Montenegrin Journal of Sports Science and Medicine

www.mjssm.me

ISSN 1800-8755

9 771800 875006

APRIL 2025

VOL.14 NO.S1

Montenegrin Journal of Sports Science and Medicine

Index Coverage

Emerging Sources Citation Index; Scopus; ProQuest; Index Copernicus; DOAJ; SCImago; SPORTDiscus; ERIH PLUS; Open Academic Journals Index; Google Scholar; SHERPA/RoMEO; Crossref; NLM Catalog; Islamic World Science Citation Center (ISC); ROAD

Proofreading Service

Danilo Tošić

Prepress

Miličko Ćeranić

Print

ArtGrafika NK

Print Run

500

ISSN 1800-8755 eISSN 1800-8763

MONTENEGRIN JOURNAL OF SPORTS SCIENCE AND MEDICINE
International Scientific Journal

Vol. 14 (2025), No.S1 (1-40)

TABLE OF CONTENTS

Full-text available free of charge at http://www.mjssm.me/



We proudly present the Book of Abstracts of the 22nd Annual Scientific Conference of Montenegrin Sports Academy "Sport, Physical Activity and Health; Contemporary Perspectives". This compilation represents a vibrant tapestry of research, showcasing over 100 abstracts that span a diverse array of scientific disciplines. Held in the astonishingly beautiful Cavtat, near Dubrovnik, Croatia, 03-06 April 2025, the conference has fostered a truly international dialogue. Scholars and experts from different countries convened in this picturesque setting, facilitated by the invaluable support of our esteemed partners Faculty of Sport Ljubljana (Slovenia), Faculty of Kinesiology Zagreb (Croatia), Faculty of Kinesiology Osijek (Croatia), Faculty of Science and Education Mostar (Bosnia and Herzegovina), Sport University of Tirana (Albania), Faculty of Sports Presov (Slovakia), and Faculty of Physical Education and Sport Pristina (Kosovo). Within these pages, you will discover cutting-edge insights and innovative perspectives, reflecting the dedication and intellectual rigor of our participants. We are proud to present a platform for the exchange of knowledge and the advancement of scientific understanding. Each abstract offers a glimpse into the latest breakthroughs and emerging trends within their respective fields. This collection stands as a testament to the collaborative spirit that drives scientific progress, enhanced by the inspiring backdrop of the Adriatic coastline. We extend our sincere gratitude to all contributors, partners, and attendees for their participation in this enriching experience. We hope this Book of Abstracts serves as a valuable resource and inspires further exploration and collaboration.

Warm regards,
Prof. dr. Duško Bjelica
Prof. dr. Maja Pajek
Prof. dr. Damir Sekulić

OPEN ACCESS

Abstracts from the 22nd Annual Scientific Conference of Montenegrin Sports Academy and "Sport, Physical Activity and Health: Contemporary perspectives": Dubrovnik, Croatia. 03-06 April 2025

Edited by Dusko Bjelica[1], Damir Sekulic[2], Maja Pajek[3]

Affiliations: [1]University of Montenegro, Faculty for Sport and Physical Education, Niksic, Montenegro, [2]University of Split, Faculty of Kinesiology, Split, Croatia, [3]University of Ljubljana, Faculty of Sport, Ljubljana, Slovenia

Correspondence: D. Bjelica, University of Montenegro, Faculty for Sport and Physical Education, Narodne omladine bb, Niksic, Montenegro, E-mail: dbjelica@ucg.ac.me

@MJSSMontenegro
MEETING ABSTRACTS FROM MSA DUBROVNIK 2025 CONFERENCE
http://mjssm.me/?sekcija=article&artid=xxx

Cite this article: Bjelica, D., Sekulic, D., & Pajek, M. (2025). Abstracts from the 22nd Annual Scientific Conference of Montenegrin Sports Academy"Sport, Physical Activity and Health: Contemporary perspectives": Dubrovnik, Croatia. 03-06 April 2025. *Montenegrin Journal of Sports Science and Medicine*, 14(S1), 5–29. doi: 10.26773/mjssm.250401

