Türk Fizyoterapi ve Rehabilitasyon Dergisi 34 (Ek Sayı 2)
Turkish Journal of Physiotherapy and Rehabilitation 34 (Supp 2)

3RD BRICSCESS CONFERENCE ABSTRACT BOOK

February 26-29, 2024
Delhi NCR, India


MANAV RACHNA
vidyanatariksha
A++
NAAC
The Foundation
For Global
Community Health
BRICS
Council of Exercise and Sports Science
Manav Rachna International Institute of Research & Studies
Delhi NCR (India)
ORDEM E PROGRESSO
BRICSCESS
3rd BRICS Conference on
Exercise & Sports Science
26th-29th February 2024
Registration https://bricscess.com/registration/
Abstract Submission https://bricscess.com/abstracts/
BRICS
Council of Exercise & Sports Science
https://bricscess.com/2024-conference/
+91 9873430002, +91 75032 29661
bricscess2024@mriu.edu.in

EXECUTIVE COMMITTEE

Professor Mingkai CHIN Founding President BRICSCESS

Professor Hans DE RIDDER
President of BRICSCESS

Professor Ricardo UVINHA
Chairperson Scientific Committee BRICSCESS 2024

Dr. Prashant BHALLA
Patron BRICSCESS 2024

Professor Gulshan KHANNA
Chairperson BRICSCESS 2024

ORGANISING SECRETARY: Prof. Sanjeev GUPTA
Co-ORGANISING SECRETARY: Dr. Nitesh MALHOTRA

CORE COMMITTEE
Prof. Gurjeet Kaur Chawla
Prof. Divya Sanghi
Dr. Lakhvinder Kaur
Dr. Pooja Sharma

SCIENTIFIC COMMITTEE

Editor in Chief:
Prof. Dr. H. Serap İnal, İstanbul Galata Üniversitesi

Members:
1. Prof. Maya Van Gent, South Africa
2. Prof. Nara Rejane Cruz De Oliveira, Brazil
3. Prof. Rajesh Kumar, India
4. Prof. Myriam Guerra-Balic, Spain
5. Prof. Verónica Violant Holz, Spain
6. Dr. Cinthia Lopes Da Silva, Federal University of Parana, Brazil
7. Prof. Erika Zemková, Slovakia
8. Prof. G. Balasekaran, Singapore Prof Ian Culpan, New Zealand
9. Prof. Biljana Popeska, Goce Delcev University, North Macedonia
10. Prof. Bijen Filiz, Turkey
11. Prof. Kshitija Bansal, Manav Rachna International Institute of Research and Studies, India
12. Prof. Dané Coetzee, North-West University, South Africa
13. Prof. Chae-Hee Park, Republic of Korea
14. Prof. Gıyasettin Demirhan, Turkey
15. Prof. Fatma Saçli Uzunöz, Turkey
16. Prof. Garry Kuan, Malaysia
17. Dr. Zornitza Mladenova, Association of Touristic Animators, Bulgaria
18. Dr. Marcos Gonçalves Maciel, State University of Minas Gerais, Brazil
19. Dr. Antonín Kuban, Czech Replublic
20. Miss. Yew Cheo Ng, Singapore
21. Dr. Mottakin Ahmed, India
22. Miss. Larissa Pires, Federal University of Sao Paulo, Brazil

Associates Editors:
1. Prof. Kshitija Bansal, Manav Rachna International Institute of Research and Studies, India
2. Dr. Jasmine Kaur Chawla, Manav Rachna International Institute of Research and Studies, India
3. Dr. Irshad Ahmad, Manav Rachna International Institute of Research and Studies, India
4. Dr. Ankita, Manav Rachna International Institute of Research and Studies, India

SCIENTIFIC COMMITTEE

DAY 1: February 26, 2024 (Monday)		
0900 -1000hrs	VENUE A Block Auditorium	Registration
1000 - 1015hrs		Welcome of Dignitaries and Participants
1015 - 1100hrs		(K-01) Keynote Address Physical Activity and Reduction in Chronic Disease
1100 – 1230hrs		Inaugural Ceremony
1230 -1330hrs	LUNCH	

INVITED PRESENTATIONS								
Time	**VENUE:1 A Block Auditorium**		**VENUE: 2 B Block Auditorium**		**VENUE: 3 AT-16**		**VENUE: 4 AF-14**	**VENUE: 5 AT-17**
	Title	**Invited Speaker**	**Title**	**Invited Speaker**	**Title**	**Invited FLV presentations**		
1330 -1400hrs	**(S-01):** Concussion in Schools Rugby: Are We winning the Battle?	**Prof. Hans De Ridder (South Africa),** President, BRICSCESS President, Board of Directors, the GCH Foundation Senior Vice-President, ISAK Director, School of Human Movement Sciences, North-West University-Potchefstroom South Africa	**(S-02):** Innovative Integration of Technology in Physical Education, Physical Activity and Active Living	**Mr. Ben Wells** (USA) Physical Educator Lü Ambassador CDE Trainer/ Presenter SHAPE America 2016 SHAPE Colorado Bennett Ranch Elementary Falcon, CO USA	**(S-03):** Tourism and Leisure in the Post COVID Digital Era	**Dr. Zornitza Plamenova Mladenova (Bulgaria)**, President, Association of Touristic Animators Bulgaria		
1400- 1430hrs	**(S-04)**: Using Digital Technologies in the Competence Physical Education, Sport and Fitness According to WorldSkills Russia Standards	**Assoc. Prof. Maria Abulkhanova (Russia),** Founding Member and Vice President of BRICSCESS	**(S-05):** Physical Education, Well-Being and Health among Brazilian Children During the Social Distancing Period	**Assoc. Prof. Nara Rejane Cruz De Oliveira (Brazil)**, Human Movement Sciences Dept., Federal University of Sao Paulo, Brazil	**(S-06):** Relationship of BMI on the agility and strength skills of six- to eight-year-old learners in the North West Province of South Africa. The PERF-FIT study	**Prof. Dané Coetzee (South Africa),** Faculty of Health Science School of Human Movement Sciences North-West University, South Africa		
1430 -1500hrs	**(S-07):** The Effect of Physical Activity-Based Brain Breaks on Gain Score	**Prof. Gıyasettin Demirhan (Turkey)**, Board of Directors, GCH Former President, Turkish Sports Sciences Association Former Dean, Faculty of Sports Sciences, Hacettepe University Turkey	**(S-08)**: Influence of a Physical Activity and Psychosocial Intervention on Risk Factors Associated with NCD among Adolescents	**Assoc. Prof. Maya Van Gent (South Africa),** Human Movement Science Department, Faculty of Health Sciences, University of Fort Hare, South Africa	**(S-09)**: The Effects of Brain Breaks® Physical Activity Videos on Focus, Task Tracking and Academic Achievement in Turkey	**Assoc. Prof. Dr. Bijen Filiz (Turkey),** Department of Coaching Education Afyon Kocatepe University Turkey		
1500 -1630hrs	**Workshop (S-10)**: Learn How to Establish Lifelong Healthy Behaviours in Children and Youth Using a Science-based, Child-friendly, Sustainable Approach.	**Dr. Michelle Lombardo (USA),** President, The Organ Wise Guys Inc. USA	**OR-01 Oral Presentations**		**OR-02 Oral Presentations**		**OR-03 Oral Presentations**	**OR-04 Oral Presentations**

,

DAY 2: February 27, 2024 (Tuesday)										
INVITED PRESENTATIONS										
Time	**VENUE:1 A Block Auditorium**		**VENUE: 2 B Block Auditorium**		**VENUE: 3 AT-16**		**VENUE: 4 AF-14**		**VENUE: 5 AT-17**	
0915-0930hrs	**Thematic Orientation**									
0930 -1015hrs	**(K-02)**: **Keynote Address** Holistic Development of Fitness in Children and Youth in India: Need for Development of a Sustainable Model	**Prof. G. L Khanna (India),** Founding Member & Vice President – BRICSCESS and Pro Vice Chancellor Manav Rachna International Institute of Research and Studies, India								
1030 -1100hrs	**(S-11)** Research Development Centre on Sport and Leisure Policies: Regional Partnership through Physical Activity, Exercise, and Health Science	**Prof. Ricardo R. Uvinha (Brazil),** Founding Member and Secretary General of BRICSCESS, Dean, School of Arts, Sciences and Humanities, University of Sao Paul, Brazil	**(S-12):** Youth Health in Focus: Integrating Pharmacology and Epidemiology for Comprehensive Sports Science Advancements	**Prof. Gushchina Yulia (Russia),** Deputy Director for International Affairs and Public Relations MIRUDN, People's Friendship University of Russia.	**(S-13):** Best Practice, Enhancing Children´s PA in Kindergartens by Connecting Music and Movement in Pre-school Education	**Dr. Antonín Kuban (Czech Republic),** Faculty of Physical Education and Sports Charles University Czech Republic				
1100 -1145hrs	**Symposium** - Scientific Advances in Dietary Supplements	Col Dr Anup Krishnan (Retd) Mr Prasanna Choudhari Dr Samuel Pullinger Dr. Pooja Gaur Ms Aradhana Sharma Ms Vibha Acharya	**(S-14)** Physical Activity Level and Psychological well being of University students and possibilities for its improvement: Case Study from North Macedonia	Assoc. Prof. Dr. Biljana Popeska (North Macedonia), Faculty of Educational Sciences Goce Delcev University Stip Republic of North Macedonia						
1145 -1200 hrs	**Brain Break**									
1200 -1230hrs	**Cultural Programme (A Block Auditorium)**									
12300 -1330hrs	**LUNCH**									
Time	**VENUE:1 A Block Auditorium**		**VENUE: 2 B Block Auditorium**		**VENUE: 3 AT-16**		**VENUE: 4 AF-14**		**VENUE: 5 AT-17**	
1330 -1500hrs	**Meeting – Board of Directors (Venue – A Block Meeting Room)**									
	Workshop (S-15) Young and Old Alike: Agility Skills Testing and Training within a Long-term Physical Development Model	**Prof. Erika ZEMKOVÁ (Slovakia),** Comenius University in Bratislava Slovakia	**OR-05 Oral Presentations**		**OR-06 Oral Presentations**		**OR-07 Oral Presentations**		**OR-08 Oral Presentations**	

	DAY 3: February 28, 2024 (Wednesday)								
	INVITED PRESENTATIONS								
Time	**VENUE:1 A Block Auditorium**		**VENUE: 2 B Block Auditorium**		**VENUE: 3 AT-16**		**VENUE: 4 AF-14**		
0915- 0930hrs	**Thematic Orientation**								
0930 -1015hrs	**(K-03) Keynote Address** Connecting Holistic Health to Interactive Technology in Youth and Community through the United Nations Sustainable Development Goals 2030.	**Prof. Mingkai Chin (USA)** Founder and President, The Foundation for Global Community Health (GCH) Founding & Immediate Past President, BRICS Council of Exercise & Sports Science (BRICSCESS) Co-Founder & Former President Asian Council of Exercise & Sports Science (ACESS) Vice President, Global Affairs & Research HOPSports Inc., USA (2010-2022) Hong Kong-China							
1015 -1100hrs	**(K-04) Keynote Address** Promoting Holistic and Sustainable Physical Education and Physical Activity for Children and Youth	**Prof. Uri Schaefer (Israel)**, President, International Council of Sport Sciences and Physical Education (ICSSPE) Past President and Board member, International Council of Coaching Excellence (ICCE) International Adviser, BRICSCESS Executive Director, Israel Coaching Association Start Up Consultant: Fantasticwe.com Israel							
1115-1145hrs	**(S-16):** Prevention of Knee Joint Injuries among Prepubertal and Pubertal Children:11+ and FIFA 11+	**Prof. Serap Inal (Turkey),** Dean and HOD, Department of Physiotherapy and Rehabilitation, Istanbul Galata University, Turkey	**(S-17)** Using the OMNI Rate of Perceived Exertion (RPE) Scale to Self-Regulate Exercise Intensity to Induce Cardiovascular and Peripheral Adaptations During Soccer Training	**Assoc. Prof. G. Balasekaran (Singapore)**, President, Asian Council & Exercise Sports Science, ACSM Health Fitness Director. National Institute of Education Nanyang Technological University Singapore	**(S-18)** Does External Pneumatic Compression Help with Recovery and Improve Performance after Cycle Ergometer Anaerobic Exercise?	**Yew Cheo NG (Singapore),** Nanyang Technological University Singapore			
1145-1215hrs	**(S-19)** Influence of Sports Participation, Genetic Factor and Nutritional Supplementation on Bone Health and Muscular Performance in Young Population.	**Assoc. Prof. Foong Kiew Ooi (Malaysia),** Lecturer and Former Programme Chairman, Exercise and Sports Science Programme, School of Health Sciences, Universiti Sains Malaysia.	**(S-20)** The Innovative Approach of Using Music for Health and Sport: From Conceptual Underpinnings to Applications	**Prof. Garry Kuan (Malaysia)**, Secretary-General, Asian-South Pacific Association of Sport Psychology. Executive Board Member, Asian Council of Exercise and Sports Science (ACESS) Exercise and Sports Science Programme Universiti Sains Malaysia	**(S-21)** Mental Health, resilient coping strategies and hope of residents of the city of São Paulo during the period of social distancing in the COVID-19 pandemic	**Larissa Pires (Brazil),** Health Sciences Federal University of São Paulo-Santos Brazil			

1215 -1245hrs	**PLENARY SESSION**					
1245- 1330hrs	**LUNCH**					
1330 -1500hrs	**Workshop (S-22)** Synergy of Gratitude and Mindfulness in Sports and Physical Fitness: Harnessing the Science of Human Flourishing and Wellbeing	**Prof. Dr. Waheeda Khan (India),** Department of Clinical Psychology Faculty of Behavioural Sciences Advisor - SGT University Gurugram	**OR-09 Oral Presentation**	**OR-10 Oral Presentation**	**OR-11 Oral Presentation**	
1500-1630hrs	**Prof. S K Verma Memorial Award "Poster Presentation"**		**OR-13 Oral Presentation**	**OR-14 Oral Presentation**	**OR-15 Oral Presentations**	
1730hrs onwards	**GALA DINNER (CENTRAL LAWN)**					

	DAY 4: February 29, 2024 (Thursday)									
	INVITED PRESENTATIONS									
Time	**VENUE:1 A Block Auditorium**		**VENUE: 2 B Block Auditorium**		**VENUE: 3 AT-16**		**VENUE: 4 AF-14**		**VENUE: 5 BG-08**	
0930-0945hrs	**Thematic Orientation**									
0945-1030hrs	**(K-05) Keynote Address :** Adapted Judo for Children with Autistic Spectrum Disorder: the AUTJUDO Project.	**Prof. Myriam Guerra-Balic (Spain),** Board of Directors, GCH FPCEE-Blanquerna University Ramon Llull (Spain)								
1045-1115hrs	**(S-23)** Models and variations of exercise programs to improve cardiovascular and increase muscle mass.	**Dr. Rina Ambar Dewanti (Indonesia),** Assistant and lecturer UNJ, state University of Jakarta	**(S-24)** Impact of Physical Activity Programs in the Schools for promotion of Fitness among Students.	**Prof. Rajesh Kumar (India),** I/c Director of Physical Education Osmania University, T.S. Hyderabad, India	**(S-25)** Childhood Obesity and its Associated Factors among School Going children in Raisen, Madhya Pradesh, India	**Dr. Mottakin Ahmed (India),** Sports Officer Government College Silwani, Raisen M.P., India				
1115-1145hrs	**(S-26)** Intergenerational a Sport Program between Youth and Elderly: A Case of Pickleball clubs	**Prof. Chae-Hee Park (Republic of Korea),** ACSM Exercise is Medicine® Older Adult Committee Member, Director, Korea National Sport University, Republic of Korea	**(S-27)** Physical Activity Involvement from Classrooms to Houses: Case from Cappadocia Region of Turkey	**Prof. Fatma Sacli Uzunoz (Turkey),** Department of Coaching Education, School of Sport Sciences and Technology Nevşehir Hacı Bektaş Veli University, Turkey						

PLENARY SESSIONS

February 27, 2024 (Tuesday)					
VENUE: I BLOCK AUDITORIUM			VENUE: G BLOCK AUDITORIUM		
TIME	**PANEL DISCUSSION**	**PANEL MEMBER**	**TIME**	**PANEL DISCUSSION**	**PANEL MEMBER**
1130-1300hrs	**Vision Olympic 2036** Panel Discussion-1 **Academia Athletica: Fusing Education and sports**	**Chair Person** **Lt Gen (Dr.) J.S. Cheema** Vice Chancellor, The Maharaja Bhupinder Singh Punjab Sports University, Patiala	**1130-1300hrs**	**"Advances in Holistic Health & Sports for Children and Youth"**	**Dr. Mantu Saha** Scientist F, DRDO-Defense Institute of Physiology and Allied Sciences (DIPAS)
					Dr. Manjunath Sharma Pro-Vice Chancellor & Director of Research, SVYASA University, Bangalore
		Moderator **Dr Jatin Soni** Former Vice Chancellor Swarnim Gujrat Sports University Vadodara, Gujrat			**Dr. I N Acharia** Programme Officer, MDNIY New Delhi
		Col. Raj Singh Bishnoi Sr. Executive Director, Netaji Subhash National Institute of Sports, Patiala			**Dr. Raghavendra Rao** Director, CCRYN. National Ayush Mission, Ministry of Ayush Govt Of India, New Delhi
		Mr. Tahsin Zahid Chief Executive Officer (CEO) SPEFL-SC			**Prof. Surinder Kumar** HOD & Dean, Faculty of Yoga & Phy Edn. Gurukul Kangri University, Haridwar
		Dr. Dhananjoy Shaw Head Dept. of Physical Education & Sports Sciences, DU			**Dr. UK Singh** Faculty of Yoga & Physical Edn. Gurukul Kangri University, Haridwar
		Dr. Manohar Lal. Prof. Department of Physical Education, Punjab			
		Dr. Kawaljeet Singh Director Sports, Khalsa University Amritsar			
		Prof. Arjun Sinh Rana Vice Chancellor Swarnim Gujarat Sports University			
1400-1530hrs	**Vision Olympic 2036** Panel Discussions -2 **Rehabilitation Athletics: Redefining Recovery**	**Chair person** **Prof. Dr. Oleksandr Krasilshchikov** Professor of Sports Science, Universiti Teknologi MARA (UiTM) Malaysia	**1400-1530hrs**	**Vision Olympic 2036 Panel Discussions: 3** **Tach Play: Navigating the future of sports technology**	**Chair Person** **Prof. L.B. Laxmikant Rathod** Vice Chancellor Palamuru University, Mahabubnagar, Telangana
		Dr. Vivek Kumar Mathur: Moderator Specialist Sports Medicine Deputy Inspector General (Medical) I.T.B.P (Central Armed Police Forces)			**Moderator:** **Mr. Ram Kumar Singh** Founder & CEO Vradicals India Pvt Ltd
		Dr. K.A. Thiagarajan Senior Consultant Sports Medicine & Physical Medicine and Rehabilitation Sri Ramachandra Medical Centre Chennai			**Mr. JKL Prasad** Business Development manager A D Instruments
		Dr A G K Sinha Professor Sports Sciences, Physiotherapy, Physical Education Punjabi University Patiala Punjab			**Dr. Hanjabam Barun Sharma** Professor, Institute of Medical Sciences (IMS), Banaras Hindu University (BHU), Varanasi
		Dr. Dobson Dominic Prof & HOD Sports Medicines & Sports Science Saveetha Medical College Chennai, Tamil Nadu			**Mr. Sujit Panigrahi** Founder and CEO, Fitness365
		Dr. Aijaz Ashai Head of Department Adams Wylie Physio Rehab Centre			**Prof. Sanjeev Gupta** Dept of Physiotherapy, School of Allied Health Sciences, MRIIRS
					Dr Prakash Jha Professor, Kings College London
					Cak Sushilo Head of Graduate International Program & International Coordinator, Universitas Negeri Jakarta (UNJ)

ORAL PRESENTATIONS

OP 01: Iron deficiency among female Football Players

Pritee Singha, Gurjeet Kaur Chawla, Indranil Manna

OP 02: Effect of recreational games on enjoyment and attitude of millets as potential solution to address reproductive health challenges in young female adults- A Comprehensive Review

Kanika Anand, Gurjeet Kaur Chawla

OP 03: Medical nutrition therapy for the management of gestational diabetes mellitus – A Comprehensive Review

Swati Aggarwal

OP 04: Antioxidant potential of Aswagandha Root and Athletic Performance

Sharmistha Samanta, Dr. Sridip Chatterjee, Prof. Runu Chakraborty

OP 05: Impact of Omega 3 fatty acids on different organs of SOFA score involved in sepsis.

Swati, Madhvi Awasthi, Nameet Jerath

OP 06: Nutritional status, psycho-physiological, and performance of vegetarian versus non-vegetarian athletes: A pilot observation study

Raushan Kumar, Keren Harish Tiwari, A. Yuvaraj, Harish Kumar Tiwari

OP 07: Product development and nutritional evaluation of beetroot jam for athletic performance enhancement

Jyoti Prasad, Divya Sanghi

OP 08: Association of dietary intake of omega-6/omega-3 ratio with body mass index

Gurseen Rakhra, Kaavya Nair

OP 09: A study on nutrient quality and shelf life of pearl millet microgreen grown under sunlight

Ashima, Awasthi M

OP 10: Effect of product developed from foxtail millet and jackfruit seed on blood glucose response among middle aged population.

Muskan Bansal, Mahak Sharma

OP 11: **The Indian football: from a social and scientific perspective**

Soumyadeep Mukhopadhyay, Upasana Chowdhury, Snehunsu Adhikari, Bithin Kumar Maji, Somnath Gangopadhyay

OP 12: Differences in the stride to stride variability while prolonged running on treadmill and track: A crossover study

Zaheen A. Iqbal, Prof. Daniel H.K. Chow

OP 13: A study on applications of engineering education in sports and physical education

Tara Singh Thakur, Kumar Neeraj

OP 14: Estimation of the changes in the field hockey penalty stroke technique by using non-linear analysis

Viswanath Sundar, Sabarathinam Srinivasan, Rajinikumar Palaniappan

OP 15: A comparative study of personality profile and cognitive abilities between physical education and general students

Namchan Norbu Bhutia, Atanu Ghosh

OP 16: Effect of hand grip strength, heart rate and anxiety on the shooting efficacy of female 10M pistol shooting

J S Soodan, Sandeep Kaur

OP 17: Innovative integration of yogic and SUJOK (oriental) practices for holistic development of school children

SN Karthikeyan, Shaheen Ahmed

OP 18: Youth experiences of a rural South African sport development programme

Leepile Cyril Motlhaolwa

OP 19: Science of Archery traced from ancient Indian literatures

Samiran Mondal

OP 20: Effect of recreational games on enjoyment and attitude of adolescent girls

Ashoke Kumar Biswas, Nurun Nabi

OP 21: Assessing the effect of three different pre-match warm-up structures on male professional basketball players' physiological parameters

Vikas Singh, Ciocan Vasile Catalin, Tenzing Norzom Bhutia, Ravindra Singh Rajpurohit, Carmen Pârvu, Ashish Sharma

OP 22: Comparative study on mental toughness between national and state level male archers

Rajibul Islam, Manabendra Majhi

OP 23: Measure of depression between the male and female athletes of district players

Suresh Babu Nannapaneni

OP 24: Importance of morphological, physical fitness and physiological variables in talent identification in sports

Atanu Jana, Gulshan Lal Khanna, Indranil Manna

OP 25: HRV guided training in improving swimming performance of elite junior swimmers – A Randomized control trial

Sneha T, Dobson Dominic, Harshavardhini A

OP 26: Performance status of Indian female athletes in the international competitions

Khatun N, Konar A, Das S, Chatterjee S, Polley S

OP 27: Physiology of soccer: An update in Indian context

Indranil Manna

OP 28: A comparative study on level of sports confidence between team game and individual game athletes

Adrija Biswas, Prof. Ashoke Kumar Biswas

OP 29: Influence of aerobic fitness on cardiac autonomic function in regular exercisers: an observational pilot study

Paul P, Chatterjee S

OP 30: Effect of in-season linear sprint training on sprint kinematics of amateur soccer players

Avinash Kharel, Sangey Tsering, Sonam Ramchiary

OP 31: Effectiveness of high intensity circuit training with body weight on lower limb strength, agility and speed in badminton players: A comparative study

Vallari Sharma, Neeraj Singh, Vijay Kaushik, Ramhari Meena, Preeti Taneja

OP 32: Effects of upper limb training and ergonomic interventions in youth esports players - A Quasi experimental study
Koushik K V S, Dobson Dominic, Praveen R, Nikhil Roy M, Sai Kishore

OP 33: Role of training intensity distribution in endurance sports: A review

Manish Nagpal, Nitesh Malhotra

OP 34: Role of low-intensity training and nutritional supplementation in subjects with fibromyalgia and visceral disorders - Case Report

Mahek Arora, Priyanka Sethi, Preeti Saini

OP 35: A longitudinal study on prevalence of doping and the perception towards anti-doping among Tamil Nadu youth football players

Nikhil Roy M, Dobson Dominic, Praveen R, Koushik K V S

OP 36: Breathing exercises in lung cancer: A Systematic Review

Bhaskara Rao Jagurothula, Kshitija Bansal

OP 37: Diastolic Blood Pressure: An Independent Predictor for Cardiac Autonomic Neuropathy in Type-2 Diabetes Patients

Saima Zaki, Saurabh Sharma

OP 38: The effect of pep devices in chronic obstructive pulmonary disease patients: A Systematic Review

Chanakya Singh, Nitesh Malhotra, Preeti Saini, Priyanka Sethi

OP 39: The effect of backpack load on pulmonary function: A Systematic Review

Megha Singh, Preeti Saini, Nitesh Malhotra, Priyanka Sethi

OP 40: Effect of asana and exercise on speed, strength and endurance among eumenorrheic women athletes during various phases of menstrual cycle

P Ashwini, K Deepla

OP 41: Effect of Wim Hof breathing method for the enhancement of sports performance: A Systematic Review

Jamil Ahmad Butt, Jai Prakash Bhukar, Farooq Ahad Kumar, Towseef Ahmad Taily

OP 42: Ergonomics modifications and improving well-being as an early disease prevention in school going children in developing countries

Pooja Kumari Mahaseth, Ndahiriwe Chance Christian, Tanpreet Kaur, Tejaswini Kalyan Pwar, Rinkle Malani

OP 43: The impact of poverty and gender inequality on the psychological risk factors of adolescents at risk for NCD's in the Eastern Cape, South Africa

Van Niekerk RL, Van Gent MM

OP 44: Physical fitness, cardiovascular and musculoskeletal health, and occupational performance in firefighters

Jaron Ras, Denise L. Smith, Andre P. Kengne, Elpidoforos S. Soteriades, Lloyd Leach

OP 45: Comparing the impacts of video-based and face-to-face yoga practices on the depression level, pain, fatigue and quality of life of sedentary individuals

Nahide Kocer, Feyza Baca Bicer, Habibe Serap Inal

OP 46: A systematic review protocol for the effectiveness of psycho-educational intervention programmes in addressing the psychological risk factors associated with non-communicable diseases among adolescents

Nokwanda Bokolo, Rudolph Leon Van Niekerk, Verona Mathews, Lloyd Leach

OP 47: Are the video-based yoga exercises effective on musculoskeletal pain and quality of life of discharged patients in post-covid-19 stage

Mehmet Durbulu, Habibe Serap Inal

OP 48: Comparative effects of selected exercises on motor fitness of normal and deaf secondary schools students in katsina state

Sule Idris

OP 49: The best interest of the child clause and setting a legal framework for sustaining sport in low to medium income countries (LMIC)

Ushotanefe Useh

OP 50: A comparative study of the effect of ACBT (active cycle of breathing technique) versus postural drainage in pulmonary rehabilitation. A Systematic Review

Megha Sharma, Preeti Saini, Nitesh Malhotra, Priyanka Sethi, Pooja Sharma

OP 51: School and university: An extension experience from leisure in southern Brazil

Silva CL, Vendruscolo R, Moro VL, Godoy L, Camargo M

OP 52: Impact of aerobic fitness on selected respiratory indices: an observational pilot study

Roy D, Chatterjee S

OP 53: Study on the effects of short-term resistance training on body-composition, strength, power and aerobic performance of football players

Kingshuk Ghosh, Gulshan Lal Khanna, Indranil Manna

OP 54: Study on the effects of training on body composition, physical fitness and physiological variables of young soccer players

Sayan Jyoti Bera, Indranil Manna

OP 55: Comparison of flexibility, foot posture and BMI in ballet dancers with and without heel pain

Latika Areja, Kangana Kansal Juneja, Dheeraj kumar, Sanjeev Gupta

OP 56: Comparison of glenohumeral rotational rom between leg spinners and off spinners in elite cricketers

Manibhadra Panda, Sonali Vispute, Tabish Fahim, Ashwin Kshirsagar

OP 57: Effect of hand training on grip strength and activities of daily living in non-ambulatory muscular dystrophy patients: A Review

Anjali Rawat, Dr. Divya Aggarwal, Pooja Sharma

OP 58: Effect of 6 weeks circuit training for development of endurance among soccer players of J.N.T.U. Hyderabad

Jampana Ramesh Babu

OP 59: Comparative evaluation of efficacy of extracorporeal shock wave therapy in addition to eccentric exercises in management of non-insertional Achilles tendinopathy in athletes

Sushmita Kushwaha, Bhagat Singh Rathee, Firoz Azam Khan

OP 60: 800 meter rural collegiate athletes' performance after six weeks of cardio respiratory endurance and targeted plyometrics training

Neeraj Kumar, Anand N. Badwe

OP 61: Effect of neuromuscular training on gait parameters in patients with knee osteoarthritis

Sulekha Parashar, Amrinder Singh

OP 62: Evaluating the effects of an immediate stretch-shortening cycle protocol on neuromechanical parameters in male and female players

Monika Sharma, Amrinder Singh

OP 63: Examining the effect of lengthening of the pectoralis minor and strengthening of the hip abductor of the non-dominant sides on throwing performance of the amateur male cricketers: A randomized controlled trial

Mayuresh Padalkar, Manibhadra Panda, Tushmeet Kaur, Tabish Fahim, Ashwin Kshirsagar, Rohit Dawande, Akash Tandale

OP 64: Effect of rhythmic stabilization on dynamic balance in children with down syndrome: A pilot study

Nusrat Jahan, Nitesh Malhotra

OP 65: Nerve conduction studies (sensory and motor) as outcome measure in hypothyroidism – A literature review

Shubhi Pandey, Sunita kumari, Moattar Raza Rizvi

OP 66: The effect of a 12-week web-based chair yoga program on physical performance and mood in individuals with mild cognitive impairment (MCI)

Nahide Kocer, Beyza Baca Bicer, H. Serap Inal, Nilgun Cinar, Mustafa Yilmaz

OP 67: Prevalence of tension- type headache in university medical students: a cross-sectional study

Roshani Sharma, Palak Sachdeva, Jasmine Kaur Chawla, Pragya Kumar

OP 68: Comparative analysis of heart rate variability in amateur vs professional young badminton players -A cross-sectional study

Dobson Dominic, Harshavardhini , Sneha T

OP 69: Effect of core strength training with nutmeg intake on sleep disorder blood pressure diabetic and erectile dysfunctions among middle aged men

Venkatesan Ramchandran

OP 70: Relation between physical activity, screen time, stress hormones, vitamin e level and academic performance - Gender and ethnic differences among students

Zaheen A. Iqbal, Prof. Daniel H.K. Chow

OP 71: Effect of recreational games on motor creativity of adolescent girls

Nurun Nabi, Prof. Ashoke Kumar Biswas

OP 72: Effects of eight weeks of training on strength, power and speed variables of short distance runners

Soumyadip Ghosh, Indranil Manna

OP 73: Effects of continuous and interval methods of circuit training on blood lactic acid accumulation

Sudip Sundar Das, SK. Saha Alam

OP 74: Footwear influence on mechanical translation of soleus muscle activation in flexed knee heel rise action – A cross-correlation study

Sanjeev Gupta, Saanvi Aggarwal, Visweswara Rao, Guthi, Nagaraj Kondagunta

OP 75: The anthropometric and biochemical parameters, compared to a ketogenic diet

Harpreet Kour, Hanjabam Barun, Shrihari Kulkarni

OP 76: Efficacy of dynamic neuromuscular stabilization exercises in adults with low back pain and movement control impairment: a prospective randomized controlled pilot study

Manju Kaushik, Irshad Ahmad

OP 77: Impact of Russian current combined with close and open kinetic chain strengthening exercises on ACL revision reconstruction using allograft - A Case Report

Rohit Dawande, Manibhadra Panda, Tabish Fahim, Ashwin Kshirsagar, Mayuresh Padalkar, Akash Tandale

OP 78: Evaluation of functional mobility score and star excursion balance test in individuals with Recurrent Ankle sprain

Virag Singh, Nikhita Sharma, Irshad Ahmad

OP 79: A review of pain management and functional improvement in stage II Adhesive Capsulitis

Sheena Arora, Moattar Raza Rizvi, Khyatee

OP 80: The effect of chronotype on athletic physical performance and sleep quality: A Systematic Review study

Mohd. Asad, Preeti Saini, Sayed Zarnain Ahmed

OP 81: A comparative study between the occupational participation of special Olympians and non-special Olympians using scope (version 2.2)

Pallavi Nair, Vidushi Sharma

OP 82: Excessive drug use leads to neurological conditions in sports. say no to doping: A review study

Kapil Upadhyay, Bishnu Ghale, Sunita Kumari, Ankita Sharma

OP 83: The role of Artificial Intelligence in prediction and prevention of injury in athletes of various sports disciplines. A systematic review

Bhavesh Sahu, Pooja Purendra Chandrakar, Kshitija Bansal, Sunita Kumari, Divya Aggarwal

OP 84: Effect of agility training on the performance of athletes in different sports specialization: Systematic Review

Sajal Sharma, Jasmine Kaur Chawla, Irshad Ahmed

OP 85: Effect of regular karate practice on neurosensory cognition among school going children

Bhattacharya P, Chatterjee S, Mondal S

OP 86: Efficacy of high intensity interval training in psychological problems in medical students: A Narrative Review

Baljeet Kaur, Moattar Raza Rizvi

OP 87: Intra-rater reliability of navicular drop test for the assessment of foot posture in pronated feet subjects

Md Farhan Alam, Saurabh Sharma

OP 88: Factors associated with physical performance in strength and/or endurance athletes: A Literature Review

Eepsita Mahanta, Pooja Bhati, Jaganjyoti Das, Pooja Anand

OP 89: Effect of blood flow restriction training after Anterior Cruciate Ligament reconstruction in adolescents: A scoping review

Shivangi Sharma, Irshad Ahmad

OP 90: Identification of factors associated with non-specific low back pain among lawyers

Prerna Mahto, Pragya Kumar, Jasmine Kaur Chawla, Madhumani Dubey

OP 91: Low-impact exercises for improving symptoms in Parkinson's disease: A Literature Review

Nagarjuna Narayanasetti, Kshitija Bansal, Annie Thomas

OP 92: Effect of rotator cuff strengthening exercises along with sleeper stretch program verses traditional exercises program in baseball player having glenohumeral internal rotation deficit (GIRD) - A comparative study

Ayushi Devgade, Neeraj Singh, Jharna Gupta, Priyanshu Joshi, Preeti Taneja

OP 93: Advancements in neurorehabilitation techniques

Mansi George, Jamil Ahmad Butt

OP 94: Analysis of trait anxiety among female college athletes

Yogamaya Panda

OP 95: Childhood obesity as precursor to stroke

Manu Bhati, Nitesh Malhotra

OP 96: Effects of menstrual phase wise training program versus conventional training program on speed, agility, power and psychological well-being of female sprinters: a comparative study

Ishita Dale, Neeraj Singh, Usha Singh, Ramhari Meena, Preeti Taneja, Suman Kumar

OP 97: The determinants of falls among the elderly living in long-term care facilities in the city of Cape Town

Ebrahim N, Leach L

OP 98: Virtual reality in sports training, skill acquisition and application

Antara Bishnu, Priyanka Sethi, Paramananda Roy, Pooja Sharma

OP 99: Neurodynamic mobilization in painful diabetic Peripheral Neuropathy: A narrative review

Jyoti Sharma, Irshad Ahmad, Arun Kumar Chandresh Singh

OP 100: Effect of Nordic hamstring exercise on jump performance in athletes

Jasmine Kaur Chawla, Elson James, Roshani Sharma, Pragya Kumar, Ankit Jain

OP 101: Effect of gamification in pedagogy of undergraduate physiotherapy & occupational therapy courses: A systematic review

Nitya Chophla, Rohit Kumar Halder, Divya Aggarwal

OP 102: The effect of Trans Cranial direct current stimulation on diabetic polyneuropathy: A systematic review study

Aparna Bararia, Ankita, Moattar Raza Rizvi

OP 103: Effect of massage on physical performance of athlete: A review

Aastha Varshney, Arvind Verma, Kshitija Bansal

POSTER PRESENTATIONS

PP 01: Assessment of body mass index and the association with quality of sleep in young adults

Ankita Sharma, Tanya Garg

PP 02: Impact of training volume and intensity on risk of overuse injuries in young athletes: A systematic review study

Bishnu Ghale, Mudssir Maqsud Shiekh, Jasmine Kaur Chawla, Irshad Ahmad

PP 03: A comparative study: effects of Pilates exercises v/s conventional core stability exercises on bat swing velocity and running speed in softball players.

Vidhya Mehta, Neeraj Singh, Ramhari Meena

PP 04: Comparison of immediate effect of self-myofascial release on plantar surface of foot v/s muscle energy technique for improving hamstring flexibility in contact sports players

Mudssir Sheikh, Bishnu Ghale, Jasmine Kaur Chawla

PP 05: Disorders of gut-brain axis: A review highlighting the treatments so far.

Riya Khurana, Gurseen Rakhra

PP 06: A comparative study of selected physiological parameters between middle-aged biomass using rural household women and liquefied petroleum gas using urban household women

Shubankar Singha, Papan Mondal

PP 07: Effect of mobile phone addiction on physical fitness of Indian youth

Urmila Tamta, Sampada Jahagirdar

PP 08: Post-operative rehabilitation following Osteochondritis Dessecans: A single case study

Riya Mittal, Himani Kaushik, Avi Choudhary, Divya Aggarwal, Pooja Sethi

PP 09: Effectiveness of positional release technique in cervicogenic headache among gym goers.

Roshani Sharma, Jasmine Kaur Chawla, Pradumn Kumar Rai, Pragya Kumar,

Ankit Jain

PP 10: Prevalence and associated risk factors of low back pain among salon workers of Delhi NCR: A cross-sectional study

Jasmine Kaur Chawla, Ilma Khan, Roshani Sharma, Pragya Kumar

PP 11: Differential efficacy of shoulder girdle muscles in management of Trapezius myalgia

Dheeraj Kumar, Nitesh Malhotra, Sanjeev Gupta, Pooja Sharma

PP 12: Investigating association of spasticity, functional activity and severity of the condition in Spastic diplegic Cerebral Palsy children.

Dheeraj Kumar, Sanjeev Gupta

PP 13: A prospective randomized comparative study between isolated eccentric versus conventional exercise therapy in athletes with rotator cuff tendinopathy.

Shorya

PP 14: **Co-relation between characterstics of hand-held devices and disability of neck and upper extermity**

Kangana Juneja Kansal, Dheeraj Kumar, Sanjeev Gupta

PP 15: Association between biomechanical measures of cervical and psychological measures in patients with Tension-type Headache

Richa Chauhan, Irshad Ahmad

KEY NOTE ADDRESS

K 01: Connecting holistic health and well being to interactive technology in youth and community through the CDC WSCC model and UNSDG 17 physical education and health

Prof. Dr. Ming-Kai Chin

K 02: Adapted judo for children with autistic spectrum disorder: the AUTJUDO project

Prof. Myriam Guerra-Balic

K 03: Holistic development of fitness in children and youth in India: need for development of a sustainable model

Prof. Dr. G L Khanna

K 04: Physical activity and reduction in chronic disease

Prof. Dr. Stephen Kopecky

K 05: Promoting holistic and sustainable physical education and physical activity for children and youth

Dr. Uri Schaefer

INVITED TALKS

I 01: Using digital technologies in the competence Physical education, sport and fitness according to worldskills Russia standards

Assoc. Prof. Dr. Maria Abulkhanova

I 02: Using the omni rate of perceived exertion (RPE) scale to self-regulate exercise intensity to induce cardiovascular and peripheral adaptations during soccer training

Assoc. Prof. Dr. Govindasamy Balasekaran

I 03: Innovative integration of technology in physical education, physical activity and active living

Mr. Ben Wells

I 04: Physical education, well-being and health among Brazilian children during the social distancing period

Assoc. Prof. Dr. Nara Rejane Cruz de Olivera

I 05: Concussion in schools rugby: are we winning the battle?

Prof. Dr. J. Hans de Ridder

I 06: The effect of physical activity-based brain breaks on gain score

Prof. Dr. Gıyasettin Demirhan

I 07: Prevention of knee joint injuries among prepubertal and pubertal children:11+ and FIFA 11+

Prof. Dr. Serap Inal

I 08: The innovative approach of using music for health and sport: from conceptual underpinnings to applications

Assoc. Prof. Dr. Garry Kuan

I 09: Impact of physical activity programs in the schools for promotion of fitness among students.

Prof. Rajesh Kumar

I 10: Influence of sports participation, genetic factor and nutritional supplementation on bone health and muscular performance in young population

Asso. Prof. Dr. Foong Kiew Ooi

I 11: Intergenerational a sport program between youth and elderly: a case of pick ball clubs

Prof. Dr. Chae-Hee Park

I 12: Research development center on sport and leisure policies: regional partnership through physical activity, exercise, and health science

Prof. Dr. Ricardo R. Uvinha

I 13: Physical activity involvement from classrooms to houses: case from Cappadocia region of Turkey

Prof. Dr. Fatma Sacliuzunoz

I 14: Influence of a physical activity and psychosocial intervention on risk factors associated with NCD among adolescents

Assoc. Prof. Dr. Maya van Gent

I 15: Youth health in focus: integrating pharmacology and epidemiology for comprehensive sports science advancements

Prof. Yulia Gushchina

FLV PRESENTATIONS

F 01: Childhood obesity and its associated factors among school going children in raisen, Madhya Pradesh, India

Dr. Mottakin Ahmad

F 02: Relationship of BMI on the agility and strength skills of six-to-eight-year-old learners in the north west province of South Africa: the perf-fit study

Prof. Dr. Dané Coetzee

F 03: The effects of brain breaks® physical activity videos on focus, task tracking and academic achievement in Turkey

Assoc. Prof. Dr. Bijen Filiz

F 04: Best practice, enhancing children´s pa in kindergartens by connecting music and movement in pre-school education

Dr. Antonín Kuban

F 05: Tourism and leisure in the post covid digital era

Dr. Zornitza Plamevona Mladenova

F 06: Does external pneumatic compression help with recovery and improve performance after cycle ergometer anaerobic exercise?

Ng Yew Cheo, Govindasamy Balasekaran, Nurul Shafiqah Binte Mohamed Saiful

F 07: Mental health, resilient coping strategies and hope of residents of the city of São Paulo during the period of social distancing in the COVID-19 pandemic

Larissa C. Pires, William F. Santana, Gisele H. Tavares, Filipe S. Romano, Carolin Lusby, Ricardo R. Uvinha, Nara R. C. Oliveira

F 08: Physical Activity Level and Psychological Well-being of University Students and Possibilities for its Improvement: Case Study from North Macedonia

Biljana Popeska, Katerina Mitevska Petrusheva

ORAL PRESENTATIONS

OP 01

Iron deficiency among female Football Players

Pritee Singha[1], Gurjeet Kaur Chawla[1], Indranil Manna[2]

1. Dept of Nutrition and Dietetics, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, India.

2. Associate Professor, Dept of Physiology, Midnapore College (Autonomous), Midnapore, West Bengal, India.

Email: priteesingha2016@gmail.com

Purpose: Iron requirement become high when person is performing hard work or sport activities. Therefore, iron deficiency (ID) has adverse effects on sport performance, as ID may limit the aerobic capacity. Iron status plays an important role in female football players as iron deficiency may limit their performance. The aim of this study was to find out the iron status of female football players.

Methods: A total of 60 female volunteers (age- 16-18 yrs.) participated in this study and were divided into sedentary control group (SCG, n=30) and female football players (FBG, n=30). The players of female football players were engaged in state level competitive football for last two years; whereas the volunteers of control groups were engaged in sedentary activities. Assessments of socio-economic status, nutritional status, menstrual status, maximum aerobic capacity (VO_{2max}), hemoglobin (Hb), hematocrit (Hct), and ferritin level in blood were performed in both the groups.

Results: A significantly reduced (p<0.05) daily energy intake, intake of dietary protein, fat, iron, folic acid, and vitamin B12; and increased (p <0.05) intake of dietary carbohydrate and fat was noted among the female football players compared to the volunteers of control groups. Significantly higher VO_{2max} was noted among the female football players than the volunteers of control groups. Further, significantly lower (p<0.05) blood level of Hb, Hct, ferritin was noted among the female football players than that of the control groups volunteers. It has been observed that the female football players had irregular menstrual bleeding (66.66%) and moderate (56.66%) flow during periods than the control group volunteers. About 33.33%) female football players had injuries due to playing football; no such incident was reported in control group volunteers. The present study showed positive correlation between VO_{2max} and hemoglobin level (r=+0.64, p<0.05); between VO_{2max} and hematocrit value (r=+0.59, p<0.05); between dietary intake of iron and dietary folic acid (r=+0.77, p<0.05); negative correlation between dietary iron intake and injury (r= -0.60, p<0.05) in the football players.

Conclusion: The female football players were suffering from iron deficiency which might be due to low dietary intake of protein, iron, folic acid, and vitamin B12; or due to increased menstrual bleeding, foot strike hemorrhage, and excessive stress due to playing football. The iron deficiency may reduce the performance of female football players. Improvement in iron status may increase the performance of the female football players. It is essential to monitor iron status of female football players at regular basis.

Keywords: Female football, protein intake, dietary iron, folic acid

OP 02

Effect of recreational games on enjoyment and attitude of millets as potential solution to address reproductive health challenges in young female adults- A Comprehensive Review

Kanika Anand[1], Gurjeet Kaur Chawla[1]

1. Department of Nutrition and Dietetics, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana, India

Purpose: This comprehensive review explores the potential of millets as a promising solution to address reproductive health challenges in young female adults. Reproductive health issues including Polycystic ovary syndrome (PCOS) is multifaceted endocrine disorder affecting a significant proportion of women during their reproductive years. It is characterized by hormonal dysregulation, insulin resistance, and irregular menstrual cycles which can have a substantial impact on overall well-being and quality of life. Dietary interventions have gained attention as a means to manage symptoms and improve reproductive health outcomes in young female adults.

