancement, techno-economic evaluations, and optimization of processing parameters.
**Conclusion:** Emerging food processing technologies provide promising solutions for maximizing the functional and technological value of tamarind while addressing the shortcomings of conventional methods. Continued multidisciplinary research is needed to refine these technologies and support the integration of tamarind as a high-value, clean-label ingredient in modern health-focused food systems.

**Keywords:** Tamarind, Tamarindus Indica, Functional Nutrition, Novel Food Processing, High-Pressure Processing, Cold Plasma, Ultrasound Extraction, Clean-Label Foods, Antioxidant Foods

**OP33**

http://dx.doi.org/10.21653/tjpr.2026.OP33

**Evaluation of Central Corneal Thickness in Patients with Vernal Keratoconjunctivitis Using Topical Steroids**

Ishfaq Ahmad[1], Ummara Shafiq[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore*

**Purpose:** To assess the changes in central corneal thickness (CCT) in patients with vernal keratoconjunctivitis (VKC) using topical steroids.

**Methods:** A prospective observational comparative study was conducted over six months at Sarwar Eye Care Center, Lahore. Thirty-four VKC patients aged 5–25 years were recruited using purposive sampling. Baseline evaluations included history, symptom documentation, and CCT measurement via pachymetry. Topical steroids (dexamethasone/prednisolone) were prescribed based on disease severity. Follow-up CCT assessments were conducted at 1 and 3 months. VKC severity and treatment response were monitored throughout. Data were analyzed to assess CCT changes over time.

**Results:** Among 34 VKC patients (mean age: 16.26 years), the most common symptoms were itching and redness (29.4%). Both steroids improved VKC severity, with dexamethasone showing greater improvement (64.7%) compared to prednisolone (36.4%) by the third month. CCT decreased significantly in both groups; however, dexamethasone caused a more pronounced thinning (OD: –33.8 µm; OS: –30.12 µm) than prednisolone (OD: –5.29 µm; OS: –5.99 µm). Statistical analysis confirmed significant CCT changes over time ($p < 0.001$) within and between groups, indicating stronger anti-inflammatory efficacy of dexamethasone but a safer corneal profile with prednisolone.

**Conclusion:** Prednisolone provides safer corneal outcomes with moderate clinical improvement, while dexamethasone offers superior symptom control but induces greater corneal thinning.

**Keywords:** Vernal Keratoconjunctivitis, Central Corneal Thickness, Steroids, Dexamethasone, Prednisolone

**OP34**

http://dx.doi.org/10.21653/tjpr.2026.OP34

**Comparative Efficacy of Low-Dose Atropine versus Multifocal Spectacles in Slowing Myopia Progression in Children**

Muhammad Asif[1], Sidra Anwar[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** To compare the effectiveness of low-dose atropine (0.01%) and multifocal spectacles in reducing axial length elongation and spherical equivalent progression in children with myopia. Myopia in children is increasing worldwide, often progressing rapidly and leading to long-term visual complications. Early interventions, including pharmacological and optical approaches, are essential to slow progression and reduce the risk of future ocular diseases.

**Methods:** A six-month randomized controlled trial was conducted on 80 children (aged 6–15 years) with mild to severe myopia at Social Security Teaching Hospital, Multan Road, Lahore. Participants were randomly assigned to receive either multifocal spectacles or low-dose atropine (0.01%) eye drops. Baseline and follow-up measurements included axial length and spherical equivalent refraction. Data were analysed using SPSS v26.

**Results:** Seventy-four participants completed the study (37.8% females, 62.2% males; mean age: 10.68 ± 2.75 years). The multifocal group showed a significant increase in axial length at the second follow-up (25.36 ± 1.30 mm vs. 24.56 ± 1.50 mm, $p = 0.020$). Intragroup analysis revealed significant changes in axial length ($p < 0.001$) and refractive error ($p = 0.035$) in the multifocal group, whereas the atropine group showed no significant changes.

**Conclusion:** Low-dose atropine demonstrated superior efficacy in inhibiting axial elongation. Both interventions were well-tolerated, with no significant impact on refractive error or visual acuity. Future studies with larger samples and extended follow-up durations are recommended to optimize paediatric myopia management strategies.

**Keywords:** Myopia, Atropine, Spectacles, Axial Length, Children

**OP35**

http://dx.doi.org/10.21653/tjpr.2026.OP35

**Effects of Pelvic Clock vs Pelvic Tilt Exercises on Pregnant Women with Low Back Pain during Their Third Trimester**

Laraib Shabir[1], Raeesa[1]

*[1]Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** To evaluate the effect of pelvic clock exercises compared to pelvic tilt exercises in pregnant women with low back pain during their third trimester.

**Methods:** A randomized clinical trial registered in the Iranian Registry of Clinical Trials (IRCT20210730052018N1) was conducted with 26 pregnant women allocated into two groups. Both groups received hot pack treatment for 10 minutes. Group A performed pelvic clock exercises, while Group B performed pelvic tilt exercises, five sessions per week for four weeks. Pain and functional disability were assessed using the Visual Analogue Scale (VAS) and Oswestry Disability Index (ODI), respectively. Normality of data was confirmed using the Shapiro–Wilk test ($p > 0.05$). Paired t-tests were applied for within-group comparisons, and independent sample t-tests were used for between-group analyses.

**Results:** Both groups demonstrated statistically significant improvements in pain and functional disability ($p < 0.05$). However, participants performing pelvic clock exercises showed greater improvements compared to those performing pelvic tilt exercises.

**Conclusion:** Pelvic clock exercises are more effective than pelvic tilt exercises in reducing low back pain and improving functional ability among pregnant women during their third trimester.

**Keywords:** Low Back Pain, Pelvic Clock Exercise, Pelvic Tilt Exercise, Pregnancy

**OP36**

http://dx.doi.org/10.21653/tjpr.2026.OP36

**Effects of Dynamic Stretching Versus Neural Mobilization Techniques in Early Middle-Aged Patients with Radicular Low Back Pain**

Muhammad Talha[1], Rubab Naqvi[1]

*[1]Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** To know the effects of dynamic stretching versus neural mobilization techniques in early middle-aged patients with radicular low back pain.

**Methods:** A randomized clinical trial was conducted involving early middle-aged patients diagnosed with RLBP at Suleman Roshan Medical College Hospital, Sindh. Participants were randomly assigned to two groups: Group 1 received dynamic stretching, and Group 2 received neural mobilization. Pain intensity (Numeric Pain Rating Scale), functional disability (Roland–Morris Disability Questionnaire), range of motion (goniometer), and pelvic inclination (inclinometer) were measured pre- and post-intervention.

**Results:** Both interventions significantly improved all clinical outcomes ($p < 0.05$). Dynamic stretching led to greater improvements in spinal mobility, including flexion ($47.64 \pm 1.82$ vs. $40.42 \pm 4.79$), same-side bending ($19.21 \pm 1.05$ vs. $16.78 \pm 2.99$), and rotational movement (mean rank: 20.64 vs. 8.36). Neural mobilization showed slightly better reductions in disability scores (RMDQ: $13.14 \pm 2.28$ vs. $14.64 \pm 2.06$), though pain levels were higher post-treatment (NPRS mean rank: 19.00 vs. 10.00). Both groups exhibited improved pelvic inclination, with dynamic stretching demonstrating slightly superior alignment restoration.

**Conclusion:** Dynamic stretching offers superior gains in range of motion and pelvic alignment, whereas neural mobilization provides modest advantages in reducing disability. Tailored interventions based on patient-specific needs are recommended for optimal outcomes.

**Keywords:** Dynamic Stretching, Low Back Pain, Neural Mobilization, Pelvic Inclination

**OP37**

http://dx.doi.org/10.21653/tjpr.2026.OP37

**Comparison of Deep Neck Flexors Training and Muscle Energy Technique on Cervicogenic Headache**

Hira Naseem[1], Madiha Ali[1]

*[1]Riphah International University, Faculty of Rehabilitation & Allied Health Sciences, Department of Physiotherapy, Islamabad, Pakistan*

**Purpose:** Cervicogenic headache involves both Weak deep neck flexors and tight cervical extensors. Deep Neck Flexor training improves motor control and Muscle Energy Technique facilitates muscle relaxation and mobility. Both dysfunctions cause pain, limited motion, poor posture. This study compared that which intervention produces better outcomes

**Methods:** A randomized controlled trial was conducted at the Satellite Clinic Rawalpindi with 34 participants (aged 20–50 years), randomly allocated into two groups through sealed envelope method. Group B received post-isometric relaxation, and Group A received deep neck flexor training for 12 sessions over 4 weeks. Outcomes were assessed using the NPRS for pain, Inclinometer for ROM and Goniometer for craniovertebral angle. Data was analyzed with SPSS version 25. This trial was registered at ClinicalTrials.gov (Identifier: NCT05754931).

**Results:** In Group A, the mean age was 32.20 ± 10.00 and in Group B, it was 29.80 ± 9.64 years. Post-treatment, significant differences ($p < 0.050$) were found in NPRS, craniovertebral angle and cervical ROM, except right ($p = 0.740$) and left ($p = 0.440$) rotation. Group A (DNF) showed more pain reduction on NPRS (mean difference = 3.88, $p < 0.050$), while Group B (MET) showed more improvements in cervical range of motion ($p < 0.050$) and craniovertebral angle (mean difference = 10.82°,$p < 0.050$).

**Conclusion:** This study concludes that both DNF training and MET were effective in managing CGH. While DNF training demonstrated better outcomes in terms of pain reduction and MET showed significant result in increasing cervical range of motion and CVA

**Keywords:** Cervicogenic Headache, Pain, Range of Motion, Posture

**OP38**

http://dx.doi.org/10.21653/tjpr.2026.OP38

**Effects of Hip Abductor and Knee Strengthening Exercises versus Knee Strengthening Exercises Alone on Muscle Strength and Functional Disability in Patients with Knee Osteoarthritis: A Systematic Review**

Samrood Akram[1], Zohaib Shahid[2]

*[1]Assistant Professor, Riphah International University, Lahore, Pakistan; Ph.D. Scholar, Superior University, Lahore, Pakistan*

*[2]Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** To compare the effects of hip abductor and knee strengthening exercises versus knee strengthening exercises alone on muscle strength and functional disability in patients with knee osteoarthritis (OA).

**Methods:** This systematic review followed the PRISMA guidelines. PubMed, Cochrane, and PEDro databases were searched for randomized clinical trials (RCTs) that met the inclusion criteria. The treatment group received hip abductor and knee strengthening exercises, while the comparator group received knee strengthening exercises alone. Muscle strength was measured using isometric and isokinetic strength tests, and functional disability was assessed using WOMAC and KOOS scales. Risk of bias was evaluated using the PEDro scale, and data were analyzed based on pre-post mean differences (MD).

**Results:** A total of 62 studies were identified, of which 7 RCTs (PEDro score 6–7) met the inclusion criteria. The combined sample included 349 patients aged 40–81 years, with a BMI range of 23.39–30.75 kg/m². The cohort comprised 23.2% males and 76.8% females and included Kellgren–Lawrence grades I–IV. All studies reported higher MD values for muscle strength in the treatment group. Results for functional disability were heterogeneous, showing effectiveness in both groups.

**Conclusion:** The combined hip abductor and knee strengthening protocol produced greater overall benefits. The review was limited by heterogeneity in OA severity among included participants.

**Keywords:** Disability, Exercise, Knee Joint, Muscle Strength, Osteoarthritis, Pain

**OP39**

http://dx.doi.org/10.21653/tjpr.2026.OP39

**Effects of Optimized Blinking Training on Ocular Performance Metrics in Individuals with Computer Vision Syndrome**

Muhammad Aleem Sabir Khan[1], Tehreem Mukhtar[1]
[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** To evaluate the effects of optimized blinking training (OBT) on ocular performance metrics in individuals with computer vision syndrome (CVS).
**Methods:** A double-blind, randomized controlled trial (NCT06913816) was conducted at The Ramzan Eye Care and Optix. Fifty-two individuals diagnosed with CVS participated (17 females, 35 males). Participants were randomly assigned to two groups: the experimental group received OBT, while the control group did not. Ocular performance was assessed using the Visual Function Index Questionnaire (VFIQ) and the Computer Vision Syndrome Questionnaire (CVS-Q) at baseline, mid-treatment, and post-treatment. Data were analyzed using the Kruskal–Wallis and Friedman tests in SPSS version 27.
**Results:** The mean age of participants was 28.63 ± 6.93 years. At baseline, there were no significant group differences in visual function or CVS scores ($p > 0.05$). Mid-treatment, the experimental group showed significant improvements in visual function ($p = 0.05$) and CVS scores ($p = 0.050$) compared to controls. Post-treatment, the experimental group achieved marked gains in visual function (mean = 62.09 ± 6.73, $p = 0.01$) and significant reductions in CVS symptoms (mean = 6.09 ± 3.28, $p = 0.003$), while improvements in the control group were smaller and less significant. Within-group analysis confirmed progressive, statistically significant improvements over time in the experimental group ($p < 0.05$).
**Conclusion:** Optimized blinking training effectively improved visual function and reduced CVS symptoms. It may serve as a safe, non-pharmacological approach to managing digital eye strain among individuals with prolonged screen exposure.

**Keywords:** Blinking, Computer Vision Syndrome, Ocular, Visual Field, Visual Acuity

**OP40**

http://dx.doi.org/10.21653/tjpr.2026.OP40

**Recombinant Cloning of the Capsid Gene from Foot-And-Mouth Disease Virus in Pichia Pastoris for Vaccine Development**

Hafiz Ayaz Ahmad[1], Mazhar Munir[1]
[1]*Department of Physical Therapy and Rehabilitation Sciences, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** Foot-and-mouth disease (FMD) is a highly contagious and economically devastating viral infection of livestock caused by the foot-and-mouth disease virus (FMDV), which has seven distinct serotypes. Conventional inactivated whole-virus vaccines pose biosafety risks due to the potential escape of live virus during production. This study aimed to clone the capsid gene from a local FMDV isolate into the Pichia pastoris expression system to support the development of a safer recombinant vaccine.
**Methods:** A consensus capsid sequence was generated from 177 sequences retrieved from the National Centre for Biotechnology Information and aligned with reference sequences using the Basic Local Alignment Search Tool. Viral ribonucleic acid (RNA) from the local isolate was reverse-transcribed to complementary DNA and amplified using specific primers. Polymerase chain reaction (PCR) products were confirmed through gel electrophoresis and sequencing. The codon-optimized gene was synthesized, cloned into the Pichia pastoris vector pPICZα-A, and transformed into Escherichia coli Top10F', followed by transfer to Pichia pastoris for expression.
**Results:** Successful amplification and sequencing confirmed accurate retrieval of the target capsid gene. The gene was efficiently cloned into the pPICZα-A vector, and positive recombinant clones were obtained in E. coli Top10F'. The construct was subsequently transformed into Pichia pastoris for recombinant protein expression.
**Conclusion:** A recombinant cloning strategy for the capsid gene of local FMDV in Pichia pastoris was successfully established. This construct lays the foundation for large-scale production of recombinant capsid protein as a candidate antigen, offering a promising route toward a safer and more effective FMD vaccine.

**Keywords:** FMD, Pichia Pastoris, PCR

**OP41**

http://dx.doi.org/10.21653/tjpr.2026.OP41

**Comparison of Airway Management Devices Laryngeal Mask Airway versus Endotracheal Tube during Respiratory Emergencies and Their Outcome**

Abid Ali[1], Tehmina Tariq[2]

[1]*Department of Emergency and Intensive Care Technology, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan*

[2]*Department of Medical Laboratory Technology, Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** To compare the airway management devices, the laryngeal mask airway versus the endotracheal tube, during respiratory emergencies and their outcome.

**Objective:** To compare the efficacy of LMA and ETT in maintaining airway patency during respiratory emergencies, assess complication rates, and evaluate patient outcomes.

**Methods:** A six-month cross-sectional study was conducted at Maqsood Medical Complex Hospital, Peshawar, involving 150 adult patients requiring airway management. Data on demographics, device type, insertion attempts, complications, and clinician satisfaction were collected via structured questionnaires. Statistical analysis was performed using SPSS version 27 with chi-square tests.

**Results:** Of 150 patients, 55.3% were male, mostly aged 33–50 years. LMA and ETT were used in 50.7% and 49.3% of cases, respectively, with choice influenced by operator preference (46.7%) and device availability (42.7%). First-attempt success was 81.3%, though 26.0% encountered anatomical insertion difficulties. Adequate oxygenation and ventilation were achieved in 72.7%. Complications occurred in 31.3%, primarily hypoxia (16.0%) and aspiration (6.7%). Device replacement was required in 26.0% of cases. The type of device used was significantly associated with complication rates ($\chi^2$ = 32.618, $p < 0.001$). Survival to discharge was 97.3%, and 71.4% of clinicians reported satisfaction with outcomes.

**Conclusion:** Both LMA and ETT were effective for airway management, though each had distinct complication profiles. Operator expertise, appropriate device selection, and continuous training are essential to improve patient safety in respiratory emergencies.

**Keywords:** Endotracheal Tube, Laryngeal Mask Airway, Respiratory Emergency, Intubation

**OP42**

http://dx.doi.org/10.21653/tjpr.2026.OP42

**Determination of Needle Stick Injury Regarding Bloodborne Pathogens among Healthcare Workers at Tertiary Care Hospital Dera Ismail Khan**

Fayyaz Muhammad Khan[1], Tehmina Tariq[2]

[1]*The Superior University Lahore, Faculty of Allied Health Sciences, Lahore, Pakistan*

[2]*The Superior University Lahore, Faculty of Allied Health Sciences, Lahore, Pakistan*

**Purpose:** Accidental needle stick injuries (NSIs) are a major occupational hazard, placing healthcare workers (HCWs) at high risk of exposure to bloodborne pathogens (BBPs) such as HIV, HBV, and HCV, particularly in surgical and patient care environments. This study assessed the prevalence of NSIs and evaluated HCWs' knowledge, training, vaccination status, and preventive practices related to BBPs in a tertiary care hospital in Dera Ismail Khan.

**Methods:** A descriptive cross-sectional study was conducted among 280 HCWs, including doctors, nurses, technologists, paramedics, and support staff with direct exposure to blood or body fluids. Data were collected using a structured questionnaire and analyzed using SPSS version 25.0. Descriptive and inferential analyses were performed, with statistical significance set at $p < 0.05$.

**Results:** Of the respondents, 34.3% reported experiencing an NSI or sharp injury within the past 12 months, yet only 24.0% initiated post-exposure prophylaxis. Although 75.7% demonstrated awareness of BBPs, only 70.7% had received formal infection control training and 66.1% consented to routine blood screening. Regular use of personal protective equipment (PPE) was reported by 80.0% of participants, while HBV vaccination coverage reached 65.1%. A significant association was observed between years of professional experience and infection control knowledge ($p = 0.031$), whereas no correlation was found between training and NSI frequency ($p = 0.425$).

**Conclusion:** Despite moderate awareness and training levels, NSIs remain prevalent among HCWs, indicating gaps in preventive practice and institutional enforcement. Comprehensive infection control protocols, enhanced HBV vaccination coverage, and continuous surveillance systems are urgently needed to mitigate occupational exposure risks.

**Keywords:** Bloodborne Pathogens, Healthcare Workers, Needle Stick Injury, Occupational Exposure, Infection Control, Hepatitis B Virus, Hepatitis C Virus, Human Immunodeficiency Virus

**OP43**

http://dx.doi.org/10.21653/tjpr.2026.OP43

**Potential of Silmitasertib in Targeting CK2 Mediated Phosphorylation for SARS-Cov-2 Inhibition**

Zubair Sharif[1], Summaiya Vakeel[2]

[1]*Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

[2]*Department of Medical Laboratory Technology*

**Purpose:** This study aimed to investigate the antiviral potential of silmitasertib, a casein kinase 2 (CK2) inhibitor, against SARS-CoV-2 by mapping phosphorylation networks and nucleocapsid protein–CK2 interactions using in silico analyses.

**Methods:** Protein–protein interaction data were extracted from the STRING database and analyzed using artificial intelligence and machine learning–based kinase profiling. CK2-associated phosphorylation sites within SARS-CoV-2 structural proteins were identified. Silmitasertib was evaluated as a potential CK2 inhibitor through virtual docking and kinase–ligand interaction modeling, supported by comparison with established antiviral compound datasets. Network topology analysis was performed to determine CK2's centrality within host–virus signaling pathways.

**Results:** Docking and interaction modeling identified CK2 as a key phosphorylation mediator exploited by SARS-CoV-2 for nucleocapsid protein modification and viral egress. Silmitasertib demonstrated strong predicted binding affinity for CK2 catalytic domains, yielding favorable docking scores indicative of potent inhibitory capacity. Network analysis confirmed CK2's central hub role within viral replication signaling pathways. The drug's prior clinical evaluation for oncology supports its repurposing feasibility for COVID-19.

**Conclusion:** In silico kinase network analysis highlights silmitasertib as a promising repurposed therapeutic candidate for COVID-19 by targeting host phosphorylation pathways crucial to SARS-CoV-2 replication. Its established pharmacological profile warrants further computational–experimental validation and translational research.

**Keywords:** Antiviral Agents, CK2 Inhibitor, Silmitasertib, SARS-CoV-2, Phosphorylation Networks, Drug Repurposing

**OP44**

http://dx.doi.org/10.21653/tjpr.2026.OP44

**Impact of Personality Traits on Different Phases of Menstrual Cycle of Young Girls and Their Association with Pain, Stress, Sleep Patterns, and Physical Activity**

Hafiza Anaba Iftikhar[1], Luqman Ali[1]

[1]*Superior University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, TRNC*

**Purpose:** Menstrual health affects physical, psychological, and social well-being. Personality psychology identifies five major traits-neuroticism, agreeableness, openness, conscientiousness, and extraversion-+that may influence menstrual experiences. This study aimed to compare pain, premenstrual symptoms, perceived stress, sleep disturbances, and physical activity across personality traits in young females before and during menstruation.

**Methods:** A comparative analytical study was conducted on 103 female participants; with sample size estimated using the WHO formula. Standardized tools included the Big Five Inventory (BFI) for personality assessment, Premenstrual Symptoms Screening Tool (PMSS), McGill Pain Index and Visual Analog Scale (VAS) for pain, WaLIDD score for dysmenorrhea, Perceived Stress Scale (PSS), International Physical Activity Questionnaire (IPAQ), and Pittsburgh Sleep Quality Index (PSQI). Data were analyzed for within- and between-phase differences ($p < 0.05$).

**Results:** Mean age and BMI were 21.80 ± 2.24 years and 21.19 ± 3.83 kg/m², respectively. VAS increased from 5.44 ± 2.73 pre-menstrual to 6.00 ± 2.42 during menstruation ($p = 0.011$), and WaLIDD scores from 5.67 ± 2.09 to 6.52 ± 2.00 ($p < 0.001$). Physical activity declined significantly ($p = 0.007$), while stress (PSS) and sleep quality (PSQI) showed no significant changes. Neuroticism was associated with the highest perceived stress and dysmenorrhea, whereas agreeableness exhibited lower stress and higher physical activity levels.

**Conclusion:** Personality traits moderately influence menstrual-phase variations, with neuroticism linked to heightened pain and emotional distress, and agreeableness associated with adaptive coping and better physical activity maintenance.

**Keywords:** Dysmenorrhea, Menstrual Cycle, Personality Traits, Physical Activity, Sleep

**OP45**

http://dx.doi.org/10.21653/tjpr.2026.OP45

**Frequency of Portal Hypertension among Patients with Cirrhotic Liver with Ultrasound**

Muhammad Jalil[1], Rashida Perveen[1]

[1]*Faculty of Allied Health Sciences, The Superior University Lahore, Pakistan*

**Purpose:** Portal hypertension is a major complication of liver cirrhosis, predisposing patients to variceal bleeding, ascites, and splenomegaly. While hepatic venous pressure gradient (HVPG) measurement is the diagnostic gold standard, it remains invasive and impractical in low-resource settings. This study aimed to determine the frequency of portal hypertension among cirrhotic patients using ultrasound as a non-invasive diagnostic tool.

**Methods:** A cross-sectional study was conducted on 150 patients with liver cirrhosis at Sheikh Zayed Medical College and Hospital, Rahim Yar Khan. Abdominal ultrasound with Doppler imaging was performed to assess portal vein diameter, flow velocity, splenomegaly, ascites, and collateral circulation. Data were analyzed using SPSS version 25, with chi-square and correlation tests applied to determine associations.

**Results:** Among 150 participants, 86.7% demonstrated sonographic evidence of portal hypertension. Splenomegaly was significantly associated with portal hypertension ($p < 0.001$), while liver texture changes were not statistically significant. No correlation was observed between portal vein diameter and flow velocity ($r = –0.007$, $p = 0.930$). Additional findings included ascites (71.3%), recanalized paraumbilical veins (38%), and reversed portal flow (16%).

**Conclusion:** Ultrasound, particularly with Doppler evaluation, serves as an effective, non-invasive method for detecting portal hypertension in cirrhotic patients. Splenomegaly and portosystemic collaterals are key sonographic indicators. Given its accessibility and diagnostic accuracy, ultrasound is invaluable for early detection and management of portal hypertension, especially in resource-limited settings.

**Keywords:** Portal Hypertension, Liver Cirrhosis, Doppler Ultrasound, Splenomegaly, Portal Vein Diameter, Ascites

**OP46**

http://dx.doi.org/10.21653/tjpr.2026.OP46

**Investigating the Relationship between Uterine and Ovarian Artery Indices and Follicle in PCOS through Color Doppler**

Abrar Habib[1], Tahira Batool[2]

[1]*Department of Diagnostic Ultrasound Superior University Lahore*

[2]*Faculty of Allied Health Sciences Superior University Lahore*

**Purpose:** Polycystic ovary syndrome (PCOS) is a prevalent endocrine disorder associated with ovarian dysfunction and abnormal vascular hemodynamics. This study aimed to investigate the relationship between uterine and ovarian artery Doppler indices—pulsatility index (PI) and resistance index (RI)—and ovarian follicle count in women with PCOS using color Doppler ultrasonography.

**Methods:** A cross-sectional study was conducted on 50 women with PCOS (aged 18–35 years) and 30 age-matched healthy controls. Transvaginal color Doppler ultrasonography was performed during the early follicular phase (days 3–5 of the menstrual cycle) to measure PI and RI of uterine and ovarian arteries and determine the number of antral follicles (2–9 mm). PCOS diagnosis was based on the Rotterdam criteria. Data were analyzed using independent t-tests for between-group comparisons and Pearson correlation to assess relationships, with $p < 0.05$ considered statistically significant.

**Results:** PCOS patients showed significantly higher uterine artery PI ($3.81 \pm 1.42$) and RI ($0.72 \pm 0.09$) compared to controls ($2.09 \pm 1.06$ and $0.58 \pm 0.07$; $p < 0.001$). Conversely, ovarian artery PI ($1.20 \pm 0.30$) and RI ($0.52 \pm 0.08$) were lower in PCOS versus controls ($2.10 \pm 0.50$ and $0.68 \pm 0.10$; $p < 0.001$). Mean follicle count was significantly higher in PCOS ($15.20 \pm 5.10$ vs. $6.50 \pm 2.30$; $p < 0.001$). A negative correlation was found between ovarian artery PI and follicle count ($r = –0.635$, $p = 0.002$).

**Conclusion:** PCOS is associated with altered uterine and ovarian blood flow, characterized by increased uterine and decreased ovarian vascular resistance. The inverse relationship between ovarian Doppler indices and follicle count highlights their potential as noninvasive markers for evaluating ovarian morphology and vascular changes in PCOS.

**Keywords:** Color Doppler Ultrasonography, Uterine Artery

**OP47**

http://dx.doi.org/10.21653/tjpr.2026.OP47

**Effects of Kinesiology Taping and Yoga Therapy on Postural Correction for Sacroiliac Joint Dysfunction in Powerlifters**

Reffat Nizam[1], Syed Muhammad Aun[1]

[1]*Superior University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, TRNC*

**Purpose:** To evaluate the effects of kinesiology taping and yoga therapy on postural correction, pain reduction, and muscle activation in powerlifters with sacroiliac joint (SIJ) dysfunction.