Invited speakers

S1

The Multidisciplinary Approach to the Lifestyle Management of Chronic Patients

Jernej Pajek
University medical Center Ljubljana and Medical Faculty, University of Ljubljana, Slovenia

Purpose: Chronic kidney disease (CKD) represent an ideal population to study the benefits of lifestyle interventions, as most CKD cases in developed societies stem from obesity, metabolic syndrome, type 2 diabetes, and arterial hypertension. These conditions respond to lifestyle modifications, often serving as the primary intervention to prevent disease progression in its early stages. Methods: Lifestyle interventions targeting CKD patients focus on dietary modifications, increased physical activity, and psychological support. A shift toward a plant-based, fiber-rich, low-acid, and low-sodium diet can mitigate metabolic imbalances, aiding in weight control, glycemic stability, and blood pressure regulation. Physical exercise reinforces dietary benefits, preventing the yo-yo effect of weight loss programs. Cognitive behavioral therapy enhances patient motivation and adherence, while peer support through social networks and digital platforms further strengthens lifestyle change. Results: Preliminary findings suggest that structured lifestyle interventions significantly improve metabolic parameters, cardiovascular health, and overall well-being in CKD patients. Diet and exercise interventions lead to better weight management and reduced inflammation, while psychological support increases long-term adherence. Peer-driven motivation fosters sustained behavior change. Conclusion: A multidisciplinary lifestyle intervention approach is essential in CKD management and has the potential for broader application in other chronic diseases. This scientific session will highlight key interventions and strategies to promote widespread adoption in clinical, kinesiological and psychological practice.

S2

Looking for a Comprehensive System for Physical Activity, Physical Fitness, Talent Identification, and Development

Arben Kaçurri
Sports Research Institute, Sports University of Tirana

Physical fitness is a key factor in achieving better athletic performance, and consistent training typically enhances physical fitness. Detailed analyses of the anatomical and physiological characteristics of elite athletes suggest that reliable predictions of athletic performance can be made. Although some researchers question

Received: 02 March 2025 | Accepted after revision: 10 March 2025 | Early access publication date: 20 March 2025 | Final publication date: 05 April 2025

Conflict of interest: None declared.

whether physical exercise below recommended levels affects physical fitness, such activity can still yield benefits, such as improved self-esteem, academic performance, or bone density. Moreover, physical fitness during childhood and adolescence has long-term benefits for both physical and mental health. While further exploration of the relationship between physical activity and physical fitness is essential, it is equally important to maintain a broader perspective on its implications. Talent Identification and Development Systems (TIDS) are widely employed in professional sports to nurture young athletes into future stars. However, the necessity and healthiness of TIDS have been questioned due to their increased professionalism, high training volumes, and intense competition, despite their limited effectiveness. Although TIDS are crucial for the future development and sustainability of elite sports globally, they have yet to be systematically evaluated and analyzed in Albania. It is timely to evaluate TIDS as intervention programs, assessing their impact on optimizing both athlete and personal development. The current findings indicate that participants often hold negative views about the existing talent identification methods in Albania. Consequently, there is a pressing need to review and enhance these methods to establish a more coherent and effective talent identification and development system. In summary, physical activity is a behavior, while physical fitness is a state that can be influenced by promoting active behaviors. Physical fitness is shaped by both genetic conditioning and individual and social determinants. Since genetic factors are unchangeable, our focus should be on modifying individual and social determinants to enhance physical activity. Ultimately, establishing a national system for monitoring physical activity and fitness is crucial to address current challenges effectively. Key words: Physical activity, health, fitness, performance, TIDS.

S3

Language Without Words: The Importance of Gestures in Coach-Player Interaction

Terezia Kovalik Slancova
University of Presov, Faculty of Sports, Presov, Slovakia