Millets, a diverse group of small-seeded grains, present a spectrum of vital nutrients including iron, calcium, magnesium, phosphorus, and B vitamins, all of which play integral roles in the functioning of the female reproductive system. Iron, essential for hemoglobin production, is pivotal in preventing iron-deficiency anemia prevalent in menstruating and pregnant women. Calcium, another cornerstone mineral abundantly found in millets, contributes significantly to bone health, guarding against osteoporosis, a common concern for women as they age. The dietary fiber in millets is essential for digestive health, aiding in the regulation of bowel movements and weight management. Moreover, the low glycemic index of millets ensures a gradual release of glucose into the bloodstream, offering a favorable impact on blood sugar levels. Beyond the nutritional spectrum, millets house antioxidants and phytoestrogens, potentially influencing hormone regulation, aiding in rebalancing the endocrine system in individuals with PCOS and positively impacting female reproductive health.

Methods: This review article examines the nutritional composition of millets and their potential benefits in managing conditions such as menstrual irregularities, polycystic ovary syndrome (PCOS), and anemia based on more than 56 articles between 2012-2022 from Web of Science, Google scholar, Science direct, Research Gate, Sage hub etc. under PRISMA guidelines. Additionally, it explores the impact of millets on hormonal balance, fertility, and overall reproductive health.

Result and Conclusion: By synthesizing existing researches and evidences, this review underscores the significant role that millets may play in supporting the reproductive health of young female adults, advocating for further research and exploration in this vital area.

Keywords: Millet consumption, polycystic ovary syndrome (PCOS), low glycemic index, dietary fiber, insulin resistance, hormonal regulation, reproductive health, dietary interventions.

OP 03

Medical nutrition therapy for the management of gestational diabetes mellitus – A Comprehensive Review

Swati Aggarwal[1]

1. Department of Nutrition and Dietitics, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana, India.

Email: swatiaggarwal@hotmail.com

Purpose: Gestational Diabetes Mellitus is fast emerging as a public health issue as it affects the current and future health of both mother and child. Medical nutritional therapy focused on lifestyle behavior changes, nutrition education and self- monitoring of blood glucose is the first line treatment for the management of GDM. The basic principle of MNT is to ensure adequate energy intake along with balanced macro & micronutrient distribution to support appropriate fetal growth, maternal weight gain while maintaining normoglycemic state. Carbohydrate being the fundamental macronutrient affecting blood sugar levels, focusing on its type, amount and distribution in the meals is of prime importance. Addition of protein and fibre in each meal is also vital to prevent extreme glycemic excursions. Effective use of MNT can not only manage hyperglycemia but also offset adverse maternal & fetal outcomes reducing the need of pharmacological intervention. It can thereby act as a game changer in the life of newborns and the susceptible female population. Despite a consensus on MNT being the cornerstone therapy for GDM management its effective implementation and patient compliance remains a challenge especially in low resource settings.

Methods: The present article is a comprehensive review of current guidelines and information regarding the role of MNT in the management of GDM. For the purpose of pertaining valuable information, this review explored 52 articles from Google scholar, Science direct, Research Gate, PubMed, Sage hub etc. under PRISMA guidelines.

Results: The literature review revealed similar outcomes in the majority of studies reaffirming the vital role of MNT as a cost-effective, side effect free and safe strategy to manage GDM. There is need of a collaborative

approach between doctors and dietitians to impart easy to understand, individualized dietary advice for better compliance and effective results.

Conclusion: Women with GDM are at a higher risk of developing T2DM later in life and their children are also predisposed to metabolic disorders. This window can therefore be further used to increase awareness and promote healthy eating practices for the entire family which can ultimately help to manage obesity and T2DM epidemic in our country.

Keywords: Medical nutritional therapy, gestational diabetes mellitus, nutrition advice, pregnancy outcomes, dietary intake

OP 04

Antioxidant potential of Aswagandha Root and Athletic Performance

Sharmistha Samanta[1], Dr. Sridip Chatterjee[2], Prof. Runu Chakraborty[2]

1. Department of Food technology and biochemical engineering, Jadavpur University, Kolkata 700032, West Bengal, India.

2. Department of Physical Education, Jadavpur University, Kolkata 700032, West Bengal, India.

3. Department of Food technology and biochemical engineering, Jadavpur University, Kolkata 700032, West Bengal, India.

Email: Sharmisthasamanta101@gmail.com

Purpose: Ashwagandha is a popular Ayurvedic herb for treating numerous diseases and also increasing human health. Enhanced cardiorespiratory endurance can enhance human physiological, metabolic, and functional abilities. Aswagandha root has extensive role for the enhancement of sports performance such as Ashwagandha root extract improves cardiorespiratory endurance and quality of life in healthy athletic individuals without producing any adverse effect. Main aim of this experimental study was to find out the bioactive components present in the aswagandha root powder and test overall in-vitro antioxidant ability of aswagandha root powder.

Methods: For the preparation of sample aswagandha root was collected from local market and dried in microwave in different watt (360watt, 540watt and 900watt). The dried sample was grounded in mixer grinder and then it was taken for the preparation of extraction by using methanol and water. For doing HPLC (High Performance Liquid Chromatography), HPLC graded methanol and water were used. The extracted samples were taken for the analysis of total polyphenolic compound (TPC), total flavonoid compound (TFC) and free radical scavenging capacity was determined by 2,2-diphenyl 1-picrylhydrazyl radical (DPPH) method. Ferric reducing antioxidant power (FRAP) was done to measure to analyse the reducing power of the extract. For the qualitative and quantitative identification of bioactive compounds HPLC was done. Overall moisture, protein, fat and carbohydrate and ash content of aswagandha root were determined by using moisture analyser, kjeldhal method, Soxhlet method, anthrone method and maple furnace respectively.

Result: TPC content of Aswagandha root dried in 360 watt (A_{360}) was 36.302 mg/g whereas, Aswagandha root dried in 540 watt (A_{540}) and 900 watt (A_{900}) the values were 33.89 mg/g, 30.026 mg/g respectively. The TFC values for A_{360}, A_{540} and A_{900} were 2.11 mg/g, 1.602 mg/g and 3.36 mg/g consecutively. Overall antioxidant content of the sample was measured by DPPH and FRAP. The DPPH values for A_{360}, A_{540} and A_{900} were 64.35%, 55.089% and 61.47% respectively. Ferric reducing antioxidant capacities were 0.26mg/g (A_{360}), 0.208mg/g (A_{540}) 0.24mg/g (A_{900}). The HPLC results provided the details of bioactive components present in the samples dried in different conditions. Aswagandha root dried in 360watt, having Dihydroxy benzoic acid (6.95mg/g), catechin (5.74mg/g), vanillic acid (6.08mg/g) and rutin (0.193mg/g), picomaric acid (0.68mg/g), Ferulic acid (0.136mg/g), Myricetin (0.91mg/g), quercetin (1.306mg/g) and Kaempferol (1.18mg/g). On the other hand, A_{540} contains gallic acid (1.87mg/g), proto catechuic acid (0.264mg/g), Dihydroxy benzoic acid (0.492m/g), Catechin (0.78mg/g), Vanillic acid (1.654mg/g), Rutin (0.148mg/g), Picomaric acid (0.067mg/g), Ferulic acid (0.016mg/g) and Myricetin (0.264mg/g) and quercetin (0.37mg/g). A_{900} contains 1.86mg/g gallic acid, 0.77mg/g protocatechuic acid, 1.69mg/g catechin, 0.029mg/g Vanillic acid, 0.018mg/g rutin, 0.17mg/g picomaric acid, 0.005mg/g ferulic acid, myricetin 0.33mg/g and 0.55mg/g quercetin. The moisture content of aswagandha root was 62.14% and Ash percentage was 6.7. Protein content of aswagandha root was 3.9%. Fat content was 0.34% and the proportion of carbohydrate was 50.9%.

Conclusion: From the above data it has been clearly observed that A_{360} contains highest antioxidant potential than other variants. Higher temperature of drying will lead to loss of polyphenol and flavonoid content. Due to presence of a large no. of bioactive components it can be good recovery supplement for athletic individuals.

Keywords: Cardiorespiratory endurance, aswagandha root, athletic individual, antioxidant potentials

OP 05

Impact of Omega 3 fatty acids on different organs of SOFA score involved in sepsis.

Swati[1], Madhvi Awasthi[1], Nameet Jerath[2]

1. Department of Nutrition and Dietetics, Manav Rachna International Institute of Research and Studies (MRIIRS), Faridabad, Haryana, India.

2. Pediatric Critical Care and Pulmonology, In-charge Pediatric Intensive Care at Indraprastha Apollo Hospital, New Delhi, India.

Email: swati_sri30@yahoo.co.in

Purpose: Sepsis is a critical condition which adversely influences majority of populations regardless of any underlying health problems. In 2017, 48.9 million sepsis cases and 11 million its related deaths were estimated, which was noted for almost 20% of deaths worldwide. According to sepsis 3 definition "Sepsis as a life-threatening organ dysfunction caused by a dysregulated host response to infection". Severity of organ dysfunction has been assessed with various scoring systems that quantify abnormalities according to clinical findings, laboratory data, or therapeutic intervention. "Organ dysfunction can be identified as an acute change in total Sequential Organ Failure Assessment (SOFA) scores, 2 points or more consequent to the infection". The hallmark symptom of sepsis is inflammation which is characterized by mitochondrial dysfunction, oxidative stress, and inflammatory cytokine release, and leads to cellular damage and organ dysfunction. "Omega-3 FAs" are the vital component of cell membranes, biotransformed to eicosanoids and other lipid derived substances that control several biochemical processes, such as inflammation and immune response in the body.

Methods: The databases were searched from both PubMed and Google scholar. Relevant studies reporting the impact of Omega-3 FAs on sepsis and its relation with heart, liver, kidney, platelet, lung and central nervous system were included.

Results: There were a few numbers of studies showing impact of Omega-3 FAs on SOFA Score. Groups under studies who did not receive Omega-3 FAs evinced highest SOFA Score. Different studies shown impact on different organs involved in SOFA Score. Omega-3 FAs was found to have antiarrhythmic effects and lowered Blood Pressure but no impact on Mean Arterial Pressure. Its intervention benefited clinical outcomes in lung dysfunction and gas exchange. Supplementation of Omega-3 FAs shown to reduce platelet aggregation. Omega-3 FAs as an emulsion reduced triglyceride with direct bilirubin and improved liver function. In neurological outcome, GCS scores improved after Omega-3 FAs supplementation. It also lowers the risk of proteinuria but had less or no effect on serum creatinine. The repeated impact reviewed was reduced length of stay and duration of mechanical ventilation in most of the studies.

Conclusion: This review finds out the impact of Omega-3 FAs on sepsis as per sepsis 3 definition. Omega-3 FAs have different role on different organs involved in sepsis. A precise approach might be necessary to ameliorate Omega-3 FAs role in sepsis.

Keywords: Sepsis, omega-3, SOFA Score, organs

OP 06

Nutritional status, psycho-physiological, and performance of vegetarian versus non-vegetarian athletes: A pilot observation study

Raushan Kumar[1], Keren Harish Tiwari[2], A. Yuvaraj[1], Harish Kumar Tiwari[1]

1. Department of Physical Education and Sports, National Sports University, Imphal Manipur India.

2. Department of Nutrition and Sports Physiology, National Sports University, Imphal Manipur India. raushannsu@gmail.com

Purpose: Dietary patterns and performance have gained impetus in

recent times, particularly the effectiveness of vegetarian diets for athletes. However, studies have reported divergent or inconclusive findings of vegetarian or vegan diets on performance. The practice of Vegetarianism is approached differently across various households, particularly in India. Therefore, this study was conducted to determine the differences in nutritional status, psycho-physiological and performance parameters between lacto-vegetarian and non-vegetarian athletes.

Methods: In this pilot cross-sectional observation study 16 male athletes aged 18 to 28 years were recruited, and divided into 2-arms (lacto-vegetarian [Veg]=8 and non-vegetarian [Non-Veg] =8) based on food choices and dietary patterns. The participants were assessed for nutritional status markers (Blood Fasting Sugar, Total Protein, Albumin, Globulin, Potassium, Chloride, Total Cholesterol, Triglycerides, LDL Cholesterol, HDL Cholesterol, and, VLDL Cholesterol), Health status markers (WBC, Neutrophils, Lymphocytes, Monocyte, Eosinophil, Basophils, Complete Blood Picture, Serum Bilirubin Total, Serum Bilirubin Direct, Serum Glutamic-Oxaloacetic Transaminase- SGOT/ AST, Serum Glutamic-Pyruvic Transaminase-SGPT/ALT, Alkaline Phosphate, Gamma-glutamyl Transferase-GGT, Urea, Creatinine) through serology test, Psycho-physiological parameters (Emotion, Life, Challenge, Commitment, Ability, Interpersonal, Reaction Speed, Motor Speed) using the Viana testing System Reaction Speed Test Series-5, and performance markers (Acceleration, Deceleration, Distance Per Min, Energy, Player Load, Power Plays, Power Score, Top Speed, Work Ratio, Total Distance,) through MSFT- Test using the Catapult device. The independent-t test was used to determine the differences in the markers across the groups.

Results: The basic physical characteristics like age, height and weight were not statistically different across groups. Among the nutritional status markers, the lacto-vegetarian group exhibited a higher High-density lipoprotein (HDL) level compared to the non-vegetarians, while the former group also having higher total cholesterol levels. The health status markers were within the normal range, irrespective of the group. However, the vegetarians exhibited a higher ($P<0.05$) SGPT level and lymphocyte count compared to non-vegetarian athletes. There was no significance difference in the psycho-physiological parameters across the Non-veg versus Veg group. The non-vegetarian group exhibited a better performance outcome compared to the lacto-vegetarian group, in terms of distance per minute (Veg 23.71< Non-Veg 32.56), work ratio (Veg 9.76< Non-Veg 13.47), and power score (Veg 1.96< Non-Veg 2.76).

Conclusion: The Lacto-vegetarian athletes in the study were similar to the non-vegetarian counterparts in terms of majority of the nutritional and health status markers, including psycho-physiological markers. However, the Non-vegetarian group showed better performance outcomes compared to lacto-vegetarian. Randomized controlled trials are warranted to validate the findings of this study.

Keywords: Vegetarian, non-vegetarian, psycho-physiology, nutritional status, athlete performance.

OP 07

Product development and nutritional evaluation of beetroot jam for athletic performance enhancement

Jyoti Prasad[1], Divya Sanghi[2]

1. School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, India

Email: divya.fas@mriu.edu.in

Purpose: Red beetroot (Beta vulgaris rubra) has recently received attention due to its many biological activity. Red beetroot is studied for its biological activity and potential as a disease prevention and health promotion functional food. Consumption of beetroot produce nitrogen (NO), which has several benefits, such as improved blood flow and gas exchange, mitochondrial biogenesis, and greater muscular constriction. Beetroot contains a high concentration of nitric oxide and is rich in antioxidants (NO). Therefore, a study was conducted to develop a Beetroot Jam for Athlete and to conduct sensory evaluation and nutritional assessment of the product.

Methods: The beetroot was used into two different types of sports jam: beetroot jam and beetroot jam with chia seeds. A basic Apple jam (sample T0) was created for taste testing as controlled sample. Sample T1 included 45 percent beetroot pulp with chia seeds and Sample T2 had 50 percent beetroot pulp. Composite and 9-point hedonic scale were done for organoleptic evaluation. The best tested product was assessed for proximal analysis – carbohydrate, fats, protein, nitrate and antioxidant properties. The product was further assessed for shelf life.

Results: The results revealed that T1 sample with 45% of beetroot pulp jam was highly acceptable in organoleptic evaluation done by 50 participants. The nutritional value per 100g of the product developed from 45% of beetroot pulp jam was energy – 257.28kcal, protein-11.25g, carbohydrates – 68.2g, fats- 0g, dietary fiber- 0.30g, Nitrates – 1.39g (1390mg), Antioxidant activity- 13.65%, TSS – 65.8%, citric acid – 4.8g. Shelf life of the most popular product containing 500g of beetroot was determined to be the greatest within one month of the date of manufacturing in air tight container when stored in a refrigerator.

Conclusion: As per European Food Safety Authority, a 60-kilogram adult athlete's daily recommendation of nitrates is 3.7 mg/Kg/body weight/d. A table spoon (15g) of developed beetroot jam comprises 210 mg of nitrates. The study concluded that beetroot jam may delay the onset of exertion and fatigue, improve cardio respiratory execution under submaximal intensities, and have an effect on anaerobic threshold performance in athletes who have engaged in the most physical activity. An interventional study can be planned for assessing the effect of beetroot jam on performance of athletes.

Keywords: Ergogenic aid; beta vulgaris l.; nitric oxide (no); carbohydrate loading; bio accessibility

OP 08

Association of dietary intake of omega-6/omega-3 ratio with body mass index

Gurseen Rakhra[1], Kaavya Nair[1]

1. Department of Nutrition & Dietetics, School of Allied Health Sciences, Manav Rachna International Institute of Research & Studies, Faridabad.

Purpose: Omega-3 and omega-6 are essential fatty acids that play vital roles in many physiological processes. It is necessary to obtain them from diet since our body cannot produce them. However, maintaining a balance between omega-3 and omega-6 intake is important for maintaining BMI values within the normal range thereby preventing disease. The changes in the dietary patterns have led to a an increased consumption of ω-6 fatty acids and a marked decrease in the ω-3 fatty acid consumption leading to an imbalance in the ω-6/ω-3 ratio.To establish the association of dietary intake of omega-3 and omega-6 ratio with the body mass index.

Method- This systematic investigation was conducted via survey for the assessment of intake of omega-3 and omega-6 fatty acids through diet in college going students (N=200) between the age of 18-25 years using a 3-day food diary (24-hour dietary recall of three days which consisted of 2 weekdays and 1 weekend).

Result-The dietary intake of linoleic acid (ω-6) was higher in subjects with a higher BMI value in comparison to subjects with a lower BMI. Additionally, the correlation analysis reveals a strong positive association ($r = 0.837$, $p < 0.001$) between BMI and the ω-6/ω-3 ratio.

Conclusion- The results from the pilot study highlights the association of ω-6/ω-3 ratio with the BMI values. The findings of the study underscore the significance of promoting healthy dietary choices with a balanced dietary intake of omega -6 and omega-3 fatty acids for maintaining healthy weight.

Keywords- BMI, ω-6/ω-3 ratio, omega-3, omega-6, food frequency questionnaire

OP 09

A study on nutrient quality and shelf life of pearl millet microgreen grown under sunlight

Ashima[1], Awasthi M[1]

1. Department of Nutrition and Dietetics, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad Haryana, India.

Email: madhviawadthi84@gmail.com

Purpose: Microgreens are edible young part of plants with great potential which are gaining popularity because of good amount of nutrition

present in it. Microgreens also called "Vegetable confetti". They are good source of many nutrients such as vitamin c, antioxidant properties, iron, potassium as well as zinc. Microgreens are easy to grow and have many properties which are helpful to fight with many harmful diseases. These are also known as 'Functional food' and 'Super food'. But their storage is the major issue encountered till date. The objective of this study was to investigate the shelf life and nutrient quality of pearl millet microgreens grown under natural light (sunlight).

Methods: For the study, pearl millet (bajra) seeds were bought from local market and were soaked overnight. For sowing, coco peat was used as growing media and then trays were kept under exposure of sunlight. Microgreens were harvested on day 12th using a sanitized scissors and were analyzed for various nutritional and microbiological parameters. To study the shelf life, post-harvest calcium lactate treatment was given. Microgreens were stored in plastic boxes and mesh bags with and without calcium treatment at 5°C for 21 days. On day 0, 4, 7, 14 and 21 sensory evaluation was done by 5 untrained and 5 semi trained panellist for their visual quality, olfactive quality and overall quality.

Results: The proximate analysis of Microgreens grown under sunlight revealed that energy, total fat, protein, carbohydrate, ash, and moisture was139.65Kcal/100gm, <1.0gm/100gm, 3.2 gm/100gm, 29.71 gm/100gm, 4.2 gm/100gm, and 62.0 gm/100gm, respectively. Whereas content of Vitamin C, lysine and total chlorophyll was 28.45 mg/100gm, 14.2 gm/100gm, 61.6µ/gm. Amount of total carotenoids and total phenols was 9.8µ/gm and 4.2 mg/gm respectively. The quantity of iron, calcium, zinc was 0.80mg/gm, 8.24mg/gm, 0.04mg/gm respectively. Amount of Fiber was found to be 31.6mg/100gm. Total antioxidant activity notable amount was 64.5% GAE. The results of the sensory quality study revealed that microgreens packed in plastic boxes without calcium were more acceptable than microgreens with calcium lactate treatment and packaged in mesh bags in all aspects of sensory evaluation.

Conclusion: The pearl millet-based microgreens grown under sunlight can be stored in plastic boxes and consumed for 14 days when kept in refrigerator at 5°C.

Keywords: Nutrient quality, shelf life, pearl millet, sunlight

OP 10

Effect of product developed from foxtail millet and jackfruit seed on blood glucose response among middle aged population.

Muskan Bansal[1], Mahak Sharma[1]

1. Department of Nutrition and Dietetics, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, India. Email: mahak.fas@mriu.edu.in

Purpose: Foxtail millet has a low glycemic index and is rich in dietary fibre. Jackfruit seeds are a good source of resistance starch, vitamins, and minerals. Therefore, the study was conducted to develop product from foxtail millet and jackfruit seeds and assess its effect on blood glucose.

Methods: The processing of Jackfruit seeds was done by drying seeds at 80°C for 4 hrs and converted into flour. Thepla was formulated with different concentrations of foxtail millet and jackfruit seeds i.e. 50g foxtail millet and 10g jackfruit seed flour (T1), 60g foxtail millet and 20g jackfruit seed flour (T2), and one controlled sample was developed with 100g wheat flour. The acceptability of the products was checked by using 9 point hedonic rating scale and proximate analysis of the most acceptable product was done. Glycemic index and glycemic load of product was done by intervening the product on 10 subjects without diabetes and assessing blood glucose level at 0, 15, 30, 60, 90, and 120 minutes by using OGTT method.

Results: The data revealed that thepla formulated with foxtail millet-50%, jackfruit seed flour 10% was found to be the most acceptable product. The proximate analysis result showed that 100g of thepla contain energy (270.36kcal), protein (5.21g), fat (2.24g), carbohydrate (57.34g), moisture (31.72g), ash (3.49g), fibers (8.3g) and resistance starch (11.46mg). The mean of incremental area under the blood glucose response curve of the control product was higher than the IUAC of the case product and the differences were statistically significant. The glycemic index was 43.77 and the glycemic load of the product was 43.77 which falls in the category of low glycemic index food.

Conclusion: The study concluded that thepla formulated with foxtail millet 50%, jackfruit seed flour 10% can be used for diabetic patients, and the athlete population with or without metabolic conditions, due to its low Glycemic load.

Keywords: Diabetes, foxtail millet, jackfruit seed, glycemic index, glycemic load.

OP 11

The Indian football: from a social and scientific perspective

Soumyadeep Mukhopadhyay[1], Upasana Chowdhury[1], Snehunsu Adhikari[2], Bithin Kumar Maji[3], Somnath Gangopadhyay[1]

1. Occupational Ergonomics Laboratory, Department of Physiology, University College of Science & Technology, University of Calcutta, Kolkata, West Bengal, India.

2. Department of Exercise Physiology, Sports Authority of India, Netaji Subhash Eastern Center, Salt Lake, West Bengal, India.

3. Department of Physiology (UG & PG), Serampore College, University of Calcutta, Hooghly, West Bengal, India.

Email: soumyadeep.mukhopadhyay98@gmail.com

Purpose: During the 19th century, football gained prominence as a revered sporting activity both inside and across diverse regions encompassing the British Empire. Initially restricted to British officials and soldiers, it gradually gained popularity among Indian schools, colleges, and institutions. The Indian Football Association (IFA) was established in 1892 in Calcutta as a guiding organization. The formation of the All India Football Federation (AIFF) in Delhi in 1937 led to a more systematic and effective administration of football competitions and operations throughout India. The origin of the Calcutta Women's Football League (CFWL) in the 1940s is a remarkable incident that triggered the development of women's football in India after independence, despite obstacles such as insufficient opportunities and subordination to men's sports. This present study endeavours to furnish a comprehensive perspective on the cultural and contemporary scientific discoveries in football. Additionally, a secondary objective was to ascertain the prevailing patterns of the physical, physiological, and other pivotal parameters imperative for the preparation of Indian football players, thereby supplementing the sport's legacy in the nation.

Methods: The process employed to search for relevant literature in this study involved exploring various databases, followed by a thorough screening procedure to guarantee that only eligible articles were considered. Specifically, in relation to the social dimension of the research, literature that examined the historical and social aspects of Indian football was deemed appropriate. Meanwhile, with respect to the scientific aspects, only studies that focused on physiological, physical, biochemical, or other parameters that were pertinent to the performance enhancement and training of Indian football players were considered eligible.

Results: The investigation revealed that the game's current status in the country was not solely attributed to its popularity. The study identified additional factors that contributed, including discriminatory practices based on race, caste, origin, and socioeconomic status. The current study has determined that the anthropometric surveys conducted on male and female football players have not been successful in identifying any noteworthy correlation between their playing positions and physical characteristics. Additionally, previous investigations on haematological and biochemical parameters have been unable to establish consistent baseline data for Indian-origin players. Comparative analyses, which have included football in relation to other sports, have revealed that footballers exhibit lower values of fat-free mass, body-cell mass, and muscle mass but higher levels of fat mass when compared to sprinters. Conversely, footballers demonstrate less lower-body power but greater agility than basketball players and greater abdominal muscle strength than cricketers.

Conclusion: The current study presents an overview of the noteworthy obstacles that Indian football surmounted to attain its present ranking. Despite scientific inquiries carried out in the field, which encompassed examinations of various physical, physiological, haematological, and biochemical parameters, they cannot be considered baselines due to the limited sample size of the study, which may not be representative of the Indian football populace. This highlights the necessity for robust

scientific investigations, which can significantly contribute to the performance and training of Indian footballers.

Keywords: Social, physical, physiological, biochemical, training

OP 12

Differences in the stride to stride variability while prolonged running on treadmill and track: A crossover study

Zaheen A. Iqbal[1], Prof. Daniel H.K. Chow[1]

1. Department of Health & Physical Education, the Education University of Hong Kong, Hong Kong.

Email: s1136208@s.eduhk.hk

Purpose: Fewer studies have studied differences in Stride to stride variability (SSV) among runners, especially after prolonged running as a function of running surface. The aim of this study was to compare SSV while prolonged running on treadmill and track using inertial measurement units (IMU).

Methods: Eleven runners (M9F2) were made to run on treadmill and track for 31 minutes at their preferred speed. Duration of gait cycle (DGC), total range of motion (TROM), maximum and minimum joint ranges of Hip, Knee and Ankle joints in the sagittal plane movements were measured using 7 IMUs. Mean and coefficient of variation (CV) of each parameter in initial and last 5 min (T1 and T2) were compared between the treadmill and track running.

Results: There were no significant differences in DGC either between two-time intervals or treadmill and track running. In T2, left hip mean maximum flexion was significantly higher ($p<0.05$) while left knee mean TROM, right ankle CV of maximum plantarflexion and TROM were significantly lower ($p<0.05$) as compared to T1. While track running, left hip mean maximum extension and TROM and right hip maximum hip extension, flexion and TROM, left knee CV of the maximum flexion in swing phase were significantly higher ($p<0.05$) while right ankle CV of TROM was significantly lower ($p<0.05$) as compared to treadmill running.

Conclusion: As we process and interpret results further, findings of this study indicate non-uniform differences in lower limb joint ranges and their variability while prolonged running on treadmill and track. It is important to study dynamic and mechanical differences between treadmill and track running as SSV varies with environment. There is fixed speed while treadmill running while running over ground offers less constrained environment.

Keywords: Stride to stride variability; prolonged running; inertial measurement units; treadmill and track running; running kinematics

OP 13

A study on applications of engineering education in sports and physical education

Tara Singh Thakur[1], Kumar Neeraj[2]

1. Department of Physical Education, Anurag University, Hyderabad, Telangana, India.

2. Department of Electronics and Communication Engineering, Anurag University, Hyderabad, Telangana, India.

Email: tarathakur@anurag.edu.in

Purpose: Today's universe is full of technology and the existence of humans on earth has become possible only through its intervention in every walk of life. Sports and Physical Education is not an exception to the wide application of engineering and technology in addition to skills and techniques for excellence. Technology has evolved for decades which opened up different avenues of introducing it into technical education and hence numerous new courses have been introduced in global education system at various levels such as under graduation, post-graduation, research and many more. Data Science, Artificial Intelligence, Cyber Security, Machine Learning etc. are some of the important present-day technologies that are transforming sports performance and enhancing physical education through different applications. The aim of this study was to explore the current applications of various streams of engineering education in sports and physical education.

Methods: To attain a fruitful outcome of the study, 2 major sources of getting the possible applications of technology were adopted. The first step was to collect the data from various online sources about the recent advancements in technology applications for sports and the second source was inviting ideas on application of engineering education in sports and physical education from 320 students pursuing undergraduate education in 8 different engineering streams. 40 students were picked up from each department. The departments involved were Artificial Intelligence, Data Science, Cyber Security, Mechanical, Electronics and Communication, Computer Science, Information Technology, Electrical Engineering and Civil Engineering. All the subjects were first explained about the purpose of the research ad were given 4 weeks of time to research and submit their ideas either as individuals or teams. Both the inputs put together were summed up for compiling the results and to carry forward the discussions on the same.

Results: The first part of data collections yielded interesting applications of technology and engineering in sports and physical education. The second part of data collection in the form of ideas from the young minds resulted in innovative and thought-provoking ideas which would really help the community of sports and physical educations. The students have also expressed few challenges encouraging inter-disciplinary projects for exciting applications and innovations ranging from prototypes to patenting.

Conclusions: This study has shown results in 2 forms concluding that each technology has equal scope in application for sports and physical education and innovations and ideas can change the future of sports and global health.

Keywords: AI, data science, cyber security, technology, engineering.

OP 14

Estimation of the changes in the field hockey penalty stroke technique by using non-linear analysis

Viswanath Sundar[1], Sabarathinam Srinivasan[2], Rajinikumar Palaniappan[3]

1. Department of Physical Education & Sports Science, Visva-Bharati University, Santiniketan, India.

2. Laboratory of Complex Systems Modelling and Control, Faculty of Computer Science, National Research University, High School of Economics, Moscow, Russia.

3. Department of Sports Biomechanics and Kinesiology, Tamil Nadu Physical Education and Sports University, Chennai, India.

Email: viswabiomech@gmail.com

Purpose: The butterfly effect suggests that even minute changes in the initial conditions of the technique can lead to vastly different outcomes. In the context of technique analysis, minor adjustments in a penalty stroke technique can ripple through the entire movement pattern, affecting variables such as speed, accuracy, and efficiency. These changes, though subtle, can be the difference between winning and losing in high-performance sports. The time series Lyapunov exponent is a non-linear measure to calculate the divergence rate. The Rosenstein algorithm was utilized to calculate the Lyapunov exponent for detecting small action changes. Thus, the study aimed to evaluate the degree of variability in field hockey penalty stroke techniques using time series Lyapunov non-linear measurements.

Methods: A single participant (age: [23], gender: [Male], experience level: [National level with 08 years of experience]) was recruited for this study. Informed consent was obtained, and the participant was briefed on the experimental procedures and objectives. Three-dimensional kinematic measurements were obtained using twelve infrared Oqus cameras (Qualisys AB, Gothenburg, Sweden), capturing the position of passive reflective markers in field hockey penalty stroke. The reflective markers were placed on both the participant and the ball. Three repetitions of the penalty stroke were performed, with rest intervals between. All data collection was conducted in a controlled indoor laboratory environment. Ambient lighting was maintained at a consistent level to ensure optimal marker visibility. The sampling frequency fs, considered the number of samples length divided by the interval length, $fs = 1/T$, with the unit sample per second. The divergence rates are calculated by time series Lyapunov non-linear to find the best coherences and variations.

Results: In this study, we rigorously analyzed Lyapunov divergence rate variations across three penalty stroke attempts (A1, A2, and A3), with a

primary focus on velocity performance. Our thorough quantitative and qualitative examination of the Lyapunov divergence results unveiled distinct trends A1:(LEs: 0.0023, 0.001, 0.0007), A2:(LEs:0.001, 0.0007, -0.00177) and A3:(LEs 0.001, 0.0028, -0.00117). Notably, A3 showcased superior velocity performance, driven by substantial divergence in right shoulder angles (x, z) compared to A1 and A2. In contrast, the y-angle variation remained relatively stable across all attempts. These results imply that variations in the x and z angles were pivotal in influencing performance outcomes, while the y angle exhibited lesser significance.

Conclusion: Thus, our conclusion emphasizes the superior performance of Attempt 3, underlining the potential biomechanical advantages of its specific right shoulder angle variations. These findings provide valuable insights into the intricacies of athletic performance and the importance of fine-tuning techniques to achieve optimal results in sports movements.

Keywords: Field hockey, penalty stroke, lyapunov exponent

OP 15

A comparative study of personality profile and cognitive abilities between physical education and general students

Namchan Norbu Bhutia[1], Atanu Ghosh[1]

1. Department of Physical Education, Jadavpur University, Kolkata, W.B, India.

Email: 16bhutianamchan@gmail.com

Purpose: In the area of psychology and evaluations, two distinct psychological constructs are commonly used: the 16PF (Sixteen Personality Factor) and cognitive ability. The 16PF is a widely used and respected personality evaluation measure. It is intended to assess a person's personality traits across 16 different variables. The ability to learn, process, and apply knowledge and information is referred to as cognitive ability. It includes a broad variety of cognitive abilities, such as memory, problem-solving, reasoning, language comprehension, and mathematical capabilities. Cognitive skills are essential for learning, making decisions, and adjusting to new circumstances, among other daily activities. Cognitive ability and personality are systematically linked. However, it is debatable whether physical education approaches have a greater influence on personality and cognitive development than general education does. Therefore, this study aimed to examine the relationship between personality and cognitive abilities in general students and physical education students.

Methods: The data pertaining to this study was collected through convenience and purposive sampling technique from 150 physical education and 150 general education male students of arts faculty Jadavpur University. The Cattle sixteen Personality Factor (16PF) Questionnaire was used for collecting data. Questionnaire contains one hundred eighty-five questions and each question has three alternatives. The Opinion expressed by the subjects was converted to numerical scores and STEN score using norms. To measure the cognitive abilities Trial making test (TMT) was used Developed by Reitan (1958), Test contains of two part A and B. Part A contains numbers scattered on paper from 1 to 25. In part B, there are numbers 1 through 13 on the paper and letters A through L. Participants are asked to combine numbers and letters on paper in the form of 1-a, 2-B, 3-C respectively. Results for both Trail Making Test A and B are reported as the number of seconds required to complete the task.

The collected data were analyzed statistically through independent T-test and the level of significant was observed at 0.05 level of confidence.

Results: The study shows that the result of a personality profile test where most factors fall within the normal range (between scores 4.7 and 6.3), but there are statistically significant differences in certain factors such as B, C, Q1, and Q3. ($p<0.05$). In the case of TMT A, the mean of completion time was 29.91 seconds for general students and 28.39 seconds for physical education students. However, no statistically significant difference was found between the groups ($p > 0.05$). On the other hand, when examining completion times for TMT B, the mean of completion time was 63.14 seconds for general students and 52.17 seconds for physical education students. A statistically significant difference was observed between these groups ($p < 0.05$). Thus, there is evidence of a significant difference between general and physical education students in terms of completion times for TMT B.

Conclusion- General students exhibit significantly higher levels of intelligence and critical thinking skills in comparison to physical education students. Physical education students demonstrate greater emotional stability and social precision than the general students. General students outperform physical education students in terms of cognitive abilities.

Keywords: Cognitive ability, personality factors, Physical education, students

OP 16

Effect of hand grip strength, heart rate and anxiety on the shooting efficacy of female 10M pistol shooting

J S Soodan[1], Sandeep Kaur[2]

1. Government Degree College Kathua, HED, UT of J&K, India.

2. Govt. Model Senior Secondary School, Raike Kalan, Bathinda, Punjab, India

Email: drsoodan@gmail.com

Purpose: The main purpose of the study was to examine the Effect of Hand grip strength, Heart Rate and Anxiety on of 10meter Air Pistol Female shooters. To find out the co-relation between Heart rate and Hand grip strength and Shooting Efficacy of Female National Shooters aged 15-23 Years and also to inspect the co-relation between Anxiety and Shooting Efficiency of Female National Shooters aged 15-23 Years. All subjects, who have been selected for sampling, participated in National or International level competitions.

Methods: To attain the aim of the study 35 female shooters, Age group 15 to 23 years, all subjects, which have been selected for sampling, participated in National or International level competitions and have been selected from SAI centre Badal, District Shri Mukatsar Sahib (Punjab) in the year 2016-2017. To evaluate the co-relation between Heart Rate and Hand grip strength the SPSS version 20 is used. The significance level was set at 0.05 or 0.01.

Result: In conclusion, it has been concluded that the Resting heart rate of 10M Female Pistol Shooters is negatively co-related with the hand grip strength (right) of the national pistol shooters of 10M range in between the age group of 15-23 years.

Conclusion: The Competitive Anxiety (SCAT) is negatively correlated and is found to be insignificant with the Shooting efficiency of female pistol shooters.

Keywords: Pistol shooters, anxiety, heart rate, grip strength, shooting efficiency

OP 17

Innovative integration of yogic and SUJOK (oriental) practices for holistic development of school children

SN Karthikeyan[1], Shaheen Ahmed[1]

1. Department of Sports Psychology, Tamil Nadu Physical Education & Sports University, Chennai.

Email: snkarthik1977@gmail.com

Purpose: Yoga has been practiced since ages for the physical, psychological and spiritual well-being of individuals. With times, there is an increased awareness about yoga and its benefits on overall health of individuals. But there are very limited studies on effect of yogic practices in combination with Sujok practice on development of school children. Therefore a need was felt to carry out a study to assess the combined effect of yoga along with Sujok practices on overall development of children. This cross-sectional study using questionnaires aims to assess the combined impact of these practices on the specific measured factors such as physical fitness, mental health & academic performance of school children over a period of four weeks. The study was conducted using the pre-post analysis method using random sampling. This study will pave the way for innovative interventions to enhance the holistic development of school children thus giving them bright future.

Methods: A Pre - post analysis method based on random sampling was used to assess the combined impact of yogic and Sujok practices on holistic development of school children. A baseline assessment was conducted on 50 students using questionnaire method with standardized scaling technique. A combination of specific yogic mudras, breathing

techniques with Sujok practices was administered on these students for a duration of four weeks. During the post intervention assessment, the impact was assessed against the baseline assessment data. A null and alternate hypothesis were framed and its validity was ascertained using T test. The validity was established based on three measured factors namely Physical Fitness, Mental Health and Academic performance.

Results: Based on the results of T test, significant increase in physical fitness, mental health & academic performance was observed. The value of calculated T was higher than the critical value of T and hence the null hypothesis was rejected. Based on validation of significant impact of yogic and Sujok practices on school children, the alternate hypothesis was accepted.

Conclusion: In the past, there have been many studies conducted to ascertain the positive impact of yogic practices on the development of youth and students. In addition to previous conclusions this study establishes that the intervention technique involving the combination of yoga and Sujok positively enhances performance in major measured factors like Physical fitness, mental health & Academic performance. Further research with larger samples and long term follow ups is recommended to validate these findings.

Keywords: Yoga, sujok practices, school children, holistic development

OP 18

Youth experiences of a rural South African sport development programme

Leepile Cyril Motlhaolwa[1]

1. The University of Pretoria, Department of Humanities Education, Pretoria, South Africa. E-mail: leepile.motlhaolwa@up.ac.za

Purpose: Sport is viewed as a mechanism that leads to both personal and social development experiences. Therefore, sport can positively affect youth experiences and improve their quality of life. Moreover, sport is recognised as a simple and effective means of achieving the SDGs, addressing social challenges and improving the health and social well-being of the participants. This research aimed to explore the youth experiences of a rural South African sports development programme to understand how and why the youth in rural South Africa experienced the sports development programme the way they did. This study followed a qualitative, descriptive research design. This study was grounded in a theoretical framework based on youth developmental experiences through sport (YDETS). The framework emanated from positive youth development (PYD) and self-determination theory (SDT). By adopting the YDETS theoretical perspective, the study offered a unique opportunity to explore the diverse realities of youth and identify factors facilitating or hindering positive development outcomes.

Methods: The purposive sampling was used to select 12 youths from three rural schools in South Africa. Arts-informed methods, including drawings and photovoice combined with semi-structured interviews were applied for data construction. Qualitative data analysis computer software, ATLAS.ti (v.8.4.15), was used, and semiotic visual data analysis, photovoice data analysis, thematic data analysis and member reflection were employed as methods for the data analysis.

Result: The findings in this study revealed the potential of the Dream fields sports development programme to enhance and develop the personal and social development skills of the youth. Furthermore, the findings related to nutrition revealed that the desire for food and water was a critical aspect of participation in the programme.

Conclusion: The participants in this study believed that proper nutrition was essential for their health and physical development. However, the sports development programme did not automatically produce positive results; instead, positive experiences associated with the programme were related to a combination of factors and contextual assets, such as the school environment, parental involvement and supportive teachers and coaches. Furthermore, the findings highlighted several adverse experiences and negative outcomes associated with the sports programme. These outcomes included physical injuries, social exclusion and negative interactions with peers, teachers and coaches. Despite structural inequity and socio-economic challenges experienced by the youth in rural communities, the findings in this study suggest that rural youth are a heterogeneous group of individuals with the aspirations, resilience and determination to overcome their challenges and succeed.

Keywords: Sports development programme, experiences, rural, youth.

OP 19

Science of Archery traced from ancient Indian literatures

Samiran Mondal[1]

1. Indian Knowledge System Laboratory, Department of Physical Education and Sport Science,Visva-Bharati (Central University), Santiniketan, West Bengal, India

Email: samiran.mondal@visva-bharati.ac.in

Purpose: Rigveda, the world oldest literature was created from Bharata (India). The other three ancient Vedas were Samaveda, Yajurveda and Atharvaveda. From Vedas many Upavedas (subvedas) were derived like Gandharbaveda, Dhanurveda, Ayurveda etc. Dhanurveda is the upaveda of Yajurveda and Atharvaveda. Dhanu means archery and Veda is science or knowledge. The present researcher desired to trace the Dhanurveda or science of archery from the ancient Indian literatures.

Methods: The Shiva Dhanurveda is the first ancient text in this area referred in the Vasistha Dhanurveda. From Vasistha to Visvamitra Dhanurveda and the present author recognized dozens of ancient Indian texts on the science of archery.

Conclusion: It was detected that on those ancient texts they pronounced the bow and its strings; the arrow: parts, fletching, cresting, range and different types of arrows. Ancient archery texts also mentioned quiver, arrowhead extractor, bracer and archer's ring. The leg and arm positions has been perfectly been reported with excellent slokas or aphorisms. The archer and target locations with air movements has been nicely defined with special aphorisms. From this paper the present scholar endorsed that to give proper respect and value, all the ancient Indian science of archery literatures and its practical application should be merged in modern archery where ever it is applicable.

Keywords: Veda, dhanurveda, science of archery, ancient india

OP 20

Effect of recreational games on enjoyment and attitude of adolescent girls

Ashoke Kumar Biswas[1], Nurun Nabi[1]

1. Department of Physical Education, Jadavpur University, Kolkata, West Bengal, India.

E-mail: akbiswas_05@rediffmail.com

Purpose: Recreation is an important part of human life and takes on a variety of shapes that are naturally influenced by both personal interests and the social structures around us. Enjoyment is the pleasure and satisfaction that one gets from doing or experiencing something. Attitude is a psychological structure, a mental entity that inherits a person and it is the emotional state of a person. The physical growth that most clearly separates adolescents from childhood occurs during this phase of transition. The purpose of the study was to know the effect of recreational games on the enjoyment and attitude of adolescent girls.

Methods: A total of 60 girls, 30 (Control Group) and 30 (Experiment Group) were selected randomly and the age ranged from 10-13 years. The experiment group was treated with planned systematic training for a period of twelve (12) weeks with different recreational games. The Physical Activity Enjoyment Scale questionnaire was used as a tool to measure enjoyment and a standardized and reliable Bengali version questionnaire on the trait of an Attitude Scale was used as a tool to measure attitude. To see the difference between the two groups, the t-test was applied for this research.

Results: The data indicated that there was an insignificant difference between the control and experiment groups in Enjoyment and Attitude. A comparison of the parameters after the experiment also indicates insignificant differences between the groups.

Conclusion: From the above findings and discussions it was concluded that due to recreational games, the level of enjoyment was least changed but no significant difference was found. After participation in recreational games, the level of attitude was the least changed but no significant was found.

Keywords: Recreation, enjoyment, attitude, physical activity, adolescent.

OP 21

Assessing the effect of three different pre-match warm-up structures on male professional basketball players' physiological parameters

Vikas Singh[1,2], Ciocan Vasile Catalin[3], Tenzing Norzom Bhutia[1], Ravindra Singh Rajpurohit[4], Carmen Pârvu[5], Ashish Sharma[1]

1. Department of Sports Psychology, Lakshmibai National Institute of Physical Education, Gwalior, India.

2. Rajkiya Pratibha Vikas Vidyalaya, Shalimar Bagh, Delhi, India.

3. University of Bacau, Faculty of Physical Education, Sport and Health Science

4. Department of Advance Training and Coaching, Swarnim Gujarat Sports University, Desar, Gujarat, India.

5. Dunarea de Jos University of Galati, Faculty of Physical Education and Sport, Romania.

Purpose: It is unclear if warming up is beneficial, harmful, or has no impact on people, making it a worthwhile study problem. This study's goal was to review the data demonstrating how a warm-up might increase performance. One of the most important issues that coaches have when it comes to strength and conditioning training is how to best prepare basketball players for games. As a result, the goal of this study was to examine how three pre-game warm-up frameworks affected the physiological state of male professional basketball players.