**Methods:** A randomized controlled trial was conducted on 40 competitive weightlifters (28 males, 12 females) diagnosed with SIJ dysfunction. Participants were randomly assigned to two groups (n = 20 each). Group A received kinesiology taping in a belt-like pattern around the SIJ using I- and Y-strips (15–25% tension), replaced every 3–4 days for three weeks. Group B underwent supervised yoga therapy sessions focusing on postural alignment, pelvic stability, and flexibility (Tadasana, Bhujangasana, Setu Bandhasana), three times weekly for three weeks. All participants received standard warm-up, stretching, and pelvic tilt education. Pain was measured using the Visual Analog Scale (VAS), muscle activation via surface electromyography (%MVC), and functional mobility using a standardized mobility score. Data were analyzed using paired and independent t-tests with $p < 0.05$ considered significant.

**Results:** Both groups showed significant within-group improvements in all parameters ($p < 0.001$). Between-group comparison revealed greater improvement in the kinesiology taping group, including lower post-intervention VAS scores (3.20 vs. 4.10; $p = 0.003$), higher muscle activation (71.8% vs. 66.7%; $p = 0.006$), and superior mobility (60.3 vs. 55.1; $p = 0.002$).

**Conclusion:** Kinesiology taping demonstrated superior short-term benefits over yoga therapy for pain relief, muscle activation, and functional mobility in SIJ dysfunction among powerlifters. A combined approach integrating taping for immediate relief and yoga for long-term postural correction may enhance rehabilitation outcomes.

**Keywords:** Sacroiliac Joint Dysfunction, Kinesiology Taping, Yoga Therapy, Pain Management, Powerlifting Injuries.

**OP48**

http://dx.doi.org/10.21653/tjpr.2026.OP48

**Transformative AI Approaches in Amblyopia Care: A Scoping Review.**

Ubaid Ullah Jan[1], Saima Riaz [1]

[1]*Faculty of Allied Health Sciences, Superior University Lahore*

**Purpose:** To evaluate the application of artificial intelligence (AI) in amblyopia care, focusing on its role in improving diagnosis, personalizing therapy, enhancing adherence, predicting clinical outcomes, and supporting progress toward Sustainable Development Goals (SDGs).

**Methods:** A scoping review was conducted following PRISMA-ScR guidelines. PubMed, Scopus, and Web of Science were searched for studies published between 2018 and 2025 using keywords such as “amblyopia,” “artificial intelligence,” “machine learning,” “deep learning,” “virtual reality,” and “augmented reality.” Eligible studies included AI-based tools for amblyopia screening, diagnosis, treatment, monitoring, or prognosis. Extracted data on AI techniques, applications, benefits, and limitations were synthesized qualitatively.

**Results:** The review identified several AI-enabled innovations, including smartphone-based vision screening tools, gamified binocular therapy platforms, virtual reality rehabilitation systems, adherence-tracking applications, and predictive models achieving AUC values up to 0.91 for recurrence risk. These technologies have demonstrated improved patient engagement, personalized treatment pathways, and expanded access to care, particularly in underserved regions. Statistically significant improvements in visual acuity and treatment adherence were reported ($p < 0.050$). Key challenges include limited pediatric datasets, data privacy concerns, device costs, and difficulties integrating AI tools into clinical workflows.

**Conclusion:** Artificial intelligence holds strong promise for transforming amblyopia management by enabling early detection, customized therapy, and remote monitoring. However, successful large-scale adoption will require robust clinical validation, ethical safeguards, and equitable integration within telehealth systems to ensure accessibility and sustainability.

**Keywords:** Amblyopia, Artificial Intelligence, Deep Learning, Telemedicine, Virtual Reality, Pediatric Vision Care.

**OP49**

http://dx.doi.org/10.21653/tjpr.2026.OP49

**AI Enabled Prediction of Non-Communicable Diseases in Postmenopausal Women: A Strategic Innovation to Advance Sustainable Development Goals 3 And 5**

Ayesha Bashir[1], Saima Riaz[2]

*[1]The Islamia University of Bahawalpur, Faculty of Medicine and Allied Health Sciences, Department of Physical Therapy, Bahawalpur, Pakistan*

*[2]Superior University Lahore, Faculty of Allied Health Sciences, Department of Physical Therapy and Rehabilitation Sciences, Lahore, Pakistan*

**Purpose:** To review the role of artificial intelligence (AI) in the early and accurate prediction of non-communicable diseases (NCDs) among postmenopausal women and to evaluate its potential contribution toward achieving Sustainable Development Goal 3 (Good Health and Well-Being) and Sustainable Development Goal 5 (Gender Equality).

**Methods:** A narrative review was conducted on English-language studies published between 2010 and 2025 examining AI-based innovations for early detection of NCDs in postmenopausal women. Databases searched included PubMed, Scopus, IEEE Xplore, and Web of Science. Extracted data focused on AI diagnostic techniques, predictive algorithms, clinical outcomes, and implications for gender equity in healthcare access and quality.

**Results:** AI technologies demonstrated substantial advancements in early detection and risk prediction of major NCDs in postmenopausal women. Machine learning models improved diabetes prediction, addressing a documented 55% increased risk in this population. AI-enhanced cancer diagnostics reduced unnecessary biopsies by up to 40% and improved detection specificity. In cardiovascular diseases, AI enabled earlier hypertension prediction and anomaly detection 6–12 months prior to traditional methods. Wearable AI tools and digital screening systems showed 76% accuracy in predicting osteoporosis-related fracture risk. Despite these achievements, significant challenges remain, including algorithmic bias, limited accessibility, low digital literacy, and resource constraints in underserved regions.

**Conclusion:** AI offers a transformative opportunity to advance preventive healthcare for postmenopausal women by improving diagnostic accuracy, reducing delays, and supporting gender-equitable health systems. Realizing its full potential requires inclusive policy development, gender-sensitive datasets, and ethical, culturally responsive implementation strategies aligned with SDGs 3 and 5.

**Keywords:** Artificial Intelligence, Postmenopause, Non-Communicable Diseases, Sustainable Development Goals, Predictive Healthcare, Women's Health.

**OP50**

http://dx.doi.org/10.21653/tjpr.2026.OP50

**Comparative effects of Ischemic Compression with and Without Muscle Energy Technique on Cervical contra-lateral Lateral Flexion in Upper Trapezius Trigger Points**

Syeda Khadija Kazmi[1], Hamza Zahid[2]

*[1]Department of Allied Health Sciences, The Superior University, Lahore, Pakistan*

*[2]Department of Physical Therapy, University of Management and Technology, Sialkot, Pakistan*

**Purpose**: Poor ergonomics can lead to trigger points in the trapezius, a major cause of non-articular musculoskeletal complaints. These trigger points may result in neck pain, restricted movement, tenderness, referred pain, and occasional autonomic changes. Our study assessed the comparative analysis of ischemic compression and its combination with muscle energy technique on contral-lateral cervical lateral flexion in patients having upper trapezius trigger Points

**Methods:** A randomized clinical trial was conducted at Smart Poly Clinic Sialkot and was completed in 6 months using non probability purposive sampling technique with 60 participants aged 18 to 45 were randomly divided into two groups. 1st group received ischemic compression while 2nd received ischemic compression combined with muscle energy technique for 4 weeks. Cervical Contra-lateral Lateral flexion range of cervical spine was recorded at baseline, 2nd and 4th weeks with total of 12 sessions.

**Results:** patients those who received muscle energy technique with ischemic compression showed contra-lateral lateral flexion 28.98±1.08 to 45.61±0.55. The Ischemic compression group also showed improvement, whereas the changes were less marked.

**Conclusion:** Ischemic compression with muscle energy technique increased cervical flexion, as compared to ischemic compression alone on the trigger points after 4 weeks of treatment and shall be considered as preferable option.

**Keywords:** Trapezius**,** Trigger Points, Ischemic Compression, Muscle Energy Technique, Range of Motion, Neck.

**OP51**

http://dx.doi.org/10.21653/tjpr.2026.OP51

**Correlation of Pain and Functional Limitations among Individuals with Ankle Sprain**

Ghulam Zahra Malik[1], Hira Khalil[2]

[1]*The Superior University, Faculty of Allied Health Sciences, Department of Rehabilitation, Lahore, Pakistan*

[2]*University of Portsmouth, School of Sport, Health and Exercise Science, Portsmouth, United Kingdom*

**Purpose:** This study examined the correlation between pain intensity and functional limitations in individuals with lateral ankle sprain and evaluated the impact of a mobile health–based rehabilitation program.

**Methods:** A randomized controlled trial was conducted on 100 participants aged 18–65 years diagnosed with Grade I or II lateral ankle sprains. Pain intensity was assessed using the Numeric Pain Rating Scale (NPRS), and functional performance was evaluated with the Foot and Ankle Ability Measure (FAAM). Participants were randomly assigned to either conventional rehabilitation or a six-week home-based program delivered via the Move 360 mobile health application. Data were analyzed using IBM SPSS version 25. The Kolmogorov–Smirnov test was applied for normality, Mann–Whitney U and Wilcoxon signed-rank tests for group comparisons, and Pearson's correlation to assess the relationship between pain and function.

**Results:** The mean age of participants was 39.6 ± 14.6 years; 51% were male and 49% female. Following intervention, the app-based group demonstrated significant improvement in FAAM scores (67.51 ± 15.96 to 82.31 ± 30.80; $p < 0.001$) and a marked reduction in NPRS scores (8.06 ± 1.36 to 4.40 ± 1.29; $p < 0.001$). Pain and functional ability exhibited a strong inverse correlation ($r = –0.680$, $p < 0.001$), indicating that higher pain levels were associated with greater functional limitations.

**Conclusion:** Pain intensity is significantly and inversely correlated with functional performance in lateral ankle sprain. Mobile health–supported rehabilitation offers a promising approach to reducing pain and improving recovery outcomes.

**Keywords:** Lateral Ankle Sprain, Mobile Health, Pain Intensity

**OP52**

http://dx.doi.org/10.21653/tjpr.2026.OP52

**A Descriptive Study on Compliance of Patellar Tendon Brace in Post-Operative Patients of Tibial Fracture**

Ayeza Ashraf[1], Rubab Naqvi[2]

[1]*MS Rehabilitation Sciences, Faculty of Allied Health Sciences, The superior University, Lahore.*

[2]*Faculty of Allied Health Sciences, The superior University, Lahore.*

**Purpose:** The Patellar Tendon Bearing (PTB) brace is commonly prescribed in the post-operative management of tibial fractures to support early weight-bearing and enhance functional recovery. However, patient compliance largely determines its clinical effectiveness and comfort. To determine the level of compliance with the PTB brace among post-operative tibial fracture patients, identify improvements associated with proper brace fitting, and highlight issues resulting from poor fitting. The study also explores the impact of PTB use on patients' quality of life.

**Methods:** A descriptive cross-sectional study was conducted on 60 post-operative tibial fracture patients who provided informed consent. Data were collected using a self-designed questionnaire through face-to-face and telephonic interviews. A non-probability convenience sampling technique was employed. Data were analyzed using SPSS version 25, and results were expressed as frequencies and percentages.

**Results:** Of the 60 participants (43 males and 17 females; mean age 41.77 ± 15.80 years), 54 patients (90%) reported satisfaction with the PTB brace, while 6 (10%) were dissatisfied. Compliance analysis showed that 75% of braces were rated as having excellent compliance, 15% as good, and 10% as poor. The findings indicate that proper brace fitting significantly contributes to better comfort, satisfaction, and compliance levels.

**Conclusion:** Most post-operative tibial fracture patients demonstrated excellent compliance with the PTB brace. Proper fitting enhances comfort and function, underscoring the importance of individualized orthotic adjustment and patient education for optimal rehabilitation outcomes.

**Keywords:** Compliance, Tibial Fracture, Post-Operative Rehabilitation, Patellar Tendon Bearing Brace, Orthotic Devices, Ankle-Foot Orthosis.

**OP53**

http://dx.doi.org/10.21653/tjpr.2026.OP53

**Efficacy of Binocular Vision Therapy versus Standard Occlusion Therapy in Improving Stereo-Acuity in Amblyopic Children**

Kashaf Rehman[1], Umara Shafiq[1]

[1]*Superior University Lahore, Department of Physical Therapy and Rehabilitation*

**Purpose:** To compare the efficacy of Binocular Vision Therapy (BVT) with standard occlusion therapy in improving stereo-acuity and visual acuity among children with amblyopia.

**Methods:** This randomized controlled trial was conducted at the Eye Clinic, Dunyapur, from March to June 2025. Fifty-four children aged 5–12 years with unilateral amblyopia (anisometropic, strabismic, or mixed) were randomly assigned to two groups. Group A received BVT, including stereopsis, vergence, and anti-suppression exercises, while Group B underwent standard occlusion therapy by patching the non-amblyopic eye for 2–6 hours daily. Therapy adherence was monitored weekly. Visual acuity and stereo-acuity were assessed at baseline, 8 weeks, and 16 weeks using the Titmus Fly Stereotest. Data were analyzed using paired t-tests and Chi-square tests.

**Results:** Children with hypermetropia showed greater improvement compared to those with astigmatic myopia ($\chi^2 = 6.46$, $p = 0.04$). BVT demonstrated superior improvement in stereo-acuity and binocular coordination compared to occlusion therapy. Differences in distance clarity and adaptation to lenses were not statistically significant ($p > 0.05$). Compliance and engagement were higher in the BVT group.

**Conclusion:** Binocular Vision Therapy significantly enhanced stereo-acuity and visual performance compared to standard occlusion therapy. Incorporating BVT into amblyopia rehabilitation protocols may improve compliance, depth perception, and long-term visual outcomes.

**Keywords:** Binocular Vision Therapy; Amblyopia; Stereo-Acuity; Occlusion Therapy; Pediatric Ophthalmology

**OP54**

http://dx.doi.org/10.21653/tjpr.2026.OP54

**Clinical Relevance and Diagnostic Value of Somatostatin Receptor Scintigraphy in Neuroendocrine and Inflammatory Disorders**

Maryam Khalid[1], Chanda Naseem[2]

[1] *Superior University, Raiwind Road, Kot Arian, Lahore*

[2]*Department of Emerging Health Professional Technologies, Superior University, Raiwind Road, Kot Arian, Lahore*

**Purpose:** Somatostatin receptor scintigraphy (SRS) is a valuable imaging modality for diagnosing and managing neuroendocrine tumors (NETs) and certain benign immune-related conditions. This study highlights the diagnostic accuracy, methodological considerations, and clinical utility of SRS in lesion detection, disease staging, treatment planning, and follow-up in patients with somatostatin receptor–positive disorders.

**Methods:** Evidence was drawn from clinical experience at Shaukat Khanum Hospital, existing consensus recommendations, and updated practice guidelines. Technical execution, radiopharmaceutical characteristics, patient preparation, and image interpretation protocols were reviewed to ensure comprehensive evaluation of SRS procedures.

**Results:** SRS demonstrated high sensitivity (>75%) in detecting NETs, including gastroenteric pancreatic tumors, pituitary adenomas, and paragangliomas. Detection rates ranged from 40% to 75% for lymphomas, insulinomas, and medullary thyroid carcinoma. The use of SPECT/CT significantly enhanced lesion localization and differentiation from physiological uptake. SRS proved effective in assessing eligibility for peptide receptor radionuclide therapy (PRRT) and in monitoring treatment response. Identified limitations such as bowel activity, low receptor expression, and pharmacological interference were mitigated through optimized patient preparation and hybrid imaging approaches.

**Conclusion:** Somatostatin receptor scintigraphy remains a reliable diagnostic tool for identifying and evaluating receptor-expressing lesions. It refines clinical decision-making in neuroendocrine oncology, especially when integrated with anatomical imaging. Although 111In-pentetreotide SRS remains clinically relevant, future directions favor PET imaging with 68Ga-labeled analogs for superior resolution and diagnostic performance.

**Keywords:** Somatostatin Receptor Scintigraphy, 111In-pentetreotide, Neuroendocrine Tumors, SPECT/CT, Peptide Receptor Radionuclide Therapy

**OP55**

http://dx.doi.org/10.21653/tjpr.2026.OP55

**Effects of Suboccipital Muscle Energy Technique and Sacroiliac Joint Manipulation Combined with Passive Hamstring Stretch in Females to Improve Hamstring Flexibility**

Mishal Shamsi[1], Muhammad Salman Bashir[2]

[1]*Sharif College of Rehabilitation Sciences (SCORS), Lahore. Pakistan*

[2]*School of Health Sciences, University of Management and technology (UMT) Lahore. Pakistan*

**Purpose:** Hamstring is the muscle that frequently gets tight. Hamstring muscle tightens due to many causes e.g. hamstring strain, obesity, anterior pelvic tilting, etc. Females with reduced hamstring limberness are more prone to low back pain, lower extremity injuries, altered posture and gait. To determine the efficacy of sub occipital MET along with passive hamstring stretch and sacroiliac manipulation with passive hamstring stretch in females to increase hamstring flexibility.

**Methods:** This Quasi-experimental trial conducted in physical therapy department of Ameer Medical Complex and District Headquarter Jauharabad**.** The method of consecutive sampling was applied for collection of the data. A sample of 28 female patients was recruited in two groups. The Group A was given sub-occipital muscle energy technique and hamstring stretch and Group B was treated with sacroiliac manipulation and hamstring stretch. Each group treated for 4 weeks with 3 sessions per week. Outcome measures were NPRS, straight leg raise and Active knee extension test, recorded before treatment and at the end of 12 treatment sessions.

**Results:** It was observed that sub occipital MET with hamstring stretch was more effective than sacroiliac manipulation with hamstring stretch to increase hamstring flexibility and over all wellbeing of females**.** Mean and Standard Deviation of this score was less than other group [p-value = 0.000 and Significant p< 0.05)].

**Conclusion:** The sub occipital MET with hamstring stretch is more consistent and reliable to increase hamstring flexibility in females than SIJ manipulation with hamstring stretch.

**Keywords:** Hamstring Tightness, Hamstring Flexibility, Hamstring Stretch, Sub Occipital MET, SIJ Manipulation.

**OP56**

http://dx.doi.org/10.21653/tjpr.2026.OP56

**AI-Integrated Physical Therapy: Feasibility of A Smart Rehabilitation App for Bankart Lesion Recovery**

Izzat Hassan[1], Samreen Sadiq[2]

[1]*Faculty of Allied Health Sciences, Superior University, Lahore Raiwind Campus*

[2]*Ghurki College of Health Sciences, Ghurki Trust Teaching Hospital*

**Purpose:** To design and evaluate the feasibility, usability, and patient adherence of an AI-integrated mobile rehabilitation application for individuals recovering from arthroscopic Bankart lesion repair.

**Methods:** A single-arm feasibility study will be conducted at the Department of Physical Therapy, Ghurki Trust Teaching Hospital, Lahore, Pakistan. Fifteen participants aged 18–45 years and 2–6 weeks post-arthroscopic Bankart repair will use an AI-enabled mobile app for eight weeks in addition to standard physiotherapy care. The app developed through expert consensus will include exercise demonstrations, adaptive progression algorithms based on pain, range of motion, and functional status, as well as reminders and real-time feedback. Feasibility outcomes will include recruitment and retention rates, app usage frequency, and technical performance. Usability will be measured using the System Usability Scale (SUS), while adherence will be monitored through session completion. Secondary outcomes will include changes in pain (VAS), shoulder range of motion, and functional scores (ASES or DASH).

**Results:** The AI-integrated rehabilitation application is expected to demonstrate high feasibility, with strong participant adherence and consistent app engagement. Most participants are anticipated to complete over 80% of prescribed sessions and report good to excellent usability scores. Predicted clinical improvements include reduced pain, enhanced shoulder mobility, and better functional outcomes on VAS, ASES, and DASH assessments. Adaptive AI algorithms are expected to support personalized progression and sustained patient motivation.

**Conclusion:** The AI-enabled rehabilitation app is anticipated to be a feasible and user-friendly tool for post-Bankart lesion recovery. Positive indicators of usability and adherence will support the advancement to larger randomized controlled trials assessing clinical effectiveness.

**Keywords:** Artificial Intelligence, Digital Rehabilitation, Technology-Driven Therapy, Mobile App-Based Rehabilitation, Bankart Lesion Recovery

**OP57**

http://dx.doi.org/10.21653/tjpr.2026.OP57

**Bones in Balance: Physical Activity and Its Impact on Bone Mineral Density to Prevent Osteoporosis in Premenopausal Women. A Narrative Exploration towards SDG3**

Rabia Jawa[1]

[1]*Superior University, Faculty of Allied Health Sciences, Department of Physiotherapy, Lahore, Pakistan)*

**Purpose:** To examine the impact of physical activity on bone mineral density (BMD) in premenopausal women and its role in preventing osteoporosis, aligning with Sustainable Development Goal 3 (Good Health and Well-Being).

**Methods:** A narrative review was conducted, analyzing 38 published studies, including experimental studies, randomized controlled trials (RCTs), systematic reviews, and meta-analyses. The review focused on the relationship between various forms of physical activity and BMD outcomes in premenopausal women.

**Results:** Evidence indicates that regular physical activity, particularly weight-bearing and resistance exercises, enhances peak bone mass and increases BMD in premenopausal women. Community-based programs, structured interventions, and the inclusion of advanced exercise techniques were shown to further improve adherence and effectiveness. These activities contribute to stronger skeletal health and reduce the risk of osteoporosis later in life.

**Conclusion:** Physical activity during premenopause is an effective preventive strategy to improve BMD and protect against osteoporosis. Supportive community programs and structured exercise initiatives can enhance participation and maximize bone health outcomes, reinforcing the importance of preventive strategies for lifelong skeletal health.

**Keywords:** Bone Mineral Density, Osteoporosis, Premenopausal Women, Physical Activity, Preventive Health

**OP58**

http://dx.doi.org/10.21653/tjpr.2026.OP58

**Effectiveness of Breathing Techniques in COPD Patients in Twin Cities**

Humera Ayub[1], Mamoona Tasleem Afzal[2]

[1]*Abasyn University Islamabad*

[2]*Shaheed Zulfiqar Ali Medical University, Islamabad*

**Purpose:** Chronic Obstructive Pulmonary Disease (COPD) is a progressive respiratory disorder characterized by airflow limitation and recurrent exacerbations, leading to increased dyspnea, cough, and sputum production. Breathing techniques play a crucial role in improving respiratory efficiency and quality of life in COPD patients.

**Objectives:** To evaluate the effectiveness of specific breathing techniques in COPD patients and to determine their role in managing both the physical and emotional aspects of the disease.

**Methods:** A randomized controlled trial was conducted at Benazir Bhutto Hospital and Al-Nafees Hospital, Islamabad. Sixty-six COPD patients aged 40 years and above, undergoing rehabilitation physiotherapy, were enrolled through non-probability convenience sampling. Participants in the experimental group received targeted breathing exercises—pursed-lip breathing, diaphragmatic breathing, and paced breathing—while the control group continued routine care. Outcomes were assessed using the St. George's Respiratory Questionnaire and the Modified Borg Scale to measure dyspnea during submaximal exercise, along with spirometry to assess lung function. Data were analyzed using SPSS version 23, with a significance level of $p < 0.05$.

**Results:** Patients performing breathing exercises demonstrated a statistically significant improvement in COPD symptoms and lung function compared to the control group ($p = 0.023$).

**Conclusion:** Diaphragmatic, pursed-lip, and paced breathing techniques are effective interventions for improving pulmonary function, reducing dyspnea, and enhancing breathing efficiency in patients with chronic obstructive pulmonary disease.

**Keywords:** Chronic Obstructive Pulmonary Disease, Dyspnea, Modified Borg Scale, Spirometer, Breathing Exercises

**OP59**

http://dx.doi.org/10.21653/tjpr.2026.OP59

**Integrating Machine Learning and Wearable Technology for Real-Time Physiotherapy Assistance**

Amna Riaz[1], Nimra Tariq[1]

[1]*Department of Basic Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** This study explored the integration of wearable-based human activity recognition (HAR) systems with machine learning algorithms to enhance personalized physiotherapy monitoring. The objective was to utilize wearable sensor data for real-time posture assessment and rehabilitation assistance.

**Methods:** Accelerometer and gyroscope data from the UCI-HAR dataset were preprocessed through standardization and dimensionality reduction using Principal Component Analysis (PCA) to improve computational efficiency. Machine learning models—Random Forest, Gradient Boosting, AdaBoost, and Support Vector Machine (SVM)—were trained and evaluated using accuracy, precision, recall, and F1-score metrics. Additional analyses included confusion matrices, ROC curves, precision–recall curves, and feature importance ranking.

**Results:** The SVM model achieved the highest accuracy (91.62%) and superior performance across most activity categories, particularly Laying (F1 = 0.98). Gradient Boosting (accuracy = 89.58%) and Random Forest (accuracy = 87.28%) also demonstrated strong predictive capability, whereas AdaBoost yielded comparatively lower accuracy (71.46%). Classification performance varied by activity type, with Walking Downstairs and Sitting showing significantly reduced scores ($p = 0.03$). Feature importance analysis identified accelerometer readings across the X, Y, and Z axes as the most influential variables.

**Conclusion:** Integrating wearable HAR systems with optimized machine learning models enables accurate and real-time physiotherapy monitoring. Such systems can support clinicians in customizing posture correction and mobility training, facilitating improved patient outcomes and continuous home-based rehabilitation.

**Keywords:** Accelerometry; Human Activity Recognition; Machine Learning; Rehabilitation; Wearable Devices

**OP60**

http://dx.doi.org/10.21653/tjpr.2026.OP60

**Impact of Digital Screen Time in Progression of Myopia in Children**

Mahrukh Fatima[1], Dr Saad Saleem[2]

[1]*Superior University Lahore, Department of physical therapy and rehabilitation sciences, Lahore, Pakistan*

[2]*Superior University Lahore, Faculty of Allied health sciences, Department of physical therapy and rehabilitation sciences, Lahore, Pakistan*

**Purpose:** The increasing use of digital devices among children has raised growing concerns about their effects on visual health. This study aimed to examine the association between digital screen exposure and the progression of myopia in children.

**Methods:** A cross-sectional study was conducted involving 79 children aged 6–12 years (31 males, 39.2%; 48 females, 60.8%) with best-corrected visual acuity (BCVA) of 20/20. Participants with cylindrical error greater than –1.00 D were excluded. Cycloplegic refraction was performed for all subjects. A structured questionnaire assessed potential risk factors, including demographic data (age, sex), parental myopia status, outdoor activity time, screen exposure duration and type, near work habits, lighting conditions during study, reading posture, and average reading distance.

**Results:** A significant association was found between increased digital screen time and myopia progression ($p = 0.002$), with a positive correlation ($p = 0.026$). These findings align with previous research demonstrating a similar relationship between prolonged screen exposure and worsening myopia.

**Conclusion:** Prolonged digital screen use significantly contributes to myopia progression in children. Establishing evidence-based guidelines to reduce visual strain is essential. Parents, educators, and healthcare providers should encourage the 20-20-20 rule, optimize screen brightness and blue light settings, and promote outdoor activities to protect children's eye health.

**Keywords:** Cycloplegic Refraction, Digital Screen Time, Eye Health, Myopia Progression

**OP61**

http://dx.doi.org/10.21653/tjpr.2026.OP61

**Leveraging Artificial Intelligence and Digital Biomarkers for Personalized Post-Operative Orthopedic Physical Therapy and Equitable Outcomes**

Hasan Bin Akram[1], Mehwish Khalid[2]

*[1]Superior University Lahore, Faculty of Allied Health Sciences, Department of Physical therapy & Rehabilitation*

*[2]Lahore university of Biological and Applied Sciences, Faculty of Rehabilitation Sciences, Department of Physical therapy & Rehabilitation*

**Purpose:** This narrative review is aimed to explore the role of Artificial Intelligence and digital biomarkers in providing a personalized post-operative orthopedic physical therapy while providing equitable and impartial outcomes. The mentioned technologies have the required potential to overcome any barrier related to socioeconomic status, culture, geography and culture by offering patient centered and data driven rehabilitation therapies and strategies.

**Methods:** In current study, a comprehensive search was conducted through an integrative search method by using IEEE Xplore, Google Scholar, Scopus databases and PubMed. Terms such as "Artificial Intelligence", "Personalized Physical Therapy'', "Orthopedic Rehabilitation" and "Digital Biomarkers" are included. Eligible studies include Peer- reviewed articles and systematic reviews published between 2015 and 2024 focused on the application or use of AI or digital biomarkers in post-orthopedic rehabilitation Studies were only included if they fulfil the criteria of personalization, clinical outcomes or equality considerations. Non- English or other language based editorials, publications and opinion pieces were excluded. For relevant data intervention type, patient population, rehabilitation outcomes and also the integrity of equality focused approaches were extracted.