Effective communication between coaches and players extends beyond verbal language, with gestures playing a crucial role in conveying instructions, emotions, and strategic signals. Nonverbal communication enhances understanding and fosters team cohesion. PURPOSE: This study aims to describe the gestures used by football, handball, and volleyball coaches of U-15 boys' and girls' teams, as well as their frequency. METHODS: Indirect observation was used, with training sessions and games recorded using a static video camera. Verbal and nonverbal communication of coaches and partially players (if in proximity of the recording device) were transcribed using a transcription and coding system CHAT of the CHILDES system. Three training sessions and three league games per sport and gender were analyzed. Gesture occurrence was expressed in percentage terms. RESULTS: Gestures were categorized into five basic types: illustrators, adaptors, affect displays, emblems, and regulators. Illustrators, affect displays, and adaptors were further classified based on emotional (positive or negative) characteristic use. Regardless the game, training unit as well as sport, illustrators were the most frequently used gestures, followed by adaptors, affect displays, regulators, and emblems. Emotionally marked gestures were more frequent during games than training units. CONCLUSION: The findings confirm the key role of gestures in coach-player interaction, with a higher use of emotional gestures during games.

S4

Experimental Comparison of Two Forms of Agility in a Non-Sports Active Population

Ivan Peric
Josip Juraj Strossmayer University of Osijek, Faculty of Kinesiology, Osijek, Croatia

Previous research, predominantly conducted on samples of athletes, has highlighted the existence of two independent forms of agility: non-reactive agility, where the movement pattern is predetermined, and reactive agility, where the movement pattern is determined by an external stimulus. PURPOSE: The primary aim of this study is to investigate the presence of two distinct forms of agility in a population of individuals who do not participate in any type of physical activity. METHODS: This study included 26 young, physically inactive individuals with an average age of 20.72 ± 1.13 years, comprising 18 women and 8 men. Their basic anthropometric characteristics were assessed, including body height and weight, body mass index, body fat percentage, and muscle mass percentage. All participants then proceeded to perform validated tests for reactive and non-reactive agility. RESULTS: The primary findings of this study indicate that the results on the non-reactive agility test (15.66 ± 2.14 seconds) were superior to those on the reactive agility test (18.43 ± 2.21 seconds). Furthermore, by squaring the correlation coefficient between the non-reactive and reactive agility test results, a common variance of 84% was calculated. CONCLUSION: The very high intercorrelation coefficient and the percentage of common variance potentially suggest that reactive and non-reactive agility cannot be considered as independent forms in this subsample. To confirm these indications, further research involving larger groups of individuals is needed.

S5

Gymnastics for Ageless Vitality

K. Šibanc, M. Pajek
University of Ljubljana, Faculty of Sport, Ljubljana, Slovenia

Purpose: This review examines the effects of regular physical activity, particularly gymnastics, on the ageing process. It examines the positive effects of gymnastics on physical and mental health, focussing on the ability to improve motor skills such as strength, flexibility, balance and coordination, which are essential for an active lifestyle in older adults. Methods: A systematic review of peer-reviewed studies was conducted to analyse the effects of ageing on motor skills and the potential of regular physical activity to mitigate this deterioration. Studies were included that specifically addressed the decline in strength, flexibility, balance and coordination with age and the role of gymnastics in counteracting this decline. Key findings on the physiological and psychological benefits of gymnastics for older adults were summarised. Results: Studies consistently show that motor skills decline significantly with age: Muscle strength decreases by 1-2% annually after 50 years of age, flexibility decreases by 20-30% by age 70, and balance and coordination decrease, increasing the risk of falls. Exercise has been shown to effectively counteract these declines, improving balance by 25% and muscle strength by 15% in 12-week group programmes. In addition, participants reported better mental well-being, less isolation and a higher quality of life due to the social nature of exercise. Conclusion: Gymnastics offers a holistic approach to healthy ageing that provides physical, mental and social benefits. Its adaptability ensures safety and accessibility for older adults while promoting vitality and independence. By fostering community and emotional resilience, exercise is an ideal activity to support active ageing. Integrating exercise into health promotion programmes can significantly improve the quality of life of older people.

DOI 10.26773/mjssm.250401

S6

Health literacy & physical literacy; Is there a meaningful association between them?