Methods: Twenty-one male professional soccer players (aged 16.5 ± 3.4 years) from a single Professional Basketball Academy (PBA) team took part in this investigation. Players went through a standard pre-match warm-up three times. They played a 10-minute 1-player game after each warm-up period. Players' physiological fitness levels were evaluated after the game based on their heart rate variability (HRV), heart rate, and breath rate.

Results: Using SPSS 26.0 software and Repeated Measure ANOVA. The findings showed that physiological fitness metrics such as heart rate variability (HRV), heart stain, and breathing rate with various warming up structure trainings differed significantly.

Conclusion: To enhance the physiological performance metrics and sporting performance of players, these findings may be of considerable interest to strength and conditioning coaches for professional basketball teams.

Keywords: Basketball, physiological performance, pre-match warm-up, HRV

OP 22

Comparative study on mental toughness between national and state level male archers

Rajibul Islam[1], Manabendra Majhi[1]

1. Post Graduate Government Institute for Physical Education, Banipur, West Bengal, India.

Email: drmajhi.ped@gmail.com

Purpose: Psychological aspect is very important for the game of archers. In archery mental stability is necessary while arrow is release from the bow to get the maximum points in the game. The aim of study was to evaluate the level of mental toughness of archers between national and state level players.

Methods: The present study has conducted to assess mental toughness with 7 variables by the Loher's (1986) mental toughness questionnaire. Convenient sampling method was followed to select male subjects. Total 30 subjects were selected; national level (n=15) and state level (n=15). The age range of the subjects was 18-25 years. Independent 't' test was used to identify the difference of Mental Toughness between national and state level archers.

Results: The results showed that there was a significant difference between national and state level archers respectively Self Confidence, Negative Energy Control, Attention, Visualizing and Positive Energy but national level archers ahead in scored of attention, visualizing and positive energy and state level archers ahead in scored of self-confidence and negative energy control. Whereas there was no significant difference between national and state level archers respectively Motivation and Attitude Control but national level archers ahead in scored of motivation and state level archers ahead in scored of attitude control.

Conclusion: National level archers have better mental toughness related to Attention, Visualizing and Positive Energy and state level archers have better mental toughness related to Self Confidence and Negative Energy control.

Keywords: National archers, state archers, mental toughness, sports psychology

OP 23

Measure of depression between the male and female athletes of district players

Suresh Babu Nannapaneni [1]

1. Research Scholar, Department of Physical Education & Sports Sciences, Andhra University, Visakhapatnam, Andhra Pradesh, India.

Email: - sureshbabun.rs@andhrauniversity.edu.in

Purpose: The present study was an attempt to find out Measure of depression between the male and female athletes of District players, Present study was conducted on a sample of 70 subjects selected (35 male and 35 female) in the age range of 18 to 24 years. Standardized depression test by L.N. Dubey (1993) was used to collect the data. Mean, Standard Deviation and 't' test was used to analyze the data. On the basis of results obtained in the depression scale, it can be commented that there is no significant difference between male and female athletes of Visakhapatnam District.

Sadness and downturn in mood are symptoms that most people have experienced, and can be normal reactions to trauma or difficulties in life. The main difference between normal downturn in mood and depression is the severity of the symptoms, duration, and the gravity of impairment depression can have on person's daily functioning. Depression and depressive symptoms in athletes might be related to high volumes and intensities of training, to maladaptive cognitions in relation to sport and competition, or to a combination of both. To understand and address the issues that underlie depression and depressive symptoms in athletes, the relative contribution made by the amount of training and the mind-set of the participant needs to be established. Thus, the aim of the study was to find out the Depression between the Male and Female Athletes of District Players of Visakhapatnam.

Methods: Seventy athletes (35 male and 35 female athletes) of Visakhapatnam District, age between 18 to 24 years were randomly selected for the study who were participated in District level championship 2022. To measure depression, the standardized depression test i.e Mean, Standard deviation and 't' tests were used which was made by L. N. Dubey's (1993) and the result obtained.

Results: The 't' value (1.230) of depression male and female athletes is not significant at any level of significance. It means that there is no significant difference in level of depression male and female athletes. Even the mean score of female athletes (13.31) is slightly higher than male athletes but do not differ significantly. It means both male and female athletes have almost same level of depression.

Conclusion: Irrespective of whom an athlete should turn to, the facts remain that any level of depression will affect performance and that the issue of depression in this population should, therefore, be taken seriously by the research community. To achieve sports courses that can be a valuable aid to depression, it is best to plan activities designed to achieve these targets and arrange that they are periodically supervised by mental health professionals, ensuring that they are carried out in a sporting environment favorable to support people with depression. Over all conclusions from this research showed that there was no significant difference among the male and female athletes of Visakhapatnam District.

Keywords: Depression, athletes, psychology, mental health, analyze data

OP 24

Importance of morphological, physical fitness and physiological variables in talent identification in sports

Atanu Jana[1], Gulshan Lal Khanna[1], Indranil Manna[2]

1. School of Allied Health Science, Manav Rachana International Institute of Research and Studies, Faridabad, Haryana, India.

2. Dept of Physiology, Midnapore College (Autonomous), Midnapore, West Bengal, India.

Email: atanuphysio10@gmail.com

Purpose: The development of a child and adolescent is driven by growth, maturation, and adaptation. Physical activity during growth and development phases of life of young athlete contributes to reach their potential in muscle and bone development. These have important implications for training and competition. Sports talent can be identified at the early stage of life when the children showed interest in sports. The morphological, physical fitness and physiological variables plays a significant role in talent identification in sports.

Aim: The present study was designed to find out the importance of morphological, physical fitness and physiological variables of 10-18 years athletes for talent identification in sports.

Methods: A total of 540 female volunteers (age: 10-18 yrs) included in this study were divided into control group (CG, n=270) and experimental group (EG, n=270). The experimental group volunteers were engaged in different sports activities, whereas the volunteers of control groups were engaged in sedentary activities. The volunteers were subdivided into: (i) 10 yrs, (ii) 11 yrs, (iii) 12 yrs, (iv) 13 yrs, (v) 14 yrs, (vi) 15 yrs, (vii) 16 yrs, (viii) 17 yrs, (ix) 18 yrs. Selected morphological, physical fitness and physiological variables were measured for each group. ANOVA followed by multiple comparison tests were performed to find out the differences in selected variables.

Results: A significant (p<0.05) increase in height, body mass, BMI, BSA, lean body mass (LBM), back strength, grip strength, peak power, VO_{2max}; and significant decrease (p <0.05) in body fat and heart rate were noted with the advancement of age of the volunteers of experimental group. Further, higher strength, power and VO_{2max}; and lower body fat were noted among the volunteers of experimental group than the control group. It can be stated that physical activity accelerates the growth and development of the volunteers which are reflected in physical and physiological variables.

Conclusion: Physical activity has positive impacts on growth, development and maturity of athletes. This also improved fitness level and physiological variables of the athletes. The assessment of morphological, physical fitness and physiological variables during the period of growth and development phases of life helps in talent identification in sports.

Keywords: Athletes, growth, body fat, strength, power, VO_{2max}

OP 25

HRV guided training in improving swimming performance of elite junior swimmers – A Randomized control trial

Sneha T[1], Dobson Dominic[1], Harshavardhini A[1]

1. Dept. of Sports Medicine, Saveetha Medical College, SIMATS, Chennai, India.

Email: sneha.sambandam@gmail.com

Purpose: Identifying the most effective training stimulus proves crucial in achieving the best adaptations during endurance training. As the balance between parasympathetic and sympathetic activity is associated with variability in physiological responses to standardized training; monitoring the cardiac autonomic nervous system (ANS) is currently being employed as a promising way to optimize the training prescription. Heart rate variability (HRV) is a standard measure of daily autonomic nervous system activity in this context.

Research has shown that optimising training according to daily-recorded HRV scores leads to improvement in sporting performance. This study evaluated the effect of HRV-guided training in improving the swimming performance of elite junior swimmers. To analyse the effect of heart rate variability guided training on the swimming performance of elite junior swimmers

Methods: A double-blinded randomized control trial study was employed. Study design –randomised control study. The Inclusion criteria for the study are as follows: 1) Age 13 – 18 years, 2) Swimmers at state, national or international level, 3) Currently training between 6 – 12 sessions per week. The exclusion criteria were: 1) Any contraindications to exercise, 2) Recreational swimmers, and 3) Acute injury/illness. Sixty-six swimmers were recruited for the study based on the inclusion and exclusion criteria. A stratified random sampling technique was used to split the participants into the intervention and control groups. Both the groups' baseline swimming performance was recorded (200 mts freestyle). HRV was measured using Biosignal Plux wireless recorder. The intervention group received HRV-guided training based on their daily HRV scores for a period of 6 weeks while the control group followed their regular training for the same period.

Results were analysed on IBM SPSS v27. Independent T-tests were used to analyse the parametric data between the two groups. Repeated measures ANOVA was used to analyse the time interaction of both groups.

Results: Baseline data showed no statistical significance between the two groups' age (p>0.05). Paired T-tests showed that there was a statistical improvement in the swimming performance of the intervention group (5.6% vs 1.9%; P < 0.05). Two-tailed repeated measures ANOVA with Bonferroni adjustment showed a statistical between groups significance (p < 0.01).

Conclusion: HRV guided training is beneficial in improving swimming performance. Furthermore, a 6-week HRV-guided swimming training program is more effective than conventional swimming training in improving the swimming performance of Elite Junior swimmers.

Keywords: Heart rate variability, performance enhancement, swimming

OP 26

Performance status of Indian female athletes in the international competitions

Khatun N[1], Konar A[2], Das S[1], Chatterjee S[1], Polley S[1]

1. Department of Physical Education, Jadavpur University, Kolkata, West Bengal, India

2. Director of Physical Instruction, Jadavpur University, Kolkata, 700032, West Bengal India

Email: nasimak.pe.rs@jadavpuruniversity.in

Purpose: Historically women participation in the competitive sports came much later in comparison to men. However, from 1950s onwards the scenario has been changing, snapping the conventional image where Indian sports are continuously producing several well-known female athletes. This article aims to pick out four international events that have been organised till 2020 in order to determine the participation and performance status (number of medals) of Indian female athletes in various games. There is paucity of studies that have summarized the overall performance and achievements of female athletes in the international competitions. Therefore, this study was undertaken to analyse the performance status of Indian female athletes in the four international competitions: Olympic Games; Asian Games; World Athletic Championship and Commonwealth Games.

Methods: All the information and records for this present study were gathered through document research from web-based sources viz. Athletics in India; Olympics India; World Athletics Championships India; Asian Games India and Commonwealth Games. Data that was evaluated and collected were comprised of total number of positions woned in each athletic competition (Hits, Semi-Final and Final), as well as the total number of medals (Gold, Silver, and Bronze) awarded in selected four international championships. In this paper data are categorized by year with total number of Indian female athletes. Whereas in the Olympics the number of female Indian participants were 94, from 1980 to 2020, in Asian games were 195 from 1951-2010, in World Athletic Championship were 39 from 2003 to 2022 and in Commonwealth games the female participants were 83 from 2002 to 2018.

Results: A total of 111 women won medals in the four international competitions collectively, where gold was 27, silver was 42 and bronze was 42. As per the present record, no medals were won by female athletes at the Olympic Games; nevertheless, one bronze medal from World Athletics Championship, 96 medals (25 gold, 35 silver & 36 bronze) from Asian Games and 14 medals (2 gold, 7 silver & 5 bronze) from Commonwealth Games were earned. An overall medal status summary of the Indian women athletes are P. T. Usha was the most successful female sprinter who owned a total of 10 (4 gold, 6 silver) medals in the international competitions. Geeta Zutshi and Sunita Rani have owned 4 medals individually in 800mt, 1500mt and 1500mt,

5000mt respectively. Anju Bobby George was the most successful long jumper in the international competition sowing 1 gold and 2 bronze medal in the international level competitions. The most successful athletes were Krishna Poonia, Neelam Jaswant, Marry D'Souza, Stephine D'Souza, K.M. Benamol, and Ashwini Akunji, each of whom owned 3 medals from international tournaments. Christine Brown; Violet Peters; Sudha Singh; Preeja Sreeharan and Jyotimoyee Sikdar, owned 2 medals in the international competitions individually. Indian female athletes to win a gold medal in the 400mt and hammer throw events were Kamaljit Sandhu and Manju Bala respectively.

Conclusion: This study has produced data that suggests Indian women athletes are competing at a greater level. Thus, it can be said that Indian women athletics performance has consistently improved from 1951 to 2020 in all the four selected competitions. If the government of India takes initiative in terms of promoting Indian female athletes and adopt some policy, then it may produce more number of medals in the international competitions.

Keywords: Female athletes, Asian games, commonwealth games, olympics, world athletic championship.

OP 27

Physiology of soccer: An update in Indian context

Indranil Manna[1]

1. Associate Professor and Head, Department of Physiology, Midnapore College (Autonomous), Midnapore, West Bengal, India

E-mail: indranil.manna@midnaporecollege.ac.in

Purpose: Soccer is the world's most popular sport. A common aspect of this sport is the necessity of teamwork to complement individual skills. In order to adapt to technical evolution within the game, players have to meet the physical demands required. Soccer talent may be identified among the children at their early childhood. Furthermore, growth and development phase of life has impact on training. Aim: To find out the effect of training on selected physiological and biochemical variables of Indian soccer players of different age groups.

Methods: A total of 120 soccer players volunteered for the study, were divided (n=30) into 4 groups: (i) under 16 years (U16), (ii) under 19 years (U19), (iii) under 23 years (U23), (iv) senior (SR). The training sessions were divided into 2 phases (a) Preparatory Phase (PP, 8 weeks) and (b) Competitive Phase (CP, 4 weeks). The training program consisted of aerobic, anaerobic and skill development, and were completed 4 hrs/day; 5 days/week. Selected physiological and biochemical variables were measured at zero level (baseline data, BD) and at the end of PP and CP.

Results: A significant increase ($P<0.05$) in lean body mass (LBM), VO_{2max}, anaerobic power, grip and back strength, urea, uric acid and high density lipoprotein cholesterol (HDL-C); and a significant decrease ($P<0.05$) in body fat, hemoglobin (Hb), total cholesterol (TC), triglyceride (TG) and low density lipoprotein cholesterol (LDL-C) were detected in some groups in PP and CP phases of the training when compare to BD. However, no significant change was found in body mass and maximal heart rate of the players after the training program.

Conclusion: Training effects were reflected on selected physiological and biochemical parameters of soccer players. Improvement in these parameters depends on level of maturation factors and/or motivation, and exposure to long term training. The unique profile of age-related changes should be taken into consideration while administering training to the players. This would enable coaches to assess the current status of an athlete and the degree of training adaptability and to provide an opportunity to modify the training schedule accordingly to achieve the desired performance.

Keywords: Soccer, body composition, strength, power, VO_{2max}, training

OP 28

A comparative study on level of sports confidence between team game and individual game athletes

Adrija Biswas[1], Prof. Ashoke Kumar Biswas[1]

1. Department of Physical Education, Jadavpur University, Kolkata, West Bengal, India.

E-mail: adrijabiswas1996@gmail.com

Purpose: Sport is a human activity that involves physical exertion and skill as its main components. It typically includes elements of competition or social participation, and there are formal organizations and established rules and patterns of behavior that govern the activity. Sports psychology is a fascinating field that explores how psychological factors can impact an athlete's performance. Confidence is a crucial aspect of this, as it plays a significant role in an athlete's ability to set and achieve goals, handle stress, and maintain overall well-being. Confidence in sports is not only important for success on the field but also for personal growth and development. The purpose of the study was to assess the confidence level and compare the level of confidence between team and individual athletes and to know about their social support, environmental comfort, and mastery of their game, situational favorability, physical self-presentation, and preparation.

Methods: A total of 66 athletes were selected whose ages ranged from 18 to 29, from which 33 athletes were from individual sports (Badminton, Athletics, Swimming, Karate) and the rest 33 athletes were from team sports (Volleyball, Football, Ball Badminton, Handball). Data were collected by using the Sources of Sport Confidence Questionnaire (SSCQ) (Vealey et al., 1988). The SSCQ assesses athletes' sources of sport confidence. It consists of 41 items that represent nine sources of confidence in sport: Mastery (five items) demonstration of ability (five items), mental and physical preparation (six items), physical self-presentation (three items), social support (six items), coach's leadership (five items), vicarious experience (five items), environmental comfort (three items) and situational favorableness (three items). The items are scored on a Likert scale ranging from 'not at all important' to 'very important' to assess the importance of each source to the participants in the sport context. Its initial support for content and construct validity was established for high school and college athletes (Vealey et al., 1988). The statistical significance of the two groups' mean difference was tested by t-test.

Result: The results show that 't'- ratio of level sports confidence between individual and team game athletes' subscales i.e. DA, PMP, PSP, SS, CL, VE, EC, and SF were -0.67, -0.49, -1.99, 0.66, -0.91, -0.43, -0.70, -0.94 and -0.71 respectively. The total t-value of the sports confidence is -0.88. There was a significant difference in 'physical and mental preparation' between individual and team game athletes. The relationship (r) between mastery and the other 8 subscales for individuals were 0.7256, 0.7061, 0.4377, 0.7045, 0.1826, 0.4888, 0.2685 and 0.376 respectively. The result showed that a significant large positive correlation exists among mastery and DA, PMP; SS. Results also show that a significant medium positive correlation exists among mastery and PSP, VE, SF. But no relationship was found with CL, EC. Also, the relationship (r) between mastery and the other 8 subscales for team games were 0.584, 0.601, 0.605, 0.727, 0.783, 0.5717, 0.4678, and 0.4911 and the result shows that a significant large positive correlation exists among mastery and DA, PMP, PSP, SS, VE, EC, and SF. However, no relationship was found with CL.

Conclusion: The total point of Sports Confidence was higher in the athletes of Individual games than in athletes of Team games. In the correlation calculation of the Individual game, a significant positive correlation existed among mastery and DA, PMP, PSP, SS, VE, SF. However, there was no relationship between mastery and CL, and EC. For the Team game, a significant large positive correlation existed among mastery and DA, PMP, PSP, SS, VE, EC, and SF, but no relationship was found between mastery and CL.

Keywords: Confidence, team game, individual game, psychology, sports psychology.

OP 29

Influence of aerobic fitness on cardiac autonomic function in regular exercisers: An observational pilot study

Paul P[1], Chatterjee S[1]

1. Department of Physical Education, Jadavpur University, Kolkata 700032, West Bengal, India. Email: prosantapaul199408@gmail.com

Purpose: VO_2 max and heart rate variability (HRV) are both physiological measures used in the field of exercise science and sports performance, but they represent different aspects of aerobic fitness.VO_2 max reflects the capacity of the cardiovascular and respiratory systems to deliver oxygen to the muscles and is considered a reliable indicator of aerobic

endurance and cardiorespiratory fitness. On the other hand, HRV can be measured using both time and frequency domain parameters and it refers to the variation between consecutive heartbeats. It is influenced by the interplay between the sympathetic and parasympathetic branches of the autonomic nervous system, which regulate heart rate. Both VO_2 max and HRV provide insights into aerobic fitness, they capture different aspects of it. VO_2 max focuses on the body's ability to utilize oxygen during exercise, primarily reflecting aerobic capacity, while HRV reflects the variability and balance of the autonomic nervous system, providing information about its regulation and overall cardiovascular health. This study aimed to see the influence of aerobic fitness on selected HRV indices in regular exercisers.

Methods: Purposive sampling method was used to select the subjects for this study. Total 10 regular exercisers university youth aged 24.9±1.37 years were considered as samples for this pilot study.VO_2 max of all the sampled subjects were assessed through Labscibe software (iworx) by using Treadmill test. HRV were assessed from electrocardiogram recordings by using Labscribe (iwrox) and kubios HRV standard software. Pearson correlation coefficient were carried out for statistical analysis with VO_2 max as independent variable and dependent variables were selected HRV indices [The Root Mean Square of Successive Differences between normal heartbeats (RMSSD), Standard Deviation of the N-N intervals (SDNN), proportion of NN50 divided by the total number of NN intervals (pNN50), Low frequency (LF), High frequency (HF) and Low frequency and High frequency Ratio (LF/HF Ratio)]. The level of significance was set at $p<0.05$.

Results: There was significantly positive correlation between VO_2 max and time domain of HRV indices i.e. RMSSD ($r=0.852$, $p<.001$), SDNN ($r= 0.861$, $p<.001$), pNN50 ($r=0.799$, $p<.005$) in the time domain where RMSSD and pNN50 reflect parasympathetic responses and SDNN reflects all the cyclic components responsible for variability in the period of recording. On the other hand, found positive relationship between VO_2 max and frequency domain HRV indices i.e. LF ($r=0.745$, $p<.013$), LF/HF ratio ($r=0.686$, $p<.028$). While weak positive correlation was found between VO_2 max and HF ($r=0.608$, $p<.062$). The LF/HF ratio was predicated on the fact that both PNS and SNS activity contributes to LF power, whereas PNS activity contributes largely to HF power. LF band region was originally known as the baroreceptor range because it mostly reflects baroreceptor activity while resting. The HF band also known as the respiratory band represents parasympathetic activity associated to the HR fluctuations during breathing.

Conclusion: The positive correlation between VO_2 max and HRV indices confirms that regular exercise or physical activity leads to better cardio-vagal adaptations and a greater cardio autonomic balance. Larger samples with more HRV indices may be measured in future, to give more specified result.

Keywords: Heart rate variability; autonomic nervous system; cardiorespiratory fitness; VO_2 max; cardio autonomic function.

OP 30

Effect of in-season linear sprint training on sprint kinematics of amateur soccer players

Avinash Kharel[1], Sangey Tsering[1], Sonam Ramchiary[1]

1. Rashtriya Raksha University, India. Email: avinash.kharel@rru.ac.in

Purpose: Sprint performance is a skill to target within soccer, which can be likely achieved with a variety of methods, including different on-field training options. One such method could be linear sprint training. However, the effect of In-season linear sprint training on sprint performance and related kinetics changes are unknown in a professional setting. The study aimed to investigate the effect of In-season linear sprint training on the sprint kinematics of amateur soccer players.

Methods: After familiarization, a 4-week training protocol was completed with sprint performance and force velocity (FV) profiles compared before and after. Eighteen amateur soccer male players (Age 22 ± 2 years: Height: 178 ± 7cm; body-mass: 74 ± 8 Kg, 30-m split-time: 4.398 ± s) participated in the study. Sprint kinematics variables, including maximum Sprint Velocity (V0), Theoretical Maximum Force (F0), Maximum Force Output per kilogram of body weight (N/KG), Maximum Velocity (V(0)), Maximum Power Output (P MAX (W)), Ratio of Force to Velocity (FV), and Ratio of Force to Velocity at Peak power were measured.

Results: Results showed significant improvements in Maximum Sprint Velocity ($p<0.05$, ES=0.89), Theoretical Maximum Force ($p<0.05$, ES=0.50), Maximum Force Output per kilogram of body weight ($p<0.05$, ES=0.42), Maximum Power Output ($p<0.05$, ES=0.52), and Ratio of Force to Velocity at Peak Power (RF PEAK) ($p<0.05$, ES=0.44) post-training. There were no significant changes in the ratio of Force to Velocity (FV) and Maximum Velocity V (0).

Conclusion: These findings suggest that In-season linear sprint training can effectively improve certain sprint kinematics variables in amateur soccer players. Coaches and players should consider incorporating linear sprint training into their in-season training programs to improve sprint performance.

Keywords: Linear sprint training, sprint kinematics, soccer players

OP 31

Effectiveness of high intensity circuit training with body weight on lower limb strength, agility and speed in badminton players: A comparative study

Vallari Sharma[1], Neeraj Singh[1], Vijay Kaushik[1], Ramhari Meena[1], Preeti Taneja[1]

1. Department of physiotherapy, Mahatma Gandhi Memorial (MGM) Allied Health Science Institute (MAHSI), Indore, Madhya Pradesh, India.

Email: Vallarisharma04@gmail.com

Purpose: High Intensity Circuit Training is a combination of aerobic and resistance training in high intensity with limited resting time. HICT is designed to perform a set of exercises quickly, with good form and technique, with minimal rest in between. This can be accommodated by a 30-second exercise bout, as most individuals can reach and sustain a suitable intensity for 30 seconds. Using a heart rate monitoring during exercise, participants can determine absolute intensity (HR_{max} = 220 - Age). The goal of high-intensity protocol is to achieve maximal exercise intensity in the shortest amount of time. It has been found that 30 seconds of rest maximizes the metabolic impact of HICT, maximizing its benefits. Badminton is a high intensity game requiring strength, agility and speed. The lower limb strength of the players is required for producing stronger smashes that are created by the transferred energy from legs to upper body.

Methods: 60 Badminton players (n= 60) aged 18-30 years with normal BMI with a minimum experience of 1 year were recruited for this comparative study. They were randomized into two groups as the intervention and control group. After randomization their strength with a sphygmomanometer (Diamond Dial Regular), agility with Agility T-test and speed with 50 M sprint test were evaluated as pre and post training period. The intervention group received high intensity circuit training, while the control group received badminton sports specific training for 8 weeks. Demographic characteristics shows insignificant difference between both groups with age (years) (19.67±2.26 and 20.60±2.72 and P value = 0.06). BMI (kg/m^2) (21.89±1.64 and 22.32±1.69 and P value = 0.32) and sports age (years) (3.21±2.94 and 2.48±1.23 and P = 0.23) in badminton players.

Results: After 8 weeks, significant improvement was observed in intervention group for 50 M sprint test (n=30), (pre: 7.84±1.11, post: 6.57±0.90 and P value = 0.001), Agility T-test (pre: 10.78±0.92, post: 9.8±0.89 and P value = 0.001), Hip strength of left and right Side respectively (pre: 4.75±0.22, post: 5.53±0.19 and P value = 0.0001 and pre: 5.31±0.15, post: 6.06±0.12 and P value = 0.0001). Significant improvement is also observed in control group (n=30) for 50 M sprint test (pre: 7.56±0.87, post: 7.06±0.91 and P value = 0.001), Agility T-test (n=30) (pre: 11.21±0.87, post: 7.06±0.91 and P value = 0.001), Hip strength of left and right side respectively (pre: 4.85±0.12, post: 5.08±0.12 and P value = 0.001 and pre: 5.68±0.057, post: 5.76±0.057 and P value= 0.001). Significant improvement also observed in between both groups for 50 M sprint test (n=60) (Intervention: 6.57±0.90, control: 7.06±0.91 and P value=0.04) Agility T-test (Intervention: 9.8±0.89, control: 10.62±1.01 and P value = 0.001) while, strength displayed insignificant difference between the groups.

Conclusion: High intensity circuit training and badminton sports specific training showed significant improvement in strength, agility and speed in badminton players. Therefore we can conclude that badminton

players should perform both the trainings on alternate days in a week for improving overall performance in the game.

Keywords: High intensity circuit training, Strength, Speed, Agility.

OP 32

Effects of upper limb training and ergonomic interventions in youth esports players - A Quasi experimental study

Koushik K V S[1], Dobson Dominic[1], Praveen R[1], Nikhil Roy M[1], Sai Kishore[1]

1. Department of Sports Medicine, Saveetha Medical College & Hospital, Chennai, India.

Email: knkoushik@gmail.com

Purpose: Electronic sports(esports) is an expanding industry at a global level where skilled video gamers compete in the same way as traditional sports like cricket, soccer and basketball play. Esports is not just a phenomenon of the unemployed youth but the industry is real, rapidly growing and also investable. Over 380 million people watch esports both online and in person. Gamers who livestream themselves while playing video games are referred to as streamers. Successful gamers usually start their career at around the age of 16-17 years and they retire at around 24 years of age. Pro gamers can earn up to 6 digit salaries and some even make millions. The rapid growth of esports has raised concerns about the physical well-being of players due to prolonged gaming sessions and repetitive upper limb motions. This study focuses on the upper limb training and the ergonomic corrections of the gamers which may yield them better musculoskeletal health and also a competitive edge.

Methods: A total of 83 collegiate level esports players with a minimum game time of 4hrs/day were recruited for the study and were allotted randomly into two different groups. The intervention group was given a 12 week structured program with 3 sessions per week of monitored training. The intervention group underwent a comprehensive upper limb training program, incorporating exercises targeting strength and proprioception and also the ergonomic interventions and the control group will be given the whole body stretches. All the participants were asked to fill the sport specific questionnaire and QuickDASH questionnaire at the beginning of the study. QuickDASH questionnaire was taken on a weekly basis. Performance metrics, ergonomics and musculoskeletal health were assessed at regular intervals.

Results: The participants in the intervention group showed better performance metrics and musculoskeletal health than the control group and were found to be statistically significant.

Conclusion: Esports players are prone to ergonomic risks and musculoskeletal impairments. The results of this study indicate that player's performance can be enhanced by providing ergonomic interventions and upper limb training. This also helps in preventing the musculoskeletal disorders in the esports players.

Keywords: Upper limb training, ergonomic interventions, esports players

OP 33

Role of training intensity distribution in endurance sports: A review

Manish Nagpal[1], Nitesh Malhotra[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana, India

Email: drmanish_pt@yahoo.in

Purpose: Endurance sports demand a finely-tuned balance between training intensity and volume to optimize athletic performance. Training Intensity Distribution (TID) has gained prominence as a critical training parameter in endurance sports, with the potential to elicit superior physiological adaptations and improve overall performance outcomes. TID influences the body's aerobic and anaerobic energy systems, thereby enhancing endurance performance.

Methods: We searched 3 electronic databases (PubMed, Scopus, and Web of Science) for original research articles. After analysing 653 resultant original articles, studies were included if they met the following criteria: a) participants were endurance sport athlete; b) studies analysed training intensity distribution in the form of observational reports, case studies, or interventions; c) studies were published in peer-reviewed journals and d) studies analyzed training programs with a duration of 4 weeks or longer.

Results: The impact of TID on key performance determinants, such as lactate threshold, VO2 max, and economy of motion has the potential to drive significant improvements in an athlete's endurance capacity. The traditional pyramidal TID, where most of the training is conducted at low intensity with occasional high-intensity sessions, as well as the polarized TID model, which emphasizes a balanced distribution of low and high-intensity sessions with reduced time spent in moderate intensity, are practiced by athletes around the world, especially during the pre-competition phase to boost their performance.

Conclusion: Training Intensity Distribution has a key role in enhancing endurance sports performance. With strategical manipulation of training intensities, athletes can stimulate specific physiological adaptations that contribute to improved endurance capacity propelling them towards peak performance and athletic success. This comparative analysis offers insights into the strengths and limitations of each TID approach, aiding coaches and athletes in making informed training decisions.

Keywords: Training intensity distribution, polarised training, endurance sports.

OP 34

Role of low-intensity training and nutritional supplementation in subjects with fibromyalgia and visceral disorders - Case Report

Mahek Arora[1], Priyanka Sethi[1], Preeti Saini[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana, India

Email: mehakarora363@gmail.com

Purpose: Fibromyalgia (FM) is an umbrella term that has several conditions associated with, that causing fatigue, tenderness, and pain at several bodily segments, mood changes, anxiety, depression, and widespread chronic pain. The other associated factors that generally remain undiscussed are its relationship with the visceral organs that cause liver changes, heart abnormalities, kidney dysfunction, and brain disorders. In many studies, liver cirrhosis is associated with fibromyalgia based on several physiological factors contributing to the later symptoms.

Methods: Five subjects reported symptoms associated with fibromyalgia according to the Revised Fibromyalgia Impact Questionnaire (FIQR). A signed informed consent was taken from all the subjects recruited for the study. All five participants had symptoms of disturbed gastrointestinal tract, pain at multiple sites, irritability, and anxiety. During blood analysis, there was a reduction in vitamin D3 and Vitamin B12 levels and folate deficiencies. Also, Erythrocyte Sedimentation Rate values were out of the range in all five subjects. Ultrasound findings, suggestive of grade two fatty liver changes in four out of five subjects. These subjects underwent supplementation of Vitamin D3 and Vitamin B12 once weekly for five consecutive weeks. The low-intensity weight-bearing exercises including Tai Chi were practiced 4 times/week for 45- 60 minutes duration.

Results: The descriptive analysis for the study was completed. The average mean age for the subjects was 53.06 (6.4) years, weight 63.30 (13.02) kg, and height 159.25 (6.2) cm. There were no statistically significant differences in age, weight, height, and level of pain (RFIQ) between the subjects ($p > 0.05$, data not shown). The pre-treatment and post-treatment assessments were statistically compared. In terms of the effect of the interventions on the individual's physical conditioning, subjects have shown statistically significant recovery in their presenting complaints. The self-reported signs of recovery were observed under Ultrasound examination. The blood analysis has shown marked improvement in the reversal of liver changes, vitamin levels, and folate values. The RFIQ score was significantly better ($p<0.01$). The four out of five subjects improved along with gastrointestinal changes. The low-intensity exercises like tai chi have improved their endurance and decreased their early fatiguability.

Conclusion: The results obtained through this therapeutic protocol including both low-intensity exercises and nutritional supplements have

shown significant recovery in subjects. The visceral functions were also significantly controlled. Furthermore, the study concludes its impact on improving the associated symptoms of FM (i.e., mood changes, anxiety, depression), pain threshold, and overall well-being.

Keywords: Fibromyalgia, ESR, liver changes, weight-bearing exercises, low-intensity training

OP 35

A longitudinal study on prevalence of doping and the perception towards anti-doping among Tamil Nadu youth football players

Nikhil Roy M[1], Dobson Dominic[1], Praveen R[1], Koushik K V S[1]

1. Department of Sports Medicine, Saveetha Medical College & Hospital, Chennai, India.

Email: nikhil.roy9@gmail.com

Purpose: In youth sports, where athletes are still developing and are vulnerable to external influences Anti-doping measures play a crucial role in ensuring fair play and maintaining the integrity of athletic competitions. In recent years, there has been growing concern regarding the use of performance-enhancing substances among young athletes, including youth football players in India. The objective of the study is to estimate the prevalence of doping among young football players and assess the awareness, attitude and preventive measures on anti-doping.

Methods: A longitudinal study will be done among 83 young football players in Tamil Nadu. A pretested and pre validated questionnaire comprising the basic demographic details and questions assessing the awareness, attitude and behaviour on doping will be used to collect the data following which a health education on anti-doping will be done. The data will be collected pre and post health education session. Frequency and percentage will be used for descriptive statics and qualitative data will be analysed using chi square test. Mean difference in knowledge and attitude towards anti-doping after the health education session in comparison with pre-test score will be analysed using t-test

Results: The prevalence of doping among young football players will be estimated and frequency percentage of footballers with good knowledge, attitude and behavior towards doping, along with the factors deviating from anti-dope behavior will be analyzed. The effect of health education on knowledge and attitude towards anti-doping will also be analyzed.

Conclusion: This research will provide recommendations on how to improve anti- doping among Indian youth football players and understand other factors affecting their attitude towards anti-doping. This helps in developing effective strategies to enhance awareness and promote preventive measures in this population.

Keywords: Doping, knowledge, awareness, prevention, athletes

OP 36

Breathing exercises in lung cancer: a systematic review

Bhaskara Rao Jagurothula[1], Kshitija Bansal[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research & Studies, Faridabad, Haryana, India.

Email: bjagurothala2016@gmail.com

Purpose: Lung cancer is a leading global cause of cancer-related mortality, with a significant impact on public health. Dyspnea and reduced quality of life are common among lung cancer patients. Breathing exercises have been explored as potential interventions to mitigate these symptoms. This systematic review aims to assess the comparative impact of various breathing techniques on Dyspnea and quality of life in individuals diagnosed with lung cancer.

Methods: We conducted a comprehensive literature search across multiple databases, including Medline, EMBASE, AMED, and PsycINFO. The eligibility criteria included original research studies, encompassing randomized controlled trials, quasi-experimental investigations, and controlled before-after studies, involving adult individuals diagnosed with lung cancer. We evaluated various breathing techniques, such as diaphragmatic breathing, pursed-lip breathing, and incentive spirometry, and assessed outcomes related to Dyspnea and quality of life.

Results: The review included studies from different countries, primarily utilizing randomized controlled trials. The findings revealed that inspiratory muscle training, deep breathing exercises, and diaphragmatic breathing showed promise in reducing Dyspnea and improving quality of life among lung cancer patients. Some studies highlighted the benefits of combined interventions, particularly when incorporating aerobic exercise. However, intervention protocols varied across studies, emphasizing the need for standardized guidelines in clinical practice.

Conclusion: This systematic review underscores the potential benefits of breathing exercises in alleviating Dyspnea and enhancing quality of life in lung cancer patients. Multifaceted approaches may offer more comprehensive benefits. Further research with standardized protocols is essential to provide evidence-based recommendations for lung cancer rehabilitation.

Keywords: Lung cancer, breathing exercises, rehabilitation, dyspnea, quality of life.

OP 37

Diastolic Blood Pressure: An Independent Predictor for Cardiac Autonomic Neuropathy in Type-2 Diabetes Patients

Saima Zaki[1], Saurabh Sharma[1]

1. Centre for Physiotherapy and Rehabilitation Science, Jamia Millia Islamia, Delhi, India.

Email: saimazaki@jmi.ac.in

Purpose: Cardiac Autonomic Neuropathy (CAN) is a significant complication in patients with type-2 diabetes (T2D), impacting the autonomic nerve fibers of the heart and blood vessels. This condition can lead to serious symptoms such as resting tachycardia, orthostatic hypotension, and silent myocardial ischemia. Identifying predictors of CAN is crucial, especially with the increasing incidence of T2D. This study aims to ascertain primary markers for predicting the onset and progression of CAN in T2D patients.

Methods: A cross-sectional analysis was conducted on 76 T2D patients, assessing them using the Ewing battery, heart rate variability (HRV) measures, body composition analysis, lipid profiling, and HbA1c levels. The study employed independent t-tests and chi-square tests to differentiate between patients with and without CAN, and correlation analyses to examine the relationship between HRV and other variables. Univariate and multivariate regression analyses were used to identify markers of CAN, followed by Receiver Operating Curve (ROC) analysis for the independent predictors.

Results: Out of 76 participants, 53 were diagnosed with CAN based on the Ewing battery results, while 23 were CAN-negative. No significant differences were noted between the two groups. Univariate logistic regression identified high-density lipoprotein (odds ratio: 0.54, p = 0.03), hip circumference (odds ratio: 1.3, p = 0.03), waist circumference (odds ratio: 0.56, p = 0.03), triglyceride (odds ratio: 1.4, p = 0.01) and diastolic blood pressure (DBP) (odds ratio: 9.08, p < 0.01) as significant predictors of CAN. When multivariate analysis with adjusted co-variate was performed only DBP was significant (odds ratio: 1.31, p < 0.01). Further, ROC analysis indicated a sensitivity of 79.25 % and specificity of 91.30 % for DBP with a cut-off value of >80 mmHg.

Conclusion: From the variables analyzed, DBP has established itself as an independent predictor of CAN in individuals with T2D diabetes. These findings highlight the importance of monitoring DBP in the diabetic population for early detection and management of CAN.

Keywords: Cardiac autonomic dysfunction, diabetes, heart rate variability, blood pressure

OP 38

The effect of pep devices in chronic obstructive pulmonary disease patients: A Systematic Review

Chanakya Singh[1], Nitesh Malhotra[1], Preeti Saini[1], Priyanka Sethi[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, India.

Email: chankyasingh133@gmail.com

Purpose: In cases of severe COPD exacerbations, PEP may lessen the necessity for mechanical ventilation or the degree of ventilator assistance. This may lessen the negative effects of invasive breathing.

positive expiratory pressure (PEP) devices are intended to facilitate sputum clearance and reduce cough, but there is limited evidence for their effectiveness in COPD, The aim of this review is to see the effect of pep device in chronic obstructive pulmonary disease. (COPD).

Methods: The databases used in this systemic review are PubMed, Google Scholar, Sci hub and Springer from 2010-2023 have been used under the PRISMA approach (Preferred Reporting Items are followed in the current review.

Result: Twelve RCTs met the criteria and objectives out of which seven were included in the study. Moderate methodological quality was scored on the PEDro scale. Better lung function has been observed in the patients using pep devices rather than other breathing techniques but physical exercise leads to pulmonary clearance.

Conclusion: In patients with COPD or pre-COPD, daily use of the PEP device is safe and may enhance exercise ability. Due to its effectiveness, safety, and low cost, PEP devices could be utilised as an addition to pulmonary rehabilitation programmes.

Keywords: PEP, COPD, airway clearance, lung function

OP 39

The effect of backpack load on pulmonary function: A Systematic Review

Megha Singh[1], Preeti Saini[1], Nitesh Malhotra[1], Priyanka Sethi[1]

1. Department of Physiotherapy, School of Allied Health science Manav Rachna International Institute of Research and Studies, India.

Email: tmegha1044@gmail.com

Purpose: The goal of this study is to thoroughly evaluate how wearing big backpack weights affects lung function. This study seeks to ascertain the degree of pulmonary health alternations, lung diffusion capacity changes, and overall respiratory performance variations associated with carrying a backpack load through a comparative analysis of people who regularly carry backpacks and those who do not.

Methods: A systematic review was conducted using four databases (Google Scholar, PubMed, Springer and Research Gate) from 2010 to 2023. The PRISMA approach (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) Reporting standards were followed in this review.

Results: A total of 20 studies that matched the predetermined inclusion criteria were included in our review. These studies used spirometry, lung function questionnaires, and tests of diffusion capacity to evaluate pulmonary function in a variety of demographics, including students, employees, and military members. The participants' ages ranged from 21 to 45 years. These investigations' findings repeatedly showed a strong correlation between carrying big backpack loads and detrimental effects on pulmonary function. Particularly, people who carried big loads frequently compared to people who did not engage in such activities. Peak expiratory flow rate (PEFR), forced expiratory volume in one second (FEV1), and forced vital capacity (FVC) measures all demonstrated this.

Conclusion: There are a number of explanations for the reported decrease in pulmonary function measures in people who are carrying big backpack loads. First, the mechanical compression of the spine brought on by the weight of the backpack may produce changes in the mechanics of the thoracic cage and diaphragm, which in turn could have an impact on lung function. Second, hefty backpacks can affect respiratory mechanics and increase breathing labour due to the forward trunk tilt and changes in body centre of gravity they cause.

Keywords: Pulmonary function, backpack load, lung function, respiratory health

OP 40

The effects of nordic walking vs brisk walking on cardiovascular parameters among obese individual – a randomized clinical trial

Junneshwar Bidve[1], Mehreen Farooqui[2]

1. Department of Cardiovascular respiratory physiotherapy, MGM School of Physiotherapy, Aurangabad, Maharashtra, India.

2. Department of Community Physiotherapy, MGM School of Physiotherapy, Aurangabad, Maharashtra, India

Email: junneshwar@gmail.com

Purpose: Young adults are frequently overweight and obese, have low levels of physical activity, and lack the motivation to exercise. The study's goal is to determine whether Nordic walking is effective for helping young adults who are overweight or obese lose weight and is there any changes in their cardiovascular parameters. Exercises that have been recommended include Nordic walking (NW). So the objective of the study was to find the differences on cardiovascular parameters in brisk walking vs. Nordic walking among obese individuals for the period of 1 month.

Methods: The participants will be divided into: Group A –Brisk walking and Group B – Nordic walking. Exercise program will be given. For analysing and comparing the data statistically we will obtaining Pre and Post Resting Heart rate & Blood pressure for the given participants.

Result: Data analysis was done using Microsoft Excel 2019.Within the group paired t-test was used. And for comparing two groups unpaired t-test was used. After 1 month, In Control group (group A), the mean difference of pre and posttest on HR was 7.37 and on BP was 4.2. In Experimental group (group B), there is a significant difference in pre and post-test on HR was 12.54 and on BP was 15.56. Between the groups Analysis both HR and BP showed significant differences (p-value<0.05). The mean difference between Group A and Group B for HR is 6.47 and for BP is 2.1.

Conclusion: Based on the findings of our study, we advise healthy obese individuals to make an effort to practise Nordic Walking that enables changes in cardiovascular parameters, attaining higher metabolic intensities, and increasing muscle activation than regular walking does.

Keywords: Cardiovascular parameters, Nordic walking, obese individuals.

OP 40

Effect of asana and exercise on speed, strength and endurance among eumenorrheic women athletes during various phases of menstrual cycle

P Ashwini[1,2] and K Deepla[2]

1. Govt Degree College (A), Sangareddy, Telangana, India.

2. Department of Physical Education, Osmania University, Hyderabad, Telangana, India.

Email: ashwinireddy.p88@gmail.com

Purpose: A sports women will have a daily routine of fitness related exercise along with their sport specific fitness training. Women athletes undergo various physical and physiological changes during their lifespan, especially athletes in the age group of 12 to 25 years. While there is myth that the women athletes either do not perform physical fitness related activities or will have low performance during their menstrual phase, the reality is that most of the women athletes practice during their menstrual phase. Aim of this study is to discover the Effect of Asana and Exercise on speed and Strength & Endurance among the Eumenorrheic Women Athletes during various phases of their menstrual cycle.

Methods: 60 Eumenorrheic Women Athletes in the age group of 16 to 21 years from Govt. Degree College (A), Siddipet were considered as subjects for this study using systematic sampling technique. The subjects are randomly divided into two equal groups (n=30). The selected subjects underwent a tailor-made training program in which asana and exercises were selected based on logical approach for 60 days. Pre and Post test results for Speed, Strength & endurance were captured and analyzed using paired t test to check the mean difference between the subjects to arrive at conclusion.

Results: Collected data is analyzed at significance level of 0.05. Significant improvement observed in Speed performance during menstrual phase, ovulation phase and luteal phase between pre-test and post-test among experiment group subjects with p values of 0.0409, 0.0496 and 0.0448 respectively. Significant improvement is observed in Strength and Endurance of selected subjects during menstrual phase, ovulation phase and luteal phase between pre-test and post-test among experiment group subjects with p values of 0.0328, 0.0348 and 0.0304 respectively.

Conclusion: It is concluded that performing a specific training program backed up with logical approach for sixty days has resulted in reasonable

improvements in speed, strength and endurance during menstrual, ovulation and luteal phases among selected subjects.

Keywords: Eumenorrheic, menstrual cycle, women athletes, speed, strength endurance

OP 41

Effect of Wim Hof breathing method for the enhancement of sports performance: A Systematic Review

Jamil Ahmad Butt[1], Jai Prakash Bhukar[1], Farooq Ahad Kumar[1], Towseef Ahmad Taily[1]

1. Department of Physical Education and Sports, Central University Haryana, India.

Email: bhatjameel50@gmail.com

Purpose: Wim Hof, a Dutch extreme athlete, earned his name "The Iceman", and created three techniques namely Breathing known as Wim Hof Breathing Method (WHBM), Cold exposure and commitment related to body awareness that promotes deeply to your willpower. This systematic study reviews whether the effect of the selected technique i.e., WHBM is for the enhancement of sports performance.