**Results:** Evidence from the relevant studies suggest that AI based platforms and digital biomarkers can improve and enhance recovery monitoring, customize or personalized therapy strategies and can also improve patient engagement in therapy. The tools are proved to be useful and helping in the reduction of barriers linked to socioeconomic, cultural background or geography. However, for equitable outcomes the digital advancement alone is not enough, it also require fair access, maintaining inclusive datasets and fostering of patient-therapist trust which remains critical.

**Conclusion:** AI and digital biomarkers can improve both functional recovery and quality of care if deployed inclusively and ethically. They offer transformative potential for democratizing and personalized postoperative orthopedic physical therapy based rehabilitation. In this modern era, the optimal recovery not only means faster progress but also the availability of a compassionate and fair treatment option for every patient.

**Keywords:** Artificial Intelligence, Personalized Physical Therapy, Digital Biomarkers, Orthopedic Rehabilitation, Health Equity

**OP62**

http://dx.doi.org/10.21653/tjpr.2026.OP62

**Comparative Evaluation of Machine Learning and Ordinary Differential Equation Approaches for HIV Prognostication in Rehabilitation and Allied Health Practice**

Muhammad Azam[1], Sidra Siddiqui[1]

*[1]Department of Basic Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** To compare the predictive performance of machine learning (ML) and ordinary differential equation (ODE) models for HIV disease progression using CD4 lymphocyte count and plasma HIV-1 RNA (log10 viral load).

**Methods:** We analyzed a retrospective, longitudinal dataset of antiretroviral therapy episodes. After patient-level splitting (80.00% train, 20.00% test), lag features (CD4_lag1, VL_lag1, adherence, gender) were used to train Random Forest regressors for CD4 and log10 viral load. A within-host three-compartment ODE with fixed parameters was simulated for each test patient. Performance was assessed with RMSE and $R^2$ on the test set. Paired Wilcoxon signed-rank tests compared absolute errors between ML and ODE predictions.

**Results:** ML performance was CD4 RMSE=767.87, $R^2$=-0.10 and viral load RMSE=0.47, $R^2$=0.65. ODE performance was CD4 RMSE=755.39, $R^2$=-0.06 and viral load RMSE=2.83, $R^2$= 11.41. The paired Wilcoxon test showed a difference in absolute errors favoring ML for CD4 ($p=1.23\times10^{-12}$) and viral load ($p=4.57\times10^{-8}$).

**Conclusion:** On this real-world ART dataset, ML produced significantly lower prediction errors than a fixed-parameter ODE across CD4 and viral load. These findings support the utility of data driven methods for short-horizon prognostication, while mechanistic ODEs remain valuable for interpretability and scenario analysis. Future work will explore individualized ODE parameter estimation to narrow the gap.

**Keywords:** Antiretroviral Therapy, CD4 Lymphocyte Count, HIV Infections, Machine Learning, Models, Statistical

**OP63**

http://dx.doi.org/10.21653/tjpr.2026.OP63

**Effects of Fascial Manipulation Technique versus Joint Cavitation on the Atlanto-Occipital Joint in Cervicogenic Headache Patients**

Ali Mushtaq[1]

[1]*The Superior University, Faculty of Allied Health Sciences, Department of Rehabilitation Sciences, Lahore, Pakistan*

**Purpose:** Cervicogenic headache (CEH) is a secondary headache originating from cervical spine dysfunction, particularly at the atlanto-occipital joint. It is prevalent among office workers due to sustained poor posture and mechanical overload. This study compared the effects of Fascial Manipulation Technique (FMT) and Joint Cavitation Therapy (JCT) on pain, cervical range of motion (ROM), headache severity, and neck-related disability in CEH patients.

**Methods:** A single-blind randomized controlled trial was conducted on 36 office workers aged 25–40 years diagnosed with CEH. Participants were randomly divided into Group A (FMT) and Group B (JCT), receiving two sessions per week for six weeks. Outcome measures included the Numeric Pain Rating Scale (NPRS), Cervical Range of Motion (CROM), Headache Impact Test-6 (HIT-6), and Neck Disability Index (NDI), evaluated at baseline, mid-intervention, and post-intervention. Non-parametric statistical tests were applied due to non-normal data distribution.

**Results:** Both interventions produced significant improvements; however, Group A (FMT) demonstrated greater clinical gains across all parameters. Statistically significant reductions were observed in pain (p=0.001), improved cervical ROM (p=0.002), lower HIT-6 (p=0.004), and reduced NDI scores (p=0.003).

**Conclusion:** Fascial Manipulation Technique was more effective than Joint Cavitation Therapy in alleviating pain, enhancing cervical mobility, and reducing disability in cervicogenic headache patients. These findings highlight FMT as a superior manual approach for managing CEH in rehabilitation settings.

**Keywords:** Atlanto-Occipital Joint, Cervicogenic Headache, Fascial Manipulation, Joint Cavitation, Neck Pain

**OP64**

http://dx.doi.org/10.21653/tjpr.2026.OP64

**Leveraging Socioeconomics and Cognitive Data for Dementia Stages Classification**

Rizwana Bibi[1], Sidra Siddiqui[1]

[1]*Department of Basics Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** Early detection of dementia severity is crucial for timely intervention and management. This study aimed to develop and evaluate predictive machine learning (ML) models to classify dementia stages using socioeconomic and cognitive predictors.

**Methods:** Data from 2,149 participants were collected, including demographic, socioeconomic, and psychometric variables such as functional assessment, Activities of Daily Living (ADL), Mini-Mental State Examination (MMSE), memory complaints, and behavioral measures. Data preprocessing involved label encoding, scaling, and imputation of missing values. Machine learning models—including Random Forest, Logistic Regression, cost-sensitive variants, and SMOTE-based approaches—were trained and compared using accuracy, precision, recall, F1-score, and macro-averages. Predictor importance was assessed using univariate and multivariate regression analyses (Mann–Whitney U and chi-square tests).

**Results:** The SMOTE–Random Forest model achieved the highest performance, with macro precision of 94.43%, recall of 93.82%, F1-score of 93.30%, and accuracy of 95.00%. The cost-sensitive Random Forest also performed robustly (accuracy 94.19%, macro F1-score 93.55%). In regression analyses, dementia severity showed significant positive associations with functional assessment, ADL, MMSE, memory complaints, and behavioral problems (all $p < 0.001$), while HDL cholesterol, sleep quality, and education level were non-significant predictors.

**Conclusion:** Machine learning models, particularly the SMOTE–Random Forest, effectively classify dementia severity using combined cognitive and socioeconomic variables. Functional and cognitive assessments—including ADL, MMSE, and memory-related measures—emerged as the strongest predictors for dementia stage classification.

**Keywords:** Cognitive Impairment, Dementia, Machine Learning, Socioeconomic Factors, Predictive Modeling

**OP65**

http://dx.doi.org/10.21653/tjpr.2026.OP65

**Rehabilitation and Gender Equity: A Scoping Review Addressing the Intersection of Disability, Gender, and Sustainable Development Goal 5**

Sahar Aslam[1], Saima Riaz[2]

[1]*Faculty of Allied Health Sciences, Department of Physical Therapy & Rehabilitation Sciences, The Superior University, Lahore, Pakistan*

[2]*The Superior University, Faculty of Allied Health Sciences, Department of Physical Therapy & Rehabilitation Sciences, Lahore, Pakistan*

**Purpose:** Rehabilitation is vital for health and functioning, yet women and girls with disabilities face unique barriers, and the link between gender equality (SDG 5), disability, and rehabilitation remain underexplored.

**Methods:** This scoping review consisted of search from PubMed, Scopus, and Web of Science (2015–2025) for peer-reviewed studies on rehabilitation and gender equity. Inclusion criteria covered all rehabilitation domains and global regions; grey literature was excluded. Studies were charted by design, setting, and findings on gender-related access, use, and outcomes.

**Results:** An estimated ~2.4 billion people worldwide need rehabilitation, and women make up just over half of this population. However, evidence suggests women often have poorer access and outcomes in rehabilitation. Gender norms, including caregiving roles and transport barriers, restrict women's access to rehabilitation, while gender-biased assistive technology design limits benefits. Evidence is mixed; one Italian study reported higher home discharge rates for women in psychiatric rehabilitation. Research on transgender, non-binary, and low-income populations remains limited, underscoring the need to integrate disability within SDG 5 gender equity initiatives.

**Conclusion:** Nascent data shows significant gender inequities in rehabilitation. Health systems must implement gender-responsive approaches (equipping professionals with knowledge of gender dynamics, adapting devices and services to women's needs, building caregiver resilience) and gather outcome measures disaggregated by sex. To align with SDG 5, rehabilitation policy and practice should integrate disability and gender – monitoring service use by gender and ensuring women with disabilities share in the benefits of "rehabilitation for all."

**Keywords:** Disability, Sexism, Rehabilitation, Sustainable Development, Sex Factor

**OP66**

http://dx.doi.org/10.21653/tjpr.2026.OP66

**Clinical Evaluation of Corneal Higher Order Aberrations in Trans Photorefractive Keratectomy and Femtosecond Laser in Situ Keratomileusis Patients with Myopia and Astigmatism**

Muhammad Zubair Nazar[1], Waleed Jameel[1]

[1]*Faculty of Allied Health Sciences, The Superior University Lahore*

**Purpose:** To assess and compare visual outcomes and corneal higher-order aberrations (HOAs) following Trans Photorefractive Keratectomy (TPRK) and Femtosecond Laser In Situ Keratomileusis (FS-LASIK) in patients with myopia and astigmatism.

**Methods:** This longitudinal experimental study was conducted at Amer Eye Hospital Network, Rawalpindi, including 120 eyes from 60 patients. Participants were divided into two groups: TPRK (n = 30 eyes; 15 myopic, 15 astigmatic) and FS-LASIK (n = 30 eyes; 15 myopic, 15 astigmatic). Visual acuity (VA; LogMAR), contrast sensitivity (CS; Pelli-Robson chart), and HOAs (corneal topography) were measured preoperatively and at 1 week and 1 month postoperatively. Data were analyzed using repeated-measures ANOVA and independent t-tests.

**Results:** Both procedures significantly improved VA ($p < 0.05$), with TPRK yielding better postoperative vision (mean VA: 0.006 ± 0.025 vs. 0.867 ± 0.110 for FS-LASIK). Although CS declined slightly in both groups, TPRK showed higher mean CS values ($p > 0.05$). HOAs increased significantly after both surgeries ($p < 0.05$), but were lower in TPRK (0.619 ± 0.087) compared to FS-LASIK (0.762 ± 0.087).

**Conclusion:** Both TPRK and FS-LASIK effectively correct myopia and astigmatism. However, TPRK offers superior postoperative outcomes, with enhanced contrast sensitivity and fewer induced higher-order aberrations, indicating better overall visual quality.

**Keywords:** Trans Photorefractive Keratectomy; Femtosecond LASIK; Higher-Order Aberrations; Myopia; Astigmatism.

**OP67**

http://dx.doi.org/10.21653/tjpr.2026.OP67

**Comparative Effects of Active Release Technique versus Muscle Energy Technique for Treating Trigger Point Induced Mechanical Neck Pain in Young Adult Female Population**

Waleed Jameel[1], Muhammad Zubair Nazar[1]

[1]*Faculty of Allied Health Sciences, The Superior University Lahore*

**Purpose:** Mechanical Neck Pain (MNP) is commonly aggravated by posture or movement and is frequently linked to myofascial trigger points (MTrPs)—hyperirritable nodules within taut muscle fibers. This study compared the effectiveness of Active Release Technique (ART) and Muscle Energy Technique (MET) in improving pain, cervical mobility, and functional status among individuals with MTrP-induced MNP.

**Methods:** A quasi-experimental study was conducted on 44 women aged 25–44 years diagnosed with MTrP-related MNP at Social Security Hospital, Kot Lakhpat, and Nishat Linen Clinic. Participants were randomly allocated into two groups receiving either ART or MET. Outcome measures included the Numeric Pain Rating Scale (NPRS), Neck Disability Index (NDI), and cervical range of motion (ROM) assessed via goniometry. Assessments were performed at baseline, immediately post-intervention, and on day 14. Data were analyzed using paired and independent t-tests ($p < 0.05$) with SPSS version 26.

**Results:** Both interventions produced significant improvements in all outcome measures ($p < 0.001$). ART showed superior pain reduction, while MET resulted in greater improvement in neck disability. Both techniques equally enhanced cervical rotation, lateral flexion, and extension.

**Conclusion:** ART and MET are effective for treating MTrP-induced MNP. ART better alleviates pain, whereas MET more effectively enhances functional performance. Combining both approaches may yield comprehensive therapeutic benefits.

**Keywords:** Active Release Technique; Muscle Energy Technique; Mechanical Neck Pain; Cervical Range of Motion; Goniometer.

**OP68**

http://dx.doi.org/10.21653/tjpr.2026.OP68

**Assessment of Tear Film Instability in Glaucomatous Patients Using Anti-Glaucoma Drugs**

Ijaz Hussain[1], Ummara Shafiq[1]

[1]*Deaprtmnt of Allied Health Sciences, Superior University Lahore*

**Purpose:** Glaucoma management frequently involves long-term use of topical medications that may compromise tear film stability and ocular surface integrity. Understanding these effects is essential for maintaining visual comfort and adherence to therapy. To evaluate the impact of anti-glaucoma medications on tear film stability, ocular surface health, and related symptoms in patients with glaucoma.

**Methods:** A cross-sectional study was conducted on 150 glaucoma patients aged 18–60 years. Visual acuity was assessed using standard Snellen charts. Tear film stability and production were measured through Tear Break-Up Time (TBUT) and Schirmer's tests, respectively. The Ocular Surface Disease Index (OSDI) questionnaire assessed subjective symptoms of dryness and discomfort. Data on anti-glaucoma medications prostaglandin analogs, beta-blockers, alpha agonists, carbonic anhydrase inhibitors, miotics, and combination therapies were collected alongside demographic and clinical variables.

**Results:** Most participants were aged 41–50 years with balanced gender distribution. The majority had open-angle glaucoma for over three years and exhibited moderate to severe visual impairment (mean visual acuity: RE = 0.34 ± 0.15; LE = 0.32 ± 0.17). Prostaglandin analogs were most frequently prescribed. Post-treatment, TBUT increased from 2.80 s to 2.87 s, and Schirmer's test values improved from 2.68 mm to 2.90 mm ($p < 0.05$). Correlation analysis showed weak but significant associations between drug class and ocular surface parameters.

**Conclusion:** Anti-glaucoma medications cause mild yet significant alterations in tear film stability and ocular surface health. Despite these effects, treatments remain effective and well tolerated. Routine ocular surface assessment is recommended to enhance comfort and therapeutic adherence in glaucoma patients.

**Keywords:** Glaucoma, Anti-glaucoma Drugs, Tear Film Stability, Ocular Surface, Schirmer's Test, TBUT

**OP69**

http://dx.doi.org/10.21653/tjpr.2026.OP69

**Evaluating the Impact of Presbyopic Eyewear on Driving Performance among Commercial Drivers**

M. Khalil Talib[1], M. Anwar Awan[1]

[1]*Department of Allied Health Sciences, Superior University Lahore*

**Purpose:** To evaluate the impact of presbyopic eyewear on driving performance in commercial drivers.

**Methods:** An observational cross-sectional study was conducted among 86 commercial drivers aged 40–65 years (mean age: 52.4 ± 7.3 years) recruited through purposive sampling. Participants were reassessed after 15 days of using presbyopic eyewear. Visual acuity and driving performance were evaluated using standardized tests to assess functional improvements associated with eyewear use.

**Results:** The mean uncorrected visual acuity was 0.45 ± 0.20 logMAR, which significantly improved to 0.15 ± 0.10 logMAR with presbyopic correction ($p < 0.001$). The mean driving performance score improved from baseline (72.4 ± 12.6) following presbyopic eyewear use ($p = 0.02$). Despite measurable improvements, common issues persisted, including difficulty shifting focus between near and distant objects, dashboard visibility challenges, night glare, and visual fatigue.

**Conclusion:** Presbyopia is highly prevalent among middle-aged commercial drivers and has a significant impact on visual performance while driving. Regular vision screening and appropriate correction with presbyopic eyewear can improve both visual acuity and driving performance, contributing to enhanced road safety. Tailored vision correction strategies and consistent eyewear use are essential for reducing vision-related driving risks in this population.

**Keywords:** Presbyopia, Progressive Addition Lenses, Visual performance, Driving Safety, Commercial Drivers

**OP70**

http://dx.doi.org/10.21653/tjpr.2026.OP70

**Responsiveness and Minimal Clinically Important Difference of the Navicular Height Drop Test in Patients with Plantar Fasciitis**

Aasim Manzoor[1], Rubab Naqvi[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose**: To evaluate the responsiveness of NHDT and determine the MCID in patients with plantar fasciitis. This would help assess the effectiveness of treatment interventions.

**Methods**: A prospective observational cohort study was conducted over 6 months, involving 40 participants diagnosed with plantar fasciitis. NHDT was measured at baseline, 4, 8, and 12 weeks. The Foot Function Index, Visual Analog Scale (VAS), and Global Rating of Change (GRC) were also used for assessment. Data analysis was performed using SPSS version 24.

**Results**: Significant reductions in NHDT were observed at all time points, indicating the test's responsiveness to treatment. A 4 mm decrease in NHDT was correlated with clinically meaningful improvements in foot function and pain reduction, suggesting that NHDT is a valid measure for assessing treatment progress. The MCID was determined to be 4 mm.

**Conclusion**: This study confirms that the NHDT is both responsive and capable of detecting clinically meaningful changes in patients with plantar fasciitis. The findings support its application as a reliable outcome measure for evaluating treatment effectiveness.

**Keywords:** Plantar Fasciitis, Navicular Height Drop Test, Responsiveness, Minimal Clinically Important Difference, Foot Function

**OP71**

http://dx.doi.org/10.21653/tjpr.2026.OP71

**The Role of Antioxidants, Macronutrients, and Lifestyle Modifications in Breast Cancer Patients in Lahore, Pakistan**

Tahreem Amanat[1], Farah Javed[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** Breast cancer in Pakistan is a leading cause of morbidity and mortality among women. The leading factors that can lower the risk of the disease are a diet that plays a crucial role in cancer prevention, with macronutrients (proteins, carbohydrates, and fats) and antioxidants significantly influencing breast cancer risk.

**Methods:** The organized Food Frequency Questionnaire (FFQ) was used to measure the survey group, which included 150 elderly women aged between 25 to 65 years from different medical organizations, healthcare facilities, and gathering centers from leading urbanized area of Lahore, Pakistan. The duration of the survey was six months.

**Results:** Antioxidants play a crucial role in disease prevention. Antioxidant-rich foods such as fruits, vegetables, turmeric, garlic, and herbal teas offer protective effects. Dietary interventions and disease awareness campaigns, as well as balanced macronutrient intake and increased antioxidant consumption, can play a crucial role in breast cancer prevention. A total of 113 patients had proved to modify their diets, while 37 had not.

**Conclusion:** In conclusion, dietary patterns impact breast cancer risk in Pakistani women due to excessive intake of animal-based proteins, refined carbohydrates, and saturated fats increase disease risk. On the other hand, plant-based proteins, complex carbohydrates, healthy fats, and antioxidant-rich foods provide protective benefits from the disease.

**Keywords:** Macronutrients, Antioxidants, Lifestyle Modification, Breast Cancer Prevention.

**OP72**

http://dx.doi.org/10.21653/tjpr.2026.OP72

**Comparative Effects of Neurodynamic and Active Release Technique on Pain, Hand Grip, and Functional Status in Patients with Carpal Tunnel Syndrome**

Muhammad Shahzad[1]

[1]*Faculty of Allied Health Sciences, University of Lahore, Pakistan*

**Purpose:** To evaluate the effects of Neurodynamic and active release technique on pain, hand grip strength, and functional status in patients with carpal tunnel syndrome.

**Methods:** This RCT was conducted 62 participants of both genders, 18-60 years with carpal tunnel syndrome were involved in the study. Participants with a history of Carpal Bone Fractures, Stroke, LBP, pregnancy, cervical radiculopathy Hand Surgery were excluded. They were randomly allocated through lottery methods into two groups: NDT and ART with routine physical therapy. Scales used for outcome measures were the Numeric Pain Rating Scale, Functional Status Scale, and hand-held dynamometer.

**Results:** The mean age of recruited participants was 30.83±7.61 years. Within-group analysis showed statistically significant improvement in all outcome measures ($P<0.05$). Between-group analysis showed that NDT and ART were effective in reducing pain ($P<0.05$), but no statistical difference was found between the techniques regarding pain, functional status, and hand grip strength ($P>0.05$).

**Conclusion:** It is concluded that active release therapy ART and Neurodynamic technique NDT were effective in decreasing pain, improving functional status, and hand grip strength. However, both Neurodynamic and active release techniques had statistically equal effects in improving pain, functional status, and hand grip strength among patients of carpal tunnel syndrome. Although both therapies showed clinically significant improvement. Thus, both techniques can be used as an adjuvant treatment option with routine physical therapy for patients with carpal tunnel syndrome for maximal treatment efficacy.

**Keywords:** Carpal Tunnel Syndrome, Neurodynamic Technique, Active Release Technique, Numeric Pain Rating Scale, Functional Status Scale, Hand Dynamometer

**OP73**

http://dx.doi.org/10.21653/tjpr.2026.OP73

**Association between Work-Related Stress and Peripheral Neuropathic-Pain in Post Chemotherapy Female Breast Cancer Survivors**

Wasif Ameen[1], Adil Ur Rehman[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To investigate the association between work-related stress and peripheral neuropathic pain in post-chemotherapy female breast cancer survivors.

**Methods:** This cross-sectional study was used to explore the association between work-related stress and peripheral neuropathic pain in female breast cancer survivors past chemotherapy. The study included a sample of 48 participants, aged 29-51, selected through purposive sampling from a clinical setting in Lahore, Pakistan. Participants were divided into two groups: high symptom cluster and low symptom cluster, based on symptom severity. Analysis was performed using IBM SPSS Statistics 24.

**Results**: None of the Brief Job Stress Questionnaire dimensions showed a statistically significant association with DN4 neuropathic pain status. Neuropathic pain burden (DN4 total) shows only weak, non-significant positive associations with Job-stressor and Psychological-Stress-Reaction scores, and virtually none with Social-Support. Thus, the data do not provide statistically convincing evidence that job stress (whether environmental, psychological, or mitigated by social support) is linearly related to neuropathic-pain severity in this sample.

**Conclusion**: Overall job stress, psychological stress reactions, or perceived social support had no meaningful relationship to neuropathic pain severity. Higher stress might be associated with more neuropathic symptoms.

**Keywords:** Breast Cancer Survivors, Chemotherapy-induced Peripheral Neuropathy (CIPN), Neuropathic pain, Work-related Stress, DN4 Questionnaire, Visual Analog Scale (VAS)

**OP74**

http://dx.doi.org/10.21653/tjpr.2026.OP74

**Rehabilitation Strategies for Post-Surgical Breast Cancer Survivors: Virtual Reality, Conventional Therapy, and Lifestyle Approaches: A Systematic Review**

Asima Irshad[1], Muhammad Naveed Babur[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To conduct a systematic assessment of randomized and controlled evidence comparing Virtual Reality (VR) based rehabilitation, conventional physical therapy (CPT), and lifestyle/exercise therapies in post-surgical breast cancer patients, as well as meta-analyses if data is sufficiently homogeneous.

**Methods:** Following the PRISMA guidelines 2020 recommendations, the following databases were searched through August 2025: PubMed/PMC, Scopus, ClinicalTrials.gov, and the Cochrane Library. Inclusion criteria: adult post-surgical breast cancer patients; therapies such as VR, CPT, or exercise/lifestyle; randomized or controlled trials. Outcomes include shoulder range of motion, grip strength, pain (VAS), upper-extremity function (DASH/UEFI), lymphedema, fatigue, anxiety, and quality of life. The risk of bias was assessed using Cochrane Rob 2.0.

**Results:** In total, 78 studies were included: 28 Virtual Reality-based rehabilitation trials, 30 traditional physical therapy trials, and 20 lifestyle/exercise studies. The Virtual Reality treatments comprised Kinect, Wii, Pablo, and headset-based immersive/relaxation Virtual Reality. Traditional rehabilitation included physiotherapy, resistance, and aerobic programs, whereas lifestyle/exercise therapies included home-based activities, yoga, and structured training. A meta-analysis found that Virtual Reality + traditional therapy resulted in better grip strength (Hedges' g = 0.86; 95% CI 0.45-1.27; $p < 0.001$) and decreased discomfort (VAS) (SMD = -0.48; 95% CI -0.73 to -0.23), indicating a preference for Virtual Reality. The heterogeneity varied from 45-72% ($I^2$).

**Conclusions:** Virtual reality combined with traditional rehabilitation dramatically improves strength, shoulder mobility, and pain management in breast cancer patients. These data indicate Virtual reality as a promising addition to traditional therapy, providing both physical and psychological advantages.

**Keywords:** Breast Cancer Rehabilitation, Virtual Reality Therapy, Conventional Physiotherapy, Lifestyle Interventions

**OP75**

http://dx.doi.org/10.21653/tjpr.2026.OP75

**Correlation of Plyometric and HIIT with Agility, Sprint Speed, and Power in Female Athletes**

Kiran Gillani[1], Muhammad Asad Ali[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To investigate the correlation of plyometric training and high-intensity interval training with sprint speed, agility, and power in female athletes.

**Methods:** A randomized clinical trial was conducted over six weeks with 35 female fast bowlers aged 18–25 years from local cricket academies. Participants were randomly allocated to either a PT group or an HIIT group. Both groups trained three times weekly. Performance was evaluated pre- and post-intervention using the 40-Yard Sprint Test (40-YT), Standing Broad Jump (SBJ), and Agility Test (AT). Statistical analysis was conducted using paired and independent t-tests in SPSS-23.

**Results:** The PT group showed greater improvements compared to the HIIT group in SBJ (76.69 ± 3.33 cm vs. 31.4 ± 0.91 cm), 40-YT (0.93 ± 0.27 s vs. 0.79 ± 0.07 s), and AT (0.71 ± 0.03 s vs. 0.08 ± 0.06 s), with all outcomes reaching statistical significance ($p < 0.05$).

**Conclusion:** Both PT and HIIT were significantly correlated with improvements in sprint speed, agility, and power among female fast bowlers. However, plyometric training elicited greater performance gains, highlighting its superior effectiveness for enhancing key physical attributes in this athletic population**.**

**Keywords:** Agility, Plyometric Training, High-Intensity Interval Training, Sprint Speed, Explosive Power, Women's Cricket

**OP76**

http://dx.doi.org/10.21653/tjpr.2026.OP76

**The Effects of Mir Shakeel Tele-Integrated Therapy on Pain, Range of Motion and Patient Satisfaction in Patients of Total Knee Arthroplasty: A Pilot Study**

Mir Shakeel Ahmad[1], Chua Siew Kuan[1]

[1]*Lincoln University College, Faculty of Science, Department of Physiotherapy, Petaling Jaya, Selangor, Malaysia*

[2]*Ghurki Trust and Teaching Hospital, Lahore, Pakistan*

**Purpose:** Total knee arthroplasty (TKA) significantly enhances the quality of life in patients with end-stage osteoarthritis. This pilot trial assesses the short-term effects of the Mir Shakeel Tele Integrated Therapy Plan (MSTITP) on pain, range of motion and patient satisfaction.

**Methods:** A single-blind randomized controlled pilot trial was conducted at GTTH and Meer's Rehabilitation and Physical Therapy. Sixty patients aged 35–45 years undergoing unilateral primary TKA were randomly and equally assigned to two groups. Group A (MSTITP) received weekly video-based telerehabilitation, regular feedback and motivation, and access to guided exercise video. Group B received in-person sessions for 2–3 times weekly for 12 weeks, exercise regimen adjusted by the physical therapist based on progression. Outcome measures were assessed at baseline, 6 weeks, and 12 weeks post-intervention. Primary outcomes included pain intensity measure using visual analog scale, knee range of motion assessed by goniometry, and patient satisfaction measured by the Patient Satisfaction Questionnaire (PSQ-18).