Marijana Geets Kesic, Barbara Gilic
University of Split, Faculty of Kinesiology

Health literacy, the capacity to obtain, process, and understand basic health information, is crucial for individual well-being and effective healthcare utilization. Similarly, physical literacy, encompassing the motivation, confidence, physical competence, knowledge, and understanding to maintain physical activity throughout life, contributes significantly to health outcomes. However, the interplay between these two literacies is under-explored, yet potentially synergistic. Limited health literacy can impede individuals' ability to engage in informed physical activity choices, understand exercise recommendations, and manage health conditions through movement. Conversely, deficiencies in physical literacy may restrict individuals' capacity to translate health information into practical, movement-based actions. The complexity arises when considering diverse populations, where varying levels of both literacies exist. Further, educational strategies that effectively integrate health and physical literacy development are lacking, hampering the potential for holistic health promotion. Assessing and addressing both literacies concurrently is essential for promoting sustainable healthy lifestyles. Future research must investigate the mechanisms through which these literacies interact and influence health behaviors and outcomes. Addressing this knowledge gap is vital for designing interventions that empower individuals to take control of their health through informed and active lifestyles.

S7

The role of the coach - athletic talent - success

Janez Vodicar
Univerza v Ljubljani

The main purpose is to illustrate the link between the role of the coach in the search for and monitoring of the development of the athlete's talent. This connection, together with all other known and unknown causes, leads to a successful outcome. In athletically developed countries, much attention is paid to this because athletic talent alone for a particular sport is not a sufficient condition for athletic success. The belief that every former top athlete can be a successful coach is also not true. Coaches are the carriers of the training process of athletes and must combine several individual close areas for which they must be appropriately educated. In addition to the narrower role of trainer, the coach also takes on the role of educator, teacher, psychologist, manager, advisor, animator, technologist, masseur, physiotherapist, etc. To be able to successfully perform the professional role of coach, the coach must first have appropriate education and also acquire specific professional knowledge in the field of the chosen sport or sport activity. The broad field of professional skills requires a significant leap in the current understanding of the vocational training system. The work of a successful coach is associated with scientific and research work, which coaches usually do not deal with much in their work. It is extremely important to follow the development of an athlete in the long term, because in this way we not only monitor their progress in the training process, but also the success of the outcome. The success of the result depends on many other factors, because there is a certain day and a certain hour when the athlete is supposed to achieve a top result. His very important task is to look for talent when pre-selecting athletes and, above all, to work with them gradually and progressively. To be successful, we need to know why we select, who we select, who is the one who selects, when we select and, above all, how we select young athletes for success in sport. Physical education teachers at school play an important role in discovering talent and aptitude. In addition, it is necessary to monitor the development path of a young athlete, because we know that some develop faster than others. Educational institutions and national federations are responsible for continuously improving the knowledge and skills of coaches by incorporating new scientific approaches into training. Slovenia is one of the countries that has recently achieved high results in relation to its population worldwide, mainly due to the advanced continuous monitoring of athletes' fitness and the connection of the sports institute with sports federations. Keywords: coach - talent - competence - science.

S8

The Experiential Learning Component of Sport Management

Robert C. Schneider
Department of Kinesiology, Sport Studies & Physical Education, The College at Brockport, United States of America

Experiential learning, as a broad term, is fundamental to sport management curricula, normally including guidance and supervision of the student-learner. Its range of opportunities manifest in various learning formats including service, active, engaged, hands-on, and apprenticeships. Bergsteiner and Avery (2014) help streamline an understanding of experiential learning through the Twin Cycle Experiential Learning Model which incorporates four classes of variables. Aristotle's long-standing question of the appropriate balance of higher knowledge versus usefulness in life serves as a basis to help determine experiential learning's role in higher education sport management curricula. Factors related to experiential learning include securing the experience, remuneration policies, duration, and location of the experience ranging from local to international. Each sport management program's approach to factors of experiential learning is program specific as determined by the program's unique mission. The experiential learning internship is most common and necessary to support sport management students' transition into sport industry employment (Hawzen, et al., 2018). Enhancing students' hirable qualifications for employment in the uniquely competitive sport industry (Walker et al., 2020) is a primary objective of the strategic placement of experiential learning in the sport management curriculum. The USA government's recent expression to increase and offer financial support for experiential learning in the form of apprenticeship programs aligns with the promotion of experiential learning (Weisman, 2025).