Methods: A systematic review of published articles (n=8) was used and received a mean score of 18-28 years of age based on PubMed, Metadata, MDPI, ProQuest, Web of Science, Scopus that delimits to the following keywords: breathing economy, sports performance, Heart Rate Variability, V**o2** kinetics, fatigue, exercise, endurance and health-related outcomes, control of stress and physiology.

Results: The present study consists of eight papers; five papers show positive and the remaining three do not show any effective results in the above-mentioned keywords of methodology. The findings of this systematic review suggest that Wim Hof's breathing method may affect the enhancement of sports performance in various parameters such as physical endurance, mental Stress, mood and anxiety and v**o2** kinetics. Additionally, this method was not suggested to enhance respiratory economy, physical conditions of stress, and anaerobic performance were shown insignificant.

Conclusions: Altogether, the findings pointed to a possible application of the WHBM in some perspectives of sports culture. Future research should emphasise on large size of the active population because the previous studies have investigated on small sample size. Secondly, training sessions should be increased up to 12 weeks because a single study (small size) of 12 weeks of session shows a positive result in sports performance and 4 to 8 weeks didn't show an appreciable result. Thirdly, rather than a questionnaire-based study, scientific (laboratory) research should be employed for more reliability because very few such types of studies have been applied for the enhancement of sports performance. However, there is some ambiguity about whether WHBM is more helpful in various aspects of psychological as well as physiological issues, because some evidence and recent studies point out positive results, but scientific study on the direct effects of WHBM on competitive sports performance is still being conducted, because very little investigation is being found in the field of physical education and sports to assess the stress and anxiety during rigorous or highly competitive activities. Future studies are required to determine these factors that can give appreciable performance gains.

Keywords: Breathing economy, sports performance, HRV, V**o2** kinetics, stress & health-related outcomes.

OP 42

Ergonomics modifications and improving well-being as an early disease prevention in school going children in developing countries

Pooja Kumari Mahaseth[1], Ndahiriwe Chance Christian[2], Tanpreet Kaur[3], Tejaswini Kalyan Pwar[3], Rinkle Malani[3]

1. Department of Neuro physiotherapy, MGM School of Physiotherapy, Aurangabad, India. Constituent Unit of MGM Institute of Health Sciences.

2. University of Rwanda, Department Of physiotherapy, College of Medicine and Health Sciences.

3. MGM School of Physiotherapy, MGMIHS, Aurangabad, India.

Email: poojamahaseth1993@gmail.com

Purpose: Early ergonomics, physical training intervention and education from childhood are considered critical as they are the future of our country for the global economy and individuals alike. Children are not currently protected by legislation in the same way that adults are in the workplace in Europe. In many schools, there is a lack of appropriate equipment such as school furniture and activity-based learning techniques and environments to improve posture, fitness, attention and attainment. By decreasing sedentary behaviors and, thus, increasing daily physical activity, individuals may experience stress-reducing benefits, which may enhance the immune system. As the healthcare commonly says "prevention is better than cure" It would be better said "Early prevention in childhood is crucial to our survival than any remedy". This study raises awareness of the role of ergonomics in protecting and enhancing children's physical and mental development. Children's posture correction, Ergonomics for home computing, aerobic exercise training, flexibility training,

Methods: The data were collected by using an outcome measures Children Physical Activity Questionnaire(C-PAQ) and Kids Screen 52 Health Questionnaire for Children and Young People. Experimental research design study was used to assess this study. In addition, this study was used with Pre and post tests. Snowball sampling was used for data collection. Population of the study involved 308 school students (ages 8 to 18), with duration of the study 6 weeks for intervention and overall 18 months to complete the entire study. The study was conducted through MGM School of Physiotherapy, Aurangabad. This study was a Multicentric study, from developing countries like Nepal and India. The Initiative was implemented by various state schools of Nepal and India, both government and non-government schools.

Results: The statistical analysis showed that there is significant effectiveness in physical activity in school going children among the students using computer or internet.i.e. (p value is 0.019) ($p<0.05$) And students playing badminton, performing aerobics, playing cricket, watching TV or videos have shown to be non-significant i.e. (p value>0.553) ($p>0.05$).

Conclusion: This study concluded that physical training and ergonomic education in school going children has shown significant effectiveness to a great extent for improving quality of life, modifying lifestyle and preventing disease of school going students.

Keywords: Children, developing countries, disease prevention, ergonomic modification, physical therapy

OP 43

The impact of poverty and gender inequality on the psychological risk factors of adolescents at risk for NCD's in the Eastern Cape, South Africa

Van Niekerk RL[1], Van Gent MM[2]

1. Department of Psychology, University of Fort Hare, East London Campus, South Africa.

2. Department of Human Movement Sciences, University of Fort Hare, Alice Campus, South Africa.

Email: leonvn@ufh.ac.za

Purpose: The mental health and well-being of adolescents at risk for non-communicable diseases (NCDs) is often indicative of psychological risk factors in contexts of poverty and gender inequality. The aim of the study was to explore the mental health and well-being and the impact of poverty and gender on adolescents at risk for NCDs. Behavioral risk factors such as smoking, drinking and physical inactivity were used to determine risk for NCD's among adolescents.

Methods: A stratified random sample of 266 adolescents ($M_{age} = 15 \pm 1.24$) in grades 8-12 from eight schools in two districts in the Eastern Cape, South Africa, was selected to participate in the study. The schools were from both urban and rural areas in the districts and the sample included both male and female participants.

Results: Results indicated that among the adolescents that were smoking (4.1%), drinking (38.3%) and physical inactive (59%), a total of 69.7% were at risk for NCDs. While 59.8% of the adolescents at risk reported mild to severe psychological distress, only 36.7% were found to be flourishing. A significant positive correlation was found between physical exercise and age (r = .180) and between physical inactivity

and psychological distress, while a significant negative correlation was found between physical activity and well-being (r = -.125) and between the number of risk factors and physical activity (r = -.491). Adolescents at risk were significantly less active than those who were not at risk for NCDs. Chi-square analysis showed that significantly more female adolescents who smoked (63%) or were physical inactive (67.3%) were at risk for NCD's than their male counterparts. More adolescents from poor schools were smoking (54.5%), drinking (60.7%) or physically inactive (72.4%) than from rich schools. Significantly more females (63.6%) and poor adolescents (66.4%) showed high psychological risk factors. Female adolescents from poor backgrounds were significantly less active than those from more privileged backgrounds. While a logistical regression indicated that socio-economic status, gender and psychological risk factors contribute significantly to physical inactivity, physical inactivity was a significant predictor of risk for NCDs among adolescents.

Conclusion: The impact of gender and socio-economic status on the physical inactivity and mental health of adolescents and its prediction of risk for NCD's among adolescents is significantly worse for females and adolescents from poor communities. This reinforced the role of gender inequality and poverty as contributors to the risk of NCD's among adolescents.

Keywords: Psychological risk factors, non-communicable diseases, gender inequality, poverty.

OP 44

Physical fitness, cardiovascular and musculoskeletal health, and occupational performance in firefighters

Jaron Ras[1,2], Denise L. Smith[3], Andre P. Kengne[4], Elpidoforos S. Soteriades[5,6], Lloyd Leach[1]

1. Department of Sport, Recreation and Exercise Science, Faculty of Community and Health Sciences, University of the Western Cape, Cape Town, South Africa.

2. Department of Sport Management, Faculty of Business Management, Cape Peninsula University of Technology, Cape Town, South Africa.

3. Health and Human Physiological Sciences, Skidmore College, Saratoga Springs, New York.

4. Non-communicable Diseases Research Unit, South African Medical Research Council, Cape Town, South Africa.

5. Healthcare Management Program, School of Economics and Management, Open University of Cyprus, Nicosia, Cyprus.

6. Environmental and Occupational Medicine and Epidemiology (EOME), Department of Environmental Health, Harvard T.H. Chan School of Public Health, Boston, MA, USA.

Email: 3405618@myuwc.ac.za

Purpose: To perform their work efficiently and safely, firefighters should maintain all aspects of physical fitness. Cardiac-related incidents are the leading cause of duty-related deaths in firefighters, and many firefighters have poor musculoskeletal health that hinder their occupational performance. Establishing the relationship between physical fitness, cardiovascular health, musculoskeletal health and occupational performance may add new insight on the most significant factors influencing occupational performance in firefighters. Therefore, the purpose of this study was to investigate whether physical fitness, cardiovascular health and musculoskeletal health were associated with occupational performance in firefighters.

Methods: This cross-sectional study included 283 full-time firefighters aged 20-65 years from Cape Town, South Africa. A researcher-generated questionnaire was used to collect data on sociodemographic characteristics, lifestyle factors and musculoskeletal health (musculoskeletal discomfort and musculoskeletal injuries). Physical measures were used to collect information on physical fitness, cardiovascular health, and occupational performance [using a physical ability test (PAT)]. Linear and binary logistic regressions, multivariate analysis of covariance (MANCOVA) and backward stepwise regressions were used to investigate the associations between the various constructs.

Results: From multivariable analyses, age, lean body mass, body fat percentage, estimated absolute oxygen consumption ($abV\dot{O}_{2max}$), grip strength, leg strength, push-ups, sit-ups, weekly metabolic minutes (MET) minutes and heart rate variability were associated with PAT completion times (all $p<0.01$). The MANCOVA showed a significant difference between performance categories of the PAT based on physical fitness and cardiovascular health (both $p<0.001$). Weekly MET minutes, bodyfat percentage, $abV\dot{O}_{2max}$, grip strength, leg strength and sit-ups explained the highest proportion (50.5%) of the variation in PAT completion times.

Conclusion: Younger, non-obese, fitter and stronger firefighters, with a better CVH status, performed significantly better and were most likely to pass the PAT. Firefighters should maintain high levels of physical fitness and a good level of CVH to ensure a satisfactory level of occupational performance.

Keywords: Firefighters; occupational performance, fitness, strength and endurance

OP 45

Comparing the impacts of video-based and face-to-face yoga practices on the depression level, pain, fatigue and quality of life of sedentary individuals

Nahide Kocer[1], Feyza Baca Bicer[2], Habibe Serap Inal[3]

1. Physiotherapy Program, Vocational School, Doğuş University, Istanbul, Turkey,

2. Social Services, Vocational School, Doğuş University, Istanbul, Turkey

3. Department of Physiotherapy and Rehabilitation, Faculty of Health Sciences, Istanbul Galata University, Istanbul, Turkey

Email: nahidekocer@gmail.com

Purpose: Physical activity and yoga are known to be effective in maintaining physical and mental well-being, reducing fatigue, pain and concentration difficulties. The adaptation and sustainability of these approaches in sedentary and insufficiently active individuals should be supported through today's technological tools and the internet. For this reason, this study aimed to examine the effects of video-based yoga and face-to-face yoga and exercise on pain, fatigue, depression and quality of life.

Methods: Sedentary women (n=48) with a mean age of 30.44±9.61 years were randomly divided into three groups as video-based yoga (n=17), face-to-face yoga (n=15) and Physical exercise (n=16) interventions. The pranayama (respiration), asana (poses) and meditation were given to yoga group, and the exercises for respiration, muscle strengthening, stabilization and flexibility were given to exercise group, under the supervision of the physiotherapist. Yoga exercises recorded in video for the video-based yoga group consisted the same exercises of the yoga group. The sessions for each group were given for a total of 6 weeks (2days/week) as 12 sessions, and for 60min. Their depression (Beck Depression Scale), pain (Pain Quality Assessment Scale), quality of life (WHOQOL-BREF) and fatigue (Fatigue-Severity-Scale) were evaluated at the beginning and end of the 6 weeks. The data was analyzed with SPSS 22.0.

Results: In the intra group evaluation, at the end of the study, there was a significant improvement ($p<0.05$) in depression, fatigue and pain levels in the general health subscale of quality of life, and a statistically significant improvement in depression and pain scores in the video-based yoga and exercise group ($p<0.05$). No significant difference was found between the groups in relation to depression, fatigue, pain and quality of life.

Conclusion: Physical activity and yoga practices are associated with a decrease in depression scores, fatigue and pain levels, and an increase in quality of life, regardless of whether they are video-based or face-to-face. The study is very important in terms of showing that video-based practices are at least as effective as other practices and providing guidance to ensure the sustainability of physical activity increase for sedentary individuals. Video-based yoga can be recommended as an effective method for sedentary women.

Keywords: Yoga, quality of life, fatigue, pain, video-based, depression

OP 46

A systematic review protocol for the effectiveness of psycho-educational intervention programmes in addressing the psychological

risk factors associated with non-communicable diseases among adolescents

Nokwanda Bokolo[1], Rudolph Leon Van Niekerk[1], Verona Mathews[1], Lloyd Leach[1]

1. University of Fort Hare, South Africa

Email: nbokolo@ufh.ac.za

Purpose: The psychological health concerns and risk factors associated with non-communicable disease among adolescents have been prioritized on the agenda of international health institutions globally. This review aims to determine the various types of psycho-educational intervention programmes developed to address the psychological risk factors associated with NCDs among adolescents, and to assess the effectiveness of the psycho-educational intervention programmes.

Methods: The systematic review will include case-controlled and randomized controlled studies. The review will use electronic databases, PubMed, CINAHL, Science Direct, Cochrane Library, SCOPUS, and ERIC, as well as grey literature for thesis repository from 2012 to 2022. The key search terms include intervention programme, adolescents, psychological risk factors and NCDs. The studies identified will be downloaded into Mendeley and exported to Covidence software for screening, quality assessment and data extraction.

Results: The quality assessment tool to be utilized is Joanna Briggs Institute critical appraisal checklists to ensure relevance and quality of the articles. This systematic review will use two types of data analysis: narrative synthesis of qualitative studies and meta-analysis of quantitative studies.

Conclusion: The findings from this systematic review can help to complement the scarce knowledge on the psychological well-being by providing evidence-based tools for the management of psychological risk factors associated with NCDs, as well as present key insights for future intervention programmes on the management of psychological risk factors associated with NCDs among adolescents.

Keywords: Psychological health, non-communicable disease, adolescents

OP 47

Are the video-based yoga exercises effective on musculoskeletal pain and quality of life of discharged patients in post-covid-19 stage

Mehmet Durbulu[1,2], Habibe Serap Inal[3]

1. Department of Physiotherapy and Rehabilitation, Faculty of Health Sciences, Istinye University, Istanbul, Turkey

2. Silivri State Hospital Physiotherapy Unit, Istanbul, Turkey

3. Department of Physiotherapy and Rehabilitation, Faculty of Health Sciences, Istanbul Galata University, Istanbul, Turkey

Email: serap.inal@galata.edu.tr

Purpose: During post-Covid-19 stage cases may continue to experience pain and mild functional limitations in their daily activities more than a year. This may limit their quality of life. It was aimed to search the effectiveness of video-based (VB) yoga interventions compared to the home-based (HB) posture exercises in the first six-months of post-Covid-19 period on individuals with mild symptoms.

Methods: Post-Covid-19 patients (n=85) met the study criteria were grouped as VByoga (n=40), HBposture exercise (n=28), and control (n=17) groups. VByoga and HBposture exercise groups trained face-to-face in the first session to perform them three times a week for eight weeks at home. Control group was informed regarding the importance of physical activity and maintaining the correct posture. The socio-demographic characteristics, pain, walking, balance, quality of life was evaluated as before-after the exercises.

Results: The quality of life and balance of VByoga and HBposture exercise groups were significant ($p<0.05$). The decrease in total pain, pain intensity, and increase in walking capacity were significant in favor of the VByoga group ($p<0.05$). The relation between quality of life and balance in the yoga group were low ($r=0.447$; $p=0.008$); in posture ($r=0.571$; $p=0.004$) and control groups ($r=0.671$; $p<0.001$) were at moderate level.

Conclusion: VByoga and HBposture exercises planned by physiotherapists decreased pain and improved balance, walking capacity and health-related quality of life of individuals with mild symptoms in the first six months of the post-Covid-19 period. However, time was also a key factor for all the groups in relation to these features.

Keywords: Pain, balance, yoga, quality of life, post-Covid-19

OP 48

Comparative effects of selected exercises on motor fitness of normal and deaf secondary schools students in katsina state

Sule Idris[1]

1. Federal Collage of Education, Katsina, Nigeria.

Email: sule.idris@fcekatsina.edu.ng

Purpose: The study was primarily designed to compare the effects of 8 weeks of selected exercises on motor fitness of normal and deaf secondary school students in Katsina State. A pre-test/post-test experimental design was used in this study; the population of the study comprised all the senior secondary school students of Katsina College, Katsina and all senior secondary school students of school for the deaf, Malumfashi, Katsina State with the population of three thousand, six hundred and nine students (3609).

Methods: The sample size used for the study is sixty students; 30 students from each of the two schools. One major hypothesis and four sub-hypotheses were developed. The instrument used is a modified standardize AAHPER1985 test battery Descriptive statistics of mean X and standard Deviation (SD) was used to analyse demographic information, while independent t-test was used to test the formulated hypotheses at 0.05 level of significance.

Results: The result of the study revealed that there was significant difference between normal and deaf in their agility after 8 weeks of exercise training ($t = 6.873$ $P< 0.05$); there was significant difference between normal and deaf students in their balance after eight weeks of exercise training ($t = 2.786$ $P<0.05$) there was significant difference between normal and deaf students in their power after 8 weeks of exercise training ($t = 4.723$ $P<0.05$). There was significant different between normal and deaf students in their speed after eight weeks of exercise training ($t = 2.885$ $P<0.05$).

Conclusion: The implication of this study was that, selected exercise training had significant effect on both normal and deaf subject. It was therefore, recommended among others that both normal and deaf students should be involved in exercise training regularly.

Keywords: Comparative, deaf, motor fitness, selected exercises

OP 49

The best interest of the child clause and setting a legal framework for sustaining sport in low to medium income countries (LMIC)

Ushotanefe Useh[1]

1. North West University, South Africa.

Email: ushotanefe.useh@nwu.ac.za

Purpose: Law of delict (Tort law) applies to situation where a civil wrong is committed (does not involve criminal conduct but addresses conduct that are careless or intentional that leads to harm or injury to a person or property (e.g. when a coach fails to adequately instruct or supervise players under his or her care; players or participants violence; player to player violence; battery (parent hits a volunteer); transportation liability, Safe environment; fitness classes, risk management (process or course of action designed to reduce risks (probability or likelihood), contract law, agency law, employment law, constitutional law.

Methods: Legal review of relevant legislation related to sport in different LMIC was done in this study. Legal research methodologies were used in this paper to acquire legally relevant information, interprets, and applies them to resolving issues in developing legal framework for sustaining sport in LMIC. This was done through a scientific and systematic way in solving the best interest of the child clause and therefore setting a legal framework.

Results: International laws such as the Universal Declaration on Human Rights, Convention on the Rights of the Child, Charter of Physical Education & Sport and Section 28 (1) b and (d) (b) of the South African Constitution and its legal instrument with regard to family care or

parental care, or to appropriate alternative care when removed from the family environment were reviewed. Section 28 clearly stipulated that the child is to be protected from maltreatment, neglect, abuse, or degradation. It further reiterated that a child's best interests are of paramount importance in every matter concerning the child. Young persons are quite vulnerable when they are in care of adults for different reasons. And sport is no different. In sports, there are activities that involve behaviour committed or omitted that directly or indirectly harm children. A few of the examples are physical abuse, emotional abuse, sexual abuse, neglect, written, verbal abuse & threats, display of visual materials, unwelcome remarks, jokes, taunting about looks, religion, sex & sexual orientation, leering & Suggestive gestures, paternalistic behaviour which undermine self-esteem, unwanted physical contact, including touching, unwelcome sexual flirtations, invitations, requests.

In dealing with young persons in sport, we should therefore consider what is in their best interests.

Conclusion: To attain sustainability through science in youth sport, legal framework is paramount. These should include the development of clear and inclusive guidelines for these young persons, parents, guardians, and trainers.

Keywords: Interest of child, sport law, low- and medium-income country

OP 50

A comparative study of the effect of ACBT (active cycle of breathing technique) versus postural drainage in pulmonary rehabilitation. A systematic review

Megha Sharma[1], Preeti Saini[1], Nitesh Malhotra[1], Priyanka Sethi[1],Pooja Sharma[1]

1. Department of Physiotherapy, School of Allied Health science Manav Rachna International Institute of Research and Studies, India.

Email: sharma16megha22@gmail.com

Purpose: Pulmonary rehabilitation includes various techniques such as the Active Cycle of Breathing Technique (ACBT), Autogenic Drainage, postural drainage, and breathing exercises. Previous research on achieving total lung function has primarily focused on the ACBT pattern or other physiotherapeutic interventions. This review aims to compare both techniques for pulmonary rehabilitation.

Methods: Relevant literature was searched from databases such as MEDLINE (PubMed), CENTRAL of Cochrane Library, Web of Science and Physiotherapy evidence database. The inclusion criteria of articles were low-load BFRT, ACL reconstruction, randomized controlled trials, muscle strength and volume, and only full-text papers were included.

Results: Ten randomized controlled trails (RCTs) met the objective and criteria. After the screening and review process, only six articles were included in the systemic review. Data extracted from these six articles showed inconclusive results when comparing the two techniques. Both techniques were found to be effective, especially when performed simultaneously, with some articles suggesting that ACBT may be more effective.

Conclusion: The findings on the comparison between the two techniques yielded inconclusive findings. Both ACBT and the other techniques were effective for pulmonary rehabilitation.

Keywords: ACBT, postural drainage, COPD, physiotherapy, rehabilitation.

OP 51

School and university: An extension experience from leisure in southern Brazil

Silva CL[1], Vendruscolo R[1], Moro VL[1], Godoy L[1], Camargo M[2]

1. Department of Physical Education, Federal University of Paraná, Brazil.

2. Municipality of Curitiba, Municipal Secretary of Education, Brazil.

Email: cinthialopes@ufpr.br

Purpose: Leisure is a social right in Brazil, and from childhood, people have the right to access experiences and knowledge related to this social phenomenon. The objective of this study was to analyze an experience carried out in the extension program of the Federal University of Paraná/Brazil, through a collaborative project between professors from the Department of Physical Education and a public school in Curitiba, state of Paraná/Brazil. This objective is related to two United Nations Sustainable Development Goals - quality education and poverty eradication.

Methods: This work consists of an experiential report and dialogue with the literature based on classic and contemporary leisure authors. The experience was conducted within the university extension framework of a public institution in southern Brazil, involving two groups of elderly individuals and 56 children from a public school in the city of Curitiba, state of Paraná. The activities focused on leisure-related contexts.

Results: The intergenerational interaction between the elderly and children, as well as the children's access to social, physical-sports, and manual leisure contents through leisure-based education, were the outcomes of the experience.

Conclusion: We evaluated that a proactive and favorable action towards poverty eradication and quality education, which are United Nations' goals we sought to achieve, was accomplished through the positive response of elderly and participating children to the proposed extension activities, facilitated by the collaboration between school and university.

Keywords: Leisure, education, university extension.

OP 52

Impact of aerobic fitness on selected respiratory indices: an observational pilot study

Roy D[1] and Chatterjee S[1]

1. Department of Physical Education, Jadavpur University, Kolkata, West Bengal, India.

Email: droy6023@gmail.com

Purpose: Physical fitness may be interpreted as a capability of an organism to enhanced level of metabolic processes because of increased level of metabolic demands. Aerobic capacity which is estimated by optimum level of oxygen consumption (VO_2 max) that stands for aerobic fitness, can be expressed by relative (ml/kg/min) value too. Pulmonary capacity has a massive evaluation-importance for sport and health of general population as well. There were few studies done on this issue, but they did not find any conclusive findings. This lacuna propagates the researchers to look into a new approach having different samples and indices to find out the resultant impact of aerobic fitness on selected respiratory indices.

Methods: Interested participants were screened from the Department of Physical Education, Jadavpur University, Kolkata 700032, India. Through minute screening and purposive sampling ten males aged (25±1.69 years) with Body Mass Index (21.9±1.72) were selected as samples for this pilot study. Each participant filled in a consent form ensuring the fitness and health condition. For measuring VO_2 max, iworx instrumental setup availed with Lab scribe software and Nasan TMT providing Bruce Protocol, and for Spiro metric measures [Vital Capacity (VC), Tidal Volume (TV), Forced Expiratory Volume in first second (FEV1), and Forced Expiratory Volume in third second (FEV3)], the specific iworx set up along with Lab scribe software were used. Instruments were properly calibrated prior to every experimental session and the best of three trials were taken for granted as final measurement. The mean, standard deviation and Pearson Correlation were performed for analyzing the data. A single independent variable, VO_2 max along with other Spiro metric dependent variables i.e. VC, TV, FEV1 and FEV3 were considered for this study. To find out any relationship between the two separate groups of variables, a co-relation has been computed. The 'r' differences were taken to be significant when the p values were <0.05.

Results: Significant relationship (r) was found only in between the VO_2 max and VC. Results showed that VO_2 max clearly impacts on VC ($r=0.659$; $p=0.038$). However, there were weak positive correlation found in case of the other PFT indices i.e., TV ($r=0.336$; $p=0.342$; FEV1 ($r=0.464$; $p=0.176$ and FEV3 ($r=0.298$; $p=0.402$). As the results demonstrated, it is concluded that aerobic fitness has scrawny impacts on selected respiratory indices. Provided that the small sample size may affect the results of the correlation coefficient in this correlative analytical study.

Conclusion: From this penetrating observation a precise and concluding statement demonstrates that aerobic fitness which is otherwise termed to be VO_2 max induces a prominent and positive impact precisely on the VC. However, the influence of VO_2 max on other indices was found weak.

This impact of aerobic fitness in turn may positively influence the health conscious and sports population to go for a systematic and scientific physical exercise protocol for their goal-oriented outcome.

Keywords: VO2max, spirometry, aerobic fitness, exercise, sports.

OP 53

Study on the effects of short-term resistance training on body-composition, strength, power and aerobic performance of football players

Kingshuk Ghosh[1], Gulshan Lal Khanna[1], Indranil Manna[2]

1. Dept of Physiotherapy, School of Allied Health Science, Manav Rachana International Institute of Research and Studies, Faridabad, Haryana, India.

2. Associate Professor&HOD, Dept of Physiology, Midnapore College (Autonomous), Midnapore, West Bengal, India.

3. Email: kingshuk8013@gmail.com

Purpose: Football is popular sports world wide. Body composition play significant role on the performance of the football players. Playing football required high physical demand including strength, power, speed, agility. Resistance Training (RT) may improve these variables among the football player when given accordingly to the principle of periodization. Objectives: The present study was designed to investigate the effects of RT on body composition, strength, power and speed of football players.

Methods: A total of 60 male volunteers (age- 18±1 yrs) included in this study, were divided into i) Control Group (CG, n=30) and ii) Football Players Group (FPG, n=30). The volunteers of CG were performed sedentary activities, whereas volunteers of FPG were engaged in competitive football for last two years. The volunteers of FPG followed a periodized resistance training schedule- 2 session/wk, for 6 wks (65-75% of 1-RM, 10 exercises in each session). Other football specific training like- Continuous training, Interval training, Training of Power, Training of Speed, Training of Flexibility, Training for Skill and Match practice was continued in remaining days for 4 hours/day, 4 days/week. whereas no training was followed for CG. Assessment of body composition, strength, power, speed, agility and VO_{2max} were performed at the beginning (0 week) and end of the study (6 weeks). Paired sample t-test was performed to find out the differences in body composition, strength, power, speed and agility between groups.

Results: An increase ($P<0.05$) in grip strength (GST), back strength (BST), anaerobic power, counter movement jump (CMJ), speed, agility, VO_{2max} performance and reduction ($P<0.05$) in body fat (%) were noted after 6 weeks of training among the volunteers of Football Players Group. In addition, significantly higher ($P<0.05$) grip strength (GST), back strength (BST), anaerobic power, counter movement jump (CMJ), speed, agility, VO_{2max} performance and lower ($P<0.05$) body fat (%) and fat mass were observed among the volunteers of Football Players Group when compared with Control Group after 6 weeks of study. Co-relation was found between Lean body mass (LBM) & GSTR, LBM & BST, LBM & Highest power, LBM & Anaerobic capacity, Agility & Speed. These types of improvements in performance result from the resistance training.

Conclusion: Periodized resistance training may improve the body composition, strength, power, aerobic capacity and speed which are essential for improvement in performance of the football players.

Keywords: Football, resistance training, strength, anaerobic power, LBM.

OP 54

Study on the effects of training on body composition, physical fitness and physiological variables of young soccer players

Sayan Jyoti Bera[1], Indranil Manna[2]

1. Department of Physiology, Midnapore College (Autonomous), Midnapore, West Bengal, India.

Email: sayanjyotibera@gmail.com

Purpose: Soccer is very popular sports worldwide. The soccer players need a high level of endurance, strength, power, speed and skills to cope up with the demand of the game. To achieve a peak level of performance in soccer a proper training is required. Soccer players reach to elite level when the training programme starts from very early stage of life. Assessments of different body composition, physical fitness and physiological variables are essential to monitor the impact of training on the soccer players. This study was designed to find out the effects of 6 weeks of sports training on body composition, physical fitness and physiological variables of young male soccer players of 12 to 14 years age group.

Methods: A total of 80 male volunteers of 12 to 14 years age group were included in the present study and were divided into (i) Control Group (CG, n=40) and (ii) Soccer Group (SG, n=40). The volunteers of CG were performed sedentary activities, whereas volunteers of SG were engaged in district level competitive football for last one year. The soccer players followed a training programme- 4 hrs/d, 5d/wk, for 6 wks; whereas no training was given for control group volunteers. Assessment of selected body composition, physical fitness and physiological variables were performed at the beginning (0 week) and end (6 weeks) of the study. Paired sample t-test was used to compare the means within the groups before and after training. Pearson's correlation was performed to find relations among the variables.

Results: Significant ($p< 0.05$) increase in muscle strength, anaerobic power, speed, agility, VO_{2max}, FEV_1, FVC, PEFR; and decrease ($p< 0.05$) in resting blood pressure, resting heart rate, recovery heart rates and reaction time has been observed among the soccer players after six weeks of training. However, no change in body composition was observed in soccer players after six weeks of training. Soccer players showed significantly higher ($p< 0.05$) muscle strength, anaerobic power, speed, agility, VO_{2max}, FEV1, FVC, PEFR; and lower ($p< 0.05$) resting blood pressure, resting heart rate, recovery heart rates than control group volunteers before and after training. The present study showed positive correlation between lean body mass and muscle strength ($r = +0.54$, $p< 0.05$), between lean body mass and anaerobic power ($r = + 0.63$, $p< 0.05$), between agility and speed ($r = + 0.55$, $p< 0.05$), between agility and reaction time ($r= + 0.49$, $p< 0.05$), between VO_{2max} and FEV_1, FVC, PEFR ($r = +0.64$, $p< 0.05$); and negative correlation between resting systolic blood pressure and VO_{2max} ($r = - 0.37$, $p< 0.05$).

Conclusion: It has been observed that short duration sports training may have some beneficial effects on soccer players. However, long term training is required to obtain high level of fitness in young soccer players. Regular monitoring of body composition, physical fitness and physiological variables can provide useful information about the fitness status of the soccer players which are directly related to their performance.

Keywords: Soccer, VO_{2max}, lung functions, strength, power, agility.

OP 55

Comparison of flexibility, foot posture and BMI in ballet dancers with and without heel pain

Latika Areja [1], Kangana Kansal Juneja[2], Dheeraj kumar[3], Sanjeev Gupta[3]

1 Fit Fettle-Enriching Lifestyle, Shastri Nagar, New Delhi, India.

2 Department of Physiotherapy, K. R. Mangalam University, Gurugram, Haryana, India

3 Department of Physiotherapy, School of Allied Health Sciences, Manav Rachana International Institute of Research and Studies, Faridabad, Haryana, India.

Email: latikaareja27@gmail.com

Purpose: Heel pain is the most common foot problem of a healthy population also known as plantar fasciitis. It is predicted that 1 in 10 people will develop plantar fasciitis in their life span mostly in young athletic population. Approximately 5% of the affected population goes through surgery as an intervention for this condition. Ballet dance is such an art which requires a wide amount of training, harmony and motor control usually at the ultimate range of motion of the joints. Aim of the study is to compare whether there is any difference in the BMI, the flexibility of the foot and the foot posture of the ballet dancers if they have heel pain and if they don't have heel pain.

Methods: A comparative study was conducted, involving 40 subjects selected from various dance academies including Kingdom of Dreams, IFBC, and other ballet academies located in the Delhi National Capital Region. All participants willingly provided informed consent to take part in the study. They were then categorized into two groups using a

convenient sampling method based on specific inclusion criteria.

Group A comprised 20 ballet dancers who did not report any heel pain, while Group B included 20 ballet dancers who experienced heel pain. To assess foot posture, the Foot Posture Index (FPI) and Bubble Inclinometer were employed, measuring pronation and supination as well as flexibility in terms of dorsiflexion and plantarflexion. Body Mass Index (BMI) was determined using the standard formula, which involves dividing weight in kilograms by the square of height in meters.

Results: When comparing the control group to the case group, we observed significant differences in both plantarflexion flexibility (t = 3.01) and foot posture (t = 3.741) between the two groups. However, there was no statistically significant difference in body mass index (BMI) (t = 1.296) when comparing both groups. Additionally, no significant difference was found in dorsiflexion flexibility (t = 0.596) between the two groups. Plantarflexion range of motion and the presence of pronated foot posture between the control group and the case group. This finding aligns with previous research that has suggested a link between pronated foot posture and the occurrence of heel pain. It's important to note that while foot posture has been shown to undergo slight modifications over the course of a person's lifetime, these changes occur at such a gradual rate that foot posture essentially remains stable from one decade to the next.

Conclusion: Based on our study, we draw the conclusion that heel pain in ballet dancers is correlated with their plantar flexion range of motion and foot posture. However, there is no significant association between heel pain and dorsiflexion range of motion or body mass index in ballet dancers.

Keywords: Heel pain, ballet dancer, foot flexibility

OP 56

Comparison of glenohumeral rotational rom between leg spinners and off spinners in elite cricketers

Manibhadra Panda[1], Sonali Vispute[1], Tabish Fahim[1], Ashwin Kshirsagar[1]

1. Department of Sports Physiotherapy, MGM School of Physiotherapy, Aurangabad, Maharashtra, India.

Email: manibhadra44@gmail.com

Purpose: Spin bowler imparts rotation to the cricket ball, which makes the ball deviate from its original direction of flight when it hits the ground. Spinners are of two types as per their bowling action and the direction of ball deviation after pitching, Off-spinners and Leg-spinners. A right hand off spinner usually pitches the ball on the off stump and it turns towards the leg side and the leg spinner pitches the ball on the leg stump and it usually turns towards the off stump to a right-handed batsman. The exact opposite phenomenon happens in case of a left-handed batsman. A significant External Rotation difference has been reported between elite fast bowlers and spin bowlers. Both fast and spin bowlers have been reported with decreased Glenohumeral Internal Rotation and increased External Rotation PROM in dominant shoulders compared to non-dominant shoulders. The purpose of this study was to examine the Glenohumeral IR and ER between dominant and non-dominant arms of elite cricketers, as well as to compare these measures between Off-spinners and Leg-spinners.

Methods: Thirty-eight male elite cricketers; 20 Right arm Off-spinners with a mean (SD) age of 18.84 (1.98) years and 18 Right arm leg-spinners with a mean (SD) age of 18.24 (3.54) years were recruited from three cricket academies of Aurangabad. Isolated, active ROM of IR and ER were measured for dominant and non-dominant GHJs' of all participants using a mechanical inclinometer with established excellent intra- and inter-rater reliability. Data analysis was performed using the statistical software SPSS 28. Mean and standard deviation of ER and IR ROM of left and right GHJs of right-handed off-spinners and leg-spinners were calculated separately. Pearson correlation coefficient was used to examine correlations between IRD and ERD and age, years of experience, number of overs bowled during a practice session and match. The IR and ER values were compared between the off-spinners and leg-spinners as well as between dominant and non-dominant sides by using independent t-test.

Results: A significantly higher ($p<0.05$) IR ROM was found in leg-spinners than off-spinners and a significantly higher ($p<0.05$) ER ROM was found in off-spinners than leg-spinners. Further, ER ROM on dominant side was found to be significantly higher than non-dominant side in off-spinners ($p<0.05$) and IR ROM on dominant side was found to be higher than non-dominant side in leg-spinners ($p<0.05$).

Conclusion: As per the bowling action and dominance of muscles during repetitive actions, we concluded that off-spinners have got more dominant external rotation movement resulting in higher ER ROM and leg-spinners have got more dominant internal rotation movement resulting in higher IR ROM.

Keywords: Off-spinners, leg-spinners, glenohumeral rotational rom.

OP 57

Effect of hand training on grip strength and activities of daily living in non-ambulatory muscular dystrophy patients: a review

Anjali Rawat[1], Dr. Divya Aggarwal[1], Pooja Sharma[1]

1. Department of physiotherapy, School of Allied health sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana, India.

Email: anjalirawat0278@gmail.com

Purpose: Muscular dystrophy is characterized by progressive muscle wasting and weakness, caused by the absence of dystrophin protein. Individuals with muscular dystrophy have gradual muscular disuse and secondary physical impairment as a result of their increasingly sedentary lifestyle. Such patients struggle to accomplish daily tasks because of upper extremity weakness and hand/arm limitations brought on by the disease's progressive nature. Upper extremity weakness has received attention in recent years, and it is now understood how important it is to accurately assess upper extremity function and choose the best therapeutic course of action. Hand training program is an effective way for improving overall hand strength, wrist force, such as finger flexor and intrinsic hand muscles, grip strength thus, also improve functional activities of daily living, the aim of this review is to investigate the efficacy of hand training on grip strength and ADLs in muscular dystrophy individuals.

Methods: Systematic review with the help of following database: PubMed, Google scholar, Medline, references of the study in which we included those published papers using keywords related to hand training, muscular dystrophy and their outcomes in improving "grip strength" and "ADLs" in our search results.

Results: Ten articles were included, out of which six article shows improved grip strength (hand held dynamometer), wrist force and pinch force (Grippit) by the intervention of hand training exercises in muscular dystrophy, hand training improve muscle strength and ADL capacity thus improve quality of life.

Conclusion: Effectiveness of hand training in muscular dystrophy patients significantly improves the hand functions such as wrist force, intrinsic hand muscle strength, grip force, pinch grip, lateral grip and strength. Regarding its impact on ADLs, some research demonstrates an improvement in the ability to do ADLs, while other studies show no appreciable functional gain, therefore, still further researches is needed for finding the effects of exercise hand training to promote functioning and health related quality of life in muscular dystrophy.

Keywords: Muscular dystrophy, training, grip strength, ADL's, physiotherapy

OP 58

Effect of 6 weeks circuit training for development of endurance among soccer players of J.N.T.U. Hyderabad

Jampana Ramesh Babu[1]

1. Vidya Jyothi Institute of Technology, Hyderabad, India.

Email: pd@vjit.ac.in

Purpose: Circuit training has a strengthening effect as well as boosting your athlete's power and is ideal for those athletes who depend on high running speeds - football, rugby, basketball, cricket players and even runners**.** The purpose of the present study to find out the effect of Circuit Training for the development of Endurance among Soccer Players of J.N.T. U.

Methods: The sample for the present study consists of 20 Male Soccer

players of JNTU out of which 10 are experimental group and 10 are controlled group. The circuit training comprises of 6 to 10 strength exercises that are completed one exercise after another such as squat jumps, medicine ball throws, sit-ups, steps ups, hopping shuttles, skipping etc were given to experimental group on alternate days i.e. three sessions per week and controlled group were given the general training for six weeks. Pre test and Post test were conducted in 12 Min Run cooper test to measure the endurance among experimental group and controlled group.

Results: This study shows that due to the Circuit training there is a improvement of experimental group in endurance and controlled group is decreased in performance in endurance. Foot Ball requires endurance to play the game of 90 Min. Circuit Training is specially designed to give the entire body work out so it improves strength, endurance, mobility, power, suppleness etc.

Conclusion: It is concluded that due to circuit training there will be improvement in endurance among Soccer Players.

Keywords: Circuit training, soccer players, squat jumps

OP 59

Comparative evaluation of efficacy of extracorporeal shock wave therapy in addition to eccentric exercises in management of non-insertional Achilles tendinopathy in athletes

Sushmita Kushwaha[1], Bhagat Singh Rathee[2], Firoz Azam Khan[3]

1. Department of Sports Medicine, Pt. B.D. Sharma University of Health Sciences, PGIMS, Rohtak, Haryana, India

2. Department of Physical Education, Maharshi Dayanand University, Rohtak.

3. Sports Injury Centre, VMMC & Safdarjung Hospital, New Delhi

Email: dr.sushmitakushwaha@gmail.com

Purpose: Achilles Tendinopathy is a common overuse condition in athletes, caused by repetitive strain on Achilles tendon. affected athletes presents with pain, swelling and impaired functions. Electrotherapy, commonly Extracorporeal Shock wave Therapy (ESWT) is being widely used in treatment of Achilles tendinopathy as an adjunct to other treatment methods. This study aimed to compare the therapeutic effect of ESWT with eccentric exercises over eccentric exercise alone in management of athlete with Achilles tendinopathy.

Methods: This study was prospective randomized control trial (single blinded). 60 patients with Achilles tendinopathy were randomized into 2 groups, A & B with 30 participants in each group. Group A patients were treated with eccentric exercises alone, while group B patients were treated with ESWT in addition to eccentric exercises. ESWT was given 3 times per week for 3 weeks. Follow up was taken at 2, 6and 12 weeks following completion of therapy. Pain and functional status was assessed before giving the treatment and 2, 6 and 12 weeks following completion of treatment using VAS (Visual analogue scale) and VISA-A (Victorian Institute of Sports Assessment- Achilles Questionnaire) scores.

Results: Participants in Group A and B had mean age of 24 years and 27 years respectively. Group A had 12 female and 18 male participants whereas group B constituted 9 female and 21 male participants. The mean duration of symptoms in Group A & B were 5 weeks and 6 weeks respectively. Following treatment, decreased intensity of pain and improvement in function was seen in both the groups. Mean VAS and VISA-A scores were not statistically significant at first follow up visit following treatment at 2 weeks. But both the scores were found to be statistically significant at consequent visits at 6 and 12 weeks (($p<0.05$) following completion of treatment.

Conclusion: Management of Achilles tendinopathy in athletes, using ESWT along with eccentric exercises is found to be more effective than eccentric exercises alone.

Keywords: Achilles tendinopathy, ESWT, eccentric exercises, overuse injury.

OP 60

800 meter rural collegiate athletes' performance after six weeks of cardio respiratory endurance and targeted plyometrics training

Neeraj Kumar[1], Anand N. Badwe[2]

1. Dept. of Orthopaedic Physiotherapy, Dr. A. P. J. Abdul Kalam College of Physiotherapy, Pravara Institute of Medical Sciences (Deemed to be University), Loni, Ahmednagar, Maharashtra.

2. Department of Physiology, Dr. Balasaheb Vikhe Patil Rural Medical College, Pravara Institute of Medical Sceinces (Deemed to be University), Loni, Ahmednagar, Maharashtra.

Email: drnkumarpt@gmail.com

Purpose: The 800-meter race is a form of middle-distance running and requires significant contributions from both the anaerobic and aerobic energy system. The present study would help to find the effect of selective plyometric training with cardiorespiratory endurance training on 800- meter collegiate runners. The purpose of present study is to compare this training approach with conventional training to evaluate 800-meter performances.

Methods: A total of 150 voluntary participants were target and identified for this study, in which a total of 100 healthy voluntary rural collegiate 800-meter athletes from different colleges of Rahata Talluka of Ahmednagar district aged between 18 to 25 years were randomly selected based on inclusion and exclusion criteria. There height (cm), weight (kg), VO2 max (ml/kg/min), Anaerobic power (watt), F30 time (sec) and 800 meter running time (min. sec) were recorded. All these 100 participants divided randomly in to two equal groups of 50 participants each (group A & group B). Group A was control group which received only conventional training including cardio-respiratory endurance training (CON), and Group B received plyometric training with conventional training including cardiorespiratory endurance training (PLYO).

Results: Mean age (years), weight (kg), height (cms), BMI (kg/m2) and pulse (b/min) of group A were 19.22 (±1.53), 60.68 (±10.47), 170.4 (±6.55), 20.88 (±3.48) & 83.78 (±9.74) respectively, and group B were 19.48 (±1.18), 63.16 (±9.31), 171.8 (±5.16), 21.37 (±2.80) & 86.22 (±11.69) respectively. Student's t test was applied between all the parameters within group and between the groups.

Conclusion: The findings of the present study suggest that 6 weeks of selective plyometric training found significant in improving anaerobic power of the athletes but has insignificant role in VO2 max, and also has significant role in improving 800 meter running time of 800 meter rural collegiate athletes.

Keywords: 800-meter running, VO2 max, anaerobic power, F30, Plyometrics

OP 61

Effect of neuromuscular training on gait parameters in patients with knee osteoarthritis

Sulekha Parashar[1], Amrinder Singh[1]

1. Guru Nanak Dev University, Amritsar, Punjab, India

Email: sulekhaparashar6@gmail.com

Purpose: Osteoarthritis is a degenerative joint disease that primarily affects elderly people and predominantly affects medial tibiofemoral compartment, causing pain, function loss, and a decreased quality of life. During walking, forces across the knee joint are not transmitted equally between the medial and lateral compartments. Damage to the medial side of the knee joint and increased mechanical strain increased knee varus posture which is linked to additional loading of the medial compartment, which results in osteoarthritis of the medial knee. Studies on the kinetics and kinematics of gait in patients with medial knee OA have revealed altered gait patterns. Gait parameters that tend to decrease in knee OA include walking velocity, stride length, and cadence. The purpose of this research is to study about the effect of 6 weeks neuromuscular training on various gait parameters in patients with knee osteoarthritis.

Methods: Fifteen male and female were recruited in the study according to Kallgren and Lawerence grading (1-3). Data was recorded using the Zebris FDM Treadmill gait analysis system. Subjects were made to walk barefoot for 2 minutes on a self-selected speed on the treadmill. Participants received intervention for 6 weeks, various parameters of gait including gait phase parameters, spatial and temporal parameters were assessed.

Results: Independent T-test was used to compare pre and post

intervention recording. Significant differences were found in following variables stride length, velocity, and cadence (steps/min) p-value= 0.05.

Conclusion: Neuromuscular training showed improvements in pain, stiffness, and functional limitation (WOMAC index), as well as several gait parameters (velocity and cadence).