**Results:** Student t-test revealed no significant differences between the group across all variables at 6 weeks post intervention (all $p > 0.05$). However, repeated measures ANOVA showed significant improvements overtime in all primary outcomes. At 12 weeks, Group A (MSTITP) demonstrated significant greater improvement in knee range of motion and patient satisfaction (both $p = 0.002$), but pain reduction was comparable between groups ($p > 0.05$).

**Conclusion:** These findings indicate that MSTITP significantly improved knee range of motion and patient satisfaction at week 6 and 12 weeks following TKA.

**Keywords:** Pain, Patient Satisfaction, Range of Motion, Total Knee Arthroplasty

**OP77**

http://dx.doi.org/10.21653/tjpr.2026.OP77

**Lived Experiences of Physical, Psychological, Communication and Social Changes in Early-Stage Cancer Patients**

Salwa Atta[1], Mir Shakeel Ahmad[2]

[1]*Faculty of Rehabilitation Sciences, Lahore University of Biological and Applied Sciences*

[2]*Ghurki Trust and Teaching Hospital, Lahore, Pakistan*

**Purpose:** Cancer is not only a medical condition but it is a profoundly disruptive life event reshaping patient's physical, psychological, social and communication aspects. There is a noticeable gap of such studies in low- and middle-income countries, such as Pakistan. Therefore, it is crucial to document the lived experiences of cancer patients in Pakistan in order to formulate health policy, educate patient-centered care, and guarantee that interventions address the multidimensional issues this population faces.

**Methods:** The study was a qualitative phenomenological type of study. Patients were recruited through convenient sampling techniques from two tertiary care hospitals of Lahore. Data was collected through interviews which were recorded and later transcribed by a professional translator. Data collected was analyzed through MAXQDA according to the guidelines provided by Victoria Clarke and Virginia Braun. Confidentiality and trust worthiness were maintained and promised by the research administrator.

**Results:** Analysis yielded four overarching themes that characterized the lived experiences of cancer patients encompassing physical changes; chronic fatigue, persistent pain, nausea, weight changes, psychological fear; fear, future uncertainty, depression and emotional instability; social changes; shifts in family roles, isolation, stigma and communication changes; difficulty expressing, lack of communication and no support.

**Conclusion:** The study highlighted that cancer is a multidimensional life experience altering an individual's perspective about life. Findings underscore the urgent need of holistic, patient centered care programs and isolated cancer care setups in Pakistan ensuring that interventions address the lived realities of patients beyond biomedical management.

**Keywords:** Communication, Early-stage cancer, Physical, Psychological, Social

**OP78**

http://dx.doi.org/10.21653/tjpr.2026.OP78

**Virtual Reality–Driven Innovations in Stroke Rehabilitation: A Review on Enhancing Upper Limb Gross Motor Function and Dexterity in Support of Sustainable Development Goal 3 (Good Health and Well-being)**

Maria Mustafa[1], Saima Zahid[2]

[1]*University of Management and Technology*

[2]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To evaluate the effectiveness of virtual reality (VR)–based interventions in improving upper limb gross motor function and dexterity in adults post-stroke, supporting Sustainable Development Goal 3 (Good Health and Well-Being), compared with conventional physical therapy.

**Methods:** A narrative review was conducted on studies published between 2020 and 2025. Literature from PubMed, ScienceDirect, Google Scholar, Scopus, and Cochrane Library was analyzed, focusing on randomized controlled trials involving adults (≥25 years) with stroke-related upper limb dysfunction. VR interventions included the use of Oculus Quest, headsets, gloves, and other immersive devices alongside therapeutic exercise, compared to conventional therapy. Motor functional outcomes were assessed using Upper Extremity Fugl-Meyer Assessment (UE-FMA), Box and Block Test, Wolf Motor Function Test, Manual Function Test, Modified Ashworth Scale, Jebsen Hand Function Test, and Nine-Hole Peg Test. Data were synthesized to assess VR effectiveness in upper limb rehabilitation.

**Results:** VR-based rehabilitation, when combined with conventional therapy, demonstrated significant improvements in upper extremity motor function, range of motion, and dexterity. Evidence for enhancements in muscle strength and independence in activities of daily living was mixed. Immersive, personalized, and scalable VR interventions were shown to facilitate neuroplasticity and functional recovery, improve patient engagement, and provide measurable improvements in gross and fine motor outcomes. Limitations included motion sickness, high equipment costs, and challenges with data standardization, which may hinder widespread implementation.

**Conclusion:** VR-assisted stroke rehabilitation is an effective adjunct to conventional therapy for improving upper limb motor function and dexterity, offering immersive and personalized interventions. Addressing technical, financial, and standardization barriers is critical to maximize its clinical application and accessibility for stroke survivors.

**Keywords:** Virtual Reality, Stroke Rehabilitation, Upper Limb Motor Function, Dexterity, Neuroplasticity, Physical Therapy, Sustainable Development Goal 3.

**OP79**

http://dx.doi.org/10.21653/tjpr.2026.OP79

**Assessment of Thyroid Hormone Levels and Potential Risk of Hypothyroidism in Healthcare Workers Exposed to Low-Dose Ionizing Radiation**

Mudssar Riaz[1], Rashida Parveen[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To assess the thyroid hormone levels (TSH, FT4, and FT3) in healthcare workers exposed to low-dose ionizing radiation and to determine the association between radiation exposure levels and Hypothyroidism in healthcare workers exposed to low-dose ionizing radiation.

**Methods:** The research involved 44 participants aged 20-40 randomly chosen out of the estimated population of 50, as indicated by Krejcie and Morgan's sample size calculation technique. Reflective data of demographics, job classification, and years of service were noted through a questionnaire. Personal dosimeters collected annual radiation dose data, and thyroid function tests (TSH, Free T4, and Free T3) were assessed. Data were analyzed using SPSS to determine statistical significance.

**Results:** Out of 44, the radiology department professionals diagnosed with hypothyroidism were 11.76% and those working in the nuclear medicine department were 40.74% (p=0.04). And 53% with 16 or more years of exposure were affected (p=0.027). The relationship between the level of radiation exposure and the occurrence of hypothyroidism is very much established. Among the individuals diagnosed with hypothyroidism, 58.82% were within a higher range than the normal range of radiation exposure, and only 11.11% were within the normal range of radiation exposure. On the contrary, in the control group, that is, among persons who did not have hypothyroidism, 88.89% were at normal levels of radiation exposure, whereas it was in excess 41.18% with a significant p value (0.001)

**Conclusion:** Long-term radiation exposure exceeding a standard level is correlated with serious changes in thyroid functionality, involving hypothyroidism. Besides, abnormal TSH, Free T4, and Free T3 levels were seen in those participants with increased radiation levels, and significantly diagnosed with hypothyroidism, which evidences the connection between work-related radiation and thyroid dysfunction.

**Keywords:** Ionizing radiation, Occupational radiation, Hypothyroidism, Thyroid Dysfunction.

**OP80**

http://dx.doi.org/10.21653/tjpr.2026.OP80

**Exploring Food Fortification Potential on Sesame and Wheat Flour for Sensorical and Nutritional Attributes of Doughnuts**

Sabiha Abbas[1], Saqafat Ahmad[1]

[1]*Riphah College of Rehabilitation & Allied Health Sciences, Riphah International University Sahiwal*

**Purpose:** To evaluate the sensory attributes and overall acceptability of doughnuts fortified with sesame cake flour from different sesame cultivars, aiming to enhance the nutritional profile and address Protein Energy Malnutrition (PEM).

**Methods:** Six flour formulations were prepared by blending sesame cake flour with wheat flour in varying ratios: control (0% sesame), 1:9, 1:4, 3:7, 2:3, and 1:1 (sesame: wheat). Eight sesame cultivars (four white, four black) were used. Doughnuts were shaped and fried at 175 °C. Sensory evaluation of appearance, aroma, texture, chewiness, mouthfeel, and overall acceptability was conducted using a nine-point hedonic scale by trained panelists.

**Results:** White sesame cake flour exhibited superior sensory properties compared to black sesame flour, including better appearance, aroma, texture, chewiness, and overall acceptability. Among the formulations, the 1:9 (10 g sesame:90 g wheat) blend received the highest preference from panelists. The white sesame cultivar TH-6 demonstrated the best combination of sensory qualities for fortified doughnuts.

**Conclusion:** White sesame cake flour, particularly the TH-6 cultivar, can be successfully used to fortify doughnuts, improving their nutritional value while maintaining high sensory acceptability. This approach offers a promising strategy to combat Protein Energy Malnutrition using underutilized crop by-products.

**Keywords:** Sesame Cake Flour, Doughnuts, Sensory Evaluation, Protein Energy Malnutrition, Food Fortification, Nutritional Enhancement.

**OP81**

http://dx.doi.org/10.21653/tjpr.2026.OP81

**Effects of Cartoon Programs on Children's Language and Behavior: Working Mothers' Perspective**

Ayesha Saddiqa[1], Saba Aziz[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** This study aims to reveal the effects of cartoons produced for early childhood on the development of children in the determined parameters. The time spent by children with technology, especially television, and the consideration of both its positive and negative effects on child development, may provide solutions to current problems.

**Methods:** This study includes a qualitative explanatory research design. This study portrays a picture of the effects of cartoon programs on children's language and behaviour. A population of both males and females, between the ages of 3 years to 6 years, was selected. Interviews were conducted face-to-face according to the availability and willingness of the participants. Interview duration was a maximum of 3 minutes and a minimum of 15 minutes. Interviews were recorded for further analysis. Recorded interviews were transcribed, which were further analysed.

**Results:** The working mothers of 3 to 6 years were recorded. The majority of mothers show a positive response of their children about language development, but behaviour issues occurred due to cartoon programs.

**Conclusion:** It is concluded that screen time greatly influences the language and behavior of typically developing children.

**Keywords:** Children's Behavior, Cognitive Development, Language Acquisition, Aggression

**OP82**

http://dx.doi.org/10.21653/tjpr.2026.OP82

**Psychometric Evaluation of the Urdu Version of the Glaucoma Symptom Scale: Assessing its Reliability and Validity in Low-Literacy Populations**

Iqra Akram[1], Taimoor Hassan[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** This paper set out to achieve the translation and validation of the Glaucoma Symptom Scale (GSS) into the Urdu language with a view to applying the scale to the population of glaucoma sufferers in Pakistan.

**Methods:** A total of 67 clinically diagnosed glaucoma patients aged 25 to 60 years were enrolled. Clinical and demographic information was recorded. Each participant completed the Urdu-translated version of the GSS, which comprises 10 symptom items organized into two subscales: SYMP-6 (non-ocular symptoms) and FUNC-4 (visual capability). The translation followed standard forward-backward methodology. Psychometric characteristics of the Urdu GSS were evaluated using Classical Test Theory (CTT), including internal reliability (Cronbach's alpha), test-retest stability (intraclass correlation coefficients), and convergent validity via correlation with pertinent subscales of the SF-36 health survey.

**Results:** The Urdu version of the GSS exhibited strong internal consistency for the complete scale (Cronbach's alpha = 0.81). Factor analysis verified a two-factor structure aligned with the original scale, accounting for 48.92% of the variance. Both overall and subscale GSS scores showed significant associations with clinical markers of disease severity and with corresponding SF-36 domains, confirming convergent validity. Minimal floor and ceiling effects were noted in certain items.

**Conclusion:** The Urdu-translated Glaucoma Symptom Scale is a valid and reliable instrument when analyzed through Classical Test Theory.

**Keywords:** Low Vision, Quality of Life, NEI-VFQ-25, Psychometric Evaluation, Urdu Translation

**OP83**

http://dx.doi.org/10.21653/tjpr.2026.OP83

**Impact of Media, Socioeconomic, and Psychological Factors on the Adoption of Aesthetic Technology and Cosmetic Surgery among Women in Punjab, Pakistan**

Rabia Tahir[1], Muhammad Shahram Tanveer[1]

*[1]Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** The study aimed to examine the impact of socio-economic conditions, media influence, and psychological factors (e.g., self-esteem, body image) on women's willingness to undergo cosmetic procedures in Punjab, Pakistan.

**Methods:** A cross-sectional survey of 132 women (aged 18–50) from Lahore, Faisalabad, and Multan was conducted using stratified random sampling. A structured questionnaire assessed demographics, SES, media consumption (Instagram, TikTok), and psychological attitudes (self-esteem, body image). Data were analyzed via SPSS (v25) using descriptive statistics and Chi-square tests ($p < 0.05$).

**Results:** Age, marital status, and education showed no significant association with Cosmetic procedure adoption ($p > 0.05$). SES significantly correlated with adoption ($\chi^2 = 33.992$, $p < 0.001$), with higher SES women more inclined toward CP. Media influence, 83.3% reported social media as their primary CP information source; high media engagement correlated with greater adoption ($\chi^2 = 51.266$, $p < 0.001$). Psychological factors, self-esteem, and appearance dissatisfaction were the strongest predictors ($\chi^2 = 58.173$, $p < 0.001$), with 56.1% considering CP to meet societal beauty standards.

**Conclusion:** The study underscores that psychological factors, media narratives, and SES primarily drive CP adoption in Punjab. Recommendations include media literacy programs, psychological counselling in cosmetic clinics, and policies to address financial barriers. Future research should expand to a longitudinal study and should explore male perspectives and mixed-method designs for deeper cultural insights.

**Keywords:** Aesthetic Technology, Cosmetic Surgery, Punjab Women, Media, Socioeconomic, Psychological

**OP84**

http://dx.doi.org/10.21653/tjpr.2026.OP84

**Evaluating the Knowledge and Implementation of Evidence-Based Practices in Airway Management among Respiratory Therapists in Critical Care Units across Lahore**

Shakeel Ahmad[1], Tasra Bibi[1]

*[1]Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To assess the knowledge of evidence-based practice in airway management among respiratory therapists at Critical Care Unit settings.

**Methods:** Descriptive cross-sectional study design in which 132 participants were allocated to evaluate the knowledge and implementation of evidence-based practices in airway management in critical care units. Data was collected (convenience sampling technique) using a scale questionnaire. Data were analyzed using SPSS version 26. One-way ANOVA test was used to compare the demographic variables.

**Results:** A total of 132 respiratory therapists participated, with 55.3% male and 44.7% female. Most were aged 20–25 years (50.8%) and had 1–5 years' experience (78%). Closed suctioning (69.7%), semi-recumbent positioning for NIV (77.3%), and daily sedation interruption (42.4%) were frequent practices. Preoxygenation and neuromuscular blocking agents were routinely used by 69.7%, humidified gases by 63.6%, and cuff pressure was always maintained by 80.3%. Video laryngoscopy use for difficult intubations varied; capnography was always used by 30.3%. Oral care with chlorhexidine was routine in 40.2%, and 47% preferred NIV over intubation.

**Conclusion:** This study highlights that while respiratory therapists in Lahore possess foundational knowledge of airway management, there remain significant gaps in the consistent implementation of evidence-based practices, influenced by age, academic qualifications, and clinical experience.

**Keywords:** Respiratory Therapists, Critical Care Units, Evidence-based, Airway Management

**OP85**

http://dx.doi.org/10.21653/tjpr.2026.OP85

**Rate and Predictor of Satisfaction after Noninvasive Cosmetic Procedures**

Maham Saleem[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose**: This study aims to assess the level of satisfaction among individuals undergoing non-invasive facial cosmetic procedures in Punjab, Pakistan. It further investigates the demographic, psychological, and procedural predictors influencing patient satisfaction.

**Methods**: It was a cross-sectional study carried out in dermatology and aesthetic centers of Punjab, Pakistan. A sample of 102 patients, aged 20-40 years, who had received non-invasive facial cosmetic procedures in the past 6 months to 2 years, were interviewed. Satisfaction levels were determined on the basis of short-term and long-term follow-ups, and information regarding the demographic factors and experience of the procedures was obtained.

**Results**: The majority of respondents were highly satisfied with the procedures (55.9%). The most common treatments were fat injections (76.5%) and liposuction (93.1%). Gender, the patient's educational level, and the specialization of the doctor had a significant impact on satisfaction. Satisfied patients were those without complications, for example, infection and asymmetry (p=0.000). Specialized consultations in the follow-ups significantly increased satisfaction (p=0.000).

**Conclusion**: Facial non-invasive cosmetic procedures are valued in Punjab, Pakistan, and patient satisfaction is determined by the demographic characteristics and by the success of the procedure. Patient satisfaction can be improved by the setting of realistic pre-procedural expectations, by the management of complications, and by adequate follow-up attention. These results can lead the clinicians to more patient-centered, individualized attention.

**Keywords**: Non-invasive Aesthetic Procedures, Patient Satisfaction, Botox, Liposuction

**OP86**

http://dx.doi.org/10.21653/tjpr.2026.OP86

**Association between Estimated Glomerular Filtration Rate Decline and Cardiovascular Risk Scores in Middle-Aged Adults: A Cross-Sectional Study**

Arishba Iftikhar[1], Laiba Naveed Khan[1]

[1]*Department of Emerging Health Professional Technology, Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Decline in estimated glomerular filtration rate (eGFR) is a recognized marker of renal dysfunction and has been associated with increased cardiovascular risk. This study aimed to examine the relationship between eGFR decline and established cardiovascular risk scores in middle-aged adults.

**Methods:** A cross-sectional study was conducted on 350 adults aged 40–60 years attending outpatient clinics. eGFR was calculated using the CKD-EPI equation. Cardiovascular risk was assessed using the Framingham Risk Score (FRS) and the Atherosclerotic Cardiovascular Disease (ASCVD) score. Demographic data, blood pressure, lipid profile, fasting glucose, and smoking history were recorded. Participants were categorized into normal, mildly reduced, and moderately reduced eGFR groups. Pearson correlation, ANOVA, and multivariable linear regression were performed adjusting for age, sex, body mass index, and comorbidities.

**Results:** eGFR was inversely correlated with both FRS ($r=-0.410$, $p<0.001$) and ASCVD score ($r=-0.380$, $p<0.001$). Mean FRS increased from 9.80±3.40 in the normal eGFR group to 15.20±4.10 in the moderately reduced group ($p<0.001$). ASCVD scores rose from 8.60±2.90 to 14.10±3.70 across the same categories. Regression analysis identified eGFR decline as an independent predictor of higher cardiovascular risk scores ($b=-0.320$, $p<0.001$).

**Conclusion:** Lower eGFR is significantly associated with elevated cardiovascular risk scores in middle-aged adults, independent of traditional risk factors. Early identification of reduced renal function may enhance cardiovascular risk stratification and guide preventive interventions.

**Keywords:** Cardiovascular Diseases, Glomerular Filtration Rate, Middle Aged, Risk Assessment

**OP87**

http://dx.doi.org/10.21653/tjpr.2026.OP87

**Comparative Effects of Dynamic Cupping and PNF Stretching on Hamstring Tightness among Football Players**

Muhammad Zeeshan[1], Zainab Ali[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** The aim of this study was to compare the effectiveness of dynamic cupping and the contract-relax method of the PNF stretching technique on hamstring tightness among football players.

**Methods:** This randomized clinical trial was carried out to determine hamstring tightness in football players. Forty players voluntarily consented to participate in the study, in which the adult subjects with an age group between 20-30 who had a hamstring tightness and a minimum 20-degree restriction in SLR unilaterally were recruited in group A and group B (20 in each group). Those with cognitive impairments, uncontrolled medical conditions, and a history of lower extremity injury in the last two months and a previous history of surgery were excluded. Group A was given PNF, and Group B was given the Dynamic cupping technique. Assessments were performed at baseline (T1), mid-rehabilitation (T2), and post-rehabilitation (T3). The sit-and-reach test was used to evaluate the hamstring tightness.

**Results:** Within the group analysis, both PNF stretching and Dynamic cupping improved flexibility significantly over time (Friedman test, P=0.00). Between-group analysis showed significant differences at pre-test (P= 0.04) and post-test (P= 0.05), favoring PNF. Although both interventions were effective, PNF demonstrated superior improvements in flexibility compared to Dynamic Cupping.

**Conclusion**: PNF stretching provided benefits over the dynamic cupping technique in terms of reducing hamstring tightness among football players. It reduces the tightness and improves the flexibility of football players, so which can cause them to run on the ground and kicking ability also improved.

**Keywords:** Hamstring, PNF Stretching, Flexibility, Football Players

**OP88**

http://dx.doi.org/10.21653/tjpr.2026.OP88

**Formulation and Optimization of Amla-Ginger Gummies Jelly with Natural Sweeteners Enhanced Nutrition and Wellbeing**

Shaista Ashraf[1], Rashida Perveen[1]

[1]*Faculty of Allied Health Sciences, Superior University, Lahore*

**Purpose:** Growing consumer demand for functional and nutraceutical foods has increased interest in natural, immune-boosting products formulated without artificial additives. Amla (Emblica officinalis) and ginger (Zingiber officinale) are well known for their antioxidant, anti-inflammatory, and digestive properties; however, their incorporation into palatable, consumer-friendly products remains challenging. This study aimed to formulate and optimize an Amla–Ginger gummy jelly using natural sweeteners, with the objective of enhancing nutritional value, palatability, and overall consumer acceptability.

**Methods:** Three experimental batches of Amla–Ginger gummy jelly were prepared using varying proportions of amla extract, ginger extract, gelatin, honey, stevia, and water. The formulations were evaluated for physicochemical properties (texture, appearance, and stability), sensory acceptability (taste, aroma, mouthfeel, and overall acceptability), and preliminary nutritional characteristics. Optimization was based on achieving a balance between functional benefits and sensory quality.

**Results:** Among the three formulations, the optimized batch demonstrated improved texture, uniform consistency, and superior sensory acceptability compared to the other samples. The use of honey in combination with stevia significantly enhanced sweetness and masked the inherent bitterness of amla and pungency of ginger without the need for artificial sweeteners. The optimized formulation showed good structural stability and was well accepted in sensory evaluation, indicating improved palatability and potential consumer appeal. The presence of amla and ginger contributed to enhanced antioxidant potential, supporting the product's nutraceutical value.

**Conclusion:** The study successfully developed an Amla–Ginger gummy jelly using natural sweeteners that combines health benefits with acceptable taste and texture. This formulation offers a convenient, pleasant, and health-promoting alternative to conventional nutraceutical products and has potential application as a natural immune-support supplement in the functional food industry.

**Keywords:** Amla-Ginger Gummies, Natural Sweeteners, Honey, Stevia, Gelatin, Nutraceuticals

**OP89**

http://dx.doi.org/10.21653/tjpr.2026.OP89

**Ethnopharmacology of Achyranthes Aspera: A Comprehensive Review**

Hifsa Mobeen[1], Muhammad Ansar[1]

[1]*Department of Medical Laboratory Technology-Faculty of Allied Health Sciences, The Superior University, Lahore, Pakistan*

**Purpose:** The purpose of this review is to highlight the traditional medicinal significance of Achyranthes aspera (Family: Amaranthaceae) and to summarize the existing knowledge regarding its phytochemical constituents and pharmacological activities. Since the plant is widely used in folk medicine for treating various infections and inflammatory conditions, this review aims to present updated information that may support its potential application in modern therapeutic research.

**Methods:** The review is based on previously published scientific studies related to Achyranthes aspera, focusing on literature that reports its chemical composition and biological effects. Information was gathered from research articles, traditional medicine documentation, and ethnopharmacological studies describing the medicinal use of different plant parts such as seeds, roots, stems, leaves, and shoots.

**Results:** The reviewed data indicate that Achyranthes aspera contains significant phytochemicals including tannins, terpenoids, flavonoids, alkaloids, fatty acids, achyrantine, amino acids, and dihydroxy ketones. These constituents contribute to various pharmacological actions such as immunostimulatory, antiallergic, antiasthmatic, anti-inflammatory, antibacterial, antifungal, and hypoglycemic effects. The plant is widely employed in traditional healing systems in Asian and African regions, where it is used safely to treat bacterial, fungal, skin-related, and allergic disorders.

**Conclusion**: The collected evidence suggests that Achyranthes aspera is a promising medicinal plant with diverse therapeutic properties. Although extensive studies have been conducted on its extracts, further research is needed to explore its phytochemical profile in greater depth and to understand the mechanisms responsible for its pharmacological effects. This may help in developing new natural drug formulations and expanding its use in modern healthcare.

**Keywords:** Achyranthes Aspera; Phytochemicals; Antimicrobial Properties Immunostimulant, Antiasthma Tic

**OP90**

http://dx.doi.org/10.21653/tjpr.2026.OP90

**Comparison of Angiographic Characteristics and Risk Factors in Young and Middle-Aged Patients with Coronary Artery Disease**

Simran Saeed[1], Ahmad Jamal[2]

[1]*Department of Emerging Allied Health Technology, The University of Lahore, Raiwind Road, Bhuptian Chowk, Lahore*

[2]*Department of Emerging Health Professional Technologies, Superior University, Raiwind Road, Kot Arian, Lahore*

**Purpose:** To compare the angiographic characteristics of coronary artery disease in patients of middle and young age.

**Methods:** Data were collected from 101 patients who presented with coronary heart disease and had undergone angiography or PCI. A total of one hundred and one patients of either sex, of young and middle-aged were included. Non-probability sampling was employed to examine the association of age with the pattern of CAD, along with their different risk factors, i.e., Myocardial infarction (MI), Hypertension (HTN), Angina, Diabetes mellitus (DM), and Smoking.

**Results:** The finding of a statistically significant relationship between age and CAD, with a p-value of 0.049, suggests that age is one of the significant risk factors for the development of CAD. This study also concluded that in young patients there were more SVD (3.96%) as compared to DVD and TVD while in middle age patients there were more TVD (42%) as compared to SVD (31%) and DVD (19%) and the stenosed coronary arteries were LAD(79%), RCA(52%), LCX(46%) and LMS (16%)and the risk factors were MI(75%), HTN(74%), male (67%), DM(59%), smokers (41%), FH(39%), Angina(16%).

**Conclusion:** As our p-value (0.049) is less than the alpha value (0.05) so we concluded that there is an association between the young and middle-aged patients with coronary artery disease.

**Keywords:** Angiographic Characteristics, Coronary Artery Disease, Angiography, Diabetes Mellitus

**OP91**

http://dx.doi.org/10.21653/tjpr.2026.OP91

**Ultrasonographic Comparison of Ovarian Stromal Blood Flow between Fertile Women with Normal Ovaries and Infertile Women with Polycystic Ovary Syndrome**

Reemal Shahid[1], Khadeeja Nasir[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** This study aims to evaluate and compare ovarian blood flow indices between women and women with polycystic ovary syndrome (PCOS) using Doppler ultrasonography.

**Methods:** A cross-sectional comparative study was conducted with 120 participants, consisting of 60 fertile women and 60 women diagnosed with PCOS. Ovarian stromal blood flow was measured using Doppler ultrasonography, assessing pulsatility index (PI), resistance index (RI), vascularization index (VI), flow index (FI), and vascularization flow index (VFI). Antral follicle count (AFC) and ovarian volume were also recorded.

**Results:** Women with PCOS exhibited larger ovarian volumes (11.99 ± 2.80 mL) and higher AFC (36.50 ± 5.64) compared to the control group. Blood flow indices (VI, FI, VFI, PI, and RI) were significantly higher in the PCOS group ($p<0.05$). Hormonal analysis revealed higher levels of luteinizing hormone (LH) and testosterone, and lower levels of follicle-stimulating hormone (FSH) in PCOS women. Correlation analysis indicated strong positive relationships between ovarian blood flow.

**Conclusion:** Women with PCOS exhibited significantly altered ovarian stromal blood flow compared to fertile women, highlighting the vascular dysfunctions associated with PCOS.

**Keywords:** Blood Flow Velocity, Hormonal Imbalance, Ovarian Blood Flow,
Polycystic Ovary Syndrome, Ultrasonography

**OP92**

http://dx.doi.org/10.21653/tjpr.2026.OP92

**Impact of Emergency Department Crowding on Delays in Initiating Oxygen Therapy for Hypoxemic Patients**

Attiya Iqbal Yonus[1], Amina Saeed[1]

[1]*Department of Emerging Health Professional Technology, Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Timely oxygen therapy is a cornerstone in preventing complications and mortality among hypoxemic patients. Emergency Department (ED) crowding may hinder the rapid initiation of this critical intervention. This study assessed the relationship between ED crowding severity and delays in starting oxygen therapy.

**Methods:** A cross-sectional observational study was conducted over three months in the ED of a tertiary care hospital. Adult patients (≥18 years) with oxygen saturation <90% on room air were enrolled. The National Emergency Department Overcrowding Scale (NEDOCS) was applied at patient arrival to classify crowding into low, moderate, and high categories. Time from triage to oxygen therapy initiation was recorded. One-way ANOVA compared mean times between groups, and multivariable linear regression adjusted for demographic and clinical confounders.