S9

Preparing for Alpine Skiing: A Guide for Skiers from Lowland Countries

Vjekoslav Cigrovski
University of Zagreb Faculty of Kinesiology, Croatia

Alpine skiing is a globally popular sport with a rich tradition, enjoyed by approximately 400 million skiers of all ages across more than 2,000 ski resorts worldwide. It is typically practiced in cold environments and at altitudes above 1,500 meters, offering a range of health benefits. It is therefore more accessible in Alpine countries, where natural and artificial snow conditions create ideal skiing environments. Skiing is a complex activity that involves unique and specialized movement patterns. Many recreational skiers attempt to learn independently, often skipping ski schools and professional instruction, which can increase the risk of falls and injuries. Insufficient physical preparation is another key factor contributing to skiing-related injuries. Since skiing involves movements that are unfamiliar to beginners, a certain level of physical preparedness is essential for both learning effectively and minimizing the risk of in-

jury. Likewise, competitive skiers must engage in off-season, sport-specific training to maintain their physical fitness and performance levels. Therefore, it is attractive to use alternative sports which include similar body positions, relations between body segments and similar general movements and muscle contractions like alpine skiing (Cigrovski et al., 2022). Various training devices and activities, such as the Pro Ski Up simulator, inline skating, and the Ski Track simulator, are designed to replicate the movement patterns of alpine skiing. These alternatives help beginner skiers familiarize themselves with skiing mechanics, assist recreational skiers in preparing for winter vacations, and allow competitive skiers to maintain their physical capacity through exercises that mimic the muscle engagement required for skiing (Cigrovski et al., 2024). To objectively evaluate the effectiveness of these training tools, kinematic and kinetic analyses are essential. These analyses compare the forces and pressure distributions generated during alternative activities with those created during actual ski turns. Additionally, they examine the body's segmental positions in relation to each other and to the ski slope. Pressure distribution (kinetic variables) was measured using pressure-detecting insoles, which are thin and lightweight, ensuring minimal impact on ski performance during dynamic testing (Cigrovski, Očić et al., 2020). Kinematic parameters were measured using the Xsens MVN Link inertial motion capture system, which allows real-time motion analysis without altering the skier's natural movements, and aids in analysing joint angles (Cigrovski, Rupčić et al. 2020). While simulators attempt to replicate natural mountain conditions with real snow, differences remain between movements on simulators or inline skates and those performed on snow (Bon et al., 2021). Despite these differences, simulators offer a valuable method for pre-season preparation and maintaining physical fitness when on-snow training is not possible. While they may not fully replicate the experience of skiing on snow, simulators offer greater similarity than many other recreational activities, helping skiers develop essential motor skills and maintaining fitness levels when skiing on snow is not possible. This is especially important for recreational skiers, who can benefit by improving the physical condition while competitive skiers can use it as an ideal tool for pre-season ski-specific training or year-round tool to enhance their physical maintenance. By incorporating such preparation methods, the risk of injuries during actual skiing sessions can be reduced.

Invited sectional speeches

I1

Chronic Kidney Disease: Strategies to Improve Patient Well-being

Špela Bogataj[1,2]
[1]University of Ljubljana, Faculty for Sport, Ljubljana, Slovenia, [2]University Medical Centre Ljubljana, Department of Nephrology, Ljubljana, Slovenia

Background: Chronic kidney disease (CKD) significantly impacts patients' physical and cognitive health, leading to reduced quality of life. Many patients experience fatigue, reduced mobility, and cognitive decline, which contribute to social isolation and decreased functional independence. Identifying effective strategies to improve patient well-being is crucial. Purpose: To explore evidence-based non-pharmacological strategies to enhance the well-being of CKD patients, focusing on physical activity, cognitive training, psychotherapy, nutrition and lifestyle modifications. Methods: By assessing the specific disease-related needs of patients, we can integrate individualized non-pharmacological approaches into routine care. For CKD patients, these interventions must be tailored to the severity of the disease and any accompanying comorbidities. Additionally, they should be adapted to the specific physical, physiological, and cognitive challenges faced by CKD patients to ensure their feasibility and effectiveness. Results: Findings suggest that different non-pharmacological interventions may offer significant benefits for CKD patients. Regular aerobic and resistance training have been shown to improve physical function, reduce fatigue, and enhance cardiovascular health. Cognitive training may help maintain cognitive function, potentially mitigating the effects of CKD-related cognitive decline. Social support and patient education play a key role in sustaining engagement with these interventions. Despite barriers such as fatigue and limited motivation, tailored programs can improve adherence and maximize benefits. Conclusion: Implementing structured multidisciplinary non-pharmacological interventions may enhance quality of life in CKD patients by improving physical function, preserving cognitive abilities, and fostering greater independence. Future research should explore the optimal frequency and intensity of such interventions to refine clinical recommendations.