Keywords: Knee osteoarthritis, neuromuscular training, gait

OP 62

Evaluating the effects of an immediate stretch-shortening cycle protocol on neuromechanical parameters in male and female players

Monika Sharma[1], Amrinder Singh[1]

1. MYAS-GNDU Department of Sports Sciences & Medicine, Guru Nanak Dev University, Amritsar, Punjab, India.

Email: physiomonikasharma19@gmail.com

Purpose: Repetitive Stretch-Shortening Cycle (SSC) actions induce fatigue with a bimodal recovery process, causing an immediate performance decrease post-exercise, followed by recovery within 1-2 hours and then a secondary decline lasting 3-7 days, accompanied by muscle soreness. This fatigue leads to acute and delayed changes in proprioceptive and neuromuscular parameters, involving metabolic, structural, and biochemical factors. To best of our knowledge, the effect of acute SSC fatigue on different jumping types e.g squat and countermovement jump has not been conducted between male and female athletes, hence the aim of the study to assess the changes in kinetic and neuromuscular parameters after an immediate SSC protocol and its impact on jumping performance.

Methods: Total sample size n=40, both males (n=20) & females (n=20) university- level players were recruited. Kinetic variables were assessed using a forceplate (Quattro Jump, Kistler, model 9290DD, Winterthur, Switzerland), muscle activity was evaluated through EMG (Noraxon-USA, MR3 3.8.30), and peripheral fatigue was measured using the Lactate Scout sensor (EKF diagnostics, Senslab). Paired t-test was used to assess pre and post-data following the acute SSC fatigue protocol.

Results: We observed different kinetic and muscle activity changes during squat and counter-movement jump among male and female players. Results showed the significant ($p<0.05$), diverse changes in the various parameters of kinetics and muscular activity while comparing the pre and post readings of jump parameters.

Conclusion: The study's findings suggest that comprehending the kinetics and neuromuscular aspects of biomechanical responses is crucial for achieving optimal movement, especially in male and female athletes. This knowledge can be valuable for sports scientists and coaches in their pursuit of sports specific goals.

Keywords: Kinetic, sports, EMG, fore plate

OP 63

Examining the effect of lengthening of the pectoralis minor and strengthening of the hip abductor of the non-dominant sides on throwing performance of the amateur male cricketers: A randomized controlled trial

Mayuresh Padalkar[1], Manibhadra Panda[1], Tushmeet Kaur[1], Tabish Fahim[1], Ashwin Kshirsagar[2], Rohit Dawande[1], Akash Tandale[1]

1. Department of Sports Physiotherapy, MGM School Of Physiotherapy, Aurangabad, Maharashtra, India.

2. TMF Specialist Syneos Health

Email: mayuresh1797@gmail.com

Purpose: Cricket is the most admired game and most played sport in India, Batting, bowling, and fielding are the three areas of cricket. Fielding is crucial in the game as fielders retrieve the ball and accurately throw it back to the bowler, wicket keeper or stumps. Thus, they need to focus on velocity and accuracy to enhance their throwing performance. Following the summation principle, movement begins at the hips and knees to maximize speed at the shoulder, elbow and wrist. Strengthening the hip muscles is vital for boosting ball release speed. Hip abduction strength has been observed to be stronger on the dominant side in asymptomatic nonathletic participants. Thus, the aim of the study was to examine the effect of pectoralis minor lengthening on the throwing accuracy and hip abductor strengthening on throwing speed.

Methods: Simple random sampling was used to divide the athletes into two groups of 35 each. The participants were assessed for Throwing Accuracy and Throwing Speed along with hip abductor strength and pectoralis minor length. The experimental group received hip abductor strengthening program for three days a week for six weeks and Modified PNF stretching of Pectoralis Minor for 2 days a week for three weeks. The throwing accuracy and speed were assessed post intervention. Data analysis was done using SPSS including the Shapiro-Wilk test for distribution of normality, Mean and SD calculations for quantitative variables and proportions for categorical variables. Paired t-test assessed outcome variables within the groups, with significance set at $p<0.05$.

Results: The experimental group displayed substantial improvement in throwing performance, with Throwing speed shifting from 87.00±2.28 to 90.77±2.40 ($p=0.00001$), and Throwing Accuracy from 6.57±1.37 to 9.25±1.96 ($p<0.001$). The 95% confidence interval confirmed significant differences ($p<0.05$) within the experimental group. Conversely, the control group executed no significant changes: Throwing Speed changed from 87.3±3.14 to 87.4±3.58 ($p=0.2760$), and Throwing Accuracy from 6.08±2.39 to 5.77±1.71 ($p=0.26$).

Conclusion: The Throwing Performance (TP) increased significantly in participants who were enrolled in experimental group as compared to control group. It supports the hypothesis that there will significantly increase in throwing performance after pectoralis minor lengthening and hip abductor strengthening of the non-dominant side. The coaches should focus on these two muscles for optimal throwing performance in players.

Keywords: Throwing performance, throwing accuracy, throwing speed, hip abductor strength, pectoralis minor length.

OP 64

Effect of rhythmic stabilization on dynamic balance in children with down syndrome: A pilot study

Nusrat Jahan [1,2], Nitesh Malhotra [1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research & Studies, Faridabad, India

2. Physiotherapist, DEIC-COE, Jawaharlal Nehru medical college and hospital, Aligarh Muslim University, Aligarh, Uttar Pradesh, India.

Email: nusratjahan.jahan@gmail.com

Purpose: Down syndrome is a neurological, nonhereditary genetic condition that is caused by an extra abnormal chromosome present on the 21st called trisomy 21. This may result in global development delay, which includes motor delay, decreased mental ability with a low IQ level, hearing problems, vision problems, and cardiac dysfunction. Down syndrome can be presented with single issue or in combination of several issued due to its diversity. So children with Down syndrome come with different severity due to clusters of issues may present. Children with Down syndrome exhibit altered gait patterns and balance issues even after obtaining it at later ages. Balance can be improved with continuous therapy even after the child reaches his motor milestones and starts walking. Continuous therapy can help the child improve balance to make his daily activities better. The objective of this study is to find out the effect of rhythmic stabilization (proprioceptive neuromuscular facilitation) on dynamic balance in children with Down syndrome.

Methods: Children in the age group of 4–10 years with a confirmed diagnosis of Down syndrome were included in this study. Children had followed eight weeks of rhythmic stabilization for a total of 24 sessions, for 40 minutes each. 40 minutes of intervention include 10 minutes of warm-up and cool-down with 30 minutes of different techniques of rhythmic stabilization for the pelvis and lower limb. Dynamic balance was evaluated pre- and post-intervention twice in each child: first at baseline and then after the rhythmic stabilization intervention. The methods used for dynamic balance are the time up and go test (TUG) and the time up and down stairs test (TUDS). Data was analyzed with quantitative analysis for descriptive statistics and paired t-test has been used with 95% confidence interval to see difference in balance parameter.

Results: After the intervention with rhythmic stabilization, the child had

improved dynamic balance with improvements in scores on the time up and go test and the time up and down stairs test. Continuous rhythmic stabilization in children with Down syndrome helps in obtaining better trunk control while walking. Improvement was seen in dynamic balance control in the form of walking and stair climbing in a shorter duration interval after rhythmic stabilization therapy. Rhythmic stabilization technique had significant improvement in balance with time up and go test ($p < 0.05$) and time up and down stairs test ($p < 0.05$).

Conclusion: Rhythmic stabilization techniques-based physiotherapy is effective and safe for Down syndrome children for balance control.

Keywords: Proprioceptive neuromuscular facilitation, down syndrome, balance

OP 65

Nerve conduction studies (sensory and motor) as outcome measure in hypothyroidism – a literature review

Shubhi Pandey[1], Sunita kumari[1], Moattar Raza Rizvi[1]

1. Department of physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of research & studies, Faridabad, Haryana, India.

Email: shubhipandey555@gmail.com

Purpose: Hypothyroidism is a condition associated with reduced level of thyroid hormones and raised TSH. Hypothyroidism due to involvement of peripheral nervous system patients develops usual manifestations e.g. paraesthesia, numbness, muscle weakness, decreased sensation, etc. Hypothyroidism is the most frequent endocrinal polyneuropathy that can cause axonal and demyelinating polyneuropathies. So, the nerve parameters are expected to be altered in these patients so the nerve conduction velocities are helpful for clinical examination of the Peripheral nervous System involving motor and sensory nerve studies. Nerve conduction studies examine the integrity of the nerve fibre itself and it's constitutive components (axon and myelin sheath).

Methods: All the relevant studies were included which were published from 2017 to March 2023 from different-different database such as Google Scholar, PubMed, PEDro etc. using keywords nerve conduction velocity, hypothyroidism, thyroid hormone. In which results were showing the significant relation between sensory and motor nerve conduction velocities and hypothyroid. In it the literature of early published articles, journal which includes the data of hypothyroid patients in different-different population. In this review we have included the various parameters of nerve conduction studies like Sensory and motor distal latency, sensory and motor Nerve conduction velocities of both the limbs.

Results: This review shows that there is significant decrease in the nerve conduction velocities of Sensory and Motor components of nerves. The parameters of median nerve are most commonly affected.

Conclusion: There is significant reduction in Sensory NCV of Median nerve in case group as compared to control group. Estimation of nerve conduction velocities is useful parameter in early diagnosis and evaluation of peripheral neuropathy in hypothyroidism. It will help to plan physical training protocol to prevent further deteriorating conditions.

Keywords: Hypothyroidism, nerve conduction velocities, thyroid stimulation hormone.

OP 66

The effect of a 12-week web-based chair yoga program on physical performance and mood in individuals with mild cognitive impairment (mci)

Nahide Kocer[1], Beyza Baca Bicer[2], H. Serap Inal[3], Nilgun Cinar[4], Mustafa Yilmaz[1]

1. Physiotherapy Program, Vocational School, Doğuş University, Istanbul, Turkey.

2. Social Services, Vocational School, Doğuş University, Istanbul, Turkey

3. Department of Physiotherapy and Rehabilitation, Faculty of Health Sciences, Istanbul Galata University, Istanbul, Turkey

4. Department of Neurology, Maltepe University, Istanbul, Turkey

Email: nahidekocer@gmail.com

Purpose: The aging of the global population will lead to increased rates of cognitive decline and dementia. Therefore, effective, cost-effective and low side-effect interventions are urgently needed for the treatment and prevention of cognitive decline. Our study aims to investigate the effects of Chair Yoga (CY) training on mild cognitive impairment (MCI).

Methods: Eight elderly participants (≥55 years) with MCI were enrolled in a 12-week CY intervention. CY exercises were practiced for 12 weeks (1day/1hour) with an online instructor and 12 weeks (2days/1hour) with pre-recorded video for a total of 36 hours. Physical performance (Berg balance scale, sit and stand 5 times) and mood (Family Resilience Scale, Geriatric Depression Scale, Geriatric Quality of Life Scale and Life Satisfaction Scale) were assessed at baseline and at week 13. Data were analyzed using SPSS 22.0.

Results: According to our results, the study showed an increase in the scores in all subscales of the Family Resilience Scale (struggle-defiance, self-efficacy, commitment to life, control), Geriatric Quality of Life Scale (emotional functioning, autonomy, history, social participation, death and closeness) by %5 and %7, respectively. There was a significant improvement in the participants' depression levels and their quality of life related to their emotional functioning and overall quality of life. There were also significant improvements in their balance and lower extremity functional endurance and balance.

Conclusion: Yoga practices, which are known to have many benefits for physical and psychological health, have been observed to cause positive improvements in emotional functioning and quality of life in patients with mild cognitive impairment. We believe that it would be beneficial to popularize chair yoga practices among individuals with mild cognitive impairment in order to create a life routine and increase physical activity level.

Keywords: Chair yoga, video-based, physical performance, mild cognitive impairment

OP 67

Prevalence of tension- type headache in university medical students: a cross-sectional study

Roshani Sharma[1], Palak Sachdeva[2], Jasmine Kaur Chawla[3], Pragya Kumar[2]

1. ABXPhysio, Guwahati, Assam.

2. Department of Amity Institute of Health Allied Sciences, Amity University Noida, Uttar Pradesh.

3. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana.

4. Email: roshnisharma899910@gmail.com

Purpose: Tension type headache (TTH) is considered as one of the most disabling condition in the general population with a prevalence ranging between 30% and 78%. Chronicity of such conditions may pose a significant public health challenge. Medical Students are constantly subjected to stress. Therefore, Identification of such factors may reduce the risk of chronicity and can improve general well-being. The present study was conducted with the objective to investigate the prevalence of TTH in the University Medical students of Delhi and to identify the impact of different variables on TTH.

Methods: This was a cross-sectional study was based on Questionnaire based on the ICHD-3 criteria. A convenient sampling method was employed on 100 university level students between the age group of 17-30 years. The IBM-SPSS version 23 was used for statistical analysis. Pearson's correlation coefficient was use to find the association between relevant risk factors causing TTH among medical students.

Results: The prevalence of tension-type headache (TTH) in university students of Delhi, NCR, India in this study was found out to be 35.6% out of which 87% of the students experienced a headache in the past 3 months. 54.5% of the students had episodic Tension-type headache and 5% had chronic Tension-type headache.

Conclusion: The high prevalence of TTH warrants plan for prevention and development of treatment strategies. The condition has a significant impingement on psychological health and academic outcomes,

suggesting the need for preventing efforts to reduce the prevalence of headache related disorders amongst students at university level. **Keywords:** Headache, prevalence, tension type headache, university students

OP 68

Comparative analysis of heart rate variability in amateur vs professional young badminton players -A cross-sectional study

Dobson Dominic[1], Harshavardhini [1], Sneha.T[1]

1. Department of Sports Medicine, Saveetha Medical College & Hospital, Chennai, India.

Email: harsha07.vardhini@gmail.com

Purpose: In the realm of sports and athletic performance, the pursuit of excellence is a constant endeavour. Athletes, coaches, and sports scientists are continuously exploring new ways to optimize training methods, enhance recovery strategies, and unlock the full potential of the human body. Amidst this quest, one physiological parameter has emerged as a promising indicator of an athlete's readiness, adaptation, and overall performance capacity: Heart Rate Variability (HRV). The variability in time intervals between successive heartbeats, known as heart rate variability, serves as a window into the intricate autonomic control of the cardiovascular system. HRV holds profound significance as a non-invasive tool for assessing the dynamic interplay between sympathetic and parasympathetic influences on the heart.

Objective: This cross-sectional study aimed to evaluate and compare heart rate variability (HRV) in young badminton players, with a focus on assessing potential differences between amateur and professional players to gain insights into the autonomic regulation of the cardiovascular system.

Methods: A total of 127 young badminton players aged between 10-24 years participated in this study. Participants were categorized into two skill levels (amateur and professional) and two gender groups (male and female). HRV data were collected during a period of rest using Biosignal plux wireless explorer. Time-domain and frequency-domain HRV parameters were extracted and statistically analysed using independent t-tests and ANOVA.

Results: Significant variations in HRV was noted in Time-domain values (RMSSD) between amateur and professional players. Additionally, distinct HRV patterns emerged when comparing male and female players. These differences underscore potential influences of skill level and gender on the autonomic modulation of the heart rate in the context of badminton participation.

Conclusion: This cross-sectional investigation of HRV among young badminton players reveals notable distinctions between amateur and professional players, as well as between male and female players. The findings suggest that both skill level and gender may play a role in influencing cardiac autonomic regulation in response to the demands of badminton training and competition. Further research is warranted to explore the mechanisms behind these variations and to potentially tailor training and recovery strategies accordingly.

Keywords: Autonomic nervous system, badminton, badminton performance.

OP 69

Effect of core strength training with nutmeg intake on sleep disorder blood pressure diabetic and erectile dysfunctions among middle aged men

Venkatesan Ramchandran[1]

1. Department of Exercise Physiology and Nutrition, Tamil Nadu Physical Education and Sports University, Chennai, Tamil Nadu, India

Email: venkat.tnpe@gmail.com

Purpose: In Ayurvedic medicine, nutmeg has long been used as a natural sleep aid. Simply adding a small pinch of nutmeg to a warm glass of milk can help the body and mind to relax and prepare one for a good night's sleep. Aside from its many culinary uses, nutmeg contains powerful anti-inflammatory plant compounds that act as antioxidants. These may improve mood, blood sugar control, and heart health, though more research is needed on these effects in humans. Thus, the increase in the MF and IF, indicates that nutmeg, along with increasing libido, probably also increases the potency. The significant increase in the Ejaculatory Latency (EL) suggests that the extract and standard drug prolonged the duration of coitus. **Purpose:** The purpose of the study was to investigate Effects of Nutmeg intake with Core strength Training on Sleep Disorder Blood Pressure Diabetic and Erectile Dysfunctions among Middle Aged Men.

Methods: The 60 subject were selected for this study through the random group design consist of pre and post test, 60 Desk Bound People randomly divided into Four groups with 15 subjects, the group was assigned as an Experimental Group I (Core Training) and Experimental Group II (Nutmeg intake) 3. Experimental Group III (Core Training with Nutmeg intake) and 4. Control group. During the training period, the experimental group underwent their training with natural powder intake for the period of 24 weeks for all days. Analysis of Covariance statistical technique was used, to test the significant difference among the treatment groups. The level of Significant at 0.05 level of confidence for 3 and 56 (df) =2.7 and 55(df)=2.72. If the adjusted post-test results were significant, the scheffe's post hoc test was used to determine the paired mean significant difference

Results: 1. It was surprisingly noticed that all three Experimental Groups were greater significant difference in all the dependent variables such as 1.Blood Pressure 2.Diabetic and 3.Erectile Dysfunctions than the control group. 2. The Experimental Group III was greater significant on 1.Blood Pressure 2.Diabetic and 3.Erectile Dysfunctions Level than the Experimental Group II and Experimental Group I due to implementation of 24 weeks of Combined Effects of among Middle Aged Men Nutmeg with Core Training among Desk Bound People.

Conclusion: It was concluded that All the Experimental Groups was significantly improved on the post test result when compared with the pretest in all the dependent variables due to implementation of 24 weeks of Effects of Nutmeg with Core Training on Sleep Disorder Blood Pressure Diabetic and Erectile Dysfunctions among Middle Aged Men. (B). Second conclusion was The Experimental Group III *(*Core Training with Nutmeg intake*)* was greater change in all the variables like Blood Pressure Diabetic and Erectile Dysfunctions when compared with experimental group I and experimental group II.

Keywords: Nutmeg, sleep disorders, erectile dysfunction

OP 70

Relation between physical activity, screen time, stress hormones, vitamin e level and academic performance - Gender and ethnic differences among students

Zaheen A. Iqbal[1], Prof. Daniel H.K. Chow[1]

1. Department of Health & Physical Education, The Education University of Hong Kong, Hong Kong.

Email: s1136208@s.eduhk.hk

Purpose: This presentation will provide overview of 7 studies centered around physical activity (PA) among school students. Although adolescents and ethnic subgroups have been identified at higher risks of overweight, fewer studies have explored effects of PA on their holistic health. Non-ethnic groups comprise of 33% of total population in Saudi Arabia. These studies focused on relation of PA with screen time, food choices, stress hormones, vitamin E level, total antioxidant capacity, body composition, and academic performance among local and non-ethnic school students in physical activity; academic performance; screen time; body composition; dietary preferences; non-ethnic groups; school students.

Methods: Students (8-18 years, n=1534; over 7 studies) and their parents completed a questionnaire about demographic characteristics, daily routine in and after school (including PA, watching television, using computers, playing video games and other screen-based devices), and daily dietary preferences. The pattern of PA among participants was measured using a short form of the International Physical Activity Questionnaire. Their body weight, waist circumference, height, levels of cortisol and serotonin, serum total antioxidant capacity and Vitamin E were measured. These data were used to calculate basal metabolic rate and total energy expenditure. End of the academic year grades (1.0, very poor; to 10.0, outstanding) were obtained from the school as academic performance measure.

Results: Students with moderate and high PA demonstrated lesser screen time, lower body composition values and higher energy expenditure than those with mild PA. Gender and ethnic based differences were observed in body composition indices, screen time and fitness scores. Non-ethnic students were found to be more physically active than locals. The academic performance was found to be positively correlated with age, gender, vitamin E, total antioxidant capacity, serotonin, and PA but negatively with body mass index and salivary cortisol. The higher screen time duration and consumption of fast foods were positively associated with body mass index among local students.

Conclusion: Results of these studies provide insights on relation of PA, academic performance and overall well-being of students in physical activity; academic performance; screen time; body composition; dietary preferences; non-ethnic groups; school students and discuss avenues, including intervention techniques, to promote PA among them. Cultural and lifestyle differences need to be considered while developing education policy to promote PA.

Keywords: Physical activity; academic performance; screen time; body composition; dietary preferences; non-ethnic groups; school students

OP 71

Effect of recreational games on motor creativity of adolescent girls

Nurun Nabi[1], Prof. Ashoke Kumar Biswas[1]

1. Department of Physical Education, Jadavpur University, Kolkata, West Bengal, India.

E-mail: nabi.rph@gmail.com

Purpose: Participation in any kind of activity or games that are recreational in nature may lead to enjoyment and happiness which ultimately reflects health. Recreational activities are regarded as "fun" because they frequently take place for amusement, enjoyment, or pleasure. Every child has some instincts, feelings, and a unique specialization from birth. One of nature's special gifts is creativity. Motor creativity or creative responses means creative expression through motor movements. Motor creativity can also be termed as the individual's ability to express themselves creatively through motor behavior and motor movement. The period of life from the age of 10 to 19 is known as adolescence. It is a distinct period in the development of the human being and a crucial one for building the groundwork for long-term health. The purpose of the study was to know the effect of recreational games on the motor creativity of adolescent girls.

Methods: A total of 60 girls, 30 (Control Group) and 30 (Experimental Group) were selected randomly and the age ranged from 10-13 years. With planned systematic training for a period of twelve (12) weeks with different recreational games, the experiment group was treated. A modified Motor Creativity test battery with five test items was used. It was formed and standardized by Prof. A. K. Bhattacharyya following the Wyrick Test of Motor Creativity. These tests were on motor activity, whose performance reflects creativity in the motor domain. To see the difference between the two groups, inferential statistics were used in this research work.

Results: The results show the't'- ratio of Motor Creativity (Item no. II, III, IV, V and Total Motor Creativity) for the control group i.e. Item no. I- 0.72, Item no. II- 1.41, Item no. III- 1.22, Item no. IV- 2.90, Item no. V- 2.45 and Total Motor Creativity- 8.49 and for the experiment group the values were Item no. I- 7.13, Item no. II-19.41, Item no. III-8.98, Item no. IV- 15.40, Item no. V- 9.72 and Total Motor Creativity- 25.72. Comparison of Motor Creativity between the Control and Experiment Groups indicates insignificant difference before the experiment in all the five (5) components (Item no. - I, II, III, IV, and V) of motor creativity and total motor creativity. After the experiment, it also appeared that the treatment group had a significantly greater value of motor creativity in all five (5) components of motor creativity

Conclusion: Due to participation in recreational games (for the experiment group), there were positive changes found in creativity and increased motor responses i.e. motor creativity.

Keywords: Recreation, motor creativity and children.

OP 72

Effects of eight weeks of training on strength, power and speed variables of short distance runners

Soumyadip Ghosh[1], Indranil Manna[1]

1. Department of Physiology, Midnapore College (Autonomous), Midnapore, West Bengal, India.

Email: imsoumya14@gmail.com

Purpose: Athletic activities are very popular in worldwide. In sprinting or short distance running the participant covers a predetermined distance (100m, 200m, 400m) as quickly as possible. The success in these events depends on strength, power and speed components of the athletes. Body composition and blood lactate level also play significant role on the performance of the short distance runners. Training may improve of these variables and enhance performance of the athlete. Aim: The aim of the study was to find out the effects of eight weeks of training on body composition, strength, power, and speed and blood lactate level of short distance runners.

Methods: A total of 100 male subjects (age 18-20 years) participated in this study were divided into control group (CG, n=40) and experimental group (EG, n=60). The experimental group athlete's were divided into 100m (n=20), 200m (n=20), 400m (n=20) running groups. The volunteers of Control group did not participate in athletic activities and were engaged in recreational activities. The volunteers of the experimental group participated in short distance running events for last two years in various state level competitions. The volunteers of the experimental group followed a training programme- 2 hrs/d, 5d/wk, for 8 wks; whereas no training was given for control group volunteers. Assessments of selected morphological variables, physical fitness and physiological variables were performed at the beginning (0 week) and end (8 weeks) of the study.

Results: A reduction (p<0.05) in body fat (%), peak lactate and performance time; and increase (p<0.05) in lean body mass, strength (grip, back, leg, elastic leg, lower body, abdominal), anaerobic power and speed were noted after 8 weeks of training among the volunteers of experimental group. A significantly higher (p<0.05) speed and anaerobic power has been observed among the athletes participated in 100 m running than athletes participated in 200 m, and 400 m running events. In the present study negative correlation has been noted between fat mass and grip strength (r= -0.28, p<0.05), fat mass and relative average power (r= -0.35, p<0.05); and positive correlation has been observed between speed and maximum power (r= -0.51, p<0.05), back strength and leg strength (r=+0.80, p<0.05).

Conclusion: The strength, power and speed are the central components of the sprinters that contribute to their exceptional athletic abilities on the track. Lower body fat percentages are associated with improved power-to-weight ratios, essential for explosive starts and rapid accelerations. Regular monitoring of body composition, strength, power, and speed and blood lactate level may help the short distance runners to improve their performance.

Keywords: Body fat, strength, power, speed, blood lactate, short distance runners.

OP 73

Effects of continuous and interval methods of circuit training on blood lactic acid accumulation

Sudip Sundar Das[1], Sk. Saha Alam[1]

1. Department of Physical Education, Jadavpur University, Kolkata, WB, India.

Email: dassudip2006@gmail.com

Purpose: Sports training is the well-structured systematic and scientific instruction according to demands of individual capability for the enhancement of sports performance. There are different types of training methods in the field of sports training such as continuous method, interval method, repetition method, and circuit training method are used for the improvement of Aerobic and Anaerobic capacity of sports person. The aim of present study was to investigate the effects of continuous and interval circuit training on accumulation of blood lactic acid (BLA).

Methods: Total 60 boys' students (age level of 13 to 16 years) were randomly selected as subject from Purulia district of West Bengal, India. Total subjects were equally divided among Continuous Circuit

Training (CCT), Interval Circuit Training (ICT) and Control Group (CG). All the groups were homogeneous in nature. CCT and ICT groups were participated in specified 12 weeks training programme for three days per week. In the same time CG was on normal activity. For the present study Harvard Step Test (HST) was used as exercise. BLA was measured before onset of exercise (HST), immediate after complete of exercise (HST), after 7 minutes of exercise (HST) and after 15 minutes of exercise (HST). The data was recorded before and after the application of training programme. The 't' test and ANOVA were used to find out the statistical significance.

Results: After implementation of specified training CCT ('t' value- 5.983, 7.582, 10.48 & 10.05) and ICT ('t' value- 7.32, 9.00, 9.31 & 6.39) groups were significantly decreased than before in respect of all (four) the phases of blood lactic acid accumulation but no changes observed on control group. After 12 weeks of training period significant differences were found among three (CCT, ICT & CG) groups ('F' value- 4.80, 15.70, 26.13 & 25.54) on all (four) the phases of Blood Lactic Acid. But comparatively in respect of blood lactic acid accumulation before onset of exercise CCT group's BLA was significantly lower than ICT group. Both of training groups had lower value than CG. After immediate and seven minutes of activity, CCT and ICT had significantly lower value than CG. At last phase where after fifteen minutes of exercise, CCT and ICT also had lower value than CG and which was significant.

Conclusion: Present study concluded that Interval and Continuous Circuit Training both have positive effect (lowered) on accumulation of BLA significantly following 12 weeks specified circuit training programme. However, rate of decrement of BLA in all stages CCT group was higher than ICT group.-

Keywords: Continuous & interval circuit training, harvard step test, blood lactic acid etc.

OP 74

Footwear influence on mechanical translation of soleus muscle activation in flexed knee heel rise action – a cross-correlation study

Sanjeev Gupta[1], Saanvi Aggarwal[2], Visweswara Rao[2], Guthi, Nagaraj Kondagunta[2]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research & Studies

2. Department of Community Medicine, SVIMS - Sri Padmavathi Medical College for Women, Tirupati

Email: sanjivgupta_india1@yahoo.co.in

Purpose: Flexed knee heel rise (FKHR) action is exploited for clinical and rehabilitation purposes especially in Soleus insufficiency disorders. Effect of footwear (or elastic surfaces) on muscle's motor efficacy due to changed mechanical properties is unclear. Quantifying such influences is vital for clinical efficacy and standardisation of FKHR exercise. Cross-correlation of Surface-electromyographic (SEMG) and Inertial-Measurement-Unit (IMU) signals is an established method to interpret mechanical events following muscles activation by comparing time-series data. To compare muscle activation (SEMG) of Soleus (SOL) and Tibilais Anterior (TA) muscles with heel displacement (IMU) in FKHR in Flip-Flop (FF) - Barefoot conditions (BF).

Methods: SEMG-IMU data was acquired from a cross-sectional study performed on 40 young healthy (male/female) individuals. Subjects performed dominant-side FKHR in FF&BF conditions. SEMG-IMU signals were processed for Root-mean-square (RMS) feature for 20 second data series of FKHR action.

Results: The statistical analysis revealed that both groups were homogeneous in terms of subject characteristics (age, height, weight, BMI, duration of pain) and the baseline outcome variables of pain intensity, functional disability, and lumbar movement control impairment ($p > 0.05$). Significant post-intervention differences in all three outcome variables were observed within both study groups ($p < 0.05$). Furthermore, a between-groups analysis showed statistical differences in all three variables in the DNS group in comparison to the SFE group ($p < 0.05$).

Conclusion: Highest CCF at 1 sec lag signifies that both muscle activations precede mechanical displacement at heel; highest CCF at zero lag implies ACC-DISP were concurrent. Flip-flop trials displayed poorer CCF in both MUSC-DISP cases. Better CCF (statistically significant) was found in FF for ACC-DISP; suggesting adverse influence of Flip - Flop on muscle co-activation and thus faster mechanical translation of the muscle effort in Flip-Flop. This may be indicative of poorer antagonist control of the action. Footwear may alter control on mechanical efficacy of muscle effort potentially detrimental to dynamic coordination of foot movements.

Keywords: Soleus, sEMG, IMU, footwear, tibilais anterior

OP 75

The anthropometric and biochemical parameters, compared to a ketogenic diet

Harpreet Kour[1], Hanjabam Barun[2], Shrihari Kulkarni[3]

1. Department of Physiology, Jawaharlal Nehru Medical College, KLE Academy of Higher Education and Research Belagavi, Karnataka, India

2. Department of Physiology, IMS-BHU, Varanasi UP, India

3. Department or Orthopedics, SDM College of Medical Science, Dharward, Karnarataka, India

Email: harpreetkour.kour@gmail.com

Purpose: Body composition influences the performance in endurance sports. An optimal ration of Strength: Power to the body mass is very important for athletes. The Endurance supports demands low body fat percentage and high lean mass. The dietary modifications and training schedules plans pivot role in achieving the desired body composition. Keto diet is proven to reduce body weight and fat mass while maintaining fat free mass by making shift in substrate oxidation towards fatty acids. It is well known that food with low glycemic index decreases postprandial insulin secretion thereby increases fat oxidation. Keeping the facts in mind, this study was planned to evaluate the effects of 10 weeks of endurance training, a high carbohydrate diet with a low glycemic index results in comparable changes in the Anthropometric and Biochemical Parameters, compared to a ketogenic diet.

Methods: This is a 10 weeks of an interventional study design with five Running Session per week. A total of 57 Recreational Active Runners were enrolled for the study. The Mean Age group of enrolled subjects was 27.3 ± 5.3 years. Vo2 max was measured by bicycle ergometer. The means Vo2 max was 56.7 ± 6.5 ml/min /kg. Three groups were made. Group A: (n=19) LOW GI Diet: less than 65% of low glycemic CHO daily. Group B: (n=19) HIGH GI Diet: more than 65% of low glycemic CHO daily. Group C: (n=19) Low CHO High Fat Diet: more than 65% of Fats, less than 50 gms CHO daily. Body Fat Analysis was done by Bioelectrical Impedance Testing. Graded Exercise Testing by using Bicycle Ergometer.

Results: Baseline Distribution of Macronutrients:

Group 1: CHO- 48.9%, Protein- 19.5%, Fats- 27.8%; Group 2: CHO-49.8%, Proteins- 15.3%, Fats-31.1%, Group 3: CHO-8.7%, Proteins-26.6%, Fats- 63.4%

Body weight and BMI

Group 1: -1.7 ± 2.3 Kg and -0.5 ± 0.7 Kg/m^2; Group 2: -3.9 ± 3.4 Kg and -1.3 ± 1.0 Kg/m^2, Group 3: -4.8 ± 3.2 Kg and -1.4 ± 1.0 Kg/m^2

Absolute and Relative Fat Mass:

Group 1: -1.3 ± 2.6 Kg, Group 2: -3.9 ± 3.0 Kg, Group 1: -4.1 ± 2.6 Kg

Fat Free Mass and Skeletal Muscle Mass: No significant difference was observed between groups, but trend towards higher looses was observed in LCHF.

Graded Exercise Testing: the maximal fat oxidation increased during Low GI Diet (+0.37g/min) and LCHF Diet (+0.04 g/min) where it was decreased (0.07g/min) with High GI diet

Biochemical Parameters: There was no significant difference found in Fasting Blood Glucose levels, Serum TSH and Lipid Profile.

Conclusion: The study showed that in terms of reducing weight and fat mass while maintain fat free mass a low GIT diet is comparable to a LCHF Diet. Compared to High GI diet, the reduction in fat mass was significantly higher with Low GI diet and LCHF group. In contrast to the LCHF diet, the changes in the low GI diet were achieved with a carbohydrate intake that matched the requirement for endurance sports. These results could potentially be explained by a higher rate of fat oxidation at rest or during exercise. Graded exercise test, the maximal

fat oxidation increased during Low GI Diet and LCHF Diet where it was decreased with High GI diet.

Keywords: Anthropometry, biochemical parameters, ketogenic diet

OP 76

Efficacy of dynamic neuromuscular stabilization exercises in adults with low back pain and movement control impairment: a prospective randomized controlled pilot study

Manju Kaushik[1,2], Irshad Ahmad[1]

Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana, India.

1. Department of Physiotherapy, Pt. Deendayal Upadhyaya National Institute for Persons with Physical Disabilities (Divyangjan), New Delhi, India.

Email: manju.vats@rediffmail.com

Purpose: The altered dynamic control of the lumbar and other associated spinal regions has been considered a potential cause of non-specific chronic low back pain (NSCLBP) in individuals with movement control impairment (MCI) subgroup. Therefore, an intervention strategy that may potentially target static and dynamic functional postural stabilization, seems meaningful and promising to the population of concern. Thus, this study aimed to evaluate the effects of dynamic neuromuscular stabilization (DNS) exercises on pain, functional disability, and lumbar movement control impairment in individuals belonging to the MCI subgroup of non-specific chronic low back pain.

Methods: This pilot study was conducted in an outpatient department of physiotherapy of a rehabilitation Institute at New Delhi, India. A total of 10 patients of NSCLBP belonging to MCI subgroup were recruited according to study inclusion and exclusion criteria. Patients were randomly allocated into the experimental DNS group (n = 5; age: 24.20±3.56 years) and the general Strengthening and Flexibility Exercises (SFE) group (n = 5; age: 23.80±4.32 years). Both intervention groups underwent a supervised progressive group-specific exercises for 30-45 minutes per session, preferably on 5 days a week for a total of 6 weeks of duration or altogether 30 sessions in consecutive weeks. The Numeric Pain Rating Scale (NPRS), Oswestry Disability Index (ODI v2.1a), and movement Control Test Battery were used to measure pain intensity, functional disability, and lumbar movement control impairment respectively at baseline and at the end of total 30 sessions.

Results: The statistical analysis revealed that both groups were homogeneous in terms of subject characteristics (age, height, weight, BMI, duration of pain) and the baseline outcome variables of pain intensity, functional disability, and lumbar movement control impairment ($p > 0.05$). Significant post-intervention differences in all three outcome variables were observed within both study groups ($p < 0.05$). Furthermore, a between-groups analysis showed statistical differences in all three variables in the DNS group in comparison to the SFE group ($p < 0.05$).

Conclusion: The results of this pilot study indicate the superior and positive effects of the DNS program, with nearly twice the mean change percentage in pain intensity, functional disability, and lumbar movement control impairment score compared to generally prescribed SFE program.

Keywords: Low back pain; dynamic neuromuscular stabilization; movement control impairment

OP 77

Impact of Russian current combined with close and open kinetic chain strengthening exercises on ACL revision reconstruction using allograft - A Case Report

Rohit Dawande[1], Manibhadra Panda[1], Tabish Fahim[1], Ashwin Kshirsagar[1], Mayuresh Padalkar[1], Akash Tandale[1]

1. Department of Sports Physiotherapy, MGM School of Physiotherapy, Aurangabad, Maharashtra, India.

Email: rohitdawande9@gmail.com

Purpose: Primary anterior cruciate ligament (ACL) restoration has been found to be a successful intervention with majority of patients experiencing functional recovery and good to exceptional clinical results in post-operative evaluations. Appropriate physiotherapy management is pivotal in the post-reconstruction phase to lower the risk of problems such as edema, pain, decreased joint range of motion, muscular weakness, muscle girth, poor balance and impaired functional activity.

Methods: A 23-year-old recreational football player with post-surgical case of left ACL reconstruction came to sports physiotherapy department for rehabilitation. He had already endured injuries to ACL, twice on the left side, which is the ipsilateral side and once contralaterally in the past. The first and foremost ACL tear took place when the athlete was 18 years old and he underwent ACL reconstruction wherein a same side autograft from hamstring (gracilis and semitendinosus tendon) was taken. A year later, this was followed by another injury to ACL ligament on the right side. The graft used was similar to the previous surgery. Third episode of injury, this time injury to the ACL ligament on left side (2nd time on same side) occurred when he was 21 years old and arthroscopic ACL revision using tibialis posterior allograft was done. In this case study, we evaluated the patient's pain, range of motion, strength of the muscles and muscles girth. In adherence to ACL rehabilitation protocol, we used Russian current combined with closed and open kinetic chain strengthening exercises for improving range, thigh and leg muscles girth and also for improving the strength of thigh muscles. We also provided MFR to the lower limb muscles every alternate day, with patellar mobilization to increase range of motion along with strengthening of hamstring, quadriceps and calf. After that we used vigorous lower limb and core strengthening program with balance and proprioception training along with agility and plyometric training.

Results: We compared the pain, range of motion, strength and muscles girth before and after rehab and found a significant improvement after 6 months.

Conclusion: Application of Russian current was effective for pain reduction and helped in strengthening of the muscles up-to four weeks. We initially used closed kinetic chain strengthening exercises for first two weeks followed by open kinetic chain strengthening exercises, in further progression vigorous strengthening and endurance training of lower limb and core muscles, balance and proprioception, agility and plyometrics training provided a patient very good recovery and improvement in overall functional capacity of the patient after 6 months of rehabilitation

Keywords: ACL reconstruction, Russian current, open kinetic chain exercises, closed kinetic chain exercises

OP 78

Evaluation of functional mobility score and star excursion balance test in individuals with Recurrent Ankle sprain

Virag Singh[1], Nikhita Sharma[1], Irshad Ahmad[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana, India.

Email: nikhita2111@gmail.com

Purpose: Recurrent ankle sprain can be defined as two or more ankle sprains within a year. 20% of individuals sustaining acute ankle sprain progress into chronic instability. Due to this, their participation in physical activity is reduced. When a patient exhibits mechanical and functional instabilities, with ongoing symptoms one year after the initial sprain, it leads to chronic instability. Overall, it compromises the mobility of the lower extremity. Therefore, the present study aims to evaluate functional mobility score (FMS) and star excursion balance test (SEBT) in individuals with recurrent ankle sprain.

Methods: Twenty-seven participants (10 recurrent ankle sprain and 17 healthy control), aged between 18 and 30 years, were recruited. Individuals with recurrent ankle sprain within 1 to 6 months with no symptoms of pain and swelling were selected. Both groups were assessed with the SEBT for the left and right limbs and FMS. Both groups were analyzed using an independent t-test.

Results: There was a significant decrease in the SEBT of the left ($p<0.001$) and right limb reach ($p<0.001$) and FMS values ($p<0.001$) of the recurrent ankle sprain group when compared with the healthy control. Individuals with a history of recurrent ankle sprains were seen to be frequently correlated with balance and gait abnormalities. Recurrence

of ankle sprains is due to diminished postural control, impaired proprioception, loss of muscle strength, and ligamentous laxity. The results suggest that ankle joint stability and movement correlate with balance and mobility. Thus, individuals should engage in proper rehabilitation after ankle sprain injuries.

Conclusion: The present study concluded that recurrent ankle sprain individuals were found to decrease dynamic balance control and overall mobility compared to healthy control.

Keywords: Recurrent Ankle Sprain, Star Excursion Balance Test, Functional Mobility score

OP 79

A review of pain management and functional improvement in stage II Adhesive Capsulitis

Sheena Arora[1], Moattar Raza Rizvi[2], Khyatee[3]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research & Studies, Faridabad, India.

2. School of Allied Health Sciences, Manav Rachna International Institute of Research & Studies Faridabad, India.

3. Director and Cofounder Pratyaksh Medical Care LLP, Delhi, India.

Email: sheena.arora.81989@gmail.com

Purpose: This review was done to analyze the literature, investigating the effects of physiotherapy and rehabilitative interventions in patients suffering from stage II adhesive capsulitis on their pain management and functional improvement. Adhesive capsulitis is a painful condition characterized by progressive loss of function at shoulder joint due to restricted active and passive ranges. Till today, no unanimity has been established regarding its rehabilitative treatment for pain management and functional improvement.

Methods: A review of the literature available from 2010 until 2022 was carried out using the various research databases such as Medline, PEDro, PubMed, Scopus and Cochrane Library of Systematic Reviews. A combination of terms was used for the search: adhesive capsulitis OR frozen shoulder AND systematic review OR meta-analysis AND pain management OR functional recovery OR functional improvement. We included systematic reviews that specifically dealt with stage II adhesive capsulitis, treated with physiotherapy. Qualitative analysis was used.

Results: Out of 33 studies, only 15 systematic reviews respected the eligibility criteria and were included in this study. Their results showed an important heterogeneity of the studies and all of them agree on the lack of high-quality scientific work to prove unequivocally which rehabilitative treatment is better than the other. It was also found that due to this lack of gold standard criteria, there is also heterogeneity in the diagnosis of the same.

Conclusion: Physiotherapeutic and Rehabilitative interventions are undoubtedly effective in treating adhesive capsulitis, but there is no evidence that one approach is more effective than the other regarding the methods reported. Very few studies have worked on follow up disability prevention due to adhesive capsulitis. Future high-quality RCTs are needed to standardize the treatment modalities of each physiotherapy intervention to provide strong recommendations in favor. This study will give a baseline of information in area of pain management and functional improvement in stage II adhesive capsulitis which in turn can lead to formulation of evidence-based protocols for the treatment.

Keywords: Adhesive capsulitis, pain control, rehabilitation, disability prevention, prophylaxis

OP 80

The effect of chronotype on athletic physical performance and sleep quality: A Systematic Review study

Mohd. Asad[1], Preeti Saini[1], Sayed Zarnain Ahmed[1]

1. Department of Physiotherapy, Faculty of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, (MRIIRS), Faridabad, Haryana, India

Email: asad66054@gmail.com

Purpose: There is evidence that several sports-related factors follow circadian rhythms. Individuals' circadian rhythmicity is expressed through their chronotype, which is divided into three categories: morning types (M-types), evening types (E-types), and neither kind (N-types). Compared to E-types, M-types exhibit earlier peaks in a number of sleep quality variables throughout the day. Not enough research has been done on how chronotype affects athletic performance. The objective of this review was to examine how chronotype affected athletic performance and the sleep quality to physical exertion.

Methods: The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) reporting standards are followed in the current review. We looked for scientific papers in PubMed, google scholar, and Sci Hub by combining the terms "chronotype," "circadian typology," "morningness," and "eveningness" with the term's "sleep", "sport," "performance," and "athletic." Reference lists that were pertinent were examined. We only included peer-reviewed papers published in English between 2014 and 2023 in our search results.

Result: Our inclusion criteria were met by sixteen papers. The chronotype has an impact on the ratings of perceived effort and weariness in connection to sports performances: When doing a physical task at a submaximal level in the morning, M-types felt less exertion than N- and E-types did. Furthermore, compared to N- and E-types, M-types generally outperformed them in terms of athletic performance as indicated by race times. Other findings on the chronotype effect on sleep quality to physical exertion were not always reliable. Different types of physical exercise and varied samples could contribute to this discrepancy.

Conclusion: Sports trainers and coaches should take into account the influence of both the time of day and chronotype effect when scheduling training sessions into specific time periods.

Keywords: Athletes, chronotype, sports performance, sleep.

OP 81

A comparative study between the occupational participation of special Olympians and non-special Olympians using scope (version 2.2)

Pallavi Nair[1], Vidushi Sharma[2]

1. Department of Primary Care and Public Health, School of Public Health, Imperial College London, UK

2. Amity University, Noida, Uttar Pradesh, India.

Email: vsharma7@amity.edu

Purpose: While the positive effect of physical activity and sports on physical and psychological well-being is well documented within the general population, the effects of sports on the occupational participation of individual with intellectual disability are limited. To compare the Occupational Participation among Special Olympians and Non- Special Olympians using the Short Child Occupational Profile (SCOPE). Study Design: Convergent Parallel Mixed-method Research Design.

Methods: Seven schools registered under Special Olympics Bharat were selected as per the permission of the school. A chart review was done by the school administration, or the permission was given, to get the Special Olympian students name from the sports teacher of the school. According to the inclusion criteria, (1) Age group between 12-21 years, belonging to the second(12–15years) and third(15–21years) subclasses (out of the four categories laid down in the Special Olympics participation rules) against a constraint of atleast two years active attendance in the sports for Special Olympians (2) Prior IQ test (45>x>70) for Intellectual Disability. A sample of 100individuals with Intellectual Disabilities, 50 Special Olympians and 50 Non-Special Olympians were selected, and the Short Child Occupational Profile (SCOPE version2.2) was administered. The data was collected by three different sources, observation, teachers' interview, and parents' response. Statistical Analysis was carried out by SPSS version19 and QDAMiner.