**Results:** Of 240 participants (mean age 56.4 ± 15.2 years; 52.1% male), mean oxygen initiation times were 6.8 ± 2.4 min (low crowding), 11.5 ± 3.2 min (moderate), and 18.3 ± 4.6 min (high) ($p = 0.001$). NEDOCS scores correlated positively with delay ($r = 0.642$, $p = 0.001$).

**Conclusion:** Increasing ED crowding significantly prolongs the initiation of oxygen therapy in hypoxemic patients. Reducing ED overcrowding could enhance the timeliness of life-saving interventions and improve clinical outcomes.

**Keywords:** Emergency Department Crowding, Hypoxemia, Oxygen Therapy, Time-to-treatment, NEDOCS.

**OP93**

http://dx.doi.org/10.21653/tjpr.2026.OP93

**Comparative Analysis of Durability and Comfort in Silicone versus Gel Liners for Transtibial Prostheses**

Hafeez Ul Rehman[1], Fatima Guftar[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose**: This study aims to compare the durability and comfort of silicone versus gel liners in transtibial prostheses, with an emphasis on their impact on user experience and overall prosthetic performance.

**Methods**: A cohort of 40 transtibial prosthesis users (n=40) was selected for this study. Participants were randomly assigned to use either silicone liners or gel liners for duration of 6 months. Durability was assessed through wear resistance tests and analysis of material degradation. Comfort levels were evaluated using a standardized questionnaire and a visual analog scale (VAS). Statistical analyses were performed to compare the two liner types, with a p-value < 0.05 considered significant.

**Results:** The silicone liners demonstrated significantly higher durability, with a wear resistance score of 98.45 ± 1.23 compared to 92.30 ± 2.58 for the gel liners (p=0.021). In terms of comfort, gel liners provided a higher user satisfaction rate, with a comfort score of 85.10 ± 3.45, while silicone liners scored 78.35 ± 4.10 (p=0.035).

**Conclusion**: Silicone liners exhibited superior durability, whereas gel liners provided higher comfort levels for transtibial prosthesis users. These findings suggest that the choice of liner should be individualized based on patient needs, with silicone recommended for those prioritizing longevity and gel for those prioritizing comfort.

**Keywords**: Comfort, Durability, Gel Liners, Prosthetics, Silicone Liners

**OP94**

http://dx.doi.org/10.21653/tjpr.2026.OP94

**A Comparative Analysis of Myopia Prevalence among Madarsa Students Vs Non-Madarsa Students in Sukkur**

Khizar Abbas[1], Sidra Anwar[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To compare the prevalence of myopia among Madarsa and school students in Sukkur.

**Methods:** This comparative cross-sectional study, conducted at Al Shifa Trust Eye Hospital, included students aged 5–21 years from schools and Madrasas in Sukkur. The sample size was 364, with 10% dropout rate; 328 participants met the eligibility criteria. After consent, participants underwent visual acuity testing and refractive error assessment.

**Results:** Myopia prevalence was high in both groups, with no significant difference for right eye (p = 0.750, OR = 0.658), left eye (p = 0.750, OR = 0.658), or either eye (p = 0.685, OR = 0.494). Mean spherical equivalent was −1.2 D (OD) and −1.1 D (OS), axial length ≈ 26.6 mm, and mean distance visual acuity 0.39–0.51 LogMAR. Significant differences were found in right-eye spherical refraction (p = 0.042) and axial length (OD p = 0.007, OS p = 0.002), while other visual, refractive, and biometric parameters showed no significant variation.

**Conclusion:** Based on the findings, myopia prevalence was high in both school and madrassa students, with no significant difference for the right eye, left eye, or either eye. Most visual acuity, refractive, and biometric parameters were similar, except for longer axial length in school students and slightly higher myopic spherical refraction in madrassa students' right eyes, indicating group type was not a strong predictor of myopia.

**Keywords:** Myopia, Refractive Error, Prevalence.

**OP95**

http://dx.doi.org/10.21653/tjpr.2026.OP95

**Antimicrobial Susceptibility Patterns of Staphylococcus Aureus in Nosocomial Infections: A Cross-Sectional Study at CMA Hospital**

Afzal Ali[1], Hifsa Mobeen[1]

*[1]Department of Medical Laboratory Technology, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** This study set out to describe the antibiotic susceptibility profile of S. aureus isolates recovered from a tertiary-care hospital.

**Methods:** A cross-sectional analysis was conducted on 150 clinical samples collected from infected sites of hospitalized patients. Identification of S. aureus was performed using established microbiological techniques, and antimicrobial susceptibility testing followed Clinical and Laboratory Standards Institute (CLSI) guidelines.

**Results:** Complete resistance was observed to penicillin (100%) and pipemidic acid (100%). Resistance rates to other agents were as follows: gentamicin 21.6%, amikacin 79%, piperacillin/tazobactam 11%, imipenem 5%, and meropenem 7.5%. All isolates remained fully susceptible to linezolid.

**Conclusion:** Penicillin and pipemidic acid were entirely ineffective against the isolates tested, whereas linezolid exhibited excellent activity. These results highlight the need for ongoing resistance monitoring and judicious antibiotic stewardship to manage MRSA-related nosocomial infections effectively.

**Keywords:** Staphylococcus Aureus; MRSA; Multidrug Resistance; Nosocomial Infection; Antibiotic Susceptibility.

**OP96**

http://dx.doi.org/10.21653/tjpr.2026.OP96

**Enhanced Microstructural Remodeling of Large Veins Versus Large Arteries; Potential Implications of Moderate Intensity Continuous Exercise for Rehab Plans.**

Fatima Hamza[1], Syed Nudrat Nawaid Shah[2]

*[1]Ziauddin College of Physical Therapy, Ziauddin University/ Karachi (Sindh), Pakistan*

*[2]Department of Anatomy, Ziauddin Medical College/Ziauddin University, Karachi (Sindh), Pakistan*

**Purpose**: To evaluate the modification caused by Moderate intensity continuous exercise training (MICT) on histomorphometric variables of large veins superior vena cava (SVC) and inferior vena cava (IVC), and the central artery Aorta, in rats.

**Methods:** Twenty-four SD (Sprague Dawley) male and healthy rats were divided by randomization into two equal groups. One group was allocated to MICT on a purpose-built treadmill five days/week for four weeks, while other group was kept sedentary. Both groups were otherwise the same in terms of environment and food. Diameter of lumen, thickness of vessel wall, and medial thickness were measured using Image J for morphometric analysis.

**Results:** In IVC of exercising rats diameter of the lumen, the thickness of the wall, and medial thickness increased significantly with p values ($p<0.0001$, $p=0,04$, $p=0.016$, respectively). Similarly, in the SVC of exercise rats diameter of the lumen significantly increased, while the thickness of the wall and medial thickness were significantly increased with p values ( P-0.08, $p=0.0001$, and $p=0.0009$). In other no changes were observed in aortic parameters of both groups ($p=0.9$, 0.95, 0.16)

**Conclusion:** MICT exerts more pronounced changes on the ultrastructure of IVC and SVC in comparison to the Aorta. This study concludes that large veins endure early and more profound structural adaptations to exercise in comparison to the large central artery. These findings can be potentially beneficial for experts and open new research venues.

**Keywords:** Exercise, Rehabilitation, Large Veins, Central Artery, Rats

**OP97**

http://dx.doi.org/10.21653/tjpr.2026.OP97

**Assessing Patient Comfort, Anxiety, and Satisfaction during Cycloplegic Refraction: Comparing Conventional Drops with Rapid-Onset Cycloplegics**

Hira Iqbal[1], Sidra Anwar[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To assess the comfort, anxiety, and satisfaction between conventional cycloplegics (e.g., cyclopentolate) and rapid-onset cycloplegics (e.g., tropicamide with phenylephrine) drops during cycloplegic refraction.

**Methods:** This randomized controlled trial was conducted at Al Shifa Trust Eye Hospital, Sukkur, enrolling participants aged 10–20 years selected through simple random sampling. Eligible participants were healthy participants within ±1D refractive error, while those with systemic or ocular pathology were excluded. All underwent cycloplegic refraction assessment and a structured questionnaire on anxiety, discomfort, communication, and overall experience during cycloplegic refraction, using a Likert scale and a Visual Analogue Scale for comfort.

**Results:** A total of 83 participants were enrolled, with a mean age of 15.54 ± 2.97 years; 49.4% were females and 50.6% males. The Visual Analogue Scale showed higher comfort ratings overall, with 25.3% reporting "Very Comfortable." Comparison between Cyclopentolate and Tropicamide with phenylephrine groups using the Mann–Whitney U test revealed significant differences in anxiety ($p=0.029$), relaxation during waiting ($p<0.001$), concern over duration of effects ($p<0.001$), immediate discomfort after instillation ($p=0.001$), light sensitivity ($p<0.001$), progressive discomfort ($p=0.004$), perceived procedure less uncomfortable ($p<0.001$), and overall comfort ($p<0.001$).

**Conclusion:** The study concluded that Tropicamide with phenylephrine was associated with greater overall comfort, satisfaction, and tolerance compared to Cyclopentolate, which showed higher levels of anxiety, discomfort, and light sensitivity. No significant differences were observed between the groups regarding reassurance, clarity of explanation, and provider communication during cycloplegic refraction.

**Keywords:** Tropicamide, Cyclopentolate, Satisfaction, Refraction.

**OP98**

http://dx.doi.org/10.21653/tjpr.2026.OP98

**Doppler Ultrasound Evaluation of Hepatic Blood Flow in a Diabetic Patient with Liver Cirrhosis**

Nisha Laila[1], Hafiz Shehzad Muzammil[1]

[1]*Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose**: This study aimed to evaluate hepatic blood flow parameters using Doppler ultrasound in diabetic patients with liver cirrhosis.

**Methods**: A cross-sectional study was carried out in 142 diabetic cirrhotic patients in Nishtar Hospital, Multan, during a period of four months. Measures that were evaluated entailed portal vein diameter (PVD), portal vein velocity (PVV), portal vein waveform, hepatic artery velocity, resistive index (RI), and pulsatility index (PI). Doppler findings, HbA1c, and duration of diabetes were statistically correlated.

**Results**: The portal vein mean diameter was 14.10 mm, and the mean velocity was 13.94 cm/s, which revealed severe portal hypertension. Common waveforms were monophasic (52.8%) and biphasic (34.5%). The hepatic artery RI (mean 0.7965) and PI (mean 1.5070) of the hepatic artery were high and indicated an increase in the vascular resistance. There was a significant negative correlation between HbA1c and PVV ($r = -0.721$) and PVD ($r = -0.607$), and also with diabetes duration and portal flow parameters.

**Conclusion**: Liver cirrhosis in diabetic patients is characterized by a significant reduction of portal flow and increased arterial resistance, which deteriorate with non-optimal glycemic control. The Doppler ultrasound is useful in this non-invasive measurement, and therefore, it should routinely be used in clinical practice management.

**Keywords:** Doppler Ultrasound, Hepatic Blood Flow, Liver Cirrhosis, Diabetes Mellitus, Portal Hypertension, Hepatic Artery Resistive Index, Portal Vein Velocity, Non-Invasive Imaging, Hepatic Hemodynamics, Chronic Liver Disease

**OP99**

http://dx.doi.org/10.21653/tjpr.2026.OP99

**Prevalence of Shoulder Pain among School-Going Children of the Age Group 10-15 Years Due to Heavy Bags**

Maryam Tariq[1], Muneeba Shafique[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** This study aims to check the prevalence of shoulder pain due to heavy bags, which causes repetitive stress on the shoulder.

**Methods:** This cross-sectional study was conducted among 327 students of schools in Sialkot. The Modified Nordic Questionnaire was used to determine the shoulder pain. Children's weight was measured. School bag weight was measured, and to bag-to-bodyweight ratio was also calculated.

**Results:** Research study of prevalence of shoulder pain in school-going children due to heavy bags shows that out of 327 students, which is our sample size, Shoulder Pain prevalence in 10,11, 12, 13, 14, and 15 years of age groups was 95%, 71.7%, 75.3%, 70.8%, 71.7% and 60.7% respectively. This shows that Shoulder pain prevalence was higher in the 10-year of age group. After the studies, we also concluded that Pain Prevalence was higher in males due to heavy bags.

**Conclusion:** Prevalence of shoulder pain among school-going children due to heavy bags was very high in the 10-year age group, which is 95% and most of the students had a bag-to-body weight ratio higher than the standard ratio.

**Keywords:** Children, Heavy Bags, Shoulder pain, School, School bag

**OP100**

http://dx.doi.org/10.21653/tjpr.2026.OP100

**Immediate Effects of the Pectoralis Minor Muscle Energy Technique on Its Flexibility among Healthy University Students**

Mariam Mohsin[1], Minahil Sajjad[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** This study aimed to investigate the immediate effects of MET on the flexibility of the pectoralis minor muscle in healthy university students.

**Methods:** A quasi-experimental study was conducted on 142 students with pectoralis minor tightness (61 males, 43.00%; 81 females, 57.00%) aged 18–25 years. The Pectoralis Minor Length Test was employed to measure flexibility. MET was applied in three repetitions in a single session, with a 10-second isometric contraction followed by a 30-second passive stretch. Paired sample t-tests (SPSS v25) were used to compare pre- and post-intervention muscle lengths.

**Results:** The mean pectoralis minor muscle length improved from 5.86 ± 1.07 cm pre-intervention to 5.00 ± 0.92 cm post-intervention. Statistical analysis showed that even with a single session of MET, there can be a significant improvement in muscle flexibility ($p=0.000$).

**Conclusion:** MET produced a statistically significant immediate improvement in pectoralis minor muscle flexibility among healthy university students. These findings suggest that MET is a feasible, low-risk, and effective method for reducing muscle tightness and improving shoulder function in young adults.

**Keywords**: Flexibility, Muscle Energy Technique, Pectoralis Minor, Posture, Shoulder

**OP101**

http://dx.doi.org/10.21653/tjpr.2026.OP101

**Comparison of Spencer Technique and Conventional Treatment in Adjuncts to Corticosteroid Injection in Frozen Shoulder**

Shahroz Qayyum[1], Hammad Nasar[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To examine how well the combination of the Spencer Technique with intra-articular corticosteroid injections performs against traditional treatment methods that use only intra-articular injections for managing frozen shoulder symptoms.

**Methods:** In this study, 18 Stage 2 and 3 frozen shoulder participants received either intra-articular corticosteroid injection together with Spencer Technique treatment or Group A, or intra-articular corticosteroid injection with conventional therapy as Group B. The interventions were delivered twice per week throughout four weeks of treatment duration. The researchers analyzed the data through independent t-tests in addition to repeated measures ANOVA.

**Results:** The participants from both groups achieved significant improvements in pain reduction, together with shoulder range of motion and functional recovery, yet the Spencer Technique group showed better results. Subjects in the Spencer Technique group exceeded the conventional therapy group in achieving better internal rotation results (76.33° vs. 66.67°; $p < 0.05$), together with superior total functional scoring (89.89 vs. 77.44; $p < 0.001$). The subjects in both groups experienced pain reduction, but the subjects receiving Spencer Technique demonstrated marginally better VAS scores during Week 4 (VAS score: 0.78 vs. 1.22; $p < 0.001$).

**Conclusion:** Shoulder function, along with mobility, improved to a greater degree with the combination of Spencer Technique and intra-articular corticosteroid injection than standard corticosteroid injection therapy. Research indicates that hand-treated methods, such as the Spencer Technique, aid patient recovery when treating frozen shoulders.

**Keywords:** Frozen Shoulder, Spencer Technique, Corticosteroid Injection, Manual Therapy, Shoulder Mobility, Rehabilitation

**OP102**

http://dx.doi.org/10.21653/tjpr.2026.OP102

**Effectiveness of Integrated Neuromuscular Inhibition Technique (INIT) and ELDOA Technique on Piriformis Syndrome**

Farwa Fiaz[1], Aiman Fatima[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To compare the effects of the integrated neuromuscular inhibition technique (INIT) and ELDOA in the management of piriformis syndrome in all age groups.

**Methods:** A randomized controlled trial was conducted on twenty-six patients with piriformis syndrome. All were randomly allocated to Group A and Group B. Group A was treated with the INIT, and Group B was treated with Eldoa. Both groups received conventional therapy as a baseline protocol. The session will be held 2 times a week for 8 weeks. Visual Analogue Scale and Sciatica Bothersome Index and Goniometry were used to evaluate the outcome e.g. pain and range of motion. Post-intervention measure recorded at the end of 8 weeks.

**Results:** The participants, N=26, were randomly allocated into two groups. Group A and Group B. The between group findings for Hip External Rotation ($p = .003<.05$), SBI ($p=.002<.05$) and Hip Internal Rotation ($p =<.001<.05$) and Hip abduction ($p =<.001$) are significant. The within-group findings for SBI ($p=.001$) and Hip Internal Rotation ($p =.003$), and Hip Abduction ($p =.003$). Results indicated that there is a difference in the effectiveness of both treatment techniques. We reject the null hypothesis.

**Conclusion:** Both treatment techniques are effective in improving the condition; however integrated neuromuscular inhibition technique shows a more significant improvement in pain, ROM, and Sciatica Bothersome Index scores than the ELDOA techniques in patients with piriformis syndrome.

**Keywords:** ELDOA Technique, Goniometer, Integrated Neuromuscular Inhibition Technique (INIT), Piriformis Syndrome, Sciatica Bothersome Index (SBI), Visual Analogue Scale (VAS).

**OP103**

http://dx.doi.org/10.21653/tjpr.2026.OP103

**Physiotherapy in Women's Rehabilitation: A Systematic Review of Recent Evidence (2020–2025)**

Farah Shaheen[1], Sarah Ahmad[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To update and consolidate recent (2020–2025) review evidence on physiotherapy in women's rehabilitation, highlighting novel therapies, clinical applications, and persisting challenges.

**Methods**: A systematic search was performed across PubMed, Scopus, Web of Science, IEEE Xplore, and Google Scholar (first 200 results). Eligible studies included systematic, scoping, and narrative reviews published between January 2020 and May 2025, focusing on physiotherapy interventions in women's health. Key areas included postpartum recovery, pelvic floor dysfunction, sexual health, return-to-activity after childbirth, pregnancy-related musculoskeletal care, and exercise physiology. Data were synthesized narratively to capture therapeutic advancements, practical implications, and ongoing barriers to care.

**Results**: Recent reviews demonstrate strong evidence for pelvic floor physiotherapy in treating incontinence, prolapse, and postpartum dysfunction, with growing use of digital biofeedback and telehealth platforms. Exercise-based rehabilitation during pregnancy improves maternal fitness, reduces gestational complications, and supports safe postpartum recovery. Novel modalities such as blood flow restriction training, neuromuscular stimulation, and telerehabilitation expand access and personalization of care. Other reviews focused on trunk stabilization, multimodal programs, and technology-assisted therapy, broadening the focus beyond PFMT to include functional outcomes and quality of life. However, disparities remain due to limited implementation in low-resource settings, gaps in culturally tailored interventions, and underrepresentation of women in physiotherapy research.

**Conclusion**: Physiotherapy greatly enhances women's rehabilitation throughout life stages, with innovations driving technologies to produce improved outcomes. Sustained effort must bridge the gap in access, standardization, and long-term evidence to reach inclusive, scalable models of care."

**Keywords**: Pelvic Floor Muscle Training, Postpartum, Trunk Stabilization, Biofeedback

**OP104**

http://dx.doi.org/10.21653/tjpr.2026.OP104

**Diagnostic Accuracy of Ultrasonography in Detecting Acute Appendicitis, Taking Surgery as the Gold Standard**

Muhammad Shafiq[1], Madiha Naheed[1]

[1]*Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** Acute appendicitis is one of the most common surgical emergencies, requiring timely and accurate diagnosis to prevent complications. Ultrasonography (US) is widely used as a first-line imaging tool due to its non-invasive nature and accessibility. This study evaluates the diagnostic accuracy of ultrasonography in detecting acute appendicitis, using surgery as the gold standard.

**Methods:** This cross-sectional study included 101 patients who presented with suspected acute appendicitis. All patients underwent preoperative ultrasonography, and findings were compared with intraoperative surgical confirmation. Patients were included using a non-probability convenience sampling technique. Statistical analysis included chi-square tests to assess associations and Pearson's and Spearman's correlation analyses to compare ultrasound-measured appendix size with surgical findings. A p-value < 0.05 was considered significant.

**Results:** Ultrasonography demonstrated high diagnostic accuracy in detecting acute appendicitis, with a strong correlation between appendix size measured on US and confirmed during surgery (Pearson's $r = 0.896$, $p < 0.01$). The presence of appendicolith and inflamed omental fat on ultrasound showed statistically significant associations with surgical findings ($p < 0.001$). However, ultrasound had limitations in cases of poor visualization due to bowel gas or obesity.

**Conclusion:** In conclusion Ultrasound is a powerful, accessible, and non-invasive method for diagnosing acute appendicitis. With its strong correlations and significant associations with surgical findings, it should be considered an essential part of the diagnostic process, particularly in settings where advanced imaging may not be readily available.

**Keywords:** Acute Appendicitis, Ultrasonography, Diagnostic Accuracy, Surgery, Appendicolith, Correlation

**OP105**

http://dx.doi.org/10.21653/tjpr.2026.OP105

**Effects of Plyometric Training of Quadriceps and Hamstrings on Sprint Performance in Soccer Players**

Umer Ilyas[1], Muhammad Umar Hafeez[2]

[1]*Department of Allied Health Sciences, The Superior University, Lahore, Pakistan*

[2]*Department of Physical Therapy, National Hospital and Medical Centre, Lahore, Pakistan*

**Purpose**: To investigate the effectiveness of plyometric training programs to improve the sprinting abilities of soccer players. on how to utilize these training programs to enhance the performance of their athletes, not just in soccer but in other sports as well.

**Methods:** A randomized controlled trial. Conducted at the PSB and coaching center, Lahore. 40 athletes were selected using convenience sampling. Athletes were divided into 2 groups. Group A was allocated for plyometrics exercises and Group B for traditional exercises for strengthening. A 20-meter sprint test was used for baseline readings. Players performed plyometrics 5 days per week for a period of 6 weeks. After 6 weeks, players performed a 20m sprint test. Normality of the data was checked and t- test was applied.

**Results:** Players after 6 weeks of plyometric training decreased time in 20m sprint test from 4.82±0.52 sec to 3.54±0.22 sec, while players with traditional strengthening exercise decreased time from 5.25±0.62 sec to 4.65±0.25 sec. The results were significant with p-value < 0.05 after applying T-test.

**Conclusion:** Plyometric training is effective in increasing the short-distance sprint performance within 6 weeks of training.

**Keywords:** Athletes, Soccer, Hamstring Muscle, Quadriceps Muscle, Plyometric Exercises.

**OP106**

http://dx.doi.org/10.21653/tjpr.2026.OP106

**Effect of Ultrasound-Guided Botox A Injection in Spasticity among Stroke, Parkinson, and CP Patients**

Mukhlis-ul-Rehman[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose**: The study aimed at finding the effect of ultrasound-guided Botox® (botulinum toxin type A) injection in decreasing the severity of spasticity in stroke, Parkinsonism, and cerebral palsy (CP) individuals.

**Methods**: A total of 250 patients diagnosed with stroke, Parkinsonism, and CP, exhibiting varying degrees of spasticity, were selected for this study. All participants underwent ultrasound-guided Botox® injections in spastic muscles over 6 months. Pre-treatment and post-treatment assessments of spasticity were performed using the Modified Ashworth Scale (MAS) and the Tardieu Scale. The primary outcome was the reduction in spasticity, while secondary outcomes included functional improvement, muscle tone, and quality of life, as measured by the Functional Independence Measure (FIM).

**Results**: Post-treatment analysis showed a significant reduction in spasticity in all patient groups (p=0.035). The greatest improvements were observed in patients with stroke and CP, while patients with Parkinsonism showed moderate improvement. Muscle tone reduction was notable, especially in patients receiving higher doses. Functional improvement was observed across the board, with patients reporting better mobility and reduced pain.

**Conclusion**: Ultrasound guidance Botox injection is a highly effective therapeutic intervention in the treatment of spasticity in stroke, Parkinsonism, and CP patients. Spasticity and muscle tonicity, and functional status significantly improve with the intervention. Spasticity management in neuromuscular disorders has a bright future with the assistance of ultrasound guidance of the intervention.

**Keywords:** Botulinum Toxin, Cerebral Palsy, Parkinsonism, Spasticity, Stroke

**OP107**

http://dx.doi.org/10.21653/tjpr.2026.OP107

**High-Intensity Interval Training versus Moderate-Intensity Continuous Training in Enhancing Rehabilitation and Cardiorespiratory Fitness Following Total Knee Arthroplasty**

Ayesha Mohsin[1], Zeeshan Habib[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To compare the effects of high-intensity interval training (HIIT) and moderate-intensity continuous training (MICT) on postoperative quadriceps strength, cardiorespiratory fitness, and functional recovery in patients undergoing total knee arthroplasty.

**Methods:** In this randomized controlled trial, patients between ages 45-65 after TKA were randomized to 24 weeks of HIIT or CMIT (3xweek) in addition to standard physiotherapy. HIIT was performed with cycling at 85-95% peak power; CMIT at 55-70% HRR. Outcomes were VO2max, quadriceps strength, 6MWT, TUG, OKS, and QOL at baseline, 8 and 24 weeks.

**Results:** High-Intensity Interval Training (HIIT) and Continuous Moderate Intensity Training (CMIT) were compared for effects on knee function, walking endurance, functional performance, quality of life, quadriceps strength, and aerobic capacity (OKS, 6MWT, TUG, WHOQOL-BREF, VO2max, and quadriceps strength). Quadriceps strength and VO2 max were not normally distributed; OKS, 6MWT, TUG, and QOL were normally distributed. Mixed ANOVA showed significant time ($p < 0.001$) and time x group interactions in favor of HIIT for OKS, 6MWT, and TUG. Quality of life was improved equally in the two groups ($p > 0.05$). Friedman test revealed significant increases in quadriceps force and VO2max over 24 weeks (ch2=168.00, $p < .001$). No baseline differences were identified ($p = 0.223$-$1.000$), but increases from week 8 onward were significantly greater in response to HIIT ($p < 0.001$-$0.014$).

**Conclusion:** High-Intensity Interval Training (HIIT) is more beneficial than Continuous Moderate Intensity Training (CMIT) in improving knee function, walking endurance, functional performance, quadriceps strength, and cardiorespiratory fitness, and both equally improve quality of life.

**Keywords:** Total Knee Arthroplasty; High-Intensity Interval Training; Moderate-Intensity Continuous Training; Rehabilitation; Cardiorespiratory Fitness; Quadriceps Strength.

**OP108**

http://dx.doi.org/10.21653/tjpr.2026.OP108

**Association between Hand-Eye Coordination and Handgrip Strength in Children Post-Healing of Distal Radius Greenstick Fractures**

Marwa Mehmood[1], Qurba Kiran[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** This study aimed to estimate the correlation between HGS and HEC of young people after they recovered of a distal radius greenstick fracture.

**Methods:** The 84 children aged between 5-12 years who were included in this study took part in a cross-sectional study and had recovered since having a distal radius greenstick fracture. Handgrip strength was measured using a dynamometer, and HEC was assessed using the Beery-Buktenica Visual-Motor Integration (VMI) test. Pearson correlation coefficient was used to analyse data in order to identify the correlation between HGS and VMI scores. Subgroup analyses were done to investigate possible effects of age, gender and side of injury on recovery outcomes.

**Results:** The study found a moderate positive correlation between handgrip strength and VMI scores ($r = 0.452$, $p < 0.001$), indicating that stronger grip strength was associated with better hand-eye coordination in the post-healing phase. Further subgroup analysis revealed that older children (10–12 years) performed better in both HGS and VMI tasks compared to younger children (5–9 years).