I2

Lost and not found: Randomized Controlled Trial of Cognitive Behavioural Therapy for Weight-loss in Patients with Chronic Kidney Disease

Katja Kurnik Mesarič[1,2], Jana Kodrič[3,2], Špela Bogataj[1,4], Andreja Marn Pernat[1,5], Bernarda Logar Zakrajšek[6], Dominik Pogorevc[7], Jernej Pajek[1,5]
[1]Department of Nephrology, University Medical Centre Ljubljana, Ljubljana, Slovenia, [2]Department of Psychology, Faculty of Arts, University of Ljubljana, Ljubljana, Slovenia, [3]Unit of Child Psychiatry, University Children's Hospital, University Medical Centre Ljubljana, Ljubljana, Slovenia, [4]Faculty of sport, University of Ljubljana, Ljubljana, Slovenia, [5]Faculty of Medicine, University of Ljubljana, Ljubljana, Slovenia, [6]Management, Division of Surgery, University Medical Centre Ljubljana, Ljubljana, Slovenia, [7]Division of Internal Medicine, University Medical Centre Ljubljana, Ljubljana, Slovenia

Purpose: Obesity and related lifestyle factors significantly influence the onset and progression of chronic kidney disease (CKD). Managing obesity in CKD patients is essential, yet conventional methods often fall short. Psychotherapeutic and clinical psychological interventions, particularly cognitive behavioural therapy (CBT), have been shown to promote lifestyle changes and improve motivation for weight loss. This study aimed to evaluate the efficacy of a CBT-based intervention for obesity management in CKD patients. Method: Forty patients with CKD stages 2 to 4 were randomly assigned to either an intervention group, which received nutritional and physical activity counselling along with a 16-week CBT program, or a control group, which received only nutritional and physical activity counselling. The primary study outcomes were body mass index (BMI) and proteinuria. The trial was registered at ClinicalTrials.gov under the identifier NCT05927337. Results: A significant interaction effect between group (intervention vs. control) and time (pre- vs. post-intervention) was observed for BMI ($F(1,36)=32.24$, $p=0.004$, $\eta 2=0.21$), favouring the intervention group. This effect remained significant three months post-intervention ($F(2,70)=5.54$, $p=0.026$, $\eta 2=0.12$). Regarding proteinuria, significant changes over time were detected within the intervention group ($\chi 2(1)=5.00$, $p=0.025$), whereas no significant changes were found in the control group ($\chi 2(1)=2.00$, $p=0.157$), and between-group differences were not statistically significant ($U=175.00$, $p=0.897$). Conclusion: These findings indicate that CBT is an efficacious and well-tolerated intervention for obesity management in patients with early-stage CKD. Its sustained effects on BMI reduction suggest that CBT could serve as a valuable non-pharmacological treatment option in this population.

DOI 10.26773/mjssm.250401

I3

Let's stop chronic kidney disease: a description of a European cohesion project

Evelin Colja[1,2], Špela Bogataj[1,2], Dominik Pogorevc[2], Ana Janžekovič[2], Jernej Pajek[2]
[1]University of Ljubljana, Faculty of Sport, Ljubljana, Slovenia, [2]University Medical Centre Ljubljana, Department of Nephrology, Ljubljana, Slovenia