Results: The quantitative findings demonstrated a significant overall difference ($p<0.05$) between Special Olympians and Non-Special Olympians across six domains of occupational participation: volition, habituation, communication and interaction skills, process skills, motor skills, and environment. In addition, qualitative analysis of multiple domains reported by the teacher's and parent interview with in-person observations triangulated our findings. *Motor* and *process* domain (strength, maintaining posture, energy level) scored highest for SOs as

compared to Non-SOs (who were over-weight and experienced fatigue*)*. Moreover, SOs were found to be more *verbal* about their choices and *independent* in self-care tasks (*volition* domain), whereas Non-SOs frequently needed *step-by-step instructions*. For *habituation* domain, SOs were involved more in sports games and faced lesser challenges when compared to Non-SOs who preferred more passive recreation like listening to music. In *communication and interaction* domain, SOs cooperated well with others and were mostly aware of noticing and responding to surroundings, however, Non-SOs needed more assistance with initiation. These findings collectively underscore the positive impact of sports participation, not only on physical and motor skills but also on various aspects of daily living and social interaction.

Conclusions: Special Olympians have a better occupational participation as compared to Non-Special Olympians.

Keywords: Intellectual disability, occupational participation, sport, special olympics

OP 82

Excessive drug use leads to neurological conditions in sports. say no to doping: A review study

Kapil Upadhyay[1], Bishnu Ghale[1], Sunita Kumari[1], Ankita Sharma[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana, India

Email: upadhyaykapil1997@gmail.com

Purpose: Central nervous system (CNS) stimulants CNS stimulants are utilized to combat fatigue and enhance alertness, competitiveness, and aggressiveness. While they are predominantly employed in competitive settings, some athletes may also turn up using performance enhancing drugs during training to ramp up session intensity. The improper use of these substances in sports carries several potential risks. The objective of this review study is to investigate how excessive use of drug leads to neurological conditions in sports.

Methods: The articles identified were relevant literature which was identified through searches of published studies in major databases namely Google Scholar, PubMed, PEDro etc. using keywords such as "doping, neurological disease, sports, drug abuse. Only articles published after 2015 were included in the study.

Results: Drugs, like the alkaloids found in ephedra, cocaine, caffeine, amphetamines are frequently used by athletes despite the lack of proof that they have any ergogenic or actual performance benefits and their potentially dangerous side effects like aggression, tremor, confusions, hallucinations, abnormally high blood pressure which can lead to neurological conditions like stoke. Athletes also frequently engage in the use of recreational drugs, some of which are prohibited, such as cocaine and amphetamines.

Conclusions: The misuse of central nervous system stimulants in sports is a significant public health concern, and it is crucial for all sports governing bodies to actively engage in its prevention. The dissemination of information plays a vital role in preventing doping in sports and offering alternative solutions. It is necessary to implement comprehensive training and educational programs in this field.

Keywords: Doping, neurological conditions, sports, central nervous system stimulants

OP 83

The role of Artificial Intelligence in prediction and prevention of injury in athletes of various sports disciplines. A systematic review

Bhavesh Sahu[1], Pooja Purendra Chandrakar[1], Kshitija Bansal[1], Sunita Kumari[1], Divya Aggarwal[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana, India.

Email: bhaveshdpu@gmail.com

Purpose: In the world of competitive sports, athletes constantly push the boundaries of human performance, subjecting their bodies to rigorous training regimens and high-intensity activities. While these endeavors yield achievements, they also bring forth the risk of injury, threatening an athlete's career and well-being. The prevention and mitigation of injuries have long been a paramount concern in the fields of physiotherapy, sports medicine, and athlete performance. In recent years, technological revolution has taken center stage, promising to reshape the landscape of athlete injury prevention. Artificial intelligence (AI), with its ability to analyze vast datasets and identify intricate patterns, has emerged as a powerful tool. Thus, the purpose of this literature search is to understand the current trends of AI in injury prediction and prevention in various sports.

Methods: A comprehensive search of academic databases, including PubMed, Google Scholar, Nature, Springer, ScienceDirect, CINAHL, and Medline and was conducted by PRISMA guidlines using the terms Injury prevention, Artificial intelligence, Athlete, Injury prediction to identify relevant studies published in the English language between 2014 and 2023. Studies were selected based on predefined inclusion criteria (Athletes between 18-35 of age, Use of AI models for assessment, Articles with full-text availability, both male and female Athletes of various sports disciplines). Total of 43 articles matched our inclusion criteria yielding a final dataset of 20 studies for analysis. These studies encompassed various sports disciplines and employed AI-driven methodologies such as Artificial Neural Network and wearable technology.

Results: The findings of this review indicated that Artificial Intelligence holds significant promise in injury prediction and prevention. Machine learning algorithms have been successfully employed to analyze datasets, including athlete biomechanics and training loads. AI model Artificial Neural Network has exhibited the capacity to identify patterns and risk factors associated with injuries, enabling proactive injury mitigation strategies. Collaboration between AI developers, sports scientists, physical therapists and athletes is essential to tailor AI-driven interventions to individual needs and preferences.

While Artificial Intelligence shows immense promise, there is need for ethical considerations, including data privacy and the role of AI in decision-making. Also, there is scope of further researches on optimization and application of AI in various sports disciplines.

Conclusion: The predictive capacity of Artificial Intelligence empowers sports medicine practitioners to develop personalized injury prevention strategies, mitigating the risk of injury before it occurs. As the field continues to evolve, it is imperative for researchers, clinicians, and sports organizations to embrace AI-driven solutions to safeguard the well-being of athletes and maximize their athletic potential.

Keywords: Athletes, Injury Prevention, Artificial Intelligence, Injury prediction.

OP 84

Effect of agility training on the performance of athletes in different sports specialization: Systematic Review

Sajal Sharma[1], Jasmine Kaur Chawla[1], Irshad Ahmed[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies

Email address: sharmasajal450@gmail.com

Purpose: Agility plays a pivotal role in enhancing athletic performance. Agility improves body balance, coordination, perception, cueing, and decision-making of an athlete. It increases an individual's ability to maintain balance during rapid changes in direction, thereby increasing overall physical stability. However, there is a lacuna in the literature evaluating the effect of agility training on athlete's performance in different sports. Therefore, the study aims to conduct a detailed methodological literature search on the effect of agility training on athletes in different sports, highlighting agility as the key component in improving athletic performance.

Methods: Prospective human subject studies published in the English language identifying agility training and its effect on the performance of athletes in different sports. The studies were found using different research websites using PubMed, Scopus, EBSCO Pedro, ScienceDirect, and Google Scholar. Inclusion criteria comprise study parameters on experimental studies on agility in various sports specializations and studies after 2010. Out of 40 only 7 articles were included.

Results: The findings of the review suggest that agility training can improve the performance of athletes in different sports specializations.

These studies found the effectiveness of agility training among different physiological and biomechanical cp-o-variates (measured by reactive agility test i.e., Illinois agility run, vertical jump, simple reaction, cues, and decision-making tasks). The differences were found between the performances of players in different sports specializations.

Conclusion: This study provides evidence supporting that agility training has a positive impact on improving physiological and biomechanical variates in the performance of athletes in different sports specializations.

Keywords: Agility, performance, reaction time, sports

OP 85

Effect of regular karate practice on neurosensory cognition among school going children

Bhattacharya P[1], Chatterjee S[1], Mondal S[2]

1. Department of Physical Education, Jadavpur University, Kolkata, West Bengal, India.

2. Department of Physical Education and Sport Science, Visva Bharati, Santi Niketan, Bolpur, West Bengal, India

Email:puneetbhattacharya.ped@jadavpuruniversity.in

Purpose: Karate training attenuates not just an idle body but also a weary mind. Physical inactivity and increased screen time have taken a toll on global mental health of young children with the passage of time. Numerous electrophysiological and neurochemical studies document regular physical training to improve neurocognition. However, observations of specific martial art form effects like karate on neurosensory pathways are uncommon. The aim of the present study was to measure neurosensory cognition through visual evoked potential and brainstem auditory evoked potential among male school going children.

Methods: A convenience sample of 60 subjects (n=60) comprising Karate Group (K) (n=30) and active age gender matched Control Group (C) (n=30) between 12-18 years was selected based on ethical guidelines from Indian Council of Medical Research (ICMR). The study was also registered under Clinical Trial Registry of India (Regn. No: CTRI/2021/06/034483). Visual Evoked Potential (VEP) components containing three wave forms N-75, P-100, and N-145 and five waves I-V of the Brain Stem Auditory Evoked Potential (BAEP) were measured. Latency (L) and Amplitude (A) comparisons were conducted using RMS Salus 2C, Evoked Potential Recorder, in the Exercise and Sports Physiology Laboratory, Department of Physical Education, Jadavpur University, Kolkata. Normality distribution confirmed by Kolmogorov Smirnov test and a large to medium effect size was reported (Cohen's d = 0.73).

Results: Descriptives of age, height, weight, body mass index (BMI) and waist-hip-ratio (WHR) identified that BMI (K-19.73±3.45; C- 22.48±3.39) and WHR (K-0.86±0.04; C-0.89±0.04) were significantly higher ($p < 0.05$) in the Control group (C), may have a confounding effect on the result prediction and need further investigation. However, inferential group comparison using t-test for neurocognitive measures gave very precise and definite results. VEP for both eyes showed significantly shorter L in the (K) group ($p<0.05$) for N-75 (left:62.4±2.84; right:63±2.99ms) and P-100 waves (left: 95.2±2.90; right: 94.46±3.50 ms) while only in the right eye for N-145 wave (154.76±12.64 ms) and amplitude (4.13±2.65 µv). BAEP measured L of five wave forms (I-V), their interpeak latencies (IPL) and amplitude (A). Significantly shorter L for the (K) group ($p<0.05$) in the right ear in wave I (1.75±0.19 ms) and wave II (2.79±0.28 ms) was measured and for both ears in wave III (left:3.78±0.18; right:3.74±0.21 ms), wave IV (left: 4.69±0.39; right: 4.75±0.34 ms) and wave V (left: 5.47±0.36; right: 5.47±0.28ms). Significant results ($p<0.05$) in the (K) group in comparison to (C) group for IPLs for wave I-III (left:1.99±0.15; right: 1.93±0.21 ms) I-V (left: 3.63±0.34; right: 3.62±0.33ms) and III-V (left 1.60±0.28; right: 1.54±0.26 ms) and amplitude (left: 1.31±0.76; right: 1.40±0.89 µv) were measured.

Conclusion: Better focus and concentration resulted in quicker processing of evoked stimuli through the visual optic pathway. Brisker auditory adaption cues through cognitive imagery and partner training may help these practitioners not just in their sport performance or self-defense skills, but also in achieving a better neuro-cognitive health. Such mind body practice since a tender age can develop better neurosensory outcomes and over mental health in young children.

Keywords: Neurocognition, martial art, mental health, young children

OP 86

Efficacy of high intensity interval training in psychological problems in medical students: A Narrative Review

Baljeet Kaur[1], Moattar Raza Rizvi[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana, India.

Email: baljeet_kaur.phd@mriu.ac.in

Purpose: Review studies suggest a consensus on the fact that medical students experience a spectrum of psychological problems during their educational and training years. Studies have identified psychological problems such as anxiety, stress, and depression as the most common issues. Additionally, medical students may also encounter burnout, reduced self-efficacy, test anxiety, and, in some cases even suicidal ideation. Over the past decade, researchers have shown a keen interest in addressing these problems among medical students. Various treatment methodologies and interventions have been studied to alleviate the psychological challenges faced by medical students. One such treatment approach under examination is High intensity interval training (HIIT). Although HIIT has garnered interest, and some studies have been conducted to assess its efficacy in medical students experiencing psychological issues, there is a dearth of substantial evidence supporting its use in this context.

Methods: In this narrative review, the researchers have conducted an assessment of interventional studies and randomized control trials that have examined the effectiveness of HIIT in reducing psychological problems among medical students. This is the first review aimed at investigating the efficacy of HIIT specifically in medical students. Previous review studies have explored the utilization and effectiveness of HIIT in adolescents, the general population and during the COVID-19 lockdown. However, reviews explicitly evaluating the impact of HIIT on the psychological well-being of medical students had not been undertaken. The studies included in this narrative review had a participant group comprising medical students. The intervention used in these studies was HIIT, which was compared to other forms of exercise, education programs or no exercise in control groups. The outcome measures used were questionnaire or scales designed to measure psychological problems.

Results: Three studies were identified that evaluated the effectiveness of HIIT. In two of these studies, HIIT was compared to moderate intensity exercises while in the third study it was compared to a no exercise group. The results of two studies suggested improvement in psychological variables such stress, anxiety and depression. In the third study there was an improvement in cardiovascular fitness, but the impact on psychological problems among students was less pronounced.

Conclusion: HIIT has shown to enhance cardiovascular fitness in university students. Some studies have indicated its potential effectiveness and usefulness in mitigating psychological issues among medical students. However, there is a significant demand for further research to comprehensively investigate the role and efficacy of HIIT specifically in medical students for the alleviation of their psychological problems.

Keywords: High intensity interval training, medical students, psychological problems

OP 87

Intra-rater reliability of navicular drop test for the assessment of foot posture in pronated feet subjects

Md Farhan Alam[1], Saurabh Sharma[1]

1. Centre for Physiotherapy and Rehabilitation Sciences, Jamia Millia Islamia, New-Delhi, India.

Email: farhan.research21@gmail.com

Purpose: The navicular drop (ND) test is used for the assessment of foot arch as well as an indicator of foot pronation. It is performed to measure the height of the navicular tuberosity from the ground in sitting and then in standing position. The change in height of the navicular tuberosity

represents the actual ND. Pronated feet, is a medical condition in which the medial longitudinal arch (MLA) is flattened out or lowered. Pronated feet is associated with structural and postural alterations, which results in lower limb pathologies and low back pain. Therefore, a highly reliable assessment method to diagnose foot pronation is necessary. Hence, the Purpose of this study was to investigate the intra-rater test retest reliability, standard error of measurement (SEM), and smallest detectable difference (SDD) associated with the ND test in pronated feet subjects.

Methods: Foot pronation was measured using the ND test for both lower limbs on a sample of 32 bilateral pronated feet subjects (16 male, 16 female; mean age 30.9 ± 7.71; BMI 22.0 ± 1.6). Intra-class correlations coefficients (ICC), SEM and SDD values were calculated to find reliability and measurement error.

Results: Intra-rater test-retest reliability for ND test was excellent for right limb with ICCs value 0.93 and good for left limb with ICCs value 0.89. The values of 95% confidence intervals (CI) were shown (0.849 - 0.964) for right limb whereas (0.783- 0.948) for left. SEM and SDD for right and left limb were 0.72 & 0.90, and 1.99 & 2.49 respectively. The results suggest that ND measurements for subjects with foot pronation can be taken reliably by clinical practitioner

Conclusion: The ND Test is a reliable method for measuring foot arches in pronated feet subjects also. This method can be used in clinical practice to assess the patients for foot pronation.

Keywords: Reliability, subtalar, navicular, foot pronation, low arch

OP 88

Factors associated with physical performance in strength and/or endurance athletes: A Literature Review

Eepsita Mahanta[1], Pooja Bhati[1], Jaganjyoti Das[1], Pooja Anand[1]

1. Shree Guru Govind Singh Tricentenary University, Gurugram, Haryana, India.

Email: eepsitamahanta22@gmail.com

Purpose: Sports participation is one of the most popular forms of physical activity among children and adolescents. Physical fitness has been related with many health components and physical performance. Exercise is generally separated into aerobic/endurance and power/ strength activities. Numerous factors determine success in high-performance sport, including psychological conditions, motor skills and body composition. Apart from the physical built, nutritional status of the athlete plays an important role in modulating their physical and sports performance. There exists a sound theoretical link between various health related factors and performance. However, the literature available on the same is ambiguous in nature. Therefore, the purpose of this study was to review the available literature on the association of health- related parameters and performance parameters in strength and endurance athletes.

Methods: A search of major databases such as PubMed, Scopus, and Google Scholar was conducted using search terms such as 'Strength Athletes', 'Endurance athletes', 'Physical performance', 'Body composition' 'Sleep pattern', 'Nutritional intake' and 'Biochemical markers'. Studies published from 2003 onwards which specifically addressed the association of physical performance with various factors such as sleep, nutrition, body composition, heart rate and biochemical markers in strength as well as endurance athletes were included.

Results: Database searching revealed a total of 22 articles as per the eligibility criteria. Majority of the studies indicated sleep deprivation was inversely related to performance in endurance athletes. Lean body mass was directly linked to performance in endurance athletes. Protein intake was directly associated with performance in strength athletes but not in endurance athletes.

Conclusion: Finding of this study suggested that factors such as sleep, nutrition, heart rate, body composition and biochemical markers are directly associated (either positively or negatively) to physical performance in strength and/or endurance athletes.

Keywords: Strength-endurance athletes, physical performance

OP 89

Effect of blood flow restriction training after Anterior Cruciate Ligament reconstruction in adolescents: A scoping review

Shivangi Sharma[1], Irshad Ahmad[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, India.

Email: shivangitansh@gmail.com

Purpose: Anterior cruciate ligament (ACL) Sprain and tears are the most common knee injuries in adolescents and young adults. Post-ACL reconstruction decreases muscle strength and causes atrophy of muscle. In this post-acute phase of recovery, low-load exercises are required. Thus, recently, low-load blood flow restriction training (BFRT) has been popularized in ACL-reconstructed individuals for the purpose of rehabilitation. The effectiveness and safety of BFRT have been explored in the healthy adult population, and there is some information about the tolerance and side effects of BFRT in the adolescent population post-ACL reconstruction. The present review was to determine the efficacy of BFRT on muscle strength and volume in young adults and adolescents with ACL reconstruction.

Methods: Relevant literature was searched from databases such as MEDLINE (PubMed), CENTRAL of Cochrane Library, Web of Science and Physiotherapy evidence database. The inclusion criteria of articles were low-load BFRT, ACL reconstruction, randomized controlled trials, muscle strength and volume, and only full-text papers were included.

Results: Initially, 127 studies were identified. Out of these, 6 articles met the eligibility criteria. All studies used low-load BFRT in ACL injury reconstruction rehabilitation in adolescents or young adults. Various outcomes were assessed such as pain, function, muscle strength, active muscle threshold and tendon morphology. BFRT parameters were prescribed heterogeneously in all the studies. In two studies, side effects included paresthesia and dizziness in the lower extremity after BFRT. Overall, results suggest safe use and good tolerance in young people after using BFRT in ACL reconstruction. However, more evidence must be needed to outline any definitive presumption due to the indistinct result of the research. Future investigations with standardized outcome measures and specific protocols are required for a clear effect of BFRT in adolescents.

Conclusion: To conclude, the findings of this review contribute to an understanding of the role of BFRT in promoting recovery after ACL reconstruction in young and adolescents. Thus, it opens the scope of evaluating further the effect of low-load BFRT as a positive effect on post-ACL reconstruction rehabilitation.

Keywords: Side effects, patient tolerance, blood flow restriction, ACL

OP 90

Identification of factors associated with non-specific low back pain among lawyers

Prerna Mahto[1], Pragya Kumar[1], Jasmine Kaur Chawla[2], Madhumani Dubey[3]

1. Department of Physiotherapy, Amity Institute of Health Allied Sciences, Noida, UP, India

2. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, India

3. Pro Hands Clinic, Noida, UP, India

Email: pkumar24@amity.edu

Purpose: Non-specific low back pain (NSLBP) can be described as low back pain without underlying cause or disease and has a lifetime prevalence of 80%. Non-specific low back pain affects the daily lives, limiting the activities and work ability, putting a financial and medical strain on individuals, and is a major health concern. The study aimed to identify all the factors (individual, physical, psychological, workplace, lifestyle) that are associated with NSLBP in lawyers.

Methods: Cross-sectional study was conducted on lawyers at Pro Hands Clinic, Noida, District & High Court offices in Noida and Delhi. 150 practicing lawyers (Mean Age = 29.43 ± 4.51 years) having history of frequent or continuous non-specific low back pain were enrolled after taking informed consent and as per selection criteria. Assessment was conducted for individual factors [Age, Weight, Height, Body Mass Index

(BMI)], psychological factors (stress, anxiety, and depression), physical factors (Lumbar & Hip joint range of motion, Abdominal strength & endurance, flexibility, and disability caused by NSLBP), lifestyle factors (level of physical activity), and workplace factors [Rapid Entire Body Assessment (REBA)]. Data analysis was done by SPSS 28.0 using Pearson's correlation (Level of significance was $p<0.05$).

Results: Correlation analysis revealed significant association between age ($r = 0.31$), BMI ($r = 0.42$), stress ($r = 0.35$), Lumbar flexion ($r = -0.51$), Lumbar Extension ($r = -0.24$), Hip flexion ($r = -0.41$), hip abduction ($r = -0.44$), hip internal ($r = -0.49$) & external rotation ($r = -0.43$), abdominal strength & endurance ($r = -0.19$), disability ($r = 0.39$), physical activity ($r = -0.33$) and work place ergonomics ($r = 0.29$). Multivariate regression indicated stress levels ($\beta = 0.28$), lumbar flexion range ($\beta = -0.35$), back disability ($\beta = 0.37$) and physical activity levels ($\beta = -0.26$) are significant predictors of NSLBP among lawyers.

Conclusion: This study concludes that increased stress levels, reduced lumbar mobility, increase scores of back disability and reduced physical activity levels are significantly associated with NSLBP among lawyers. Incorporating targeted exercises and promoting physical activity can be beneficial in managing low back pain.

Keywords: Low back pain, lifestyle, ergonomics, workplace, lawyers

OP 91

Low-impact exercises for improving symptoms in Parkinson's disease: A Literature Review

Nagarjuna Narayanasetti[1], Kshitija Bansal[1], Annie Thomas[2]

1. Department of Physiotherapy, Manav Rachna International Institute of Research & Studies, Faridabad, Haryana, India.

2. Director Physiocare & Research Co-ordinator, School of health sciences, Garden City University, Bangalore, Karnataka, India

Email: nag.sri22@gmail.com

Purpose: Previous studies have demonstrated the potential efficacy of low-impact exercises in alleviating symptoms of Parkinson's disease (PD). This literature review aimed to comprehensively assess the impact of low-impact exercises on various domains, including balance, gait, motor function, and overall quality of life in individuals with PD.

Methods: Extensive searches were conducted across reputable academic databases, including PubMed, Web of Science, and EBSCO electronic repositories. The Cochrane risk assessment tool was employed to evaluate the methodological quality of the selected studies. Out of 1287 initially identified records, 20 studies met the stringent inclusion criteria for this literature review.

Results: The review revealed significant and positive effects of low-impact exercises on various outcome measures. The amalgamation of diverse outcome measures, including UPDRS, Berg Balance Scale, TUG, 6MWT, and PDQ-39, showcased the multifaceted impact of low-impact exercises on both motor and non-motor symptoms. Notably, aerobic exercises, such as treadmill walking, cycling, and group sessions, emerged as pivotal interventions, demonstrating improvements in gait, balance, flexibility, and overall quality of life for PD individuals.

Conclusion: In summary, this literature review provides compelling evidence that low-impact exercises yield significant improvements in balance, gait parameters (velocity and stride/step length), and overall motor function among individuals grappling with Parkinson's disease. However, it is important to note that these exercises did not have a discernible impact on step cadence or on the overall quality of life as assessed by the Parkinson's disease Questionnaire-39. These findings emphasize the potential benefits of integrating low-impact exercises into the management of PD-related symptoms.

Keywords: Parkinson's disease, physiotherapy, rehabilitation, low impact exercise.

OP 92

Effect of rotator cuff strengthening exercises along with sleeper stretch program verses traditional exercises program in baseball player having glenohumeral internal rotation deficit (GIRD) - A comparative study

Ayushi Devgade[1], Neeraj Singh[1], Jharna Gupta[1], Priyanshu Joshi[1], Preeti Taneja[1]

1. Department of Physiotherapy, Mahatma Gandhi Memorial (MGM) Allied Health Science Institute (MAHSI), Indore, M.P.

Email: ayushi.devgade.25@gmail.com

Purpose: Due of the constant force placed on the dominant (throwing) hand during the cocking phase, upper extremities in overhead athletes are more vulnerable to injuries than lower ones. Baseball is a sport with a high level of physical exertion, and swinging a bat and tossing a ball both require rotational movement. It heavily relies on the stability and range of motion of the shoulder. Due to the throwing and catching motions, a baseball player's shoulder joint and rotator cuff muscle are constantly subjected to higher repeated stress and strains, which increases their risk of injury. According to other research, 20–70% of shoulder injuries in athletes who perform overhead occur. The soft tissue and skeletal alterations brought on by the shoulder complex's repetitive movements and stresses may modify the ROM of the GH joint by increasing ER and decreasing IR. GIRD might result from an extreme drop in IR in the throwing hand. Due to the recurrent cocking phase, this causes stiffness in the rotator cuff and posterior capsule. Thus, the aim of the present study was to compare the effect of rotator cuff strengthening exercise along with sleeper stretch vs traditional exercise program in baseball player having Glenohumeral internal rotation deficit (GIRD).

Methods: To perform this study, 60 baseball players in the age range of 15-25 years were selected and randomized to two categories – rotator cuff strengthening exercise along with sleeper stretch (group A) and traditional exercise program (group B) each with 30 participants. The study was conducted at the MAHSI and Chiman-Bagh ground, an outdoor facility located in Indore, Madhya Pradesh, India. The pre and post testing measured two outcome range of motion and shoulder's muscular strength.

Results: After 6 weeks of treatment, Mean values of range of motion of Internal rotation in right shoulder in post condition of group A and group B are 64.13 and 56.40 with p-value>0.0005. There is a significant difference between mean values of range of motion of Internal rotation in right shoulder in post condition of group A and group B. Calculated t- value is 3.66 which is significant at degree of freedom 58 and 0.05 level of significance because calculated t-value is greater than tabulated t-value 2.02.there was a significant increase in ROM (external rotation and internal rotation) and muscular Strength (flexor, extensor, abductor, adductor, internal rotator and external rotator) and also decrease GIRD (internal range of motion) in group A.

Conclusion: The results indicates the positive effect of the rotator cuff strengthening exercise along with sleeper stretch in baseball player having Glenohumeral Internal Rotation Deficit (GIRD).

Keywords: Baseball, GIRD, sleeper stretch, strengthening, sphygmomanometer

OP 93

Advancements in neurorehabilitation techniques

Mansi George[1], Jamil Ahmad Butt[1]

1. Department of Physical Education & Sports, Central University of Haryana, Mahendergarh, India.

Email: mannugeorge@gmail.com

Purpose: Neurorehabilitation plays a pivotal role in improving the functional outcomes and quality of life for individuals with neurological disorders. Recent advancements in neurorehabilitation techniques have brought about innovative approaches that harness technology, neuroscience, and patient-centered care to optimize rehabilitation outcomes. The aim of the study is to present a concise overview of these advancements, highlighting their potential to revolutionize the field.

Methods: A comprehensive literature review was conducted to identify and analyze recent developments in neurorehabilitation techniques. Peer-reviewed research articles, clinical trials, and systematic reviews were sourced from reputable databases, such as PubMed and Scopus. The search criteria included publications from the last five years, focusing on innovative neurorehabilitation interventions and technologies.

Results: Robot-Assisted Rehabilitation: Robotics has emerged as a powerful tool in neurorehabilitation. Advanced robotic exoskeletons and devices offer precise control over limb movements, enabling tailored

therapy for stroke survivors, spinal cord injury patients, and individuals with movement disorders. Studies have shown significant improvements in motor function and muscle strength among robotic-assisted rehabilitation users. Virtual Reality (VR) and Augmented Reality (AR): VR and AR technologies provide immersive and engaging environments for neurorehabilitation exercises. These platforms enhance motivation and compliance while offering real-time feedback to patients. Recent studies have demonstrated the effectiveness of VR-based interventions in stroke rehabilitation, balance training, and cognitive rehabilitation for conditions like traumatic brain injury. Neuroplasticity-Based Approaches: Advances in our understanding of neuroplasticity have led to the development of novel neurorehabilitation strategies. Techniques such as constraint-induced movement therapy (CIMT) and transcranial magnetic stimulation (TMS) are designed to harness the brain's adaptive capacity. They have shown promise in promoting functional recovery and reorganization of neural circuits. Telehealth and Remote Monitoring: The integration of telehealth in neurorehabilitation has expanded access to rehabilitation services, particularly in underserved regions. Remote monitoring, teleconsultations, and wearable sensors allow therapists to track patients' progress and adjust treatment plans in real-time, enhancing continuity of care.

Conclusion: Advancements in neurorehabilitation techniques have ushered in a new era of personalized and effective rehabilitation for individuals with neurological conditions. Robotic-assisted therapies, virtual reality applications, neuroplasticity-based approaches, and telehealth solutions are transforming the landscape of neurorehabilitation. These innovations hold great promise for improving functional outcomes, enhancing patient engagement, and optimizing resource utilization in healthcare settings. Embracing these advancements and conducting further research to refine their application will undoubtedly lead to better rehabilitation outcomes for neurologically impaired individuals.

Keywords: Neurorehabilitation, advancements, neurological disorders, patient-centered care.

OP 94

Analysis of trait anxiety among female college athletes

Yogamaya Panda[1]

1. Shailabala Women's (Auto) College, Cuttack, Odisha, India.

Email: yogamayakunu@gmail.com

Purpose: Anxiety is d*efined in Foundations of Sport and Exercise Psychology as* "a negative emotional state in which feelings of nervousness, worry, and apprehension are associated with activation or arousal of the body." Anxiety can be observed as trait, a permanent predisposition to see situations as threatening, or state, a temporary emotion in response to a situation (Spielberger, 1966). State anxiety is a specific situation when the person makes a mental assessment of some type of threat and the trait situation arises in response to a perceived threat but it differs in its intensity, duration and the range of situations in which it occurs. In a state of distress is directly in an emotional state characterized by anxiety, fear, tension, and increased physiological arousal. A person with a high trait anxiety level perceives and experiences the competition as a stressful situation, manifests a higher anxiety level and responds with a disproportionally higher arousal level than a person with a lower anxiety level. Anxiety has the ability to impact all aspects of sport, from competition to injury and returning to sports. Previous study concluded that anxiety significantly impacts both the physical and psychological performances of athletes competing in sport. Female athletes reported higher levels of competitive trait anxiety and higher levels of worries, whereas males indicated greater concentration disruption. The purpose of the present investigation was to study the trait anxiety of female college athletes.

Methods: A total number of 90 female college athletes (N=30 district level, N= 30 state level and N= 30 national level) who were continuing their under graduate courses from different colleges of Cuttack Odisha were included in this study. All samples were randomly drawn from the population. Trait Anxiety Inventory by Dr. Roma Pal and Dr. Govind Tiwari was used for data collection. The test consists of 30 items. The subjects respond to each item of both the scales by rating themselves according to the standard instructions on a three-point scale - (1) Always, (2) Some times and (3) Never for balancing state and trait scale equal numbers of items have been taken. High rating indicates high anxiety whereas low rating indicates low anxiety for the positive items of each scale. The weightage scores of responses will be marked 3, 2 and 1 respectively whereas reversed items will be marked 1, 2 and 3. One way ANOVA was used to analyse the data obtained from the sample on trait anxiety.

Results: One way ANOVA was used to analyse the data obtained from the sample on trait anxiety. The result revealed a significant difference ($F=4.34^*$, $P<.05$) among district, state and national level female college athletes on anxiety. It means district, state and national female college athletes are differing in their trait anxiety.

Conclusion: From the above study, it is concluded that in trait anxiety all three different levels of female athletes are differing from each other. It is suggested that psychological interventions such as personal counseling to be provided to the female athletes periodically to control their anxiety in the competitions.

Keywords: Trait anxiety, female, athletes.

OP 95

Childhood obesity as precursor to stroke

Manu Bhati[1], Nitesh Malhotra[1]

1. Department of Physiotherapy , School of Allied Health Science, Manav Rachna International Institute of Research and Studies, Faridabad, India

Email: drpriyankabhati@gmail.com

Purpose: Stroke is considered as the second leading cause of death worldwide according to the literature available and one of the main reasons of stroke in children is obesity. In todays industrialized world, childhood obesity epidemic is evident, with rising rate every year. The prevalence of childhood obesity in United States has more than tripled over the last four decades. if obesity is not controlled, more than half of today's children will be obese as adult and its consequences includes non-communicable diseases like stroke, cardio vascular disease and many more. Prevention of these chronic diseases by managing obesity in children should be promoted at all levels. The purpose of this review is to describe the significant global problem rising in children leading to chronic diseases and how physical activities, exercises and sports can provide a non-invasive means of prevention for the above problems.

Results: There are number of studies showing increased trends of stroke and cardio vascular diseases in children in recent years because of obesity. Increase use of technology among children is one of the main reasons making them physically inactive leading to obesity. According to data obtained life expectancy will reduce and mortality rate will increase in children in future because of rising rate of chronic diseases like stroke and CVD. It also says that death rate because of obesity from 2002 to 2010 was 25% to 30% respectively, will reach up to 41% by 2030 if not considered in united states alone. To protect our children from stroke and CVD, occurring due to obesity, we need to work together at all the levels (child, parent, school, community and health Professional). It is seen that irrespective of having childhood obesity prevention policies, there are many barriers including individual, sociocultural level in its application. We need to find an easy, cost effective and interesting solution for this which mainly is sports in school.

Conclusion: As children spend most of their time in school, sports needed to be inculcated every day for all the age group along with the dietary intake (adding nutritional food) in school meals according to the guidelines provided. Physical activity, exercise and sports are considered principal intervention for use in primary and secondary prevention of chronic diseases. To involve children in various kinds of sports settings and policies, sports professionals and educators need to find the ways and help the children to manage obesity by indulging more and more into sports, thereby reducing the burden of chronic diseases from our children and gifting them a healthy life ahead.

Keywords: Obesity, childhood, stroke

OP 96

Effects of menstrual phase wise training program versus conventional training program on speed, agility, power and psychological well-being of female sprinters: a comparative study

Ishita Dale[1], Neeraj Singh[1], Usha Singh[1], Ramhari Meena[1], Preeti Taneja[2],

Suman Kumar[3]

1. Department of physiotherapy, Mahatma Gandhi Memorial (MGM) Allied Health Science Institute (MAHSI), Indore, Madhya Pradesh, India.

2. Department of Physiology, Mahatma Gandhi Memorial (MGM) Allied Health Science Institute (MAHSI), Indore, Madhya Pradesh, India.

3. Department of Microbiology, Mahatma Gandhi Memorial (MGM) Allied Health Science Institute (MAHSI), Indore, Madhya Pradesh, India.

Email: dr.ishitadale@gmail.com

Purpose: The athletic demand of a female sprinter is different from the male. Most of the performance-based changes happening in different phases of menstrual cycle may impose a greater impact on their body. Hormonal fluctuations had presented with phasic changes: menstruation (low back pain, stomach cramps), follicular phase (less muscle power due), ovulatory phase (muscle and ligamentous laxity), and luteal phase (decreased prolonged activities, exhaustion). Therefore the main objective is to study and compare the effectiveness of menstrual phase wise training program versus conventional training program on speed, agility, power and psychological wellbeing of female sprinters.

Methods: A Comparative study, which was conducted at Chimanbagh sports ground, and M.Y.H. OPD, Indore (M.P.) after ethical approval. About 60 female sprinters fulfilling the selection criteria were recruited after their consent, such that they maintained a diary for menstrual cycle which was regularly checked. With random sampling they were equally divided into intervention (n=30) and control group (n=30). Descriptive statistics for intervention and control group; age (years):21.43±3.08 and 21.03±3.41, p=0.63; sports age (years):1.18±0.46 and 1.28±0.78, p=0.54; weight (kgm):49.10±6.26 and 46.33±4.82, p=0.05; height (cm):151.53±6.33 and 145.83±3.22, p=<0.0001, respectively. It was highly significant for height, increased in intervention group. Participants of intervention group received menstrual phase wise protocol-menstruation (breathing exercises:5-10reps, 2sets, 7min, 6days; hot water fomentation and positioning:5-10min, 5-6days, 2times), follicular phase (squats, alternate lunges, step ups, gluteus bridges:15-20reps, 3-4sets, 5-10min, 6days), ovulatory phase (ROM exercises with 1kgm weight for lower limbs:10-15min, 3-4sets, 5-10min, 6days), luteal phase (jogging, long run workout:400m,10min) and control group received conventional training program (skipping, stretching of lower limbs and agility drills:5-10reps, 3-5sets, 5-10min, 7days) for 6 weeks. The pre and post outcomes of the same and between the two groups were compared for speed, agility, power and psychological wellbeing. The measures used were 30m sprint test for speed (m/sec), Edgren side step test for agility, Vertical jump test (inches), Jump height (cm) along with Harman peak and average power (watts) for the power, and BBC SWB scale for psychological wellbeing.

Results: After 6 weeks, significant improvement was observed in the intervention group, for the 30m sprint test (pre:8.70±3.58, post:8.38±3.03 and p=0.0001), Edgren side step agility test (pre:32.20±5.15, post: 33.40±4.69 and p=0.003), Vertical jump test (pre:15.77±3.21, post: 16.73±2.85 and p=0.0001), Jump height (pre: 40.08±8.18, post: 42.51±7.24 and p=0.0001), Harman peak power (pre:585.80±206.25, post:650.83±193.03, t=3.34, and p=0.002), Harman average power (pre: 6069±518.83, post: 6257.50±458.57, t=3.73 and p=0.001), and psychological wellbeing (pre:72.80±10.39, post: 70.60±10.72, t=11.33 and p=0.0001). On the other hand, improvements achieved in control group only in agility (pre: 34.03±9.75, post: 34.43±9.25 and p=0.03).

Conclusion: Menstrual phase wise training, showed significant improvement in intervention group with relaxation during menstruation, increased power in follicular phase, normalized muscle laxity in ovulatory phase and improved prolonged activities in luteal phase in relation to the speed (m/sec), agility, power (watts) and psychological wellbeing of the female sprinters and could be included in their training programs, while conventional training only exhibited significant improvement in case of agility in control group.

Keywords: Performance, relaxation, hormonal, exhaustion

OP 97

The determinants of falls among the elderly living in long-term care facilities in the city of Cape Town

Ebrahim N[1], Leach L[1]

1. Department of Sport and Recreation Science, University of the Western Cape, Bellville Campus, South Africa.

Email: nabilahebrahim77@gmail.com

Purpose: Falls are a common health burden with a multi-factorial origin causing physical, psychological, and social problems for the elderly and the society, especially within Low- and Middle-Income Countries, such as South Africa. Therefore, the aim of the study is to identify the determinants of falls in the elderly who are living in various retirement facilities in the City of Cape Town, South Africa.

Methods: This study used the social-ecological theory, which functions on multiple levels in the study, interacting on an individual level, as well as recognising the impact of the environment. The study used a quantitative, cross-sectional, and descriptive design to investigate the elderly, aged 60 years and older, living in retirement facilities in the City of Cape Town. A total of 258 male and female participants were recruited using convenient sampling. A researcher-generated and self-administered questionnaire, based on the following sociodemographic characteristics, namely, age, gender, educational qualifications, marital status, and medical history, was used in the study. The Fall Risk Assessment Tool, the Berg Balance Scale, the Dynamic Gait Index, the Timed Up-and-Go test, and the Mini Mental State Examination were used as research instruments in the study. The WHO COVID-19 safety protocol was observed throughout the period of physical testing of the participants. The results were analysed using SPSS version 28. Descriptive statistical analysis (means, standard deviations, and frequencies) was used to describe the variables, such as age, height, and weight. The data was checked for normality using a Shapiro-Wilks test. The Chi-square test was used to determine statistically significant associations between the categorical risk factors (facility type, gender, BMI, age, marital status, educational qualifications, medications, and Fall Risk Assessment Tool risk factor checklist). The Spearman's rank correlation coefficient was also used to determine associations between falls and risk factors observed as well as various medications. Odds ratios were also presented.

Results: In the present study, determinants of falls were strongly associated with history of falls pertaining to the facility type (p = 0.007), level of education (p = 0.029), marital status (p = 0.001), concerning behaviours, (X^2 = 6.486; p-value = 0.011) and other (X^2 = 4.951; p-value = 0.026) risk factors not observed in the study. Antipsychotic [χ 2 (1) = 2.246, p = 0.014, OR = 0.143 (95% CI: 0.030, 0.678)] and diuretics [χ 2 (1) = 0.537, p = 0.027, OR = 4.123 (95% CI: 1.176, 14.453)] medications were the only drugs associated with falling. A strong correlation was observed between participant falls and the TUG (p = 0.003) and BBS assessment (p = <.001). However, a negative correlation was identified with the DGI assessment (p = -.095).

Conclusion: In conclusion, awareness should be raised on the determinants of falls in the elderly living in the Long-Term Care facilities in the City of Cape Town to decrease the risk

Keywords: Falls, risk factor, elderly, determinants, long-term care facilities

OP 98

Virtual reality in sports training, skill acquisition and application

Antara Bishnu[1], Priyanka Sethi[1], Paramananda Roy[1], Pooja Sharma[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, India

Email: bishnuantara@gmail.com

Purpose: Athletes require excellent vision to perform effectively in their sports, and many athletes have turned to vision training programmes to supplement their usual training regimen. The emerging practise of 'sports vision training' is based on the idea that practising difficult visual perceptual, cognitive, or oculomotor activities boosting athletic performance. This enterprise is not necessarily new, but it has been greatly advanced in recent years by giving a qualitative analysis and narrative description of such studies in order to clarify the potential benefits of VR technology for improving sports performance, to extract the essential characteristics of existing studies, and to advise and guide future research. Our search and review of the literature yielded VR intervention studies with a pre vs. post design focusing on various sports, including target and precision sports (archery, bowling, curling, darts, golf), bat/

racquet and ball sports (basketball, table tennis), goal sports (football, soccer, basketball), sports-specific visual and cognitive abilities, and sports unspecific processes such as bodily sensations and balancing. **Methods:** A review literature search was conducted in databases (PubMed, SCI.hub, Google scholar and Scopus) with the help of six keywords i.e.: virtual reality**;** enhancement; athlete development**;** perception; skill acquisition; technology which resulted in study. The quality of methodology and procedure in the included research papers was assessed with the Strengthening the Reporting of Observational Studies in Epidemiology' (STROBE) statement, which is used to assess quality of observational studies.

Result: The potential benefit of these strategies is further highlighted by the possibility that these enhanced skills will give players a competitive advantage on the pitch. This examines new methods, innovations, and developments in sports vision training.

Conclusion: The emergence of VR HDMs and the combination of smart phone technology has resulted in the most significant developments in virtual reality technology within sporting codes. This advancement has been especially obvious. Implementing such technology has yielded positive results in motor and physiological skills, capabilities in athletes, such as perception-action skills, tactile, and decision-making, responding to unexpected events, enhancing psychological resilience and mental performance, recognising and enhancing sensorimotor abilities, immersing players in competitive settings where reaction time is essential under pressure.

Keywords: Virtual reality**;** enhancement; athlete development**,** perception, skill acquisition

OP 99

Neurodynamic mobilization in painful diabetic peripheral neuropathy: A narrative review

Jyoti Sharma[1], Irshad Ahmad[1], Arun Kumar Chandresh Singh[2]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana, India.

2. Department of Endocrinology & Diabetology, Metro Heart Institute with multispecialty, Faridabad, Haryana, India.

Email:jyotisharma.shpc@gmail.com

Purpose: Painful diabetic peripheral neuropathy is characterized by chronic pains and altered mechano- sensitivity that affects activities of daily living, impairs sleep, restricts mobility, and causes anxiety, depression and reduced social participation. Despite its high prevalence and substantial health impact, it still goes undiagnosed and untreated.

Methods: Clinical treatment of PDPN is difficult, dissatisfactory, and associated with various side effects. The role of physiotherapy seems promising in PDPN.

Results: Various research has been done on the role of different physiotherapeutic modalities and exercises in the alleviation of pain and other sensory parameters in patients with PDPN. Neurodynamic mobilization (NDM) reduces neural edema and results in remyelination of affected peripheral nerves. Though its role in neuropathic pains in various conditions, including diabetes, is established, similar studies are available that have explored its effects in animal and cadaver models in PDPN. Still, there is a dearth of studies proving its effectiveness in human models.

Conclusion: This review outlined the justification for more prospective research to gauge the effectiveness of NDM in reducing pain and other sensory problems in the PDPN.

Keywords: Painful diabetic peripheral neuropathy, neurodynamic mobilization

OP 100

Effect of Nordic hamstring exercise on jump performance in athletes

Jasmine Kaur Chawla[1], Elson James[2], Roshani Sharma[3], Pragya Kumar[2], Ankit Jain[2]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana.

2. Department of Amity Institute of Health Allied Sciences, Amity University Noida, Uttar Pradesh, India.

3. ABXPhysio, Guwahati, Assam.

Email: jasminekaur.sahs@mriu.edu.in

Purpose: In team-sports, high intensity explosive actions such as vertical jump is pivotal for success graph of an athlete and is crucial in attaining higher velocities in sports-specific movements. Nordic hamstring exercise (NHE) is an increasingly popular method for eccentric hamstring training compared to conventional hamstring exercises. The aim of the current study was to evaluate the impact of NHE training on sports performance, exclusively on vertical jump ability.

Methods: Thirty amateur basketball players aged between 18 and 28 years participated in this prospective randomized control trial and were divided into two groups: Experimental Group (Group A) and Control Group (Group B). The participants in both groups underwent regular basketball training, while the experimental group also performed Nordic Hamstring Exercises (NHE) - 3 sets of 6 repetitions in 2 sessions per week for 4 weeks. A 4-week NHE protocol was tailored for the players, vertical jump height was measured before and after the intervention protocol. t-test was used in the analysis of the data to compare the effects of the treatment, and the test values were analyzed using SPSS version 24. Student's paired and Unpaired t test was used. The statistical significant difference was set at $p<0.05$.

Results: NHE training along with conventional training program revealed significant improvement in vertical jump performance when compared to baseline and the control group ($t=6.455$, $p<0.0001$)

Conclusion: The addition of progressive NHE training in conjunction with the regular training positively influenced the vertical jump performance of the basketball players. NHE is known to have positive effects on explosive properties and creates high level of eccentric hamstring activation thereby improving the performance of the athlete. It can be recommended as an efficient training method to enhance athletic performance without involving any sophisticated or specialised equipment.