**Conclusion:** Findings reflected a favorable pattern in hand-eye coordination among children post-fracture, as handgrip strength was improved

**Keywords:** Handgrip Strength, Hand-Eye Coordination, Pediatric Fractures, Distal Radius Greenstick Fractures, Rehabilitation, Visual-Motor Integration, Motor Recovery

**OP109**

http://dx.doi.org/10.21653/tjpr.2026.OP109

**Daily Routine Exercise and Inhibition of Cancer Cell Growth: A Systematic Review**

Muhammad Shazib Butt[1], Muhammad Baber Ikram[1]
[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To evaluate the effects of daily routine physical therapy–guided exercises, including morning walks, aerobic training, resistance exercises, and flexibility routines, on the inhibition of cancer cell growth and associated physiological mechanisms.
**Methods:** A thorough search of PubMed, Scopus, Web of Science, and Google Scholar databases was performed to retrieve articles published within the past ten years. Eligible studies were randomized controlled trials, clinical trials, and experimental research that investigated the effect of structured exercise intervention on cancer patients or preclinical models. Primary outcomes assessed included tumor progression, apoptosis, immune modulation, recurrence rates, survival outcomes, and quality of life. Methodological quality and risk of bias were evaluated using the modified Cochrane RoB 1 tool.
**Results:** A total of 25 studies were selected based on inclusion criteria. Morning walks and aerobic exercise showed evidence of a beneficial effect on cardiorespiratory fitness, reduced systemic inflammation, and increased natural killer (NK) cell activity. Whereas resistance training stimulated apoptosis in cancerous cells and maintained lean mass, flexibility and mobility-centered routines also alleviated fatigue and increased functional independence.
**Conclusion:** Daily routine exercise prescribed within physical therapy practice, including morning walks, aerobics, resistance training, and flexibility exercises, plays a vital role in inhibiting cancer cell growth, enhancing functional capacity, and improving quality of life.

**Keywords:** Physical Therapy, Daily Exercise, Morning Walks, Aerobic Training, Resistance Training, Flexibility Exercises, Cancer Rehabilitation

**OP110**

http://dx.doi.org/10.21653/tjpr.2026.OP110

**From Isolation to Social Interaction: Conceptualizing the Role of Collaborative Virtual Reality Environment for Parkinson's Disease Rehabilitation**

Hafiz Muddassir Riaz[1], Muhammad Naveed Babur[1]
[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** To conceptualize the role of Collaborative Virtual Environments (CVE) in Parkinson's Disease (PD) rehabilitation by integrating social presence, aiming to enhance motor, cognitive, and psychosocial outcomes while improving patient engagement and adherence.
**Methods:** A theoretical model was proposed for incorporating social presence into PD rehabilitation via CVE. The model integrates motor, cognitive, and psychosocial rehabilitation domains, enabling real-time interaction between patients and physiotherapists. Social presence will be evaluated using validated scales measuring co-presence, perceived attention, and emotional contagion. Motor and functional outcomes will be assessed using standardized tools including the Unified Parkinson's Disease Rating Scale (UPDRS), Montreal Cognitive Assessment (MoCA), and Parkinson's Disease Questionnaire-39 (PDQ-39). Treatment adherence will also be monitored.
**Results:** Embedding social presence in CVE is anticipated to improve patient motivation, engagement, and adherence. The interactive, patient-centered approach is expected to enhance motor recovery, cognitive stimulation, and psychosocial well-being compared with conventional isolated VR or task-based rehabilitation. CVE may provide a more holistic rehabilitation experience, addressing both physical and emotional needs of PD patients.
**Conclusion:** Collaborative Virtual Environments offer a promising framework for patient-centered, interactive rehabilitation in Parkinson's Disease, emphasizing social interaction to improve functional outcomes and overall quality of life. This approach may redefine conventional VR-based neurorehabilitation strategies by integrating social, cognitive, and motor recovery.

**Keywords:** Collaborative Virtual Environment, Parkinson's Disease, Neurorehabilitation, Social Interaction, Virtual Reality, Quality of Life, Patient-Centered Care.

**OP111**

http://dx.doi.org/10.21653/tjpr.2026.OP111

**Automatic Segmentation of Intervertebral Discs in Multimodal MRI Using Ensemble U-Net Architecture**

Iqra Saeed[1], Maryam Javed[2]
[1]*National University of Sciences and Technology, School of Mechanical and Manufacturing Engineering, Department of Biomedical Engineering and Sciences, Islamabad, Pakistan*
[2]*Riphah International University, Lahore, Pakistan*

**Purpose:** Intervertebral disc degeneration is a major cause of lower back pain, requiring accurate localization and segmentation for diagnosis and surgical planning. This study aimed to develop a fully automated segmentation method for intervertebral discs using a residual U-Net–based architecture with ensemble learning to improve accuracy across multiple MRI modalities.
**Methods:** A publicly available dataset (IVDM3Seg, MICCAI 2018) containing sagittal MRI scans in four Dixon-based modalities (fat, water, in-phase, out-of-phase) was used. Four separate residual U-Net models with ResNet-34 backbones were trained on each modality using cyclic and layer-specific learning rates for faster convergence. Outputs of these models were combined through a stacked ensemble U-Net for final segmentation. Performance was evaluated using Dice Similarity Coefficient (DSC), Mean Surface Distance (MSD), and Hausdorff Distance (HD).
**Results:** Individual modality models achieved DSC values between 0.9468 and 0.9754, with MSD ranging from 0.1060 to 0.2208 and HD from 1.0120 to 1.3805 pixels. The ensemble model outperformed individual models, achieving a DSC of 0.9910, MSD of 0.0383, and HD of 0.9855 pixels ($p<0.001$ compared to baseline methods).
**Conclusion:** The proposed ensemble residual U-Net model significantly improves intervertebral disc segmentation accuracy over existing techniques, offering potential for integration into computer-aided diagnosis and surgical planning workflows.
**Keywords:** Automatic Segmentation, Computer-Aided Diagnosis, Intervertebral Disc, Magnetic Resonance Imaging, U-Net

**OP112**

http://dx.doi.org/10.21653/tjpr.2026.OP112

**Association of Thyroid Function with Obesity**

Shahar Bano[1], Sidra Iqbal[1]
[1]*Superior University, Lahore*

**Purpose:** The thyroid gland regulates metabolism, thermogenesis, and weight through the secretion of thyroxine (T4) and triiodothyronine (T3). Thyroid dysfunction affects body weight and metabolic rate, while obesity increases the risk of cardiovascular and metabolic diseases. To investigate the association between thyroid function and obesity.
**Methods:** A cross-sectional study was conducted at Social Security Hospital, Lahore, from January to April 2025, including 100 participants from pediatric to geriatric age groups. Blood samples were analyzed for T3, T4, and TSH using ELISA. Data were analyzed with IBM SPSS 26, using mean ± SD and independent t-tests for group comparisons.
**Results:** About half of the participants were obese, while others were overweight or normal weight. TSH levels were mildly elevated (4.5–10 mIU/mL) in 55 participants, severely elevated (>10 mIU/mL) in 36, and normal (0.5–4.5 mIU/mL) in 9. Anti-TPO positivity was observed in 5% of cases. Thyroid enlargement was common in obese adults. T3 concentrations and TSH levels were higher in obese individuals and showed a significant positive correlation.
**Conclusion:** Obesity was associated with primary hypothyroidism, with higher TSH levels in obese compared to lean individuals. The rising prevalence of obesity may affect the interpretation of normal TSH ranges in population studies. Although no linear relationship was found between TSH and BMI, many participants attributed obesity to thyroid dysfunction.
**Keywords:** Obesity, Thyroid, TSH, Hypothyroidism, BMI

**OP113**

http://dx.doi.org/10.21653/tjpr.2026.OP113

**Development and Nutritional, Physical, and Functional Assessment of a Plant-Based Oat Almond Milk Alternative**

Easha Aerken Mustafa[1], Hafiz Shehzad Muzammil[1]
[1]*Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** The growing prevalence of lactose intolerance, milk allergies, and ethical dietary choices has fueled interest in plant-based milk alternatives. This study aimed to formulate an oat–almond milk substitute and evaluate its physicochemical, nutritional, functional, and sensory properties.
**Methods:** Oat–almond blends were prepared as T1 (25% almond + 75% oat), T2 (40% almond + 60% oat), and T3 (50% almond + 50% oat), and compared with oat milk (T01), almond milk (T02), and cow milk (T0). Proximate composition, physicochemical characteristics, and functional attributes - including total phenolic content (TPC), total flavonoid content (TFC), and DPPH radical scavenging activity—were analyzed. Sensory evaluation was performed using a trained panel on a 9-point hedonic scale.
**Results:** Oat milk (T01) had the highest carbohydrate content (63.62%) but the lowest protein (15.8%) and fat (5.2%). Almond milk (T02) showed superior protein (34.8%), fat (32.5%), and antioxidant capacity (TPC = 62.13 mg GAE/100 mL; TFC = 13.10 mg QE/100 mL; DPPH = 63.47%). Among blends, T2 displayed a balanced composition—protein (29.9%), fat (34.9%), carbohydrate (19.04%), ash (1.8%), low acidity (0.045%), viscosity (94.4 ± 0.65 cP), TPC = 50.13, TFC = 10.93, and DPPH = 58.97%. T3 achieved the highest sensory acceptance (>7.2), comparable to cow milk.
**Conclusion:** Blending oats and almonds produced a nutrient-dense, antioxidant-rich, and sensory-acceptable milk alternative. The 40:60 almond–oat formulation (T2) provided the best balance between nutritional quality and consumer appeal, suggesting its promise as a functional dairy substitute.

**Keywords:** Almonds; Oats; Plant-based Milk; Antioxidants; Functional Beverages

**OP114**

http://dx.doi.org/10.21653/tjpr.2026.OP114

**Clinical Effectiveness of Open versus Closed Chain Exercises in Managing Knee Osteoarthritis: A Systematic Review**

Maryam Afzal[1], Zohaib Shahid[2]
[1]*University of Sialkot, Faculty of Pharmacy & Allied Health Sciences, Department of Doctor of Physical Therapy, Sialkot, PhD Scholar at Superior University, Lahore, Pakistan*
[2]*The Superior University, Faculty of Allied Health Sciences, Lahore, Pakistan*

**Purpose:** Knee osteoarthritis (OA) is a progressive degenerative joint disease characterized by cartilage degradation, pain, and functional impairment. Exercise therapy, particularly open kinetic chain exercises (OKCE) and closed kinetic chain exercises (CKCE), remains a cornerstone of OA rehabilitation. This review aimed to compare the clinical effectiveness of OKCE and CKCE in improving pain, physical function, and quality of life (QOL) in individuals with knee OA.
**Methods:** A systematic search was conducted in PubMed, Embase, Cochrane Library, PEDro, and Google Scholar for randomized controlled trials (RCTs) published between January 2014 and December 2024 using the keywords “Knee Osteoarthritis,” “Closed Chain Exercises,” and “Open Chain Exercises.” Eligible studies included RCTs on males and females aged 40–80 years with grade II–III knee OA, published in English with full-text availability. Study quality was appraised using the PEDro scale. Data synthesis employed mean difference (MD) for key outcomes.
**Results:** Eight RCTs (n = 391) met inclusion criteria; six were of good quality and two fair. Participants had a mean age of 56.86 years (BMI: 17.08–29.90 kg/m²), with interventions lasting 6–8 weeks (2–3 sessions/week). Pain reduction ranged from MD = 0.54–2.00, and physical function improvements from MD = 1.02–22.43. Only one study showed a clinically significant QOL improvement favoring CKCE (MD = 6.6–7.0).
**Conclusion:** Both OKCE and CKCE significantly improve pain and functional outcomes in individuals with grade II–III knee OA. CKCE may offer slight advantages for QOL, but both are safe and effective exercise strategies for OA management.

**Keywords:** Closed-chain Exercise; Open-chain Exercise; Knee Osteoarthritis; Physical Function; Quality of Life

**OP115**

http://dx.doi.org/10.21653/tjpr.2026.OP115

**Development of Low Sugar High Protein Smoothie for Weight Management**

Adeeba Saleem[1], Hafiz Shehzad Muzammil[1]
[1]*Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** The growing demand for functional beverages that support weight management has increased the need for low-sugar, high-protein products with appealing sensory qualities and stability. This study aimed to develop plant-based smoothies using vegan milk substitutes optimized for nutritional value, sensory acceptance, and short-term storage stability.
**Methods:** Four formulations (T1–T4) were prepared using varying proportions of almond milk and plant-derived ingredients. Physicochemical parameters—including viscosity, pH, titratable acidity, stability, and proximate composition—were assessed using AOAC methods. Functional properties such as total phenolic content (TPC), total flavonoid content (TFC), and DPPH radical scavenging activity were measured. Sensory evaluation was conducted by a trained panel using a 9-point hedonic scale.
**Results:** T1 contained the highest carbohydrate (63.62%) but the lowest protein (15.8%) and fat (5.2%) levels, with notable functional properties (TPC: 55.77 mg GAE/100 mL; TFC: 11.45 mg QE/100 mL; DPPH: 60.23%). T2 showed superior protein (34.8%) and fat (32.5%) contents, while T3 demonstrated the highest fat (43.3%) and viscosity (116.4 cP). T4 presented a balanced composition with protein (29.9%), fat (34.9%), carbohydrates (19.04%), ash (1.8%), low acidity (0.045%), viscosity (94.4 cP), and strong antioxidant potential (TPC: 50.13; TFC: 10.93; DPPH: 58.97%). T3 achieved the highest sensory acceptability, while T4 exhibited the best physical stability.
**Conclusion:** The T3 formulation, rich in protein, fiber, and healthy fats, was the most preferred for sensory quality, whereas T4 showed superior stability, making both promising low-sugar, plant-based functional beverages.
**Keywords:** Low-sugar Smoothie; High-protein Beverage; Plant-based Milk; Sensory Evaluation; Weight Management; Functional Food

**OP116**

http://dx.doi.org/10.21653/tjpr.2026.OP116

**Comparative Analysis of Disinfecting Techniques in Gynecology Operating Rooms: Advancing Infection Control in Alignment with the UN Sustainable Development Goals**

Rubama Javed[1], Seema Javeed[1]
[1]*Superior University, Faculty of Allied Health Sciences, Lahore, Pakistan*

**Purpose:** Environmental cleaning and disinfection are vital for preventing pathogen transmission and ensuring patient safety in gynecology operating rooms. This study aimed to evaluate the effectiveness of various disinfecting techniques in reducing surgical site infections, while aligning with Sustainable Development Goal (SDG) 3 (Good Health and Well-being). Additionally, it assessed staff perceptions regarding the practicality, efficiency, and sustainability of these techniques, relevant to SDG 6 (Clean Water and Sanitation) and SDG 12 (Responsible Consumption and Production).
**Methods:** A cross-sectional study was conducted using non-probability convenience sampling. Based on Cochran's formula, data were collected from 196 staff members working in gynecology operating rooms. Quantitative analyses included Fisher's Exact test, Factor Analysis, and the Kruskal–Wallis non-parametric test.
**Results:** Significant associations were found between professional roles and perceived effectiveness of disinfection methods ($\chi^2 = 9.897$, $p = 0.031$), as well as between the type of disinfectant and its perceived effectiveness ($\chi^2 = 13.053$, $p = 0.026$). Factor analysis identified three key dimensions: practicality and efficiency, sustainability and environmental alignment, and infection prevention and patient safety. Staff perceptions significantly differed across these dimensions based on their ratings of effectiveness.
**Conclusion:** The study emphasizes the need for standardized, evidence-based disinfection protocols to enhance infection prevention and environmental sustainability in gynecology operating rooms, supporting the achievement of SDGs 3, 6, and 12.
**Keywords:** Disinfection, Operating Rooms, Infection Control, Patient Safety, Sustainable Development Goals.

**OP117**

http://dx.doi.org/10.21653/tjpr.2026.OP117

**Development of Protein Enriched Cookies with Wheat, Oat and Hemp Flour**

Umber Gul[1], Hafiz Shehzad Muzammil[1]

[1]*Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** With growing consumer demand for functional and protein-rich foods, the use of alternative flours in bakery products offers a promising approach to improve nutritional quality. This study aimed to develop protein-enriched cookies by partially substituting wheat and oat flour with hemp flour and to evaluate their nutritional, physicochemical, functional, textural, and sensory properties to produce a nutrient-dense, high-quality bakery product.

**Methods:** Four formulations were prepared: T0 (control, 0% hemp flour), T1 (5%), T2 (10%), and T3 (15%). Proximate composition, pH, water activity, and antioxidant activity (total phenolic content, total flavonoid content, DPPH radical scavenging, tannins, and carotenoids) were assessed using AOAC and spectrophotometric methods. Textural parameters were determined using a texture analyzer, and sensory evaluation was conducted by a trained panel using a 9-point hedonic scale.

**Results:** The incorporation of hemp flour markedly enhanced protein, fat, fiber, and antioxidant levels while reducing carbohydrate content. The T3 formulation (15% hemp) exhibited the highest protein (31.25%) and fat (13.45%) contents, lowest carbohydrates (54.12%), and superior antioxidant properties (TPC 5.42 mg GAE/g; TFC 1.95 mg QE/g; DPPH 43.6%; tannins 0.41 mg CE/g; carotenoids 3.09 mg/kg). T3 also demonstrated optimal textural attributes (increased hardness and fracturability) and the highest sensory acceptance (≥7.8).

**Conclusion:** Substituting up to 15% hemp flour in wheat–oat cookies significantly enhances their nutritional and antioxidant properties without compromising sensory quality, offering a functional, protein-rich, and marketable health-oriented snack.

**Keywords:** Cookies; Hemp Flour; High-Protein Foods; Dietary Fiber; Antioxidant Activity; Sensory Evaluation

**OP118**

http://dx.doi.org/10.21653/tjpr.2026.OP118

**Conjunct Effects of Transcranial Direct Current Stimulation and Whole-Body Vibration Therapy on Balance, Gross Motor Function and Manual Dexterity in Spastic CP Children.**

Zainab Hassan[1], Mohammad Reza Hadian[2]

[1]*School of Health Sciences, Department of Physical Therapy and Rehabilitation, University of Management and Technology Lahore, Pakistan*

[2]*School of Rehabilitation, Tehran University of Medical Sciences, Iran*

**Purpose:** To compare the conjunct effects of Transcranial Direct Current Stimulation (tDCS) and whole-body vibration therapy with whole-body vibration therapy (WBVT) alone on Manual dexterity, Balance and Gross motor function in children with spastic Cerebral Palsy (CP).

**Methods:** A randomized Clinical Trial was carried out on 28 spastic CP children with age between 5 to 15 years of both genders. Data was collected from Dimensions national school of special children and Sehat medical complex Lahore, Pakistan. The children were divided at random into two groups. Group A received WBVT only, Group B received WBVT and tDCS. The intervention was applied 4 times a week for four consecutive weeks. Manual Dexterity was measured by the 9-Hole peg test. Balance was measured by Berg Balance scale and gross motor function was measured by GMFM-88. SPSS version 27 was utilized for statistical analysis.

**Results:** The mean age of the children in groups A and B was 12.21±2.11 years and 11.07±2.01 years respectively. Intragroup analysis revealed a statistically significant difference ($p<0.05$) in the pre- and post-treatment values of manual dexterity, balance and gross motor function. Intergroup analysis showed a statistical significant disparity between both groups on balance and gross motor function ($p<0.05$). But no significant difference was observed in manual dexterity in both groups after the treatment of four weeks.

**Conclusion:** The study concluded that positive effects were seen in both groups but tDCS and WBVT were found to be most effective in improving balance and gross motor function in Spastic CP children.

**Keywords:** Balance, Cerebral Palsy, Manual Dexterity, Spasticity, Transcranial Direct Current Stimulation, Whole Body Vibration.

**OP119**

http://dx.doi.org/10.21653/tjpr.2026.OP119

**Evaluating the Impact of Preoperative Respiratory Exercises on Post-Surgical Pulmonary Outcomes: A Randomized Controlled Trial**

Sana Rashid[1], Hafiz Shahzad Muzammil[1]
[1]*Superior University, Faculty of Allied Health Sciences, Lahore Pakistan*

**Purpose:** Postoperative pulmonary complications (PPCs) remain a leading cause of prolonged hospitalization and increased morbidity and mortality following surgery. To evaluate the effectiveness of preoperative respiratory exercises in reducing postoperative pulmonary complications and hospital stay duration compared with standard care.
**Methods:** A randomized controlled trial was conducted involving 126 patients, allocated into an intervention group (preoperative respiratory exercises) and a control group (standard care). Data were collected using a structured data sheet and analyzed using the Chi-square test for categorical variables and independent t-tests for continuous variables.
**Results:** The standard care group showed higher incidences of PPCs: atelectasis (12.7%), hypoxia (20.6%), and pneumonia (6.3%), compared with the intervention group (7.9%, 3.2%, and 3.2%, respectively). Preoperative $SpO_2$ levels were comparable between groups ($p > 0.40$), while postoperative $SpO_2$ was significantly higher in the intervention group (95.9%) than in the control group (94.7%) ($p = 0.045$). The mean hospital stay was significantly shorter in the intervention group (5.4 days) compared to the control group (13.1 days) ($p < 0.001$). Chi-square analysis confirmed a significant association between preoperative respiratory exercises and reduced PPCs ($p < 0.001$).
**Conclusion:** Preoperative respiratory exercises significantly reduce postoperative pulmonary complications and hospital stay duration. Incorporating these exercises into pre-surgical protocols can enhance patient recovery and support evidence-based perioperative care.

**Keywords:** Preoperative Respiratory Exercise, Postoperative Pulmonary Complications, Hospital Stay

**OP120**

http://dx.doi.org/10.21653/tjpr.2026.OP120

**Comparison of Endometrial Thickness Measurements in Women with Normal and Abnormal Uterine Bleeding Using Ultrasonography**

Shazia Allah Bakhsh[1], Chanda Naseem[2]
[1]*Medical Imaging Technologist, Masters in Medical Imaging Technology Superior University, Lahore*
[2]*Assistant Professor, Department of Emerging Health Professional Technologies, Superior University, Lahore*

**Purpose:** Abnormal uterine bleeding (AUB) is a prevalent gynecological condition associated with considerable morbidity. Endometrial thickness (ET), measured via ultrasonography, serves as a key non-invasive diagnostic parameter; however, threshold variability persists across different populations. To compare endometrial thickness measurements in women with normal and abnormal uterine bleeding using ultrasonography.
**Methods:** This comparative observational study was conducted at Bahawal Victoria Hospital, Bahawalpur, involving 80 women aged 20–45 years. Endometrial thickness was measured in the mid-sagittal uterine plane using transabdominal ultrasonography. Demographic data, menstrual history, and uterine parameters were recorded. Statistical analyses included descriptive measures, t-test, chi-square, and Tukey HSD post-hoc comparisons.
**Results:** The mean participant age was 31.2 years. AUB was observed in 75% of women, predominantly presenting with heavy menstrual flow. Most participants (45%) had menstrual cycles lasting 5–7 days, while 36.3% reported bleeding exceeding 7 days. Mean ET was significantly greater in women with heavy bleeding (12.6 mm) compared to those with moderate (5.7 mm) and light flow (4.1 mm) ($p < 0.001$).
**Conclusion:** A strong positive correlation was found between ET and abnormal bleeding ($r = 0.849$, $p < 0.001$), confirming that increased endometrial thickness is significantly associated with AUB. Ultrasonography remains a reliable, non-invasive, and cost-effective tool for early detection and evaluation of endometrial pathology.

**Keywords:** Endometrial Thickness, Abnormal Uterine Bleeding, Ultrasonography, Menorrhagia, Gynecological Imaging

**OP121**

http://dx.doi.org/10.21653/tjpr.2026.OP121

**Corelation of Lipid Parameters with the Extent of Coronary Atherosclerosis**

Muneefa Hamdani[1], Rida Fatima[1]
[1]*Superior University, Lahore*

**Purpose:** Coronary atherosclerosis is a progressive cardiovascular disease marked by lipid accumulation, inflammation, and plaque formation within arterial walls, leading to reduced coronary blood flow. Dyslipidemia remains a key risk factor contributing to its development and progression. To evaluate the association between lipid profile parameters and the extent of coronary atherosclerosis, and determine their potential as predictive markers.

**Methods:** A cross-sectional study was conducted at Shaukat Khanum Laboratory over six months, including 115 patients, 60 of whom were diagnosed with coronary atherosclerosis. Fasting blood samples were analyzed for total cholesterol, triglycerides, HDL-C, and LDL-C using the CHOD/PAP enzymatic method. Data were presented as mean ± SD, and independent t-tests were applied, with $p < 0.005$ considered significant.

**Results:** Patients with atherosclerosis showed significantly altered lipid profiles: triglycerides (183.4 ± 86.1 mg/dL), total cholesterol (198.1 ± 51.5 mg/dL), and LDL-C (130.9 ± 37.2 mg/dL). HDL-C levels showed a negative correlation. The prevalence of atherosclerosis was 60% among all participants.

**Conclusion:** Abnormal lipid parameters, particularly elevated LDL-C and triglycerides with reduced HDL-C, are strongly associated with coronary atherosclerosis. Routine lipid screening can aid in early detection, prevention, and management of this disease.

**Keywords:** Atherosclerosis, Lipid Profile, Dyslipidemia, Total Cholesterol, HDL-C, LDL-C, Triglycerides, VLDL-C, Cardiovascular Risk

**OP122**

http://dx.doi.org/10.21653/tjpr.2026.OP122

**Advanced Management of Intraoperative Respiratory Complications in Smoker versus Non-Smoker Patients Undergoing Laparoscopic Cholecystectomy**

Aqsa Batool[1], Rabia Javed[1]
[1]*Superior University Lahore, Faculty of Allied Health Science, Department of Emerging Allied Health Technologies*

**Purpose:** Laparoscopic cholecystectomy, though minimally invasive, presents higher anesthetic risks in smokers due to impaired pulmonary function and altered airway reactivity from chronic tobacco exposure. These factors increase susceptibility to intraoperative complications such as bronchospasm, hypoxia, and hypercapnia, further aggravated by pneumoperitoneum and Trendelenburg positioning. To compare the incidence and types of intraoperative respiratory complications between smoker and non-smoker patients undergoing laparoscopic cholecystectomy and to evaluate advanced ventilatory and pharmacological strategies for improving patient safety and outcomes.

**Methods:** A case-control study will be conducted, including smoker and non-smoker patients undergoing laparoscopic cholecystectomy. Preoperative pulmonary function tests, intraoperative blood gas analyses, ventilator parameters, and postoperative respiratory outcomes will be recorded. Management techniques such as lung-protective ventilation, intraoperative bronchodilator therapy, and continuous respiratory monitoring will be analyzed for effectiveness.

**Results:** It is anticipated that the implementation of targeted intraoperative respiratory strategies will reduce the incidence and severity of respiratory complications, decrease recovery time, and improve overall perioperative outcomes in smoker patients compared to non-smokers.

**Conclusion:** A structured, advanced intraoperative respiratory management approach tailored for smoker patients can significantly enhance anesthetic safety and postoperative recovery. This study aims to contribute toward developing standardized protocols for respiratory management in this high-risk surgical population.

**Keywords:** Laparoscopic Cholecystectomy; Respiratory Complications; Smoking; Intraoperative Management; Lung-Protective Ventilation; Bronchospasm; Anesthesia Safety

**OP123**

http://dx.doi.org/10.21653/tjpr.2026.OP123

**Perception and Practices of Self-Medication among University Students in Lahore, Pakistan**

Tooba Ali [1], Jawaria Barkat[1]

[1]*Superior University, Faculty of Allied Health Sciences, Public Health Department, Lahore, Pakistan*

**Purpose:** Self-medication, the use of medicines without professional consultation, is a growing public health concern, especially among young adults. Although it may offer convenience, inappropriate use can lead to adverse effects, antibiotic resistance, and drug dependence. To assess the perceptions and practices of self-medication among university students in Lahore, Pakistan.

**Methods:** A comparative cross-sectional study was conducted among 584 university students (292 medical and 292 non-medical) in Lahore using a non-probability convenience sampling technique. The sample size was calculated based on $P_1$ = 86% (self-medication for headache among medical students) and $P_2$ = 77% (among non-medical students), with 80% power, a 5% margin of error, and a 95% confidence level. Data were collected using a structured, self-administered questionnaire assessing knowledge, attitudes, and practices regarding self-medication. Descriptive statistics were applied for data analysis. Ethical approval was obtained, and informed consent was secured from all participants.

**Results:** Self-medication was reported by 98.6% of students, with a higher prevalence among males (62.7%) than females (37.3%). While 75% of participants recognized that some drugs require a prescription and 63.7% were aware of potential adverse drug reactions, 78.8% considered self-medication safe. Common reasons for self-medication included time-saving, quick relief, and perceiving the condition as minor. Frequently used drug categories were painkillers, antibiotics, antipyretics, and cold and flu remedies. About 56.5% of participants read medication leaflets, and 53.6% reported using antibiotics without prescription. Fever, headache, and cough/cold were the most common self-treated symptoms within the past six months.