Purpose: Chronic kidney disease (CKD) affects approximately 10% of the global population and is associated with high morbidity, reduced quality of life, and increased healthcare costs. While pharmacological treatments can slow disease progression, non-pharmacological interventions are essential in improving patient outcomes and overall well-being. This project aims to integrate CKD patients into a structured, complementary, non-pharmacological support system, fostering sustainable disease management beyond standard medical care. Methods: CKD patients will be recruited by their personal nephrologist at their regular check-ups. The intervention will last four months and will later be transformed into a network of health-enhancing centers across the country. The program is built on five key pillars: (1) psychological support, (2) personalized nutritional assessment and guidance, (3) tailored physical exercise recommendations with access to structured exercise programs, (4) disease-specific education to empower patients in self-management and adherence and (5) social support network. Expected Results: We anticipate that participants will experience improvements in physical and mental well-being, better disease understanding, and increased adherence to lifestyle modifications. Additionally, the intervention is expected to slow CKD progression, enhance quality of life, and reduce the overall healthcare burden. Conclusion: This project aims to establish a national, evidence-based, non-pharmacological support system for CKD patients. By integrating proven lifestyle and behavioral interventions, we strive to create a sustainable model for improving patient outcomes and promoting long-term health.

Oral presentations

O1

Correlation between Sprint Cycle Ergometer and Vertical Jump Test Results to Determine Anaerobic Performance in Young Football Players

Andrew Rinaldi Sinulingga[1,3], Inese Pontaga[1], Kristaps Slaidins[2]
[1]RSU Latvian Academy of Sports Education, Department of Anatomy, Physiology, Biochemistry, Biomechanics, Hygiene and Informatics, Latvian Academy of Sports Education, Riga, Latvia, [2]RSU Latvian Academy of Sports Education, Department of Sports Games, Riga, Latvia, [3]Depatmen of Sport Education, University of Riau. Riau Province, Indonesia

Vertical jump and cycling sprint tests are widely recognized as methods to assess anaerobic performance. Purpose:This study investigated the relationship between the results of the cycling sprint and the vertical jump test among adolescent footballers. Methods: A total of 22 players (mean age: 15.86±1.73 years, height:177.72±5.9 cm, weight:69.82±11.9 kg, BMI:21.99±2.80 kg/m2, training volume:7.5±1.5 hours/week, and experience:8.3±2.9 years) were tested in squat jump (SJ), countermovement jump (CMJ), 6s peak power test (6PPT) and 30s Wingate anaerobic test (WAnT) on a bicycle ergometer. Results:The significant positive relationships were determined between peak power of WAnT and jump height of SJ and CMJ (r=0.50, p=0.017; r=0.60, p=0.003), time of flight (r=0.49, p=0.019; r=0.60, p=0.003), peak force (r=0.79, p=0.001; r=0.74, p=0.001), and peak power of 6PPT (r=0.64, p=0.001). The mean power output during WAnT also showed strong associations with the peak force of SJ (r=0.70, p=0.001), CMJ (r=0.67, p=0.001), and 6PPT (r=0.69, p=0.001). Furthermore, significant differences in jump height were observed between the two types of jump test (F=0.29, p=0.004), with 10.68% higher in CMJ, but no different peak power outputs were revealed between 6sPPT and WAnT (F=4.53, p=0.129). Conclusions:Peak power output during the WAnT can predict vertical jump parameters in SJ and CMJ. Moreover, the 6PPT appears to be a more reliable characteristic of explosive power than peak power in WAnT. Keywords: Explosive strength, vertical jump, peak anaerobic power test, football, adolescents.

O2

Gastrocnemius architectural properties and sprint performance in prepubertal female athletes

Vasiliki Gaspari, Gregory C. Bogdanis, Ioli Panidi, Gerasimos Terzis, Dimitra Kanna, Anastasia Donti, Olyvia Donti
School of Physical Education & Sports Science, National and Kapodistrian University of Athens, Athens Greece