Keywords: Eccentric training, jump performance, NHE, nordic hamstring exercise, vertical jump

OP 101

Effect of gamification in pedagogy of undergraduate physiotherapy & occupational therapy courses: a systematic review

Nitya Chophla[1], Rohit Kumar Halder[1], Divya Aggarwal[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, India

Email: chophlanitya@gmail.com

Purpose: Physiotherapy and Occupational Therapy are skill-based healthcare courses that require the development of competent and technical skills along with intricate knowledge of the subject and hands-on learning experience for effective and efficient professional development. Over the years the education pedagogy has seen a paradigm shift from traditional teacher-centric approaches to student-centric overall development approaches. One of the tools to aid this is Educational Gamification. It is the use of game mechanics and strategies (like rules and rewards) or different gaming elements to engage students, stimulate their interests and provide motivation. Although over the past decade, the use of gamification in educational setups has increased there is limited evidence for the utilization of gamification approaches in the educational pedagogy of health sciences courses. This study aimed to do a systematic literature review of research studies that incorporated the Gamification approaches in the curriculum of undergraduate physiotherapy and occupational therapy courses and to visualize their effect on skill development, student motivation, and learning outcomes.

Methods: A systematic search of various electronic databases like "Google Scholar, PubMed, Elsevier, and MEDLine" was conducted for full-text published articles. The search strategy used a combination of the following keywords: "gamification", "physiotherapy", "occupational therapy", "education", "pedagogy", and "gamifying". Eligibility criteria included research papers that involved the use of gamification for teaching any course to undergraduate physiotherapy and occupational therapy students, written in English, and presented low to moderate risk

of bias. The review was done according to the PRISMA guidelines where a total of 184 articles were screened and 10 met the inclusion criteria and were included in the study.

Results: After a systematic review of the existing literature, it was found that using gamification in teaching pedagogy provided better learning outcomes for Undergraduate students of Physiotherapy and Occupational therapy. The commonly used approaches were Kahoot! and Escape Room puzzles that not only promoted active learning of students and better retention but also helped to develop life and problem solving skills. This was seen in outcomes like improved end-term examination, increased student satisfaction and motivation and better clinical understanding.

Conclusion: Overall, it was found that gamification had a positive impact on the motivation, learning outcomes, and professional development of students and can be incorporated into the academic curriculum to foster better understanding and improve the practical skills of students.

Keywords: Gamification, physiotherapy, pedagogy, occupational therapy, education

OP 102

The effect of Trans Cranial direct current stimulation on diabetic polyneuropathy: A systematic review study

Aparna Bararia[1], Ankita[1], Moattar Raza Rizvi[1]

1. School of Allied Health Sciences, Manav Rachna International Institute and Studies (MRIIRS), Faridabad, India 121001.

E-mail: aparna8482@gmail.com, ankitasharma.fas@mriu.edu.in

Purpose: Diabetic polyneuropathy, a common complication of diabetes, involves nerve damage leading to impaired sensory and motor functions. Managing chronic pain is a significant challenge in clinical practice. Current pain management approaches include conservative treatments like physical therapy and pain medications, but these are often associated with side effects, addiction risks, and limited long-term efficacy. Non-invasive neuromodulation techniques like transcranial direct current stimulation (tDCS) have gained attention as potential alternatives or adjuncts to traditional pain management strategies. Transcranial Direct Current Stimulation (tDCS) is a technique that delivers low electrical currents to the brain, showing potential in addressing various neurological disorders. In the context of diabetic polyneuropathy, understanding the interplay between diabetic polyneuropathy and tDCS is vital for exploring innovative approaches to managing this complex condition and improving patients' lives. **Objective:** This systematic review aims to synthesize existing researches to provide comprehensive insights into tDCS's potential in alleviating the diverse manifestations of diabetic polyneuropathy providing insights into its potential as a novel therapeutic approach.

Methods: The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) reporting standards are followed in the current review. We looked for scientific papers in NCBI, PubMed, and google scholar, by combining the terms "diabetic polyneuropathy," "analgesic effect," "pain management," "diabetic retinopathy" and "neuropathy treatment" with the term "transcranial direct current stimulation" reference lists that were pertinent were examined. We only included peer-reviewed papers published in English between 2015 and 2023 in our search results.

Results: Analysis of relevant researches underscores tDCS's statistically significant effectiveness in improving visuospatial working memory, enhancing NCV, elevating quality of life, promoting functional independence in ADL, boosting overall fitness, reducing neuropathic pain, increasing systemic Glucose metabolism and mitigating diabetic retinopathy.

Conclusion: tDCS holds promise in alleviating symptoms and enhancing overall well-being by targeting specific neural pathways associated with pain perception, memory, and functional capabilities. However, further research is crucial to establish standardized protocols and validate long-term efficacy and safety. This review highlights tDCS as a multifaceted intervention, offering promise in enhancing overall well-being of individuals with diabetic polyneuropathy.

Keywords: Transcranial direct current stimulation, diabetic polyneuropathy

OP 103

Effect of massage on physical performance of athlete: A review

Aastha Varshney[1], Arvind Verma[1], Kshitija Bansal[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, India

Email: varshneyaastha99@gmail.com

Purpose: Sport massage is one of the strategies used for to combat fatigue and promote relaxation. Athletes, coaches, and sports physical therapists all favor massage as a form of rejuvenation. Following rigorous training or competition, elevated lactic acid levels in the blood and muscles can have a negative impact on physical performance and raise the risk of injury. Similarly, if the muscles are not prepared well prior to strenuous activity are prone for injuries. Injury prevention is one of the major goals of the sports Physiotherapists. Thus, it becomes all the more important to understand the effects of massage on athlete's overall wellbeing and performance. **Aims:** This literature search aims to study various researches focused on sports massage and its effect on physical performance of athlete.

Methods: The PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) method is used in this article to collect data from reputable scientific information sources, include Google Scholar, PubMed, Medline, CINHAL etc. with data spanning the years 2013 to 2023. The following search keywords were used: Sports massage, soft tissue mobilization, pre competition massage, sports recovery, Performance, Injury prevention, Physical effects, wellbeing. The studies available in full text were only considered.

Results: Initial search led to 68 articles but only 12 articles met our inclusion criteria. The results of this literature search found that evidence supporting the positive effect of sports massage is scant despite its popularity among athletes, coaches and sports Physiotherapists. After engaging in physically demanding activities, the body that is sore can benefit from sport massage. The findings demonstrate that sports massage does not improve maximum strength, power and endurance but has impact on flexibility and reducing DOMS. Many of the researches stated that it can be used as an effective tool for injury prevention as it improves flexibility. It can positively impact on proprioception which in turn improves body awareness and reduction in risk of injury. Apart from these effects massage also has impact on psychological variables.

Conclusion: Sports massage can boost athletic performance by promoting blood flow, lowering lactic acid levels, and relaxing stiff muscle tissue. Our research provides guidance to coaches and athletes regarding the advantages of massage and helps them make decisions about include it in practice and competition. Sports massage is a neglected areas in research in spite of its popularity. More researches are needed to improve the evidence regarding the effectiveness of massage.

Keywords: Massage, sports, physical performance athlete, injury

POSTERS

PP 01

Assessment of body mass index and the association with quality of sleep in young adults

Ankita Sharma[1], Tanya Garg[1]

1. Department of Nutrition and Dietetics, Manav Rachana International Institute of Research and Studies, Faridabad, India

Email: ankita.fas@mriu.edu.in

Purpose: The link between sleep and maintaining health and well-being is increasingly relevant for adolescents and adults. The adverse consequences of insufficient sleep on health have been related to obesity, coronary artery disease, hypertension, type 2 diabetes, and even incident pneumonia.

Methods: A total of eighty young adults (female: 29 and male: 51) aged eighteen to twenty-five years were assessed. Anthropometric measurements including age, height, weight and indices like height for age, weight for age, and BMI for age were calculated. The sleep quality was assessed through Pittsburgh sleep quality index questionnaire. The Pearson correlation was carried out to find the relation between BMI and sleep quality.

Results: The levels of BMI have shown to be more in normal category 30.0% and underweight category 32.5% and the obese class I and class 2 are quite on the lower side. The sleep quality of participants responded shown fairly good quality of sleep which is (63.3) % as follows (20.3) % shows very good percentage whereas, (7.6) % is fairly bad quality of sleep and 8.9% shows very bad sleep quality of a young adults. The pearson correlation between the BMI and sleep quality showed no significant difference in young adults.

Conclusion: The result showed that there is no relationship between BMI with sleep quality among adolescents.

Keywords: Body mass index, sleep quality, pittsberg sleep quality index

PP 02

Impact of training volume and intensity on risk of overuse injuries in young athletes: A systematic review study

Bishnu Ghale[1], Mudssir Maqsud Shiekh[1], Jasmine Kaur Chawla[1], Irshad Ahmad[1]

1. Department of physiotherapy, Faculty of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, (MRIIRS), Faridabad, Haryana, India.

Email: bishu66g@gmail.com

Purpose: Training Volume and intensity is essential in enhancing an athlete's overall performance. Training done in an inappropriate manner result in overtraining thus, contribute to injuries in young athletes. Additionally, Overtraining also leads to onset of fatigue in athltes during and after training sessions. The current study is systematic review aim to examine the impact of training volume and intensity on the risk of overuse injuries in young athletes.

Methods: PubMed, Google scholar, Web of Sciences & Embose were used as search engines using headlines related to overtraining, treatment, prevention, and risk of injuries due to training volume and intensity. Eligibility criteria included original peer research articles written in English. Publish between 2009-2023 and using human participants of young age.

Results: The findings of the review suggest that there is significant impact of training volume and intensity in response of both overreaching and overtraining.

Conclusion: After descriptively analyzing 50 articles & revising total of 19 studies, the present study highlighted that overtraining has been associated with physiological and psychological disturbances and leads to various injuries, staleness and burnouts. Those athletes whose training hours exceeded their age or whose sports hours exceeded their free play were also more likely to develop injuries and overuse.

Keywords: Overtraining syndrome, training volume, young athletes

PP 03

A comparative study: effects of Pilates exercises v/s conventional core stability exercises on bat swing velocity and running speed in softball players.

Vidhya Mehta[1], Neeraj Singh[1], Ramhari Meena[1]

1. Department of physiotherapy, Mahatma Gandhi Memorial (MGM) Allied Health Sciences Institute (MAHSI) Indore, Madhya Pradesh, India.

Email:vids3010@gmail.com

Purpose: One of the key athletic abilities related to softball is hitting, which calls for quick rotating motions. Baseball, a sport that has been the subject of extensive research, served as the basis for the development of softball. Bat swing velocity is one of the most crucial aspects of a baseball or softball swing. Because it enables the batter to shorten their entire swing time, lengthen their decision-making time, and accelerate the ball's exit velocity, a high swing velocity is crucial for hitting success. Baseball pitching and swinging kinematics have been discovered to be increasingly correlated with core strengthening. Finding out the impact of Pilates exercises and traditional core stability exercises on bat swing velocity and running speed was the primary goal of the clinical investigation.

Methods: Softball players at the Chimanbagh sports complex in Indore (M.P) were the subjects of this comparative study. The study used a between subjects design with 107 samples total; 27 people were eliminated for failing to meet the inclusion criteria. By using the random sample technique, the remaining 80 participants were split into two groups: Group A, which consisted of 40 people who received Pilates exercises, and Group B, which consisted of 40 people who received conventional core stability exercises. The 20-meter sprint test and the bat swing velocity test's pre- and post-test readings were recorded and analysed.

Results: Since the data was normally distributed, parametric "t-tests," including paired and unpaired, were used to evaluate which type of exercises seems to be more effective than the other in enhancing bat swing velocity and running speed. The results of the data analysis demonstrated that conventional core stability exercises would significantly affect softball players' bat swing velocity and running speed compared to Pilates exercises.

Conclusion: Individually, neither PE nor CCSE demonstrated a meaningful increase in the players' running speed. Both did, however, aid in the acceleration of the bat swing. In comparison, the 20-meter sprint test and bat swing velocity test showed that CCSE was superior to PE for both outcome measures.

Keywords: Conventional core stability exercises, Pilates exercises, bat swing velocity, throwing velocity, ball exit velocity.

PP 04

Comparison of immediate effect of self myofascial release on plantar surface of foot v/s muscle energy technique for improving hamstring flexibility in contact sports players

Mudssir Sheikh[1], Bishnu Ghale[1], Jasmine Kaur Chawla[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, India.

Email address: shaikhmudssir1998@gmail.com

Purpose: Hamstring tightness is one of the leading problems faced by contact sports players; decreased hamstring flexibility is considered to be a predisposing factor for hamstring strain and injuries. These injuries are slow to recover, cause high health expenditures, and decrease the performance level of the player. Self-myofascial release (SMFR) and muscle energy technique (MET) are methods of application intended to restore optimal length, decrease pain, and improve function. Therefore, this study is undertaken to compare and find the most effective technique among the two, i.e., MET and SMFR, for improving the immediate flexibility of the hamstring muscle in contact sports players.

Methods: Amateur male contact sports players were screened according to the inclusion and exclusion criteria. 80 contact sports players, both males, fulfilled the inclusion criteria. MET and SMFR were performed

in groups, (Group A- MET and Group B-SMFR) and a pre- and post-experiment reading of the Active Knee Extension Test was taken and compared between groups.

Results: The results of this present study indicate that a single treatment of the Muscle Energy Technique with hamstring and bilateral SMFR on the plantar aspect of each foot resulted in an immediate increase in hamstring flexibility, as indicated by a decrease in Active Knee Extension scores. The Wilcoxon Signed Rank Test was utilized to evaluate the non-parametric data. For the in-between and Paired Wilcoxon signed rank test within group comparison, that is, pre-versus-post comparison, Mann-Whitney's U test was employed. Within group analysis, group A (MET) showed significant differences in AKE (right and left) scores with standard deviation of ±3.10 right hamstring and ±4.13 for left hamstring($p<0.05$). Within-group analysis for group B (SMFR) also showed significant differences in AKE (right and left) scores with standard deviation of ±4.31 right hamstring and ±4.67 for left hamstring ($p<0.05$). Between group analyses for AKE (right and left), scores showed differences, but Group A showed greater improvement than Group B.

Conclusion: From this study, it is concluded that a single session of both techniques (MET and SFMR) showed statistical as well as clinical significance in improving hamstring flexibility; however, the Muscle Energy Technique showed greater improvement than SFMR in contact sports players in both limbs.

Keywords: Muscle energy technique, Myofascial release, Hamstring, Active knee extension test

PP 05

Disorders of gut-brain axis: A review highlighting the treatments so far.

Riya Khurana[1], Gurseen Rakhra[1]

1. Department of Nutrition & Dietetics, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, India.

Email: khuranariya833@gmail.com

Purpose: There is a high prevalence of disorders of gut-brain axis (DGBI) globally as well as in India. Although DGBIs have a complex pathophysiology, they are a result of an interplay between physiological, environmental, psychological and genetical factors of a person. Three of the most researched DGBIs are irritable bowel syndrome (IBS), functional dyspepsia (FD) and functional constipation. Current researches point out visceral hypersensitivity, altered gastro-intestinal motility, intestinal inflammation, triggered immune activation, and increase in intestinal permeability and gut dysbiosis as the main mechanisms involved. A high number of individuals presenting in clinical setting with exacerbating symptoms have reported to find relief from medication. However, evidence from researches have suggested the use of complementary or alternative therapies along with medicines for a better result. This review explores all the potential complementary or alternative therapy treatments used for DGBI to achieve symptom relief and a better quality of life.

Methods: For this review a robust search for research articles was carried out using search engines, "PubMed", "Google Scholar" and "DOAJ". The keywords that were used to search included "DGBI treatments", "DGBI control trials", "IBS trials", "dyspepsia trials", "DGBI and treatments". The search gave a total of 353 papers out of which 70 papers were selected based on inclusion criteria.

Results: We categorized alternative and complementary therapies into eight categories under which various techniques were followed along with pharmacotherapy to treat DGBIs. These strategies include i) supplementation- probiotic/prebiotic/ symbiotic supplementation, cannabis supplementation ii) gut microbiome modulation through diet modification- ketogenic diet, low FODMAP diet, Mediterranean diet and intermittent fasting have shown increased symptom relief when compared to traditional regional diets along with medicinal therapy, iii) psychological modifications involving brain-gut behavior therapies (BGBT), cognitive behavior therapy, gut directed hypnotherapy, iv) physical exercise therapies like yoga, v) alternate medicinal treatments involving ayurveda, homeopathy, vi) energy healing through reiki treatments, vii) nerve stimulation therapy- targeting neuromodulators, and viii) Microbiota alteration through fecal microbiota transplant. There is being a recent shift in the treatment paradigm in the field of DGBI treatments that include "percutaneous electric nerve field stimulation" and "virtual reality" therapy. They may pose as helpful tools for the treatment of DGBIs alongside medication to improve symptoms and quality of life to a higher extent. The efficacy of these therapies and individual response however varies person to person and can be challenging to predict.

Conclusion: There is a growing body of research exploring the effects of various alternative therapies for relief from DGBI symptoms along with pharmacotherapy. Various controlled trials have used the above stated therapies and have shown increased response towards symptom relief and quality of life of patients, however, the reports on long term effect and compliance is scarce. Also, the efficacy of these therapies and individual response varies person to person and can be challenging to predict. There also lies a gap between research-based evidence and the treatments that are used by physicians in clinical settings. There needs to be a good published data on the use of the alternate treatments in clinical setting by the physicians to establish a significant response with respect to general population. To conclude, by selecting good set of treatment groups based on medical profile of an individual we can observe a reduction in symptom burden with increased quality of life and social function.

Keywords: Disorders of Gut Brain Interaction, DGBI, IBS treatments, functional dyspepsia

PP 06

A comparative study of selected physiological parameters between middle-aged biomass using rural household women and liquefied petroleum gas using urban household women

Shubankar Singha[1], Papan Mondal[1]

1. Department of Physical Education, Jadavpur University, Kolkata, West Bengal, India.

E-mail: shubankarsingha1998@gmail.com

Purpose: Heart rate, blood pressure, body temperature, oxygen saturation, respiratory rate, muscular strength, metabolic rate, and hormone levels are a few examples of physiological markers or parameters which helps to assess the body systems. A third of the world's population, or around 2.4 billion people, cook over open flames or inefficient stoves powered by kerosene, biomass (wood, animal manure, and agricultural waste), and coal, which causes dangerous indoor air pollution which contains health hazardous harmful pollutants. The purpose of the study was to compare the effect of health in terms of physiological parameters as a consequence of using biomass fuel as compared with liquefied petroleum gas users in middle-aged women.

Methods: A total of 64 subjects (age range 40-60 years) were randomly selected (32 rural and 32 urban) asymptotic users with no history of any kind of health issues and with more than 10 years of long history of using biomass and liquified petroleum gas were selected as the subjects. The subjects were selected on the basis of a purposive sampling technique. Following Physiological Variables were selected- Peak Expiratory Flow Rate, Blood Oxygen Saturation Level, Pulse Rate, Blood Pressure. The significance of difference of the means of two group were tested by using t – test with 0.05 significance level.

Results: There was significant difference in the variables like Peak Expiratory Flow Rate, Pulse Rate, Systolic Blood Pressure, Diastolic Blood Pressure in between groups but no difference found in Blood Oxygen Saturation Level. The Mean and SD value of Peak Expiratory Flow Rate in biomass user group was 304.34±46.10 l/m and LPG user group was 360.25±48.03 l/m. with 55.90625 of mean difference with 4.75 calculated "t" value (p-value<0.05) between two groups, where the Mean and SD value of Blood Oxygen Saturation Level in biomass user group was 98±0.71(%) and LPG user group was 98.25±0.67 with 0.25000 of mean difference with 1.438 calculated "t" value (p-value>0.05) between two group, where the Mean and SD value of Pulse Rate test in biomass group was 81.56±8.27331 (bpm) and LPG group was 76.90±5.26 (bpm) with 4.65625 of mean difference between two group and 2.685 of calculated "t" value (p-value<0.05), the Mean and SD value of Systolic Blood Pressure in biomass user group was 119.00±10.42 (mmHg) and LPG group was 115.15±8.02 (mmHg) with

7.843 of mean difference between two group with 3.373 calculated "t" value (p-value<0.05), and the Mean and SD value of Diastolic Blood Pressure in biomass using group was 74.46±7.66 (mmHg) and LPG group was 67.62±5.80 (mmHg) with 6.843 of mean difference and 4.025 calculated "t" value (p-value<0.05) between two groups.

Conclusion: From the study, it was concluded that there were physiological variables like Peak Expiratory Flow Rate, Blood Oxygen Saturation Level, Pulse Rate, Blood Pressure etc differences present between middle-aged biomass-using rural household women and middle-aged liquefied petroleum gas-using urban household women. Chronic exposure to biomass fuel smoke causes adverse effects on various physiological parameters, mostly the cardio-pulmonary and cardiovascular systems in the human body.

Keywords: Physiological variables, liquefied petroleum gas, peak expiratory blood profile

PP 07

Effect of mobile phone addiction on physical fitness of Indian youth

Urmila Tamta[1], Sampada Jahagirdar[1]

1. Amar Jyoti Institute of Physiotherapy, University of Delhi, India.

Email: urmilatamta01@gmail.com

Purpose: Mobile Phones have emerged as an invisible driver of modern life. They have expanded opportunities especially for the youth in terms of better productivity of daily life and socialization. But on the flip side, its excessive use can lead to Mobile Phone Addiction (MPA) which has been found to increase stress and anxiety, induce sleep disorders and compromise physical activity. But till date its direct effect on Physical fitness of Youth which is the future workforce is unclear. This study has been undertaken to investigate this effect by comparing the physical fitness levels of mobile phone addicted and mobile phone non addicted individuals.

Methods: This study was conducted on 128 young adults aged 15- 29 years in Delhi- NCR. Smart Phone addiction scale short version (SAS-SV) was used to divide the subjects into addicted and non-addicted groups. Six components of physical fitness namely flexibility, aerobic fitness, BMI, core strength, muscular endurance and balance were then administered on both the groups. The subjects with mobile phone addiction (≥31 points for males; ≥33 points for females) and mobile phone non addiction (<31 points for males; <33 points for females) were compared using independent student t-Test on their physical fitness levels. Pearson's correlation was done for evaluating correlation between mobile phone addiction and physical fitness.

Results: Participants with mobile phone addiction scored slightly less in physical fitness tests than participants in the mobile phone non addicted group. However, no statistically significant difference was observed on comparison between the two groups. In addition to this very, weak correlation existed between various components of physical fitness and mobile phone addiction.

Conclusion: Mobile phone addiction has no significant effect on physical fitness of Indian Youth.

Keywords: Mobile phone addiction, physical fitness, youth, physical activity

PP 08

Post-operative rehabilitation following Osteochondritis dessecans: A single case study

Riya Mittal [1], Himani Kaushik[1], Avi Choudhary[1], Divya Aggarwal[2], Pooja Sethi [3]

1. Banarsidas Chandiwala Institute of Physiotherapy, Guru Gobind Singh Indraprastha University, Delhi, India.

2. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, India

3. Senior Physiotherapist, Department of Physiotherapy, Dr. Ram Manohar Lohia Hospital, Delhi, India

Email: mittalriya1982@gmail.com

Purpose: Osteochondritis dissecans (OCD) is a medical condition that occurs when the blood supply to a specific area of bone is interrupted. As a result, the bone and its cartilage covering can separate from the rest of the bone. This detached fragment of bone and cartilage may become loose and even break off into the joint, causing discomfort and pain. OCD is commonly found in the knee, ankle, and elbow. Although it typically occurs in children and adolescents, it can also develop in adults.This study aims to outline the rehabilitation objectives, decision-making process and clinical milestones required for a post-surgery runner to return to the field.

Methods: A 24-year-old male athlete came to the clinic with complaints of pain, swelling, and instability in his right knee. After diagnosis, he was found to be suffering from acute OCD in the right knee and underwent surgery. Four days after the surgery, he began a course of rehabilitation which included iontophoresis, range-of-motion exercises, strengthening exercises, and aquatic exercises to improve coordination and strength. He also underwent on-field training to develop his technical and tactile skills.

Results: According to the case report, the patient was able to return to the field or track after undergoing 7 months of rehabilitation. During this time, the patient underwent 210 sessions, with one session per day. After 5 months, he reported that he had achieved 70% function (Single Assessment Numeric Evaluation) and that he experienced no pain while walking or performing full work duties.

Conclusion: This case study demonstrates the process of making clinical decisions regarding the physical therapist's management of an athlete with OCD. Some factors that may have encouraged an early return to sports include the athlete's optimal physical fitness before surgery, a personalized progression of volume and intensity of exercise loads, and a suitable density of rehabilitation training in pool and field exercises.

Keywords: Knee, physiotherapy, rehabilitation, osteochondritis, athlete

PP 09

Effectiveness of positional release technique in cervicogenic headache among gym goers.

Roshani Sharma[1], Jasmine Kaur Chawla[2], Pradumn Kumar Rai[3], Pragya Kumar[3],

Ankit Jain[3]

1. ABXPhysio, Guwahati, Assam.

2. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana.

3. Department of Physiotherapy, Amity Institute of Health Allied Sciences, Amity University Noida, Uttar Pradesh.

Email: roshnisharma899910@gmail.com

Purpose: Cervicogenic headache (CGH) is a multifactorial and complex condition involving impairment in upper cervical movement and muscle dysfunction. While there is growing evidence that supports the use of manipulative therapy and other treatment options, there is limited research citing the beneficial effects of positional release therapy. The purpose of this prospective randomised controlled trial was to investigate and compare the effects of positional release and conventional exercises in the management of CGH.

Methods: Sixty participants of both genders, aged between 18 and 30, were randomly assigned to two groups: the Experimental group (Group A) and the Control group (Group B). Both groups engaged in a comprehensive exercise program, with a focus on exercises directed toward the cervicoscapular region, including isometric, dynamic, and stretching exercises. Additionally, participants in Group A received positional release therapy in conjunction with the prescribed exercises. The intervention was administered three times per week over a four-week period. Pain assessment of the participants was done by the Visual Analog Scale (VAS), information regarding frequency of headaches and sleep disturbances was recorded before and after the intervention. Data was analysed using SPSS version 24.0. Student's paired and unpaired t-test was used to compare the effects of the intervention. The statistical significant difference was set at $p<0.05$.

Results: In the present study, both the treatment protocol were effective in reducing pain related to headache as well frequency of headaches and sleep disturbances ($p<0.05$). However, compared to baseline and control group, positional release technique along with exercises revealed

significant reduction in the parameters assessed.

Conclusion: The current study provides evidence and highlights the potential of positional release technique when used in conjunction with the conventional exercises brings about positive impact on cervicogenic headache. Further, the study promotes the use of adjunct treatment protocol for the management of such condition. The combined effects of this technique will aid in reducing pain and thereby improve the overall health.

Keywords: Cervicogenic headache, positional release, muscle dysfunction

PP 10

Prevalence and associated risk factors of low back pain among salon workers of Delhi NCR: A cross-sectional study

Jasmine Kaur Chawla[1], Ilma Khan[2], Roshani Sharma[3], Pragya Kumar[2]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana.

2. Department of Physiotherapy, Amity Institute of Health Allied Sciences, Amity University Noida, Uttar Pradesh, India.

3. ABXPhysio, Guwahati, Assam, India.

Email: jasminekaur.sahs@mriu.edu.in

Purpose: Low back pain is one of the most debilitating and prevalent musculoskeletal condition that stands out as a widespread and leading cause of disability, adding to the economic burden on individuals and society. While salon workers are high-risk professionals predisposed to this condition, however, they often receive less focus in research and initiatives. Therefore, the objective of the present study was to assess the prevalence of low back pain and risk variables among salon workers of Delhi, shedding light on a specific occupational group within the broader global context of this widespread health challenge.

Methods: A cross-sectional study was conducted from July 2022 to September 2022 on 100 salon workers. The study employed simple random sampling to select a representative sample of 100 salon workers from the registration roster of beauty salons in Delhi, ensuring a randomized and unbiased representation of the population. However, it is crucial to recognize that certain factors, such as variations in salon size or worker demographics, may introduce limitations during the data collection process, which should be taken into consideration when interpreting the study results. A structured questionnaire was used to obtain the data. Data was analysed using SPSS version 26.0 with a p-value of <0.05 to declare statistical significance. Pearson's correlation coefficient was used to identify the risk factors and their association with low back pain

Results: The prevalence of low back pain among salon works was found to be 65%. The prevalence of low back pain among employees was higher among women (70.3%) than among men (50.0%). The study found that working more than eight hours a day and standing for an extended period of time both increase the risk of low back discomfort (odds ratio [OR]=2.23, 95% confidence interval [CI]=1.21-4.12). Another significant risk factor for low back discomfort was wearing high heels (OR=2.38, 95% CI=1.37-4.13). Based on these findings, it is evident that low back discomfort is highly prevalent among salon employees in the Delhi-National Capital Region, particularly among female workers. Notably, extended work hours, prolonged standing, and the regular use of high heels emerge as significant risk factors contributing to the occurrence of low back pain within this occupational group.

Conclusion: The high prevalence of low back pain amongst salon workers suggests the need for prompt attention and promotion of intervention strategies. Recommendations extend beyond generic education and management programs to emphasize specific ergonomic improvements (e.g., ergonomic seating and workstations) and psychological support measures (e.g., stress management workshops, counselling). On-the-job training initiatives can enhance preventive measures. Future research should explore the long-term efficacy of these interventions and assess their impact on mental well-being. This approach aims to enhance the relevance and applicability of the proposed interventions, contributing to a more comprehensive understanding of occupational health in the salon industry.

Keywords: Low back pain, musculoskeletal condition, salon workers, footwear, working hours

PP 11

Differential efficacy of shoulder girdle muscles in management of Trapezius myalgia

Dheeraj Kumar[1], Nitesh Malhotra[1], Sanjeev Gupta[1],Pooja Sharma[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, India

Email: dheerajkumar.sahs@mriu.edu.in

Purpose: Trapezius myalgia is one of the most common cause of absence from work. It is generally known as muscle pain or ache. In this, pain is localized to the superior fibers of trapezius muscle and effect neck and shoulder areas. It is a common disorder which can be seen in the individuals with different population and age group. It was determined that the shortening of pectoralis minor and upper trapezius lengths increases the likelihood of exhibiting scapular dyskinesis in this asymptomatic population. Having a shorter pectoralis minor and upper trapezius appears to be a very significant risk for having observable scapular dyskinesis. Aim of the study was to check the effect of pectoralis minor and trapezius stretching in trapezius myalgia.

Methods: 30 male subjects who were meeting exclusion and inclusion criteria were taken. The procedure of the experiment, muscle length and range of motion was taken by the help of measuring tape, after that range of lateral flexion of the neck was taken by the help of the goniometer and after that treatment was given for four days. Informed consent was taken from each participants. Subjects were divided into two group A and B, group A Trapezius stretching whereas group B Pectoralis Minor stretching along with ultrasonic and neck isometric exercises which was common for both group. Pre and post range of motion and muscle length data was taken and compared for any changes. After four days treatment data was taken to check whether there was any variation has been found.

Results: Out of 30 subjects all were males of age group 18-35 years, mean age of 26.5±5.69 yrs. There was a significant difference (p = .0001) in the degree of range of motion of lateral flexion with mean value 32.6 and 39.9 with t value 7.12E-05.There was a significant difference (p = .0001) in the muscle length with mean value 10.24 and 19.18 with t value 1-14E-10. This study concluded that pectoralis minor stretching along with trapezius stretching is an effective measure in improving the functionality and pain in the people who are suffering from trapezius myalgia. Results have emphasized that rehabilitation protocols for trapezius myalgia should include pectoralis minor lengthening along with trapezius stretching.

Conclusion: It is advised to add pectoralis minor stretching in rehabilitation protocol of trapezius myalgia patient.

Keywords: Shoulder girdle muscles, trapezius myalgia, physiotherapy

PP 12

Investigating association of spasticity, functional activity and severity of the condition in Spastic diplegic Cerebral Palsy children.

Dheeraj Kumar[1], Sanjeev Gupta[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, India

Email: dheerajkumar.sahs@mriu.edu.in

Purpose: Cerebral Palsy is characterized by poor control of movement, adaptive length changes in muscle, in some cases skeletal deformity. Aim of this study was to find the correlation between degree of spasticity, functional activity and severity of condition in children with Cerebral Palsy.

Methods: 30 children with spastic diplegic cerebral palsy participated (purposive sampling) in this cross-sectional study as per the inclusion & exclusion criteria. The study involved a comprehensive assessment of the subjects' condition including; degree of spasticity on Modified Ashworth Scale (MAS), Interview with parents (or caregivers) for functional independence on Wee Functional Independence Measure (Wee FIM). Additionally, the severity of their condition was classified on Gross Motor Function Classification System (GMFCS) scale.

Results: The Kruskal-Wallis test was employed to analyze the statistical significance of the spasticity levels in the lower limbs as a whole. The results indicated that there was no statistically significant difference at the 5% significance level, with a chi-squared (X^2) value of 2.645 and a p-value of 0.265. For the statistical significance of functional activity levels, the Kruskal-Wallis test did not yield substantial evidence of statistical significance. The chi-squared (X^2) value was 3.715, and the associated p-value was 0.156. These results indicate that the functional activity levels among the groups did not exhibit a significant difference at the 5% significance level. The evaluated 30 children with diplegic cerebral palsy aged between 4 and 15 years. The exclusion of children below the age of 4 was a deliberate choice, as parents often overlook or are unaware of their child's developmental milestones during this early stage. Our assessments focused on three key aspects: the degree of spasticity, functional activity, and the overall severity of the condition in these children. We discovered a statistically significant and moderately positive correlation between the severity of spasticity and the overall severity of cerebral palsy, denoted by a correlation coefficient (r) of 0.616 ($p < 0.001$). Spasticity levels across different groups were found fairly consistent with no significant variation. This suggests that as the degree of spasticity increases, there tends to be a corresponding increase in the severity of the condition. The lack of statistical significance suggests that the differences observed in spasticity levels and functional activity levels across the groups may be attributed to chance rather than meaningful variation.

Conclusion: The study revealed a robust correlation between the severity of CP and the level of functional activity among the children. A less pronounced to moderate correlation was observed between spasticity and functional activity, as well as between spasticity and severity.

Keywords: Cerebral Palsy, Modified Ashworth Scale, Wee Functional Independence Measure, Gross Motor Function Classification System scale.

PP 13

A prospective randomized comparative study between isolated eccentric versus conventional exercise therapy in athletes with rotator cuff tendinopathy

Shorya[1]

1. Department of Sports Medicine, Pt.B.D Sharma PGIMS, ROHTAK,

Email: shoryasinghpnp127@gmail.com

Purpose: To compare the effectiveness of an isolated Eccentric exercise program versus Conventional exercise program in athletes with rotator cuff tendinopathy.

Methods: The study included 80 athletes with rotator cuff (RC) tendinopathy (diagnosed on Magnetic resonance imaging) presenting to author's tertiary level institute. Patients were randomized into two groups of 40 each by computer generated numbers. The eccentric exercise group (n = 40, mean age = 26.4years) received an isolated eccentric training combined with stretching, while the conventional exercise group received scapular stabilization exercises, concentric RC strengthening exercises and stretching. (n = 40, mean age = 25.2years). Patients in both groups fulfilled 12 week daily home based exercise program and received treatments twice a week for 3 months. Primary outcome measures were shoulder pain (a 0–100mm Visual Analog Scale; VAS) and function measured with the Constant Murley score and Disabilities of the Arm, Shoulder and Hand (DASH) score. Secondary outcome measures were isometric abduction strength in 45° in the scapular plane (Hand held dynamometer) and shoulder range of motion (forward elevation, abduction and external rotation). All measurements were taken at baseline, at 12, and 24weeks. There was no statistically significant difference in pre-intervention scores between two groups. The study was approved by Institutional Review Board.

Results: After 24 weeks, both groups showed a significant decrease in VAS scores and DASH score and a significant increase in the Constant Murley score. No statistically significant differences were found between the groups for any of the evaluated outcome measures. In the EE group, there was a slight deterioration in both CM and VAS scores between 12 and 24 weeks, but this did not reach statistical significance. Both groups also had a significant increase in isometric muscle strength between baseline and 24 weeks.

Conclusion: Both groups had significantly increased ROM, decreased pain and better function after 24 weeks of treatment. A 12 week isolated eccentric training program of the rotator cuff is as effective (but not superior to) as conventional exercise program for the rotator cuff tendinopathy in athletes.

Keywords: Isolated eccentric exercise, conventional exercise, athletes, rotator cuff tendinopathy

PP 14

Co-relation between characteristics of hand-held devices and disability of neck and upper extremity

Kangana Juneja Kansal[1], Dheeraj Kumar[2], Sanjeev Gupta[2]

1. Department of Physiotherapy, K. R. Mangalam University, Gurugram, Haryana, India

2. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, India

Email: Drkangana22@gmail.com

Purpose: There has been rampant rise in mobile usage in last 5-10 years with even higher penetration of internet usage among its users. Close to 90% of such internet usage is mainly for communication; e-mails & social networking besides web browsing and other applications. Mobile phone / Hand-held Devices (HHDs) require repetitive movement in static posture of neck and upper limb, which can cause Musculoskeletal Disorder (MSD) or Repetitive Stress Injuries (RSI). MSD are inflammatory condition (due to damage of underlying structures) of joint, muscle, ligaments, tendon, nerve causing pain and fatigue. Aim of this study was to see the co-relation between characteristics of HHDs (weight and screen size) along with disability of neck & upper extremity due to the posture and respective time duration.

Methods: The study adopted survey method. 100 subjects (28 males & 72 females; age of 21.23±2.18 years) from multiple rehabilitation clinics were included in the study; all subjects gave informed consent to participate in the study. Subjects were recruited randomly in the survey as per the inclusion criteria. Average weight of HHDs used was 160.32±15.33 grams and average screen size was 5.66±0.57 inches. Subjects were assessed as per the disabilities of the arm, shoulder and hand (DASH) and Neck Disability Index (NDI) including details of HHDs and posture in which subject uses device the most, places where they operate HHDs, duration and the purpose HHDs usage.

Results: No significant co-relation was seen between disabilities of the arm, shoulder and hand (DASH) and Weight of HHDs, inverse co-relation was seen between DASH and Screen Size of HHDs ($p < 0.05$). The correlations between the weight of the device and the DASH score was 0.02, between the weight of the device and the NDI score was 0.01, between the screen size of the device and the DASH score was -0.01, and between the screen size of the device and the Neck Disability Index(NDI) score was 0.006. Overall no co-relation was found between characteristics of HHDs and disabilities of neck and upper extremity.

No correlation was found between the characteristics of HHDs and NDI. However, an inverse correlation was observed between the characteristics of HHDs and DASH. The findings were contrary to the hypothesis; this may be attributed to the limited population size, further since age group was constrained (students only) and targeted duration of device usage was limited to one year this makes the final inference drawing elusive.

Conclusion: It is concluded that there is no significant correlation between the characteristics of HHDs and the incidence of neck and upper extremity disabilities in young adults.

Keywords: Mobile-phones, neck-pain, upper extremity pain

PP 15

Association between biomechanical measures of cervical and psychological measures in patients with Tension-type Headache

Richa Chauhan[1], Irshad Ahmad[1]

1. Department of Physiotherapy, School of Allied Health Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana, India

Email: Chauhanricha104@gmail.com

Purpose: Tension-type headache (TTH) is a neurological disorder with symptoms of headache (pain in a band-like fashion, bilateral forehead to occiput) associated primarily with tension. The predisposing factors for TTH were psychological factors such as anxiety, stress, depression and muscle tightness. Therefore, the study aimed to find any association between the biomechanical measures of cervical and psychological measures in patients with TTH.

Methods: Thirty adults (aged between 20 and 40 years) with TTH were selected based on inclusion and exclusion criteria. Their demographic characteristics such as age, height, weight, body mass index (BMI), headache duration, visual analog scale (VAS) and headache disability index were reported. Then, they were assessed with cervical flexion and extension range of motion (ROM) using a goniometer, craniovertebral angle (CVA) using the Kinovea app and psychological measures using depression anxiety stress scale 42 (DASS 42). The correlation was analyzed between cervical ROM, CVA and DASS-42 score using Pearson correlation.

Results: Their age (27.23±6.22 years), BMI (23.24±3.86 kg/m^2), Headache duration (6.57±2.34 hours), VAS (5.97±1.12) and headache disability index (66.83±14.42) were reported. Results showed a moderate negative correlation between cervical extension and all psychological measures, such as depression ($r = -0.486$, $p = 0.007$), anxiety ($r = -0.445$, $p = 0.014$), stress ($r = -0.434$, $p = 0.016$) whereas cervical extension was found no association with DASS-42. Also, CVA was found no significant association with DASS-42.

Conclusion: This study concluded that only cervical extension showed an association with psychological measures whereas CVA and cervical flexion found no association with the psychological measures.

Keywords: Cervical range of motion, psychological aspects, craniovertebral angle

KEY NOTE ADDRESS

K 01

Connecting holistic health and well-being to interactive technology in youth and community through the CDC WSCC model and UNSDG 17 physical education and health

Prof. Dr. Ming-Kai Chin

Founder and President, BRICSCESS. The Foundation for Global Community Health (GCH) Founding & Immediate Past President, BRICS Council of Exercise & Sports Science (BRICSCESS), Co-Founder & Former President Asian Council of Exercise & Sports Science (ACESS) Vice President, Global Affairs & Research HOPSports Inc., USA, Hong Kong-China.

Global Perspectives and Best Practice (Chin & Edginton,2014) included 109 scholars representing 67 universities and institutions from 40 countries focusing on new directions for physical education and health in their respective countries. This presentation provides an update on global perspectives changes found both in the literature and from discussions at international forums and conferences. Several areas of focus ae interactive technology, community networking, model schools, and best practice which are aligned with the promotion of holistic health and wellbeing. The Foundation of Global Community Health (GCH), founded in 2017, serves as an illustration of the ways in which changes occur. The GCH mission is to improve community health and wellness worldwide by promoting physical, social and emotional health and safety through scientific evidence and culturally relevant school-based intervention strategies. Online streaming projects, such as Brain Break (BB), was initiated by GCH and has developed more than 300 BB videos that are available to the world for free use. The current coronavirus pandemic has caused lockdowns in most countries confining families to their homes and reducing physical activity. Lack of physical activity is now a major global concern, and health professionals recommend that in order to maintain holistic health, regular physical activity is a basic requirement for each family member. Future global directions aimed at the promotion of physical activity and health and the linking of the Centers for Disease Control and Prevention Active Model School ideal, Whole School, Whole Child and Whole Community (WSCC), and the 17 United Nations Sustainable Development Goals (UNSDG 17), especially "Goal 3, Health and Well-Being, Goal 4 Quality Education, and Goal 11 Sustainable Communities and Cities" is emphasized with the use of case studies.

K 02

Adapted judo for children with autistic spectrum disorder: the AUTJUDO project

Prof. Myriam Guerra-Balic

Board of Directors, GCH FPCEE-Blanquerna, University Ramon Llull, Spain

Physical activity is one of the main components for health and wellbeing in all kinds of populations. It has been shown that persons with ID have decreased cardiovascular fitness and present lower rates of PA. They are considered inactive and very sedentary. Barriers to be active are several: socio-economic, low autonomy, institutionalization, lack of motivation and movement limitations. Since some years ago, researches are proposing different kind of activities that could be motivating for this population, and that would improve not only their functionality and fitness levels, but also produce some cognitive and social benefits. The Autistic Spectrum Disorder (ASD) is defined as a developmental and neurological disorder with an idiopathic etiology that appears with difficulties and deficits for communication and social interaction, repetitive behaviors, and stereotypes. ASD includes several conditions that use to be diagnosed separately: Autistic disorder, Pervasive developmental disorder not otherwise specified (PDD-NOS) and Asperger syndrome. The learning, thinking, and problem-solving abilities of people with ASD can range from gifted to severely challenged. Some people with ASD need a lot of help in their daily lives; others need less. People with ASD also show motor difficulties. Judo might attract children and youngsters with ASD because of their repetitive structure. It decreases stress and cortisol levels in youngsters with ASD. It improves health and psychosocial behaviors and decreases aggressive conducts. Children with ASD enjoy and wish to participate in Judo programs, with a very high percentage of adherences. The European AUTJUDO project (612954-EPP-1-2019-ESSPO-SCP) will be presented, which consists of an adapted judo program developed for children and adolescents with ASD. It will be shown how this program impacts improving their motor skills and psychosocial behaviors, taking into account their social inclusion.

K 03

Holistic development of fitness in children and youth in India: need for development of a sustainable model

Prof. Dr. G L Khanna

Pro Vice Chancellor, Manav Rachna International Institute of Research and Studies, India

Globally, many of the major causes of death connect to non-communicable diseases (NCDs) associated with physical inactivity, such as obesity, heart disease, stroke, cancer, chronic respiratory disease, and diabetes. It has been reported that 10% of all deaths, from NCDs, can be attributed to physical inactivity. There are 300 million school-going and 80 million out of-school children in India between the age group of 5 to 18 years. Survey of Indian council of medical research has indicated that 20% of Children are is overweight or obese; another survey indicated that 40% of Primary School Children are underweight and Obesity in 12 to 19 years and the number has tripled since 1970. 90% Indians believe that Schools and Workplaces are responsible for creating a healthy and active environment. Several Studies have shown that extending of focus beyond Academics to Sports and other activities improves classroom attendance and interest in studies. Sports and physical activity require innovative and scientific model which can play a crucial role in the implementation of health-related SDGs and further help in the achievement of "Healthy/fit India". Sports science and technology in India has changed the way sport is and physical activity are played and perceived. India has developed a sports ecosystem that is leading to increased participation in sport and physical activity. The Government of India has taken number of measures for the development of Sports and physical activity. India has launched Fit India plan to achieve health-related SDGs through sport and physical activity. Application of scientific research and innovative technology on or off the field has impacted sport outcomes in a profound way and is essential to sporting success. However, India need to make an impactful change by focusing on building a sports and fitness culture in the country, to create a generation of fitter, healthier kids, socially aware, and have the right life skill. A sustainable model for holistic fitness of children and youth needs to be designed which can include more innovative approaches, collaboration between school and community, multidisciplinary approach. Redesigning curriculum of schools by incorporating physical activity like yoga, dance and sport to promote fitness and cognitive development is an urgent need.