**Conclusion:** Self-medication was highly prevalent among university students, with significant reliance on antibiotics and analgesics. Despite awareness of potential risks, misconceptions about safety and convenience persist. Educational initiatives are urgently needed to promote rational and responsible medication use among young adults.

**Keywords:** Self-medication; Antibiotic Misuse; Health Awareness; University Students; Rational Drug Use

**OP124**

http://dx.doi.org/10.21653/tjpr.2026.OP124

**Sonographic Evaluation of Fetal Growth Patterns in Relation to Family Behavior towards the Mother**

Sadaf Nawaz[1], Madiha Naheed[1]

[1]*Superior University, Faculty of Allied Health Sciences, Department of Medical Imaging Technology, Lahore, Pakistan*

**Purpose:** Psychological and social factors play a vital role in maternal and fetal health. Family behavior towards expectant mothers directly influences stress levels, which may adversely affect fetal growth and development. This study aimed to investigate the association between family behavior, maternal psychological stress, and fetal growth patterns, using sonographic assessment of key fetal parameters in the third trimester.

**Methods:** A cross-sectional study was conducted in Sargodha, Pakistan, between September 2024 and February 2025. A total of 237 pregnant women in their third trimester were included. Data on maternal demographics, perceived stress (measured by the Perceived Stress Scale), and family behavior were collected through structured interviews. Fetal growth parameters—including biparietal diameter, head circumference, abdominal circumference, femur length, and estimated fetal weight—were evaluated using ultrasonography. Associations between family behavior, maternal stress, and fetal growth were analyzed using multiple linear regression, adjusting for potential confounders.

**Results:** Women experiencing moderate stress reported higher rates of negative family behaviors (65.4%). Fetuses of stressed mothers exhibited significantly lower growth characteristics, with 59.1% classified as below average and 5.1% diagnosed with intrauterine growth restriction or low birth weight (p=0.028). Maternal stress showed an inverse correlation with fetal head circumference, abdominal circumference, femur length, and estimated fetal weight. Supportive family behavior was associated with lower stress levels and improved fetal growth outcomes.

**Conclusion:** Maternal psychological stress and negative family behavior are significant predictors of impaired fetal growth in late pregnancy. Incorporating family-centered psychosocial support and stress management strategies into antenatal care may enhance maternal well-being and promote optimal fetal development.

**Keywords:** Family Relations; Fetal Development; Maternal Stress; Pregnancy Complications; Ultrasonography

**OP125**

http://dx.doi.org/10.21653/tjpr.2026.OP125

**Get Back in the Game: Knee Sprain Rehabilitation for Sports Professionals**

Mohammed Akhtar Khan[1], Muhammad Shahryar Khan[2]

[1]*Consultant Surgeon. Head of the Department of Orthopedics, Federal Government Polyclinic, Post-Graduate Medical Institute, Islamabad*

[2]*Islamabad Medical & Dental College, Shaheed Zulfiqar Ali Bhutto Medical University*

**Purpose:** Knee sprains are among the most prevalent musculoskeletal injuries in sports professionals, leading to performance decline, time loss, and heightened re-injury risk. Evidence-based rehabilitation strategies are crucial for safe and efficient return to play; however, standardized, athlete-specific protocols remain limited. This study aimed to evaluate the effectiveness of a structured, multi-modal rehabilitation program in improving functional recovery, neuromuscular control, and return-to-play outcomes among professional athletes with knee sprains.

**Methods:** A prospective cohort study was conducted on 60 professional athletes (aged 18–35 years) with grade I–II knee sprains. Participants underwent a 12-week phased rehabilitation program comprising: (1) acute phase—pain management, cryotherapy, and controlled mobilization; (2) subacute phase—progressive strengthening, proprioceptive, and isokinetic training; and (3) advanced phase—sport-specific, plyometric, and agility drills. Outcomes were assessed using the International Knee Documentation Committee (IKDC) score, single-leg hop tests, isokinetic strength ratios, and time-to-return-to-play. Data were analyzed using paired t-tests and repeated-measures ANOVA ($p < 0.05$).

**Results:** Significant post-rehabilitation improvements were noted across all parameters. IKDC scores increased from 54.3 ± 8.7 to 88.9 ± 5.4 ($p < 0.001$), and quadriceps-to-hamstring strength ratios normalized from 1.92 to 1.38 ($p < 0.01$). The mean return-to-play time was 9.6 ± 1.8 weeks, with a 6.7% re-injury rate within six months. Athletes in pivoting sports required slightly longer recovery periods than endurance athletes.

**Conclusion:** A structured, multi-modal rehabilitation program effectively enhances functional outcomes, neuromuscular control, and safe return to play in professional athletes with knee sprains. Integration of sport-specific conditioning and neuromuscular training is essential for optimal recovery and injury prevention.

**Keywords:** Knee Sprain, Rehabilitation, Sports Professionals, Return-to-play, Neuromuscular Training

**OP126**

http://dx.doi.org/10.21653/tjpr.2026.OP126

**Clinical Efficacy of Integrated Neuromuscular Inhibition Technique on Pain and Trigger Point Sensitivity in Non-Specific Neck Pain**

Hira Tariq[1], Amna Shakoor[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Non-specific neck pain is a common musculoskeletal disorder contributing to substantial healthcare and economic burden. Upper trapezius trigger points are often central to its pathophysiology. Integrated Neuromuscular Inhibition Technique (INIT)—a combination of muscle energy, ischemic compression, and strain–counterstrain methods—has been proposed to reduce pain and improve function. This study aimed to determine the clinical efficacy of INIT in reducing pain intensity and functional disability among patients with non-specific neck pain.

**Methods:** A single-blind randomized controlled trial was conducted over nine months at JIMS Hospital, Jacobabad, including 58 participants with upper trapezius trigger points. Participants were randomly assigned to an intervention group receiving conventional therapy plus INIT (20–30 minutes/session) or a control group receiving conventional therapy plus routine techniques (massage, traction, chiropractic care, immobilization, acupressure). Both groups underwent five sessions per week for eight weeks. Pain and disability were assessed using the Visual Analog Scale (VAS) and Neck Disability Index (NDI). Data were analyzed using paired and independent t-tests ($p < 0.05$).

**Results:** Both groups showed significant improvements in VAS and NDI scores ($p < 0.05$). However, the intervention group exhibited significantly greater reductions in pain and disability than the control group ($p < 0.01$).

**Conclusion:** Integrating the neuromuscular inhibition technique with conventional physiotherapy produces superior pain relief and functional improvement in non-specific neck pain compared to standard treatment alone. INIT represents an effective, evidence-based approach for managing myofascial neck pain.

**Keywords:** Integrated Neuromuscular Inhibition Technique; Non-Specific Neck Pain; Upper Trapezius Trigger Points; Visual Analog Scale; Neck Disability Index

**OP127**

http://dx.doi.org/10.21653/tjpr.2026.OP127

**Comparative Effect of Mulligan's Technique with and Without Kinesio Taping in Patients of Non-Specific Shoulder Pain: A Randomized Control Trial**

Usama Dilshad[1], Qurat-ul-Ain Tariq[2]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Superior University, Lahore, Pakistan*

[2]*Department of Paramedical Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Non-specific shoulder pain (NSSP) significantly impairs functional ability and quality of life. Mulligan's Mobilization with Movement (MWM) is a widely used manual therapy technique, and Kinesio Taping (KT) has been suggested as an adjunct to enhance therapeutic outcomes. This study aimed to compare the effects of MWM alone versus MWM combined with KT on pain reduction and functional improvement in individuals with NSSP.

**Methods:** A single-blind, randomized controlled trial was conducted on 24 participants clinically diagnosed with NSSP. Participants were randomly allocated to two groups: Group A received MWM alone (n = 12), while Group B received MWM combined with KT (n = 12). Both groups underwent interventions three times per week for four weeks. Outcome measures included the Numeric Pain Rating Scale (NPRS) and the Shoulder Pain and Disability Index (SPADI), assessed at baseline and after four weeks. Data were analyzed using the Wilcoxon signed-rank test and Mann–Whitney U test.

**Results:** Both groups demonstrated significant improvements in NPRS and SPADI scores post-intervention ($p < 0.001$). The MWM + KT group exhibited greater mean rank improvements in both pain and functional outcomes compared with the MWM-only group, though not all between-group differences reached statistical significance.

**Conclusion:** The combination of MWM with Kinesio Taping appears more effective than MWM alone in reducing pain and enhancing shoulder function in patients with NSSP. Integrating KT as an adjunct to manual therapy may optimize rehabilitation outcomes in clinical physiotherapy practice.

**Keywords:** Mulligan's Technique; Kinesio Taping; Non-specific Shoulder Pain; Mobilization with Movement (MWM); SPADI; NPRS; Manual Therapy; Randomized Controlled Trial.

**OP128**

http://dx.doi.org/10.21653/tjpr.2026.OP128

**Ultrasonographic Assessment of Obesity-Induced Alterations in Knee Cartilage Thickness**

Bisma Shahid[1]

[1]*Superior University, Lahore*

**Purpose:** Obesity is a well-recognized risk factor for knee osteoarthritis, contributing to cartilage degeneration through both mechanical overload and metabolic inflammation. Early detection of cartilage alterations may aid in preventing progressive joint deterioration. This study aimed to assess the association between body mass index (BMI) and femoral cartilage thickness using ultrasonography to identify early compartment-specific changes in obese adults.

**Methods:** A cross-sectional study was conducted in the Department of Radiology, Lahore General Hospital, over six months. Eighty-nine participants (mean age 40.92 ± 12.43 years; 71.9% female) aged 18–65 years with BMI ≥ 30 kg/m² were enrolled. Femoral cartilage thickness was measured bilaterally at the medial condyle, lateral condyle, and intercondylar area using a high-frequency linear transducer (6–12 MHz). Data were analyzed using SPSS version 25. One-way ANOVA compared cartilage thickness across BMI categories, while Pearson's correlation assessed relationships between BMI and cartilage thickness.

**Results:** Mean cartilage thickness ranged from 1.57 ± 0.48 mm (right lateral condyle) to 1.88 ± 1.38 mm (left intercondylar area). Although no significant group differences were observed ($p > 0.05$), a near-significant trend was noted for the right lateral condyle ($p = 0.065$). BMI demonstrated a significant negative correlation with right lateral condyle thickness ($r = –0.265$, $p = 0.012$), suggesting localized susceptibility to obesity-related cartilage thinning.

**Conclusion:** Ultrasonography revealed early compartment-specific reductions in femoral cartilage thickness associated with obesity, particularly in the right lateral condyle. These findings highlight ultrasound's value as a cost-effective and non-invasive modality for early detection and monitoring of obesity-induced knee changes.

**Keywords:** Body Mass Index; Cartilage; Knee Joint; Obesity; Ultrasonography

**OP129**

http://dx.doi.org/10.21653/tjpr.2026.OP129

**Clinical Investigation of Syphilis Coinfection with Aids and its Effect on Cd4 Cells, in Punjab, Pakistan**

Minahil Ijaz[1], Tahira Batool[2]

[1]*Department of Medical Laboratory Sciences Superior University Lahore*

[2]*Faculty of Allied Health Sciences, Superior University Lahore*

**Purpose:** Acquired immunodeficiency syndrome (AIDS), caused by the human immunodeficiency virus (HIV), remains a major global public health challenge. HIV primarily targets CD4+ T-helper cells, leading to immune suppression and increased vulnerability to opportunistic infections. Syphilis is among the most common coinfections in HIV-positive individuals, as it can enhance HIV replication and accelerate CD4 cell depletion, thereby worsening disease progression. This study aimed to investigate the association and impact of syphilis coinfection on CD4 cell counts in HIV-infected patients in Punjab, Pakistan, to support improved disease control and management strategies.

**Methods:** A cross-sectional descriptive study was conducted on 150 HIV-positive patients enrolled at the Punjab AIDS Control Program. Participants included 64 males, 76 females, and 10 transgender individuals. Risk categories comprised the general population (n=93), female sex workers (n=10), male sex workers (n=30), and injection drug users (n=17). Serological screening was performed to identify syphilis coinfection. Data were analyzed using SPSS version 25 to assess associations between coinfection status, CD4 cell counts, and viral load.

**Results:** The mean age of participants was 32.5 years. Sixteen patients (10.7%) were coinfected with syphilis, predominantly males (56.3%). Coinfected individuals exhibited lower CD4 counts and higher viral loads compared to non-coinfected patients, indicating enhanced disease progression.

**Conclusion:** Syphilis–HIV coinfection was prevalent among HIV-positive patients in Punjab, particularly among males. Coinfection was associated with reduced CD4 counts and elevated viral load, underscoring the need for routine serological screening for early detection and integrated management of sexually transmitted infections in HIV care programs.

**Keywords:** AIDS; HIV; Syphilis; CD4 Cells; Viral Load; Injection Drug Users

**OP130**

http://dx.doi.org/10.21653/tjpr.2026.OP130

**The Level of Acceptance of Physical Therapy Treatment among Health Care Providers of Pakistan**

Muhammad Aamir Saeed [1], Saima Riaz [1]

[1]*Superior University Lahore, Faculty of Allied Health Sciences*

**Purpose:** In Pakistan, Doctor of Physical Therapy has progressed last decades, especially after up gradation of curriculum with 'doctor' title. However, it is professional degree with a scope in clinical practice primarily. Because of similar patient management model such as examination, evaluation, diagnosis, prognosis, plan of care and outcome assessment. There may be impression of overlapping with affairs of other health care providing domains such as medicine, surgery, nutrition, Pharm D and so. There is need to screen acceptance of this profession in other health care profession

**Methods:** This was cross sectional survey. The population was Health care providers. Data was collected from health care providers all over Pakistan. Data was collected from health care providers all of them must have two years' experience or he/she must PGR.

**Results:** The results showed that there were 77.3% care providers had opinion that physiotherapy can cure disease, opinion categorization showed 91.3% care providers in favor of musculoskeletal, 34.5% cardiopulmonary, 32.6% pediatrics, 11% emergency, 84.8% sports and 13.6% intensive care unit related conditions.

**Conclusion** The findings concluded that there were mixed approach towards acceptance of physiotherapy as independent health care profession. It was found that health care providers recognized physiotherapy in a limited scope.

**Keywords** Physiotherapy, Doctor of Physical Therapy, Multidisciplinary, Acceptance, Health Care Delivery

**OP131**

http://dx.doi.org/10.21653/tjpr.2026.OP131

**Comparative Analysis of Figure-of-Eight versus Interrupted Sternal Wire Closure: Assessing Pain, Sternal Stability, Wound Healing, and Early Functional Recovery in Cardiac Surgery Patient's Post-Sternotomy**

Tahreem Iqbal[1], Usra Naeem[2]

[1]*MS Allied Health Sciences, Superior University, Lahore, Pakistan*

[2]*Department of Emerging Allied Health Technologies, Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Median sternotomy is the standard approach for most cardiac surgeries, and sternal closure technique critically influences postoperative stability, pain, and wound healing. This study compared the clinical outcomes of Figure-of-Eight and Simple Interrupted sternal wire closures in adult patients undergoing elective cardiac surgery.

**Methods:** In this randomized clinical trial, 108 adults undergoing elective median sternotomy were equally divided into two groups (n = 54 each). The Figure-of-Eight group received sternal closure using the Figure-of-Eight technique, while the control group underwent Simple Interrupted closure. Postoperative outcomes were assessed using the Numeric Analog Scale (NAS) for pain; ASEPSIS wound score, Sternal Instability Scale (SIS), Barthel Index for functional independence, and hospital recovery measures.

**Results:** The Figure-of-Eight group demonstrated significantly superior outcomes, with lower pain scores (1.81 ± 1.47 vs. 4.76 ± 1.48, $p < 0.001$) and 100% satisfactory wound healing compared to 5.6% in the control group. Sternal stability (SIS Grade 0) was achieved in 72.2% versus 24.1% of patients. Functional independence was higher (Barthel Index: 91.78 ± 4.39 vs. 75.94 ± 9.09, $p < 0.001$), with earlier ambulation (1.5 ± 0.5 vs. 3.56 ± 0.5 days, $p < 0.001$), shorter hospital stay (6.00 ± 1.00 vs. 7.22 ± 2.12 days), and greater satisfaction (9.04 ± 0.85 vs. 6.96 ± 0.89).

**Conclusion:** The Figure-of-Eight sternal wire closure technique yields better postoperative outcomes than the Simple Interrupted method, enhancing pain relief, wound healing, sternal stability, recovery, and patient satisfaction.

**Keywords:** Sternal Closure; Figure-of-Eight Wiring; Median Sternotomy; Wound Healing; Postoperative Recovery; Functional Independence

**OP132**

http://dx.doi.org/10.21653/tjpr.2026.OP132

**Comparative Study of Postoperative Surgical Site Infections in Diabetic and Non-Diabetic Patients Undergoing General Surgical Procedures**

Afaq Ali[1], Usra Naeem[2]

[1]*MS Allied Health Sciences, Superior University, Lahore, Pakistan*

[2]*Department of Emerging Allied Health Technologies, Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** This study aimed to compare the incidence, pattern, and risk factors of postoperative surgical site infections (SSIs) between diabetic and non-diabetic patients undergoing general surgical procedures.

**Methods:** A prospective observational study was conducted at DHQ Hospital, Dera Ismail Khan, Pakistan, involving 132 adult patients (66 diabetics and 66 non-diabetics). Data were collected preoperatively and postoperatively on days 7 and 14. Surgical site infections were categorized as superficial, deep, or organ/space infections according to CDC guidelines. All patients received prophylactic antibiotic therapy. Preoperative and postoperative glycemic levels, HbA1c, and demographic factors were recorded. Statistical analyses included Pearson's chi-square test, with $p < 0.05$ considered significant.

**Results:** Diabetic patients exhibited a higher prevalence of deep SSIs (81.8%) compared with non-diabetic patients (40.0%). Uncontrolled preoperative HbA1c levels (>8.0%) were observed in 80.3% of diabetic participants and were significantly associated with infection severity ($p = 0.023$; postoperative HbA1c correlation $p = 0.009$). No statistically significant association was found between SSI severity and duration of diabetes ($p = 0.231$). Postoperative glycemic control emerged as a strong predictor of SSI severity and recovery outcomes.

**Conclusion:** Diabetic patients are at a substantially higher risk of developing deep surgical site infections, primarily due to poor glycemic control. Optimizing preoperative and postoperative glucose management, along with adherence to wound care protocols and prophylactic antibiotic use, is essential to reduce SSI incidence among diabetic surgical patients.

**Keywords:** Surgical Site Infections; Diabetes Mellitus; General Surgery; HbA1c; Postoperative Complications; Infection Control.

**OP133**

http://dx.doi.org/10.21653/tjpr.2026.OP133

**Evaluation of Hemodynamic Changes Using Different Intra-Abdominal Pressures for Laparoscopic Cholecystectomy under General Anesthesia**

Arshad Javaid[1], Usra Naeem[2]

[1]*MS Allied Health Sciences, Superior University, Lahore, Pakistan*

[2]*Department of Emerging Allied Health Technologies, Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Laparoscopic cholecystectomy (LC) requires carbon dioxide pneumoperitoneum to establish a surgical field, which increases intra-abdominal pressure (IAP) and can affect cardiopulmonary function. Understanding these hemodynamic changes is crucial for optimizing intraoperative safety. This study evaluated the effects of varying IAP levels on hemodynamic parameters during LC to identify the optimal pressure range for cardiovascular stability.

**Methods:** A prospective observational study was conducted at Rawal General and Dental Hospital, Islamabad, including 150 patients aged 18–60 years (ASA I–II) undergoing LC under general anesthesia. Patients were allocated into three groups: Group A (<10 mmHg), Group B (8–15 mmHg), and Group C (>15 mmHg). Heart rate, systolic and diastolic blood pressure, mean arterial pressure (MAP), end-tidal $CO_2$, and oxygen saturation were recorded at baseline (T0), post-induction (T1), after pneumoperitoneum (T2), 10 min (T3), 20 min (T4), and post-desufflation (T5). Data were analyzed using one-way ANOVA ($p < 0.05$).

**Results:** Of 150 patients, 80.7% (n = 121) were overweight (BMI 25–29.9 kg/m²). Pneumoperitoneum duration differed significantly among groups ($F = 8.81$, $p \leq 0.001$). Lower IAP (8–10 mmHg) resulted in shorter operative times (75.7 ± 5.0 min) and fewer hemodynamic fluctuations. Higher IAPs were associated with increased systolic blood pressure and MAP.

**Conclusion:** Elevated intra-abdominal pressure during LC significantly affects hemodynamic stability. Maintaining an IAP of 8–10 mmHg minimizes cardiovascular variations and promotes safer intraoperative outcomes.

**Keywords:** Intra-abdominal Pressure; Laparoscopic Cholecystectomy; Pneumoperitoneum; Hemodynamics; Hypercapnia

**OP134**

http://dx.doi.org/10.21653/tjpr.2026.OP134

**Factors Influencing Bradycardia during Spinal Anesthesia in Obstetric Patients Undergoing Cesarean Section**

Muhammad Farman[1], Usra Naeem[1]

[1]*Faculty of Allied Health Sciences, The Superior University, Lahore*

**Purpose:** To identify factors influencing the development of bradycardia in obstetric patients undergoing cesarean section under spinal anesthesia and to evaluate patient- and procedure-related predictors contributing to its occurrence.

**Methods:** A descriptive cross-sectional study was conducted at Maqsood Medical Complex and Hayatabad Medical Complex, Peshawar, including 134–138 obstetric patients aged 18–40 years undergoing elective cesarean section under spinal anesthesia. Data were collected via a structured questionnaire covering demographic variables, baseline hemodynamics, sensory block levels, anesthetic details, and bradycardia incidence. Statistical analysis was performed using SPSS version 26.0, employing regression analysis and ANOVA to determine associations between variables.

**Results:** The incidence of intraoperative bradycardia was significantly associated with the level of sensory block, baseline heart rate, and presence of comorbidities ($p < 0.05$). Patients with higher sensory block levels (≥T4) and lower pre-anesthetic heart rates were at greater risk of developing bradycardia during surgery.

**Conclusion:** Bradycardia during spinal anesthesia in obstetric patients is influenced by both anesthetic and patient-specific factors. Early identification of at-risk patients and appropriate preventive measures can enhance maternal hemodynamic stability and neonatal safety during cesarean delivery.

**Keywords:** Bradycardia, Spinal Anesthesia, Cesarean Section, Obstetric Anesthesia, Hemodynamic Complications.

**OP135**

http://dx.doi.org/10.21653/tjpr.2026.OP135

**Influence of Inhaled Oxygen Level on Pulmonary Function and Gas Exchange in Off-Pump Coronary Artery Bypass Grafting Patients**

Mohsin Arshad [1], Usra Naeem[1]

[1]*Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** Off-pump coronary artery bypass grafting (OPCAB) is widely used for treating advanced coronary artery disease; however, postoperative pulmonary complications remain a challenge. The inspired oxygen fraction ($FiO_2$) during surgery may impact pulmonary gas exchange and respiratory efficiency. This study compared the effects of two intraoperative $FiO_2$ levels (0.5 vs. 0.8) on pulmonary gas exchange in OPCAB patients using $PaO_2/FiO_2$ ratio, $P(a–Et)CO_2$ gradient, and $PEtCO_2/PaCO_2$ ratio.

**Methods:** A prospective observational study was conducted at Hameed Latif Hospital, Lahore, involving 76 adult patients undergoing elective OPCAB. Participants were randomly allocated to receive either $FiO_2$ = 0.5 (Group L) or $FiO_2$ = 0.8 (Group H) during mechanical ventilation. Arterial blood gas and end-tidal $CO_2$ measurements were obtained 30 minutes after induction and at the end of surgery. Data were analyzed using SPSS v25, with $p < 0.05$ considered significant.

**Results:** At surgery completion, Group L ($FiO_2$ = 0.5) showed a significantly higher $PaO_2/FiO_2$ ratio (322.5 ± 49.7 vs. 282.9 ± 37.0, $p < 0.05$), lower $P(a–Et)CO_2$ gradient (4.1 ± 1.0 vs. 7.0 ± 1.1 mmHg, $p < 0.01$), and higher $PEtCO_2/PaCO_2$ ratio (0.879 ± 0.027 vs. 0.803 ± 0.032, $p < 0.01$) compared to Group H, indicating better ventilation-perfusion matching and $CO_2$ elimination.

**Conclusion:** Ventilation with $FiO_2$ = 0.5 during OPCAB results in more favorable pulmonary gas exchange than $FiO_2$ = 0.8, minimizing ventilation-perfusion mismatch. Further randomized trials are warranted to refine intraoperative oxygen management in cardiac surgery.

**Keywords:** Off-pump Coronary Artery Bypass Grafting; $FiO_2$; Pulmonary Gas Exchange; $PaO_2/FiO_2$ Ratio; $P(a–Et)CO_2$ Gradient; $PEtCO_2/PaCO_2$ Ratio

**OP136**

http://dx.doi.org/10.21653/tjpr.2026.OP136

**Phacoemulsification versus Extracapsular Cataract Extraction: A Comparative Study of Surgical Outcomes, Surgical Site Infection Rate, and Associated Causes**

Hafiza Tuba Razzaq[1], Usra Naeem[1]

[1]*Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Cataract remains a leading cause of reversible blindness worldwide. Among various surgical options, Phacoemulsification (PE) and Extracapsular Cataract Extraction (ECCE) are the most frequently adopted techniques. To compare the surgical outcomes and surgical site infection (SSI) rates between Phacoemulsification and Extracapsular Cataract Extraction.

**Methods:** An observational cross-sectional study was conducted in the Ophthalmology Department of Lahore General Hospital (LGH), Lahore. A total of 250 patients undergoing cataract surgery were selected through simple random sampling after obtaining informed consent. Pre- and postoperative intraocular pressure (IOP) and visual acuity (VA) were recorded, along with postoperative complications assessed one week after surgery. Data were analyzed using SPSS version 25, with a p-value < 0.05 considered statistically significant.

**Results:** Of the 250 participants, 103 were male and 147 female, with most presenting age-related cataracts (n = 173). PE demonstrated superior surgical effectiveness in terms of iris and conjunctival assessment. The mean decrease in IOP was 3.23 ± 2.9 mmHg. Visual outcomes were significantly associated with surgical technique ($p = 0.01$). Postoperative pain showed a significant difference ($p < 0.001$), with 43% reporting no pain and 64%, 10%, and 8% reporting mild, moderate, and severe pain, respectively. SSI incidence was significantly lower in the PE group compared with the ECCE group ($p < 0.001$).

**Conclusion:** Phacoemulsification yields better surgical outcomes and lower surgical site infection rates compared with Extracapsular Cataract Extraction, supporting its preference in modern cataract surgery.

**Keywords:** Phacoemulsification; Extracapsular Cataract Extraction; Intraocular Pressure; Surgical Site Infection; Visual Acuity; Cataract Surgery Outcomes.

**OP137**

http://dx.doi.org/10.21653/tjpr.2026.OP137

**Knowledge and Awareness of Instruments Sterilization Protocols among Healthcare Workers in Operation Theatre**

Mahnoor Wajid Ali[1], Manzoor Ahmed Naeem[1]
[1]*Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** Effective sterilization is essential to prevent surgical site infections in operation theatres (OTs). In developing countries like Pakistan, inconsistent adherence to sterilization protocols due to limited infrastructure, inadequate training, and poor supervision remains a major concern. This study assessed the knowledge, awareness, and adherence of OT healthcare workers to sterilization protocols in public hospitals.

**Methods:** A six-month cross-sectional study was conducted in 2025 at two public hospitals in Lahore, Pakistan, including 76 OT healthcare workers with over six months of experience. Data were collected using a structured, prevalidated questionnaire assessing knowledge, awareness, and practices. Statistical analysis was performed using SPSS v26. Descriptive statistics summarized demographics and awareness levels, while chi-square tests, t-tests, Spearman's correlation, and logistic regression identified predictors of higher knowledge.