K 04

Physical activity and reduction in chronic disease

Prof. Dr. Stephen Kopecky

Past President, American Society for Preventive Cardiology Professor of Medicine College of Medicine, Mayo Clinic USA

Lifestyle is now the leading risk factor for early cardiovascular death and chronic disease worldwide, and it is estimated that 80-90% of our health is primarily based on individual lifestyle. Over the past few decades, the obesity rate has increased markedly in countries of both upper and lower socio-economic status, including BRICS countries. The two primary components of lifestyle are physical activity and diet. As work requirements push us towards a more sedentary lifestyle, it is critical that we try to maintain regular physical activity, including both moderate frequent daily short episodes to counter our stationary work habits and less frequent episodes of vigorous interval activity. To achieve this, an interdisciplinary approach including teamwork and integration between healthcare providers, exercise physiologists, and dietitians will be required. New healthy food options will be essential to help

us migrate away from our increasingly high intake of ultra-processed foods. In addition, populations musthave access to opportunities for safe physical activity. The Physical Activity and Sports Medicine fields must be positioned to lead this lifestyle transformation via population, government, and industry education.

K 05

Promoting holistic and sustainable physical education and physical activity for children and youth

Dr. Uri Schaefer

President, International Council of Sport Sciences and Physical Education (ICSSPE), Past President and Board member, International Council of Coaching Excellence (ICCE), International Adviser, BRICSCESS, Executive Director, Israel Coaching Association Start Up Consultant: Fantasticwe.com Israel

In 2020 the entire world, for the first time in several decades, was forced to respond to a pandemic which reached almost all countries. Many governments decided to restrict public life and implemented measures to slow down the spread of the virus and its subsequent variants. The restrictions caused severe physical and economic challenges, in addition to this, home schooling increased the emotional stress of young people and parents. The pandemic has left all members of society higher levels of anxiety, perceived stress, and much lower levels of sport and physical activity. Physical education has been dealt a blow during the pandemic and since then has not been able to recover in many places. Young people in and outside the school system have drifted away from the WHO recommended daily dose of physical activity. However, the pandemic has left us with opportunities to explore new evidence-based modes of promoting physical activity, especially among young people. ICSSPE President Dr Uri Schaefer will present the gap between existing scientific evidence regarding the impact of physical activity on development and wellbeing on one hand, and existing policies on the other. He will close his presentation by proposing components for a strategic approach to increase the impact of evidence-based policy development.

INVITED TALKS

I 01

Using digital technologies in the competence Physical education, sport and fitness according to worldskills Russia standards

Assoc. Prof. Dr. Maria Abulkhanova

Founding Member and Vice President of BRICSCESS Russia

The study is consecrated on the development of the module «The involvement of different age group people in healthy lifestyle maintaining» by using digital technologies (smart wristbands ONETRAK C 320 Pulse) for the competence «Physical education, sport and fitness» and analysis of its compliance with Worldskills Russia standards. The research area aims to identify and investigate the structural and functional contributing factors to the movement system development and to provide an effective strategy for the assessment, prevention and maintenance of healthy lifestyle standards throughout the lifespan. During the research, we evaluated the results of regional Championships in this module. To determine compliance with the standards, we analyzed the results of the performance of 144 competitors in 22 regional Championships for the competence "Physical education, sport and fitness" in the championship 2019-2020. The data analysis showed that the average percentage of task completion is from 15% to 64.1%, and therefore it is concluded that the developed module from the competition task for the competence "Physical education, sport and fitness" meets the standards of World skills Russia. This might lead to improving a person's health status and increase the motivation to be more active irrespective to past experience with physical activity.

I 02

Using the omni rate of perceived exertion (RPE) scale to self-regulate exercise intensity to induce cardiovascular and peripheral adaptations during soccer training

Assoc. Prof. Dr. Govindasamy Balasekaran

FACSM President, Asian Council & Exercise Sports Science (ACESS). American College of Sports Medicine (ACSM) Health Fitness Director, Former Head, Physical Education & Sports Science. Former Programme Director Sport Science Management Physical Education & Sports Science National Institute of Education Nanyang Technological University Singapore

Training at Ventilatory breakpoint (Vpt) is an optimal intensity to induce cardiovascular fitness. This study investigated the utilization of the OMNI Rate of Perceived Exertion (RPE) Scale during female soccer players' training sessions that corresponded to Vpt. Ten females' (age: 23.30 ± 1.49 years, height: 161.10 ± 7.50 cm, body fat: 22.20 ± 3.90 %) Vpt was determined by a treadmill test followed by two 30-minute field soccer sessions (S1 and S2 – warm up: 5 minutes, activity: 15 minutes and cool down: 5 minutes). Results indicated that Vpt was established at RPE 4.89 ± 0.93. There was no significant difference for HR and RPE between both field sessions. (Warm up: HR: S1: 129 ± 11.2 beats•min-1 vs. S2: 125 ± 7.40 beats•min-1, p = 0.08; RPE S1: 2.30 ± 0.68 vs. S2: 2.30 ± 0.57, p = 0.34), Activity: HR: S1: 162.50 ± 14.69 beats•min-1 vs. S2: 163.70 ± 8.92 beats•min-1, p = 0.68, RPE S1: 4.90 ± 0.99 vs. S2: 5.00 ± 0.47, p = 0.73; Cool down: HR: S1: 108.10 ± 17.98 beats•min-1 vs. S2: 108.20 ± 11.56 beats•min-1, p = 0.97; RPE S1: 1.40 ± 0.52 vs. S2: 1.50 ± 0.52, p = 0.59). RPE and HR were significantly different between warm up, activity (RPE: 2.2 ± 0.79 vs. 5.0 ± 0.47, p = 0.00; HR:132.30 ± 7.89 beats•min-1 vs. 167.00 ± 2.05 beats•min-1, p = 0.00), activity and cool down (RPE: 5.0 ± 0.47 vs. 1.7 ± 0.48, p = 0.00; HR: 106.40 ± 7.03 beats•min-1 vs. 167.00 ± 2.05 beats•min-1, p = 0.00). Hence, participants were able to self-regulate exercise intensity at Vpt (RPE 4 to 6) during soccer field sessions which was at optimal intensity without excessive fatigue and may reduce long term risk of injuries. Appropriate exercise intensity is vital to enable students to enjoy the benefits and pleasure of an active lifestyle and reduce levels of reluctance towards physical activity.

I 03

Innovative integration of technology in physical education, physical activity and active living

Mr. Ben Wells

Physical Educator, Lü Ambassador. CDE Trainer/Presenter. SHAPE America National Presenter. Well Train Technology Trainer 2016 SHAPE Colorado Secondary PE Teacher of the Year, Bennett Ranch Elementary Falcon, CO USA.

This presentation is a compelling exploration of how cutting-edge technology is revolutionizing traditional pedagogies, fostering holistic development in students in physical education (PE), physical activity (PA) and active living. Exploring the variety of interactive learning platforms that engage students in immersive experiences, emphasizing not only physical fitness but also mental and emotional well-being. Wearable technology takes center stage, providing real-time feedback and encouraging personal growth. Discover how gamification transforms physical activity into an enjoyable, goal-oriented experience, promoting teamwork, discipline, and a lifelong love for movement. The focus extends beyond the classroom, as technology tools can cater to diverse learning styles and environments, ensuring inclusivity. Data-driven insights guide educators in tailoring programs to the unique needs of each child, fostering a comprehensive approach to their development. In this presentation, there will be examples of students use technology for ownership over one's learning through individual choice by interest, self, peer and team assessments, self-feedback, self-video recording, and skill, routine and gameplay development as well as using devices for observations, additional instruction, skill demonstrations, sharing of student success through communication with parents and student physical activity tracking through heart rate monitors and other tools. These technology tools are for more than just PE and are able to be adapted to PA and other educational contents provide opportunities for whole child growth and development. Explore how innovation in PE and PA can shape a generation of individuals who are not only physically active but also socially adept, emotionally resilient, and intellectually engaged while developing a healthy active lifestyle.

I 04

Physical education, well-being and health among Brazilian children during the social distancing period

Assoc. Prof. Dr. Nara Rejane Cruz de Olivera

Board of Directors, BRICSCESS Human Movement Sciences Department Federal University of Sao Paulo Brazil.

The global health crisis caused by COVID-19 pandemic imposed several social changes around the world. Due to high contagiousness and rapid spread, social distancing was recognized as the main public health intervention to avoid the virus transmission. However, the abrupt modification in human routine had a big impact on wellbeing and general health, particularly among children. According to the World Health Organization (WHO), physical activity was one of recommended measures for different target groups, in order to preserve mobility and reduce stress and anxiety, among other benefits, during the COVID-19 outbreak. Due to the need for social distancing, the educational activities were carried out remotely, including the Physical Education (PE) classes. However, according to a survey from the Brazilian Institute of Geography and Statistics (IBGE), 4.3 million children had no access to the internet, among them 4.1 million students of the public educational system, that represents 81,5% of all basic schools in Brazil. The same survey also showed that 49% of Brazilian municipalities faced issues such as lack of devices and internet access in public schools. These data highlight not only the digital inequalities but also the PE teachers' challenges in carrying out remote activities in order to promote health and well-being. This presentation will focus on the possible/best practices in promoting wellbeing and health among Brazilian children through Physical Education, during the social distancing period, caused by COVID-19 pandemic. The following variables will be addressed: socioeconomic and educational context in Brazil, access and use of technology resources by schools and PE teachers during the pandemic, challenges to promote health literacy in the context of the United Nations

agenda for sustainable development and future perspectives.

I 05

Concussion in schools rugby: are we winning the battle?

Prof. Dr. J. Hans de Ridder

President, BRICSCESS; Board of Directors, the GCH Foundation. Senior Vice-President, ISAK. Director, School of Human Movement Sciences, North-West University-Potchefstroom South Africa.

Rugby union has been played since the early eighteen hundreds. Being a high contact sport, it has some of the highest announced rates of concussion. The term "concussion" refers to a common form of traumatic brain injury, which typically occurs after a blow or injury to the head. It has been described as a "complex pathophysiological process affecting the brain, induced by biomechanical factors". Shear forces induced by rotational acceleration are believed to be the primary mechanism of injury in concussion. The incidence of concussion in the UK has been shown to be up to 6.9 (youth) and 4.9 (adult) concussions within rugby union. The tackle is the most injurious match event in Rugby Union, accounting for between 40% and 60% of all match injuries. Concussion is now seen as a public health epidemic, with clinicians seeing more occurrences, which is likely due to better symptom recognition rather than greater incidence. It has also been related to mental health difficulties and future development of neurological disorders and dementia. To establish both short- and long term effects of concussion within rugby, more focus must be placed on the development of multiple component assessments that cover a range of symptoms that may be present, following a concussion. A group of academics are urging the UK chief medical officers to ban tackling in school age rugby union amid growing worries about brain injuries in the sport. England former head coach Eddie Jones has proposed a ban on tackling above the waist for primary school children.

I 06

The effect of physical activity-based brain breaks on gain score

Prof. Dr. Gıyasettin Demirhan

Board of Directors, GCH. Former President, Turkish Sports Sciences Association. Former Dean, Faculty of Sports Sciences, Hacettepe University Turkey

The purpose of the current study is to examine whether physical activity-based brain breaks used in academic classes in middle school have an effect on gain score. In this study, a single group pre-test-post-test model was applied. The sample of the current study is comprised of 129 middle school students; 65 girls and 64 boys, from the 5th, 6th, 7th and 8th grades. In the study, a Demographic Information Form (DIF) consisting of demographic information of students and the Objective Comprehension Tests prepared by the Ministry of National Education to measure academic score were used. Frequency, Percentage, T-Test in independent groups, One-Way Analysis of Variance (ANOVA) and Post-Hoc Tests (Tamhane's T2) were used in the analysis of the data. According to the findings obtained from the analysis, physical activity-based brain breaks were found to be effective on the gain score from Mathematics and Religious Culture and Moral Knowledge courses. No significant effect was found in Turkish, Science and English courses. As a result, it can be said that the physical activity breaks used in the current study do not decrease academic success in Turkish, Science and English courses, but increase academic success in Mathematics and Religious Culture and Moral Knowledge courses.

I 07

Prevention of knee joint injuries among prepubertal and pubertal children: 11+ and FIFA 11+

Prof. Dr. Serap Inal

Dean and Department Head Department of Physiotherapy and Rehabilitation. Faculty of Health Sciences Istanbul Galata University Turkey.

The increasing desire to participate physical activity, sports and competitive sports increase the risk of sports injuries among children that are often anterior cruciate ligament (ACL) injuries, concussions and diaphyseal separations. Studies indicate that the risk of ACL injury among children increases as they get older. Precautions should be taken to prevent ACL injuries, especially in pre-pubertal children with incomplete skeletal system development. An imbalance of strength or an increased valgus angle in the knee joint, flat foot can lead to strain on the knee joint during training. For lower extremity alignment the insoles and wedge support may be effective to prevent injuries. Therefore, the trainer, physiotherapist, child athlete and family should work together for the necessary precautions. Intensive, resistant exercises are avoided in prepubertal (≤12 years) children, since the skeletal system has not yet developed, and the growth plates have not closed. At the age after puberty (13-17 years), intense and resistant exercises are started, and benefit is provided. During training planning, 11+ and FIFA 11+, which is currently adapted for football, are recommended to guide the selection of age-appropriate exercises. It has been prepared for the characteristics of the posture, strength, balance, coordination, flexibility, speed, quickness, and agility of children. Additionally, its illustrated guideline gives clues to the trainers about the incorrect postures and movements comparatively. Thus, it is not only an effective training tool but also trains couches, athletes, and families.

I 08

The innovative approach of using music for health and sport: from conceptual underpinnings to applications

Assoc. Prof. Dr. Garry Kuan

Secretary-General, Asian-South Pacific Association of Sport Psychology (ASPASP) Executive Board Member, Asian Council of Exercise and Sports Science (ACESS) Exercise and Sports Science Programme. Universiti Sains Malaysia.

Music has the ability to improve personal health, physical education and sports performance. Researchers have suggested that music should be carefully selected to match the requirements of activities and characteristics of both individuals and groups, to produce significant impacts on performance enhancement and motivation. Music has also been shown to have psychophysical effects of lowered perceived effort, arousal control, enhanced affective states and synchronisation effects. Certain music can elevate arousal, and increase beta waves, indicating an actively engaged mind. Conversely, arousing music can suppress theta waves that are associated with the daydreaming state, allowing them to 'pump up' and avoid tiredness. Soothing music, on the other hand, raises alpha waves that are seen during a state of meditation or relaxation. This presentation will provides an overview of the key concepts, theory, underlying mechanisms, empirical research, and application relevant to the use of music in health and sport. A theoretical model will be presented that practitioners can use as a reference point in the design of music-related interventions. This leads into consideration of the mechanisms—emotional, perceptual, and rhythmrelated—that underlie the effects of music in health and sport. Throughout this presentation, the taxonomy of pretask, in-task, and post-task applications of music serves as a common denominator to aid the absorbability of the material. The centrepiece of these presentation is to provide a new framework that presents factors relevant to optimizing music selection in health and sport.

I 09

Impact of physical activity programs in the schools for promotion of fitness among students.

Prof. Rajesh Kumar

I/c Director of Physical Education. Osmania University, T.S. Hyderabad, India President, International Federation of Physical Education, Fitness and Sports Science Association.

Physical Activity programs for middle and high school in India is helpful to choose the students who are having the talent and can be prepared and give basic foundation of Sports to build the elite sports person. Physical Activity in Schools Plays the main role in the Identification of Talent and Selection of Sport of a Child at School and College level to guide for the correct coaching in becoming the future champions of the country. Sport programs and coaches resort to overemphasizing competition and related sport skills. From a coach's standpoint, there is

need for practical, functional, and sequential athlete document that will provide coaches with best practices for the development of strength, flexibility, and stability in their athletes at correct age at school level to develop the motor qualities and skills. This Programme of Physical Education must include movement vocabulary, physical literacy, and athletic movement skills, if athleticism is to be achieved. Physical Activity in the school helps the student to promote his good health, mental development along with the development of sports skills.Hence it is recommended that Physical activity is a basic foundation to build High Performance athlete, along with the mental development, Health development, Social development etc. Physical activity is an essential component of any strategy that aims to the students to have less obesity among childrens. Physical activity implementation in schools is exercise act as a medicine. It is recommended that Physical activity is essential for growth and development of children and youth.

I 10

Influence of sports participation, genetic factor and nutritional supplementation on bone health and muscular performance in young population

Asso. Prof. Dr. Foong Kiew Ooi

Lecturer and Former Programme Chairman, Exercise and Sports Science Programme, School of Health Sciences, Universiti Sains Malaysia, Malaysia.

Sports participation by performing regular weight bearing exercise is believed could maintain or enhance bone health status and muscular performance. Genetic studies in the area of human physical performance reveal a strong heritability of key phenotypes of muscular performance. Sports nutrition is a body of knowledge that provides information regarding food or dietary ergogenic aids necessary for maintaining and enhancing health, growth, physical and sports performance. The importance of proper nutrition is of great interest to both athletes and exercisers for optimal performance and long term health benefits. Proper nutrition improves performance by improving bone health and body composition, which increases speed, mobility, and muscular strength. In this lecture, research findings of sports participation, bone health status, and muscular strength in Malaysian and British young athletes will be presented. Several selected genes and their associations with bone health status and muscular performance in Malay young athletes will be discussed. In addition, this lecture will also cover the topic of combined effects of exercise with nutritional supplements on bone health status, bone metabolism markers and muscular performance in young population.

I 11

Intergenerational a sport program between youth and elderly: a case of pick ball clubs

Prof. Dr. Chae-Hee Park

ACSM Exercise is Medicine® Older Adult Committee Member Director, Academic Information Center Dept. Sport and Healthy Aging. Korea National Sport University

Republic of Korea

Nowadays with the rapid aging society, little interaction among generations has developed gaps between the two or more, creating misconceptions about older adults. Most children and youth who do not have the opportunities to interact with their grandparents are likely to have negative feelings about seniors and to form several misconceptions about aging. Regular physical activity especially sport participation is one of the main ways to prevent and manage various chronic diseases for older adults who is defined as people aged 65 and over and can have positive effects on variety of aspects of holistic health for youth as those persons between the ages of 15 and 24 years. Pickleball, inventing in 1965 as a children's backyard game on Bainbridge Island, Washington in the US, is an indoor or outdoor racket/paddle sport where two players or four players, hit a perforated hollow plastic ball over a 36-inch-high net using solid-faced paddles. During COVID-19 pandemic situation, Gangdong-gu has been looking for ways to increasing physical activity levels for people in the community, they've developed pickleball clubs. Through collaboration and cooperation between a university and communities, by giving seniors the opportunity of participating in pickleball with the younger generation of college students, they improved their negative perceptions of the elderly and created a place for generational integration. In a symposium, a talk will be made in two main areas that are an importance of Intergenerational sport programs in the aging societies and an example of development and application of pickleball suitable for an intergenerational sport activity.

I 12

Research development center on sport and leisure policies: regional partnership through physical activity, exercise, and health science

Prof. Dr. Ricardo R. Uvinha

Founding Member and Secretary General of BRICSCESS. Dean, School of Arts, Sciences and Humanities. University of Sao Paulo, Sao Paulo Brazil

This research aims to demonstrate the main results of a project carried out in partnership between two of the main Brazilian universities, University of Sao Paulo (USP) and Federal University of Sao Paulo (UNIFESP), in the promotion of Physical Activity, Exercise, and Health Science. This is the partnership to carry out the Research Development Center on Sport and Leisure Policies of Rede Cedes, with support from the Ministry of Sport of the Government of Brazil. The project had the characteristic of maximizing the academic scientific development potential of the southeastern region of Brazil, meeting the demands of scientific investigations, as well as reflecting on the development of qualified and socially referenced sports and leisure policies, especially in the context of training agents to act in this field. The central results stand out: the mapping and analysis of public sports and leisure policies at the national and regional levels, with the promotion of the exchange of knowledge and experiences in the academic context (other centers and research groups from national and international institutions) and non-academic (sports and leisure departments in the municipalities, community in general); the contribution to critical training and advice regarding public policies on sport and leisure, with an emphasis on the important role of communities and institutional partnerships for the promotion of health through physical activity.

I 13

Physical activity involvement from classrooms to houses: case from Cappadocia region of Turkey

Prof. Dr. Fatma Sacliuzunoz

President, 5th ICPESS 2018. Senior FLV, ICPESS 2015, GoFPEP 2016, BRICSCESS 2017. Department of Coaching Education. Former Founding Director, School of Sport Sciences and Technology. Nevşehir Hacı Bektaş Veli University, Turkey.

In the framework of Whole School, Whole Community, Whole Child Model (WSCC), scientific results of positive effects on the holistic development of On-Line-Streaming (OLS) Brain Breaks (BB) were our milestone to promote physical activity in Cappadocia region of Turkey since 2014. Our journey in creating an active and healthy society began with 300 kids' involvement after convincing the school principals, then it spread all over the city schools with 7000 students' and 300 teachers' participation after persuasion the directorate of provincial education of Nevşehir. Based on our experimental study results we moved BB on higher education with 1500 youths' participation, then we applied BB all over the university to promote physical activity step by step. The practice as movement culture which became their lifestyle, especially for students from sport sciences was also moved to schools and sports clubs in their own positions after graduation. It was another turning point for us that all people stayed in their homes all over the world with global problem Covid-19 pandemic since March 2020. During that time it was a great opportunity to make our university students as a locomotive in order to engage all family members in physical activity in many cities in Turkey. In this presentation, there will be concrete examples from children in active classrooms to family at active homes as outcomes of collaboration among educational institutions, school leaders, city, and also families to improve physical activity level in society within the context of holistic development.

I 14

Influence of a physical activity and psychosocial intervention on risk factors associated with NCD among adolescents

Assoc. Prof. Dr. Maya van Gent

Human Movement Science Department Faculty of Health Sciences University of Fort Hare South Africa.

Concerns pertaining to physical, physiological and psychological health and risk factors associated with non-communicable diseases (NCDs) among adolescents have been prioritised in the agendas of international health institutions throughout the world. The necessity for living healthy lives and maintaining healthy lifestyles is often neglected in many countries, particularly in many low-income countries. Another aspect to consider is also the mental health and well-being of adolescents, as adolescents account for 16% of reports of instances of mental illness throughout the world. It has been estimated that from 10 to 20% of adolescents develop mental health problems, with more than half of the instances of mental disorders throughout the world affecting adolescents as young as 14 years of age. The global population includes approximately 1.2 billion adolescents or young peopleand in South Africa, adolescents comprise 39% of the overall population, unfortunately some undesirable forms of behaviour, such as physical inactivity, poor diet, become ingrained during adolescence. Thus, adolescents are an ideal time to promote physical and mental health behaviour. This presentation willfirstly report the prevalence of physical, physiological and psychological risk factors that are associated with NCDs among adolescents in the poorest province of South Africa.An overview of the physical activity and psychosocial intervention will be provided with reporting of the post-test and retest results. The presentation will also report associations between various factors that possibly predict NCD among adolescents and conclude with suggestions to reduce the risk factors among adolescents.

I 15

Youth health in focus: integrating pharmacology and epidemiology for comprehensive sports science advancements

Prof. Yulia Gushchina

Deputy Director for International Affairs of Medical Institute of the Peoples' Friendship University of Russia.

The field of sports science has seen a growing interest in the intersection of pharmacology and epidemiology, particularly in relation to the health of young athletes. This work aims to explore the potential advancements that can be made in sports science by integrating pharmacological and epidemiological perspectives, with a specific focus on youth health.

Epidemiology is crucial in understanding the impact of pharmacological influences on the health of young athletes. The use of performance-enhancing drugs among young athletes has been on the rise, highlighting the urgent need for regular epidemiologic evaluation of doping and hormone therapy in this population. This emphasizes the importance of not just assessing the immediate effects of pharmacological interventions, but also understanding the long-term health implications, which can only be achieved through rigorous epidemiological studies.

By merging the realms of pharmacology and epidemiology, a holistic grasp of the manifold elements that impact the well-being of young individuals in the sphere of sports science can be attained. This includes not only the physiological effects of pharmacological interventions, but also the social and environmental determinants that can impact young athletes' health and well-being. There is the association between socioeconomic status and access to performance-enhancing drugs among young athletes, highlighting the need for a holistic approach that considers both pharmacological and epidemiological factors. Through the integration of pharmacological and epidemiological approaches, sports science emerges as a catalyst for fostering evidence-driven interventions and policies to bolster the health and welfare of young athletes. Implementing targeted educational programs alongside strict monitoring and regulation of pharmacological interventions can effectively reduce the prevalence of doping among young athletes. This underscores the potential for comprehensive sports science advancements by integrating pharmacological and epidemiological approaches in addressing youth health.

Integrating pharmacology and epidemiology in the study of youth health in sports science has the potential to yield significant advancements in understanding the impact of pharmacological interventions on young athletes' health, as well as in developing evidence-based interventions and policies to promote their well-being.

FLV PRESENTATIONS

F 01

Childhood obesity and its associated factors among school going children in raisen, Madhya Pradesh, India

Dr. Mottakin Ahmad

Sports Officer, Government College Silwani, Raisen, M.P. India

Raisen, Madhya Pradesh, India Near about 1.4 billion people live in India. According to UN forecast India will overtake China by 2023.Total population of India is 17.7% of total world population. Childhood obesity has become one of the major problems in India. For two /three decades it has been observed that obesity is increasing in Indian children. Due to the increase in abnormal body weight children are facing many health hazards. To investigate the factors associated with growth obesity researcher will carry out a cross-sectional study in different schools in Madhya Pradesh India. Random samples will be taken into consideration. The age level will be 12-18 years old. About (n = 500) samples will be taken from different regions. Data will collect by administering the questionnaire. Height and weight, and BMI will calculate. Z score will be calculated, and BMI will be categorized based on age and gender according to WHO. The chi-square test will employ the level of significant value at 0.05. This study will help to find the reason behind the increase in abnormal weight and prevention methods can be taken. Through this research children and parents will be benefited which will give awareness to society.

F 02

Relationship of BMI on the agility and strength skills of six-to-eight-year-old learners in the north west province of South Africa: the perf-fit study

Prof. Dr. Dané Coetzee

Senior FLV, Program Leader: Kinderkinetics Faculty of Health Science, School of Human Movement Sciences North-West University-Potchefstroom South Africa.

BMI influences motor components that children use in physical and sport-related activities. This study aimed to determine whether there is a relationship between BMI and running speed- and agility and strength skills. This is a cross-sectional study that was conducted as part of the PERF-FIT research study. Ninety-seven learners, between the ages of six-to-eight-year-old part take in this study. The Bruininks-Oseretsky Test of Motor Proficiency (BOT-2**)** was used as a measuring instrument that provided information on the running speed- and agility and strength skills. A Spearman correlation and partial correlation as well asa one-way variance analysis (ANOVA's) with a Tukey Post Hoc test was used to analyse the data. Statistical significance with moderate positive correlation was found in the whole group's running speed- and agility for the shuttle run (r=0.47, p=0.001). Furthermore, statistical significance with a trivial negative correlation was found in one-legged stationary hop (r=-0.31, p=0.002) and one-legged side hop (r=-0.22, p=0.032). For the whole group's strength skills, while statistical significance with small negative correlation were found with knee push-ups (r=-0.20, p=0.046) and v-ups (r=-0.20, p=0.052). However, trivial negative correlations were reported for the whole group. In the overall group 4.1% (n=4) were underweight, 76.3% (n=74) were normal weight, 10.3% (n=10) were overweight, and 9.3% (n=9) were obese. BMI was found to have a small negative correlation with six-to-eight-year-olds' running speed- and agility, and strength skills. This data can be utilized to construct more age-specific intervention programs focused at improving speed- and agility and strength skills development, as well as lowering BMI in preparation for later sport- specific skills.

F 03

The effects of brain breaks® physical activity videos on focus, task tracking and academic achievement in Turkey

Assoc. Prof. Dr. Bijen Filiz

Department of Coaching Education Afyon Kocatepe University, Turkey

The aim of the study is to examine the effect of Brain Breaks® physical activity videos on focus, task tracking, and academic achievement. The study group consists of 30 students who studying in the 4th-grade of a private school. The study was designed as a quasi-experimental design. Focus and task tracking evaluation form prepared by the researchers and HopSports Brain Breaks® videos will be used as data collection tools. The study will be carried out for 8 weeks, once a week, during the designated class hours and with the video levels. Application; It will be in the form of assigning tasks to students in the first 15 minutes of a lesson, then doing physical activity by watching high and medium or low-motion videos for 10 minutes, and then assigning tasks to students for 15 minutes. During these periods, students' fulfilling the task and focus times will be followed before and after physical activity. It will also be checked whether physical activity has an effect on focusing and maintaining the task. The application is divided into two periods as the morning and the middle of the day. In addition, videos are classified as high and medium or lowmotion. Therefore, it will be determined how physical activity is more effective in focusing on and fulfilling the task with high and medium or low-motion videos in the morning or in the middle of the day. In addition, in the last week of the program, students will first take a 15-minute short exam from an academic course (Mathematics, Life Science, English, etc. to be prepared by the course teacher in accordance with the curriculum), followed by a 10-minute high-action Brain Breaks® Physical activity will be done with physical activity videos, and the same exam will be given again immediately after. As pre-test and post-test, it will be examined whether there is an effect of physical activity on course achievement. As data analysis, mean and standard deviation for descriptive statistics; Dependent t-test (Wilcoxon Signed Rank test) to measure the difference between 15- minute video applications and academic achievement for 8 weeks; Independent t-test (MannWhitney U) to measure the difference between morning and midday sessions and high, medium or low-motion videos; ANCOVA analysis will be done to measure the effect of the posttest according to gender.

F 04

Best practice, enhancing children´s pa in kindergartens by connecting music and movement in pre-school education

Dr. Antonín Kuban

Senior FLV Director/Co-founder: Kindergarten Housenka and IMAGO individual learning school in Prague Director of Music-based P.E. Program, teacher and trainer Faculty of Physical Education and Sports Charles University Czech Republic.

The key period for a positive attitude towards PA is a youth, which is also a key period for building a positive relationship to the active and healthy lifestyle. This study is focused on creating new Music Based Physical Educational (MBPE) program for pre-school children in the Czech Republic, focused on all-round personal development by connecting music and movement, and on determining it´s effect. An additional effect of MBPE program should be the support of pre-school child's natural and comprehensive motor development, sensorimotor, musical and rhytmical competences with the stress on personal health and hygiene. To validate the effect of MBPE program, the study forms part of a longitudinal research design in kindergartens during nine months. Two experimental and one control group of pre-school children were chosen and observed. Test results before and after MBPE program intervention were ANOVA analysed. With pre-test and post-test use of a musical/motor test battery(Brtníková, 2007), we have witnessed major improvement in the children´s musical and motor skills, in aesthetical motoric exhibitions, in general in relation to the quality of motoric and musical skills and in feelings towards the music. The children aquired new competences from the fields of general knowledge and social communication too. The strengthening and deepening of the interpersonal boundaries and relationships among the children contributed to their orderliness and discipline. Considering our results, we can ascertain that MBPE program has a positive influence on, not only a child´s musical/motor skills, but also on their acquisition of a wide set of new physical competences, experience, musical competences. As side effect we noticed also positive influence on social, cognitive and intellectual skills.

F 05

Tourism and leisure in the post covid digital era

Dr. Zornitza Plamevona Mladenova

Senior President Association of Touristic Animators FLV Bulgaria

Tourism is one of the world's major economic sectors. It is the third-largest export category (after fuels and chemicals) and in 2019 accounted for 7% of global trade. Tourism is one of the sectors most affected by the Covid-19 pandemic, impacting economies, livelihoods, public services and opportunities on all continents. The travel industry has been at the forefront of digital innovation and continues to be transformed at an exponential rate across the globe. According to the World Economic Forum's Digital Transformation Initiative (DTI), from 2016 to 2025, digitalization in aviation, travel and tourism is expected to create up to US$305 billion of value for the industry through increased profitability, migrate US$100 billion of value from traditional players to new competitors, and generate benefits valued at US$700 billion for customers and the wider society. The present pandemic COVID-19 has resulted in global challenges, economic and healthcare crises, and posed spillover impacts on the global industries, including tourism and travel that the major contributor to the service industry worldwide. The tourism and leisure industry has faced the COVID-19 tourism impacts hardesthit and lies among the most damaged global industries. The aim of our research is to predict the future challenges and resilience strategies using the potential of digitalization with the main purpose to overcome the consequences of the Pandemic in the context of sustainable development.

F 06

Does external pneumatic compression help with recovery and improve performance after cycle ergometer anaerobic exercise?

Ng Yew Cheo[1], Govindasamy Balasekaran[2] , Nurul Shafiqah Binte Mohamed Saiful[2]

1. Singapore University of Social Sciences

2. National Institute of Education, Nanyang Technological University

Athletes are constantly searching for treatment strategies to boost performance to provide them that edge over their competitors. Therefore, this study investigated the effects of External Pneumatic Compression (EPC) on recovery and performance after anaerobic exercise. Ten male athletes (age:25.2 ± 1.1 years, height: 173.1 ± 6.69 cm, weight: 75.77 ± 11.95 kg) participated in this counterbalanced cross-over study. Participants underwent the Wingate Anaerobic Test (WAnT) ergometer cycling session (CS1 & CS2). Total power in Joules (TW), mean power (MP) output in Watts and fatigue index (%FI) were extracted. Each session included a 5-min warm-up cycle, CS1 and CS2 (30 seconds), 20 minutes rest trial between CS1 and CS2 ((EPC/active recovery (AR)/ static recovery (SR) – randomized). Heart rate (HR), ratings of perceived exertion (RPE) and blood lactate (BLa) were recorded. Results indicated TW for EPC (CS1: 19.14 ± 2.33, CS2: 19.04 ± 2.83, p = 0.01) and AR (CS1: 19.09 ± 2.54, CS2: 19.02 ± 2.97, p =0.02) were significantly higher than SR (CS1: 18.58 ± 2.73, CS2: 18.47 ± 3.03). No significance between EPC and AR. Similarly, MP for EPC (CS1: 642.55 ± 78.38, CS2: 637.85 ± 95.62 p = 0.02) and AR (AR CS1: 634.90 ± 81.18, CS2: 638.06 ± 99.98, p = 0.02) were significantly higher than SR (CS1: 623.21 ± 91.08, CS2: 620.38 ± 103.03). No significance between EPC and AR (p = 0.57). %FI (EPC CS1: 63.40 ± 18.03, CS2: 56.86 ± 15.15 vs. AR CS1: 64.80 ± 17.41, CS2: 59.42 ± 17.78 vs. SR CS1: 62.23 ± 17.05, CS2: 57.40 ± 15.98, p = 0.78).We can conclude that EPC and AR help with recovery and performance. EPC may be a beneficial recovery method to use when static recovery is preferred

F 07

Mental health, resilient coping strategies and hope of residents of the city of são paulo during the period of social distancing in the COVID-19 pandemic

Larissa C. Pires, William F. Santana, Gisele H. Tavares, Filipe S. Romano, Carolin Lusby, Ricardo R. Uvinha, Nara R. C. Oliveira

Federal University of São Paulo-Santos Brazil

COVID-19 pandemic has abruptly changed the daily routine of the population worldwide, especially in the most affected countries. The COVID-19 outbreak has forced governments to impose social distancing policies for an extended period of time, resulting in the confinement of a large part of the population around the world and, consequently, impacting on mental health, well-being, and quality of life of the population. Under such circumstances, this study aimed to analyze variables related to the field of mental health, such as anxiety, depression, and their relationship with resilient coping and hope for residents of the city of São Paulo, the epicenter of the pandemic in Brazil. The questionnaire used in this research was made available online and included demographic information. For anxiety and depression data, the short form of (PROMIS®) v1.0 -- Anxiety 4a and PROMIS® v1.0 -- Depression. The formalization for participation in the study was made by signing the Free and Informed Consent Form. A total of 1,434 adults in São Paulo completed the questionnaire between July 8 and August 8, 2020. The data presented here point to the pandemic's impacts on mental health aspects, suggesting the need for incentives for implementing public mental health policies with strategies to respond to epidemics and pandemics before, during and after the event.

F 08

Physical Activity Level and Psychological Well-being of University Students and Possibilities for its Improvement: Case Study from North Macedonia

Biljana Popeska[1], Katerina Mitevska Petrusheva[2] and Snezana Jovanova Mitkovska[3]

1. Faculty of Educational Sciences, Goce Delcev University – Stip, North Macedonia, currently affiliated at University of Luxembourg, Department of Education and Social Work, Institute of Teaching and Learning

2. Faculty of Education, International Balkan University – Skopje, North Macedonia

3. Faculty of Educational Sciences, Goce Delcev University – Stip, North Macedonia

Physical, emotional, and mental health are important aspects of overall well-being. According to the WHO "Well-being is a state in which the individual realizes their potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to contribute to their community". On the other side, physical activity is recognized as one of the most effective ways to improve overall wellbeing. When it comes to young people, universities are recognized as important places for promotion of well being and active lifestyle. This study is focused on examination of physical activity level and level of psychological wellbeing among students at two universities in North Macedonia and to explore students' opinions about possibilities that the university can offer with aim to improve participation in physical activity and overall wellbeing. Physical activity level of students was examined using short version of IPAQ questionnaire. Psychological well-being was examined using revised short version of Psychological Well-being scale adopted by Ryff (1989) that measure six dimensions of well-being: Autonomy, Enviromental mastery, Personal growth, Positive relations with others, the Purpose of life and the Self-acceptance. Possibilities of the universities were identified using open-ended questions. The study was conducted at sample of 230 students from GoceDelcev University and International Balkan University in North Macedonia, including students of all study years. The results from this study provide solid basis for outlining recommendations for practical activities which can be applied at higher education institutions, with final aim of improving students' physical activity level and well-being.

WORKSHOP PRESENTERS

Dr. Michelle LOMBARDO

President, The OrganWise Guys Inc.

USA

Dr. Michelle Lombardo is the President of the certified Women Owned Business, The OrganWise Guys Inc., and the author of The OrganWise Guys series, which promotes the benefits of good nutrition and preventive healthcare practices through creative characters playing the roles of the vital body organs. She is the author of a comprehensive supplemental curriculum that spans Early Childhood age through fifth grade and includes over 50 books and a host of complementary multimedia resources. She also annually conducts dozens of "train the trainer" sessions and keynote addresses on these materials. Dr. Lombardo is also the Project Manager of the W.K. Kellogg Foundation-funded Thriving Communities, Thriving Children 3 (TCTC3 (2020-2023); a project designed to improve young children's health and literacy status in Mississippi. The OrganWise Guys program is approved as a Research-Tested Program. It is implemented in partnership with universities across the USA as part of the United States Department of Agriculture's Supplemental Nutrition Assistance Program's federally funded initiative. Results of various OrganWise Guys projects are published in the *Journal of the American Dietetic Association*, the *American Journal of Public Health* and the *Journal of Healthcare for the Poor and Underserved*. Dr. Lombardo is a co-author of the book chapters *Schools as *Laboratories* for Obesity Prevention: Proven Effective Models* and *School-Based Obesity Prevention Interventions Show Promising Improvements in the Health and Academic Achievements among Ethnically Diverse Young Children* (Global View on Childhood Obesity: Current Status, Consequences and Prevention. Elsevier, 2010, 2nd Edition 2019).

Learn How to Establish Lifelong Healthy Behaviors in Children and Youth Using a Science-based, Child-friendly, Sustainable Approach

This workshop highlights an engaging, science-based solution to the global health crisis combined with a replicable model for dissemination. To achieve optimal performance in life, good nutrition and physical activity promotion must begin at an early age and be reinforced regularly. The goal is to help children and families access easy-to-understand materials that provide simple health messages using lovable organ characters such as Hardy Heart, Madame Muscle and Sir Rebrum, the brain. A robust digital platform, complemented by print and physical resources, is designed for educators/caregivers to engage children (and their families) in a way that encourages them to choose healthy foods and physical activity to take care of their bodies because they understand the why. This approach empowers children to be healthy and smart from the inside out. This scalable, holistic program has been in motion for over two decades in the USA and continues to bear stellar results, which include improved literacy rates. In addition to school programming, the model includes partnerships with grassroots organizations in the footprint of the schools, such as summer camps, after-schools, doctor's offices, etc., providing an interdisciplinary approach to obesity prevention activities that directly links to UNSDG Goals 3, 4 and 17. The research presented is published in top-tier journals on the school program and shows statically significant improvements in children's BMI percentiles, waist circumference, blood pressure, and standardized test scores. Recent research demonstrates statistically significant improvements in literacy outcomes in PreK and elementary-age students participating in the WKKF multi-year initiative.

Prof. Dr. Erika ZEMKOVÁ

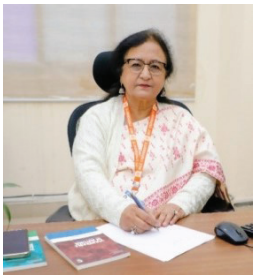
Department of Biological and Medical Sciences

Faculty of Physical Education and Sport Comenius University in Bratislava Slovakia

Prof. Dr. Erika Zemková is a professor in the Department of Biological and Medical Sciences, Faculty of Physical Education and Sport, Comenius University in Bratislava. She also works as a researcher at the Technological Institute of Sport, Faculty of Electrical Engineering and Information Technology, Slovak University of Technology and Faculty of Health Sciences, University of Ss. Cyril and Methodius in Trnava. She completed her Master's Degree in Professional Coaching in 1994, and Doctoral Degree in Sports Kinanthropology in 1999. In 2004, Slovak Academy of Sciences awarded her the Scientific Qualification Degree IIa – Independent Scientist. In 2007, she became Associate Professor and in 2013 Full Professor of Sports Kinanthropology. In 2008, she graduated at the Institute of International Relations and Law Approximation, Faculty of Law, Comenius University in Bratislava. She has received fellowships for conducting research at foreign universities, including the Ronald and Eileen Weiser Professional Development Award (University of Michigan, 2009), Fulbright Award (NeuroMuscular Research Center at Boston University, 2005–2006), Aktion Österreich–Slowakei Stipendium (University of Vienna, 2005), NATO Expert Visit Award (University of Aberdeen, 2005), CIMO Fellowship (Research Institute for Olympic Sports in Jyväskylä, 2003), and for teaching activities through the Erasmus Program and bilateral agreements between Universities (2004–2013). She was awarded by Coventry University Research Committee to be a Visiting Professor in Physical Education and Sport at the Faculty of Health and Life Sciences, Coventry University (2012–2015). Her scientific and academic work was noted for merit by her home Faculty of Physical Education and Sport in 2011, 2012 (Associate Professor of the Year) and 2019 (Professor of the Year), and also by Comenius University in Bratislava in 2018 for her outstanding work in the field of functional diagnostics of athletic performance.

Young and Old Alike: Agility Skills Testing and Training within a Long-term Physical Development Model

Agility is a key quality of physical fitness in both children and the elderly. It is strongly connected to strength, balance and coordination. A great attention is paid to developing agility skills throughout childhood and adolescence, particularly in those playing competitive sports. Examining the effects of growth, maturation and training on essential aspects of agility performance, such as perceptual and decision making processes and change of direction speed, is of special importance. Revealing changes in sensory and motor functions is also important for senior athletes and allows comparisons with those normally attributed to aging. Assessing agility skills in conditions that are similar to demands of the sport of interest is useful in distinguishing within- and between-group differences as well as in revealing acute and adaptive changes during training programs. While exercise-induced fatigue seems to impair cognitive rather than motor functions, faster movement execution rather than response times usually contributes to improved agility performance after the training. The predominant role of either the sensory or the motor component in agility skills depends on demands of particular sport. Their contribution can be estimated using the Agility Index. It is defined as the ratio of reaction time and agility time divided by the previously determined coefficient for each traveling distance. This variable can be applied for assessing agility skills in individuals of various ages and physical fitness within a long-term physical development model. Activities that include generic pattern recognition, hand-eye coordination, and the decision-making are highly recommended for agility training not only for improvement of athlete performance but also for whole well-being and health of both young and older physically active individuals.



Prof. Dr. Waheeda Khan

Department of Clinical Psychology Faculty of Behavioural Sciences Advisor SGT University

Gurugram, Delhi-NCR, India

E-mail: profwkhan@gmail.com

Prof. Dr. Waheeda Khan is a Professor Department of Clinical Psychology, former Dean Faculty of Behavioural Science, SGT University, Gurugram, and former Head Psychology Department of Jamia Millia Islamia Central University, New Delhi, India. Since 2021, she has held the position of Advisor, and member of SGT University Development Board. She has supervised 33 Ph.D scholars, including students from India, UK, Iran, and Pakistan. She has supervised many Master's students for their field training and research projects, including six students from Linkoping University, Sweden. She has published 80 and above research papers, including 25 book chapters published in reputed indexed journals/books, presented her work at many International and national conferences. She is currently pursuing DST funded project on 'Autism Spectrum Disorder', completed UGC-UKIERI Thematic Partnership International Project (2014-16) funded by UGC, India and British Council, UK, and another International GCH Research Project on "Psychological responses, coping strategies and physical activity during the Covid-19 pandemic: A multiple country comparison study" in 2020. She has worked as Visiting Research Fellow at Open University, Visiting Professor at Helwan University, Egypt, Visiting Faculty at UTM Malaysia, and in August 2023 will be Visiting Scientist at the Albert Einstein Medical College, USA. She has trained number of counsellors in providing HIV-AIDS and mental health counselling, positive interventions and wellbeing. She has received number of honours for her illustrious career, including "ICONIC Health Psychologist "award by Indian Association of Health Psychologists. She is an ardent traveller whose experiences have influenced the lives of numerous students in academics, research, and training.

Synergy of Gratitude and Mindfulness in Sports and Physical Fitness: Harnessing the Science of Human Flourishing and Wellbeing

Integrating mental health into youth sports is a crucial topic that should be addressed in any comprehensive youth sports programming. Therefore, it is essential to integrate mental health support into youth sports program to promote overall wellbeing and create a positive sports environment. This session would focus on educating participants about the importance of identifying the signs and symptoms of mental health issues in young athletes. Participants would be introduced to various approaches for promoting mental health in youth sports, such as resilience, gratitude and mindfulness practices etc. Both gratitude and mindfulness have been linked to various health outcomes, including physical and mental health. Gratitude is a positive emotion that arises from the perception of benefits received from others, while mindfulness refers to the intentional and non-judgmental awareness of the present moment. Studies have found that gratitude and mindfulness have significant implications for physical and mental health. Gratitude has been associated with better sleep quality, improved heart health, better immune system function, and better self-reported physical health. Similarly, mindfulness has been linked to lower levels of pain, stress, fatigue, anxiety, and depression, as well as improved cardiovascular function. The relationship between gratitude and mindfulness appears to be mutually reinforcing. Practicing gratitude can improve mindfulness, and vice versa, leading to further improvements in health outcomes. Therefore, integrating gratitude and mindfulness practices into daily routines may be a valuable tool for athletes seeking to improve their overall well-being. The importance of developing a positive sports culture will be the highlight of the workshop.

Endorsement