**Results:** Participants had a mean age of 41.7 ± 9.6 years and 9.8 ± 6.3 years of experience. Only 28.9% correctly identified the Spaulding classification, and 50% knew standard autoclave temperature. Hepatitis B vaccination coverage was 59.2%, and 40.8% were directly involved in daily sterilization. Major barriers included lack of time (27.6%) and insufficient training (23.7%). Knowledge was significantly associated with education ($p = 0.015$), designation ($p = 0.031$), and prior training ($p = 0.001$). Training (OR = 2.5, $p = 0.030$) and experience (OR = 1.08, $p = 0.020$) independently predicted higher knowledge levels.

**Conclusion:** Significant gaps exist in sterilization knowledge and practices among OT staff. Regular training, supervision, and standardized protocols are vital to enhance infection control and patient safety.

**Keywords:** Sterilization Protocols; Operation Theatre; Infection Control; Healthcare Workers; Public Hospitals; Awareness; Pakistan

**OP138**

http://dx.doi.org/10.21653/tjpr.2026.OP138

**Development and Evaluation of Physicochemical Properties of Fenugreek Energy Bars and Their Relation to PCOS**

Tahira Shahbaz[1], Rashida Perveen[1]
[1]*Faculty of Allied Health Sciences, Superior University, Lahore, Pakistan*

**Purpose:** To assess whether fenugreek-based bars could serve as functional foods for managing PCOS symptoms.

**Methods:** A total of three treatments were developed: T0 (control, containing peanut butter instead of fenugreek), T1 (mild fenugreek), T2 (moderate fenugreek), and T3 (high fenugreek), all containing fixed quantities of oats, almonds, and honey. Physicochemical analysis of the samples included moisture content, ash, pH, total lipid, total protein, carbohydrate, fiber, and polyphenol content. Methods for these estimations were based on standard WHO guidelines (2011), Lowry's method (1951), Soxhlet extraction, and Singleton & Slinkard's (1997) procedure.

**Results:** The results showed that the T3 formulation, containing higher fenugreek concentration, demonstrated the highest ash content (17.04±0.43%) and fiber content (2.1±0.55 g/100g), indicating enhanced mineral and indigestible carbohydrate levels. T1 exhibited the highest protein content (7.54±0.53 g/100g), while T0 had the lowest polyphenol concentration (8.99±0.46 mg GAE/g), highlighting the antioxidant potential of fenugreek. Sensory evaluation was conducted using a structured 9-point hedonic scale assessing five key attributes: taste, texture, aroma, appearance, and overall acceptability. The analysis revealed that fenugreek-based bars (T1 T2 T3) were well accepted in terms of flavor and texture, while T1 scored highest in overall acceptability.

**Conclusion:** Fenugreek energy bars, combined with oats, almonds, and honey, possess substantial physicochemical and nutritional attributes that could make them a beneficial adjunct dietary intervention for women suffering from PCOS.

**Keywords:** PCOS, Fenugreek, Energy Bars, Physicochemical Properties, Functional Foods, Honey, Fiber, Polyphenols, Sensory Evaluation.

**OP139**

http://dx.doi.org/10.21653/tjpr.2026.OP139

**Effectiveness of Transcranial Direct Current Stimulation Combined with Dual Task Training on Balance and Fall Risk in Parkinson's Disease**

Kinza Arif[1], WajeehaAfzal[1]

[1]*Department of Physical Therapy & Rehabilitation Sciences, Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose:** The objective was to examine the synergistic effects of anodal transcranial direct current stimulation (tDCS) applied to the primary motor cortex (M1) in conjunction with dual-task training (DTT) on balance, functional mobility, and prospective fall rates.

**Methods:** Forty Parkinson's disease (PD) patients (Hoehn & Yahr II-III), aged 50 to 75 years, were randomized into active or sham tDCS groups. Both groups underwent identical 4-week DTT (3 sessions per week) that integrated balance and gait exercises with cognitive activities. The active group underwent 20 minutes of 2mA anodal tDCS over the M1 before training, while the sham group experienced a similar setup with only an initial simulation of current.

**Results:** Following the intervention, the active tDCS group exhibited substantially greater enhancements compared to the sham group on the BBS (mean difference: +4.5 points, $p<0.01$) and dual-task TUG (mean reduction: -3.3 seconds, $p<0.01$). Subsequent analyses validated a markedly diminished fear of falling (FES-I, $p<0.05$) and a 42% reduction in fall incidence during the 3-month follow-up in the active stimulation cohort.

**Conclusion:** Targeted neuromodulation with anodal tDCS enhances the efficacy of DTT, leading to significant advancements in balance, functional mobility under cognitive strain, and a decrease in fall risk in PD. This integrated method signifies a promising evidence-based alternative for neurorehabilitation.

**Keywords:** Transcranial Direct Current Stimulation, Dual-Task Training, Parkinson's Disease, Balance, Falls, Rehabilitation.

**OP140**

http://dx.doi.org/10.21653/tjpr.2026.OP140

**Effect of Nigella Sativa Oil for the Treatment of Hypertension**

Nawal Rasheed[1], Farah Javed[1]

[1]*Faculty of Allied Health Sciences, Superior University Lahore, Pakistan*

**Purpose**: This study aimed to evaluate the dose-dependent effects and safety profile of Nigella sativa oil. The effect of supplementation on systolic (SBP) and diastolic blood pressure (DBP) among adults with hypertension

**Methods**: A randomized, controlled, parallel-group trial was conducted involving 60 participants (n = 15/group) assigned to 1 mL/day, 2 mL/day, 5 mL/day of Nigella sativa oil, or a control (no supplementation) for 12 weeks. Blood pressure measurements were taken at baseline and after two weeks using a standardized protocol. Data were analyzed using repeated measures ANOVA to assess within-group changes, and Group comparisons were performed using one-way ANOVA with Tukey's post-hoc test.

**Results**: Significant time effects were observed for both While SBP and DBP differed significantly in all intervention groups ($p < 0.001$), no significant change was detected in SBP within the control group ($p = 0.491$). The largest reductions occurred in the 5 mL group. Between-group analysis showing effects on SBP ($p = 0.005$) and DBP ($p < 0.001$). Post-hoc comparisons revealed that the 5 mL group had significantly greater SBP reduction versus 1 mL ($p = 0.0058$) and control ($p = 0.0205$), and all treatment groups showed greater DBP reductions versus control ($p < 0.001$).

**Conclusion**: Nigella sativa oil supplementation produced significant, dose-dependent reductions in SBP and DBP, with the highest efficacy at 5 mL/day, indicating its potential as an affordable complementary therapy for hypertension.

**Keywords:** Nigella Sativa, Hypertension, Systolic Blood Pressure, Diastolic Blood Pressure, Complementary Therapy

**OP141**

http://dx.doi.org/10.21653/tjpr.2026.OP141

**Therapeutic Horizons of Immersive Virtual Reality and Neuromodulation in Pediatric Neurorehabilitation**

Qurba Kiran[1], Muhammad Naveed Babur[1]

*[1]Superior University, Faculty of Allied Health Sciences, Department of Physical Therapy and Rehabilitation, Lahore, Pakistan*

**Purpose:** The purpose of this systematic review is to assess the therapeutic potential of non-invasive brain stimulation (NIBS) and immersive virtual reality (VR) in pediatric neurorehabilitation. The evaluation will examine the ways in which these therapies affect the motor, cognitive, and neurophysiological outcomes of children with developmental disorders in accordance with the Sustainable Development Goals (SDG 3: Good Health and Well-Being, SDG 4: Quality Education).

**Methods:** The review is registered with PROSPERO and will adhere to PRISMA rules. Quasi-experimental research, controlled clinical trials, and randomized controlled trials (RCTs) published between 2018 and 2025 will all be considered. Children with developmental impairments such autism spectrum disorder, Down syndrome, and cerebral palsy who are between the ages of 0 and 18 make up the group of interest. VR-based rehabilitation and NIBS methods like repetitive transcranial magnetic stimulation (rTMS) and transcranial direct current stimulation (tDCS) are among the interventions being reviewed. The databases that will be searched are CENTRAL, CINAHL, PubMed, and Scopus.

**Results:** Expected Results show significant gains in motor function, cognitive function, and neurophysiological responses are expected when VR and NIBS are combined. It is anticipated that the study would also draw attention to evidence gaps, synergistic effects, and potential future paths for child-centered, technology-driven rehabilitation approaches.

**Conclusion:** By helping clinicians, educators, and policymakers advance creative pediatric neurorehabilitation methods that promote SDGs 3 and 4, the findings will support long-term, inclusive rehabilitation programs.

**Keywords:** Virtual Reality, Children, Developmental Disabilities, Brain Stimulation, Neurorehabilitation.

**OP142**

http://dx.doi.org/10.21653/tjpr.2026.OP142

**Feasibility of Implementing AI-Powered Liver Cancer Prediction Systems in Clinical Settings**

Mirza Abdul Wahab[1]

*[1]Faculty of Faculty of Computer Science and Information Technology, Superior University, Lahore*

**Purpose:** To evaluate the feasibility of implementing AI-powered liver cancer prediction systems in clinical settings by developing a deep-learning framework for automated segmentation and prediction of liver tumors from CT images, aiming to enhance early detection, treatment planning, and patient outcomes.

**Methods:** A deep-learning-based framework was developed using advanced convolutional neural network (CNN) architectures, including U-Net and its variants, optimized with class balancing techniques. The model was trained and validated on a high-quality, annotated dataset of liver CT images. Key strategies such as transfer learning, data augmentation, and hyperparameter tuning were applied to improve performance. Model effectiveness was assessed using metrics including accuracy, sensitivity, specificity, Dice Similarity Coefficient (DSC), and Intersection over Union (IoU). Cascaded fully convolutional networks (FCNs) combined with 3D Conditional Random Fields (CRFs) were also employed for enhanced segmentation performance.

**Results:** The proposed framework achieved high segmentation accuracy, with an average DSC of 0.96 for liver segmentation and 0.84 for tumor segmentation. The cascaded FCN-CRF approach demonstrated true value accuracy rates of approximately 99.55% for liver segmentation. These results surpass conventional methods and other state-of-the-art deep-learning models, confirming the robustness and clinical applicability of the proposed system.

**Conclusion:** The study demonstrates that AI-powered liver cancer prediction systems are feasible and effective for clinical implementation. The developed deep-learning framework facilitates accurate tumor segmentation, supports early diagnosis, and enables timely intervention, potentially improving patient outcomes. These findings highlight the transformative role of AI in liver cancer care and provide a foundation for integrating automated prediction systems into routine clinical workflows.

**Keywords:** Artificial Intelligence, Liver Cancer, Deep Learning, CT Imaging, Tumor Segmentation, Clinical Implementation, Convolutional Neural Networks, Medical Image Analysis.

**OP143**

http://dx.doi.org/10.21653/tjpr.2026.OP143

**Virtual Reality Assisted Artificial Intelligence Intervention for Speech-Language Pathology: A Pilot Study in Pakistan**

Fariha Ambreen Chaudhry[1], Muhammad Naveed Babur[1]

[1]*Department of Physical Therapy and Rehabilitation Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Speech and language disorders significantly impact communication, social integration, and quality of life. Emerging technologies such as Artificial Intelligence (AI) combined with Virtual Reality (VR) offer innovative approaches for therapy. This pilot study aims to explore the feasibility and preliminary efficacy of an AI-driven VR intervention for improving speech and language outcomes in patients with speech-language pathology (SLP) disorders in Pakistan.

**Methods:** A one-group pretest–posttest design was employed between February 2025 and July 2025, enrolling 12 participants (07 male, 05 female; mean age 28 ± 7.5 years; range, 18–40 years) diagnosed with various SLP disorders. Participants underwent a 6-week AI-assisted VR therapy program, which included interactive speech exercises, real-time feedback, and gamified VR scenarios tailored to individual therapy goals. Outcome measures included the Speech Intelligibility Rating Scale (SIRS), Communication Effectiveness Index (CETI), and patient-reported quality of life via the ASHA-QOL questionnaire, assessed at baseline and post-intervention. User engagement and adherence were monitored through the VR platform.

**Results:** Preliminary findings indicated significant improvements in speech intelligibility (mean SIRS increase of 18%, $p < 0.05$) and communication effectiveness (CETI scores improved by 20%). Quality of life scores also showed meaningful enhancement across social participation and emotional domains. The adherence rate was 85%, and participants reported high satisfaction and engagement with the VR-based program.

**Conclusion:** AI-assisted VR therapy appears to be a feasible, engaging, and potentially effective approach for improving speech, communication skills, and quality of life in patients with SLP disorders in Pakistan. Further large-scale randomized studies are warranted to confirm these findings and optimize intervention protocols.

**Keywords:** Speech-Language Pathology, Virtual Reality, Artificial Intelligence, Pilot Study, Communication Rehabilitation, Pakistan

**OP144**

http://dx.doi.org/10.21653/tjpr.2026.OP144

**Advancing Healthcare Delivery through Artificial Intelligence: A Cross-Sectional Study from Pakistan**

Aimen Naveed [1], Fariha Ambreen Chaudhry[2]

[1]*The City School Pakistan*

[2]*Department of Physical Therapy and Rehabilitation Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Artificial Intelligence (AI) is transforming global healthcare systems by improving diagnostic accuracy, accelerating clinical decision-making, and enhancing patient outcomes. However, evidence on its adoption, readiness, and perceived utility among healthcare professionals in Pakistan remains limited. This study aims to assess healthcare providers' knowledge, attitudes, and perceived barriers toward the use of AI in clinical practice across tertiary healthcare settings in Pakistan.

**Methods:** A descriptive cross-sectional study was conducted between January and June 2025 among 210 healthcare professionals (physicians = 32%, physiotherapists = 28%, nurses = 24%, others = 16%) working in private and public hospitals in Lahore and Islamabad. A validated 28-item questionnaire assessed three domains: knowledge of AI applications, attitudes toward AI-supported healthcare, and perceived challenges to adoption. Descriptive statistics were used to summarize findings, while independent t-tests and ANOVA evaluated group differences across professions and experience levels.

**Results:** Overall AI knowledge scores were moderate (mean 62.4% ± 11.7). Participants demonstrated the highest awareness in AI-based diagnostics (76%) and predictive analytics (71%), while knowledge of AI-driven rehabilitation was low (44%). Attitudes toward AI were predominantly positive, with 81% agreeing that AI can enhance clinical efficiency and 74% believing it can improve patient safety. Major barriers included lack of training (86%), concerns regarding data privacy (72%), and limited infrastructure (68%). Significant differences in AI knowledge were observed based on professional role ($p < 0.05$), with physicians ranking highest.

**Conclusion:** The findings indicate growing acceptance and recognition of AI's potential within Pakistan's healthcare community, though gaps in training, policy, and technological readiness persist. Strengthening AI-related education, establishing regulatory frameworks, and improving digital infrastructure are essential for safe and effective integration of AI into routine healthcare practice. Further longitudinal studies are recommended to explore AI-driven clinical outcomes in local settings.

**Keywords:** Artificial Intelligence, Healthcare Innovation, Clinical Decision Support, Digital Health, Pakistan, Cross-Sectional Study

**OP145**

http://dx.doi.org/10.21653/tjpr.2026.OP145

**Precision and Patient Outcomes in PAL: A Comparison of Manual versus ZIT Measurements**

Hafiz M. Noman[1], Khurram Nasir[1]

[1]*Department of Optometry and Vision Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Perceived Activity Level (PAL) assessments play an essential role in evaluating functional capacity, monitoring patient progress, and guiding rehabilitation planning. Traditionally, PAL has been measured manually by clinicians; however, the introduction of digital tools such as the ZIT (Zone-Indexed Tracking) system offers the potential for enhanced precision and objectivity. This study aims to compare the accuracy, consistency, and impact on patient outcomes between manual PAL measurements and ZIT-based digital assessments in musculoskeletal rehabilitation patients.

**Methods:** A comparative observational study was conducted from January to July 2025, enrolling 60 patients undergoing rehabilitation for lower-limb musculoskeletal conditions. Participants were evaluated using both manual PAL scoring and ZIT digital measurement during their initial assessment and at 6-week follow-up. Reliability was assessed through inter-rater agreement (ICC), while measurement precision was evaluated using mean absolute error (MAE) between repeated scores. Functional outcomes were assessed using the Lower Extremity Functional Scale (LEFS) and patient-reported satisfaction scores. Paired t-tests and Bland–Altman plots were used for statistical comparison.

**Results:** ZIT measurements demonstrated significantly higher precision with lower MAE values compared to manual assessments ($p < 0.01$). Inter-rater reliability for ZIT was excellent (ICC = 0.93), while manual scoring showed moderate agreement (ICC = 0.71). Patients assessed and monitored with ZIT data showed greater improvement in LEFS scores (average +12.6 points) compared to those monitored manually (+8.4 points). Patient satisfaction was also higher in the ZIT group, with 82% reporting clearer understanding of their progress versus 59% in the manual group.

**Conclusion:** Digital ZIT-based measurements provide superior precision, reliability, and clinical usefulness compared to traditional manual PAL scoring. Integration of ZIT tools into routine rehabilitation practice may enhance clinical decision-making, improve patient engagement, and lead to more favorable functional outcomes. Further randomized clinical trials are recommended to establish long-term benefits and cost-effectiveness.

**Keywords:** Perceived Activity Level, ZIT Measurement, Manual Assessment, Rehabilitation Outcomes, Functional Capacity, Precision Tools

**OP146**

http://dx.doi.org/10.21653/tjpr.2026.OP146

**Effect of Interpupillary Distance on Ocular Alignment in High Prescription Lens Wearers**

Sana Shafique[1], Khurram Nasir[1]

[1]*Department of Optometry and Vision Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Interpupillary Distance (IPD) is critical for aligning optical centers with the visual axis, especially in individuals wearing high prescription lenses (≥ –5.00 D). Even minor IPD inaccuracies can induce unwanted prismatic effects, binocular dysfunction, and visual discomfort. This study aims to determine the effect of IPD discrepancies on ocular alignment and to evaluate the association between IPD deviation and prismatic effects in high myopia patients.

**Methods:** A cross-sectional analytical study was conducted at Allah Yar Khan Hospital involving 73 myopic participants aged 15–30 years with prescriptions of –5.00 D or higher. IPD was measured using a PD ruler, and refractive error was confirmed with a NIDEK autorefractor. Ocular alignment was assessed using the prism bar cover test, while prismatic effects were calculated using Prentice's Rule. Visual discomfort was recorded using a symptom rating scale. Data were analyzed using SPSS v26, employing Chi-square and Pearson correlation tests.

**Results:** Participants with IPD discrepancies >1 mm demonstrated significantly higher prismatic effects (63%) and greater visual discomfort scores (mean 3.8) compared with those whose IPD deviation was ≤1 mm. A strong positive correlation was found between IPD deviation and prismatic effect severity ($r = 0.712$, $p = 0.01$). Individuals with prescriptions worse than –8.00 D experienced the highest level of binocular misalignment and symptom burden, including eye strain, diplopia, and difficulty focusing.

**Conclusion:** IPD discrepancies have a substantial and clinically significant impact on ocular alignment and visual comfort in high prescription lens wearers. Even deviations as small as 1 mm can produce measurable prismatic effects, leading to binocular instability and visual disturbance. Accurate IPD measurement is therefore essential to reduce prismatic errors and maintain optimal visual performance in high myopia patients.

**Keywords:** Interpupillary Distance, High Myopia, Prismatic Effects, Ocular Alignment, Visual Discomfort, Optometric Assessment

**OP147**

http://dx.doi.org/10.21653/tjpr.2026.OP147

**Visual Performance in Presbyopes Using Soft and Hard Designs of Progressive Addition Lenses**

Asim Saleem[1], Kashmala Zareen[1]

[1]*Department of Optometry and Vision Sciences, Superior University, Lahore, Pakistan*

**Purpose:** Presbyopia leads to a progressive decline in near focusing ability, significantly affecting daily visual tasks and quality of life. Progressive Addition Lenses (PALs) provide a seamless visual transition from distance to near, yet the comparative effectiveness of soft versus hard PAL designs remains clinically debated. This study aimed to evaluate and compare visual performance, user satisfaction, and adaptation patterns between soft and hard design PALs in presbyopic individuals.

**Methods:** A comparative cross-sectional study was conducted among 72 presbyopic participants aged 40–55 years at Hussain Optical Centre, Lahore. A structured questionnaire assessed visual performance across distance, intermediate, and near tasks, along with distortion, comfort, adaptation, and head movement. Responses were recorded using a 5-point Likert scale. Statistical analysis was performed to determine associations between lens design and satisfaction outcomes.

**Results:** Overall, 63.9% of participants reported positive performance with PALs. Soft design PAL users demonstrated significantly higher satisfaction (80.8%) compared to hard design users (42.9%). Among first-time PAL wearers, satisfaction reached 90.9%. Soft design PALs exhibited superior adaptability, reduced distortion, and enhanced clarity, particularly for intermediate tasks such as computer work. A statistically significant association was observed between PAL design and user satisfaction ($p = 0.001$), favouring soft design lenses.

**Conclusion:** Soft design PALs provide better visual performance, comfort, and adaptation compared to hard design PALs in presbyopic individuals. Personalized PAL design selection, aligned with user-specific visual demands, is essential for optimizing presbyopia management and enhancing overall patient satisfaction.

**Keywords:** Presbyopia, Progressive Addition Lenses, Soft Design, Hard Design, Visual Performance, User Satisfaction, Optometry.

**OP148**

http://dx.doi.org/10.21653/tjpr.2026.OP148

**AI-Driven Performance Analytics for Early Injury Prediction in Competitive Athletes: A Multicenter Observational Study**

Faroque Md Mohsin[1], Zahidul Mostafa[2], Banasree Roy Urmi[3], Aditta Das[4], Sinigdha Islam[5], Rajib Kumar Malakar[6], Tamanna Akter[7], Chaudhry Muhammad Aehsan[8]

[1]*Directorate General of Health Services, Mohakhali, Dhaka, Bangladesh*

[2]*Department of Cardiology, Cox's Bazar Medical College, Cox's Bazar, Bangladesh*

[3]*Tbilisi State Medical University, Georgia*

[4]*Hebei Medical University, Shijiazhuang, China*

[5]*ZWH Medical Care PC, New York, USA*

[6]*Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh*

[7]*Tairunnessa Memorial Medical College, Gazipur, Bangladesh*

[8]*The Superior University, Lahore, Pakistan*

**Purpose:** Artificial intelligence (AI)–assisted movement and physiological analysis is transforming sports medicine by enabling early identification of athletes at risk of musculoskeletal injuries. This study aims to evaluate the accuracy and clinical utility of an AI-based performance monitoring system for predicting injury risk compared with conventional physiotherapy assessment.

**Methods:** A multicenter observational study was conducted from January to August 2025 involving 160 competitive athletes aged 16–35 years from four sports academies. Participants underwent baseline screening using (1) an AI-driven motion-capture system analyzing gait, jump mechanics, neuromuscular symmetry, and heart-rate variability, and (2) traditional physiotherapy assessment performed by certified sports clinicians. All athletes were followed for 12 weeks to document injury incidence. Predictive accuracy, sensitivity, specificity, and time efficiency were compared using ROC analysis, logistic regression modeling, and descriptive statistics.

**Results:** The AI system demonstrated significantly higher predictive accuracy for early injury risk (AUC 0.89) compared with conventional assessment (AUC 0.71). Sensitivity (86%) and specificity (82%) were superior in the AI model. Screening time was reduced by 48% using AI-based assessment. Data visualization and automated alerts improved clinician decision-making, enabling earlier corrective interventions. Athletes reported higher satisfaction with AI screening due to perceived objectivity and speed.

**Conclusion:** AI-powered performance analytics offer a highly accurate, rapid, and clinically useful method for predicting sports-related injuries. Integrating AI with traditional physiotherapy may enhance preventive care, reduce injury burden, and optimize athletic performance across training environments.

**Keywords:** Artificial Intelligence, Sports Medicine, Injury Prediction, Motion Analysis, Athlete Monitoring, Preventive Care

**OP149**

http://dx.doi.org/10.21653/tjpr.2026.OP149

**Effects of Inversion Table Therapy versus Mulligan Techniques on Pain and Lumbar Flexibility in Patients with Chronic Low Back Pain: A Randomized Controlled Trial**

Faiz Ur Rehman Subhani[1], Asima Irshad[1]
[1]*Superior University, Lahore*

**Purpose:** Chronic low back pain (CLBP) is a prevalent musculoskeletal condition associated with pain, disability, and reduced quality of life. Although inversion table therapy and Mulligan techniques have individually demonstrated therapeutic benefits, comparative evidence between the two interventions remains limited. This study aims to evaluate the differential effects of inversion table therapy and Mulligan techniques on pain intensity and lumbar flexibility in adults with CLBP.

**Methods:** A double-blinded randomized controlled trial was conducted across multiple private clinical facilities in Lahore, enrolling adults aged 30–50 years with clinically diagnosed CLBP. Participants were randomly assigned to two equal groups following similar baseline treatment. Group 1 received inversion table therapy, while Group 2 underwent Mulligan techniques. Outcome measures included pain intensity using the Numeric Pain Rating Scale (NPRS), disability using the Oswestry Disability Index (ODI), lumbar flexibility via the Sit-and-Reach Test (SRT), and quality of life using the RAND SF-36. Data analysis was performed using SPSS version 26, with between- and within-group comparisons assessed through appropriate statistical tests.

**Results:** Between-group analysis showed no significant differences for NPRS and RAND SF-36 scores ($p > 0.05$), indicating comparable effects on pain intensity and quality of life. However, significant differences were observed for ODI and SRT outcomes ($p < 0.05$), demonstrating superior disability reduction with Mulligan techniques and greater improvements in lumbar flexibility with inversion table therapy. Within-group analyses indicated significant improvements across all outcomes for both interventions.

**Conclusion:** Both inversion table therapy and Mulligan techniques demonstrated meaningful clinical benefits for patients with chronic low back pain. Mulligan techniques were more effective in reducing disability, whereas inversion table therapy yielded greater improvements in lumbar flexibility. These findings support the targeted use of each intervention based on individualized patient needs in physiotherapy practice.

**Keywords:** Inversion Table Therapy, Mulligan Technique, Lumbar Flexibility, Chronic Low Back Pain, Disability, Physiotherapy.

**OP150**

http://dx.doi.org/10.21653/tjpr.2026.OP150

**Regenerative Rehabilitation in Musculoskeletal Conditions: Integrating Biologic Therapies with Targeted Rehabilitation Approaches**

Arzu Dinç Yavaş[1]
[1]*İstanbul Aydın University, Medical Faculty, Department of Physical Medicine and Rehabilitation*

**Purpose:** Regenerative rehabilitation integrates regenerative medicine technologies—such as stem cell therapy, platelet-rich plasma (PRP), exosomes, and tissue engineering—with evidence-based physical therapy principles to enhance tissue repair in musculoskeletal conditions. This abstract summarizes current regenerative rehabilitation strategies and their role in optimizing biological and functional recovery.

**Methods:** A narrative review of contemporary literature was conducted, focusing on regenerative modalities and their interaction with mechanotherapy, electrical stimulation, and thermal therapies in musculoskeletal healing.

**Results:** Regenerative medicine demonstrates promising outcomes in enhancing repair of bone, cartilage, muscle, tendon, and ligament tissues. PRP effectiveness varies by preparation, with leukocyte-poor PRP benefiting intra-articular pathology and leukocyte-rich PRP supporting tendon and ligament healing. When paired with rehabilitation modalities—such as eccentric loading, laser, ultrasound, or high-frequency electrical therapies—PRP shows improved structural and functional outcomes. Stem cell–based therapies benefit significantly from postoperative mechanical loading, which enhances stem cell activation, migration, and differentiation. Mechanotherapy stimulates key molecular pathways regulating chondrogenesis, osteogenesis, and tendon remodeling. Electrical stimulation (DC, PEMF, and capacitive coupling) promotes cellular regeneration through piezoelectric and electroporation-based mechanisms. Thermal modalities, including low-intensity pulsed ultrasound, enhance blood flow, heat-shock response, and extracellular matrix synthesis. Tissue engineering advances, such as conductive hydrogels and bioactive scaffolds, offer new pathways for integrated rehabilitation of electroactive tissues.

**Conclusion:** Regenerative rehabilitation offers a synergistic framework in which biologic therapies and targeted rehabilitation enhance tissue regeneration beyond what either can achieve alone. Although early evidence is promising, optimal dosing, timing, and protocol standardization remain underexplored. Continued interdisciplinary collaboration is essential to translate regenerative rehabilitation advances into routine musculoskeletal care.

**Keywords:** Regenerative Rehabilitation, PRP, Stem Cells, Mechanotherapy, PEMF, Thermal Therapy, Tissue Engineering