The architecture of the triceps surae muscles—comprising the gastrocnemius medialis (GM), gastrocnemius lateralis (GL), and soleus—is a critical functional characteristic in athletes, as these muscles serve as the primary movers of the ankle joint during explosive actions of the lower limbs. However, data on the triceps surae architectural properties are limited in children, and it is largely unknown how muscle architecture is related to functional properties in prepubertal athletes. PURPOSE: To examine the relationship between architectural characteristics of GM and GL and sprint performance in prepubertal female athletes. METHODS: Forty rhythmic gymnasts (aged 9.1±0.6 y; training age 3.9±1 y) participated in this study. Muscle architecture (fascicle length and angle, muscle thickness) and anatomical cross-sectional area (ACSA) of GM and GL were assessed via ultrasonography. Sprint performance times over 10 and 20 m were also recorded. RESULTS: Moderate correlations were found between 10 m sprint performance time and GM thickness and pennation angle (r = -0.340 to -0.409, respectively, $p<0.05$) as well as their ASCA (r =-0.405 $p<0.01$). Similarly, 20 m sprint time significantly correlated with GM thickness and pennation angle (r = -0.348 to -0.439, $p<0.05$) and ASCA (r=-0.378, $p<0.05$). Multiple regression analysis showed that GM thickness accounted for 14.5% of the variance of 10 m sprint speed (adjR2=0.145, $p<0.01$). GM pennation angle accounted for 17.1% of the 20 m sprint speed (adjR2=0.171, $p<0.01$). CONCLUSIONS: In pre-pubertal athletes, the GM muscle architecture explains a small percentage of short sprint performance, possibly due to its association with force production.

O3

The Role of the Electromechanical Efficiency Index of the Skeletal Muscle: A Systematic Review

Gasper Turnsek[1], Armin H. Paravlic[1,2]
[1]Faculty of Sport, University of Ljubljana, Ljubljana, Slovenia, [2]Science and Research Centre Koper, Institute for Kinesiology Research, Koper, Slovenia

The skeletal muscle electromechanical efficiency (EME) index quantifies the relationship between electrical activation and mechanical output, offering a more comprehensive assessment of muscle func-

tion than each parameter alone. This integration provides unique insight into neuromuscular performance, fatigue resistance and recovery, making the EME index valuable in both clinical and sports settings. PURPOSE: This systematic review evaluates the EME index as an alternative to stand-alone electromyography (EMG) or mechanomyography (MMG), exploring its advantages, applications and limitations. METHODS: A systematic search of three databases identified 1284 studies, of which 10 met the inclusion criteria. RESULTS: The EME index has been used to assess a range of muscle conditions including muscle atrophy, chronic pain, and rehabilitation progress in knee injuries and fatigue. Among the available methodologies, tensiomyography is one of the most reliable tools for obtaining the EME index, but is limited to involuntary muscle contraction. CONCLUSION: The EME index provides a comprehensive view of muscle function by integrating electrical activation and mechanical output, making it superior to EMG or MMG alone. Standardizing measurement protocols is essential to ensure reproducibility and enable accurate inter-individual comparisons and longitudinal assessments. This will enhance its utility as a robust tool for assessing muscle function and monitoring progress in clinical, sports and rehabilitation settings.

O4

A Framework for a Return to Activity Algorithm for Non-Specific Back Pain in Golf

Slavko Rogan[1], Hannu Luomajoki[2], Tamara Lehmann[1], Pascal Rhunke[1], Eefje Luijckx[1]
[1]Bern University of Applied Sciences, School of Health Profession, Bern, Switzerland, [2]Zurich University of Applied Sciences, School of Health Sciences, Institute of Physiotherapy, Winterthur, Switzerland

A total of 54% of golfers suffer from lumbar back pain, regardless of age and performance level. Empirical evidence on the best practices for developing return-to-activity (RTA) protocols for non-specific back pain is notably scarce. PURPOSE: The objective is to create a framework for return-to-activity (RTA) in golf athletes with non-specific back pain, with the goal of providing evidence-based recommendations for optimal rehabilitation. METHODS: The framework was developed through a systematic process that included a systematic literature search, data extraction and synthesis, the identification and definition of RTA components, and the creation of a visual representation of the overall framework. RESULTS: A framework has been created out of seven articles. The RTA framework consist of two domains. Domain one is return to work. Multi-dimensional assessment procedures are required: Questionnaire, physical examination (mobility, strength and endurance) and psychological aspects. Domain two is return to sport. Survey of rotational load and impacts. CONCLUSION: This framework offers a return-to-activity (RTA) protocol for golfers, aiming to enhance understanding of person-centred rehabilitation and improve clinical practice. The framework requires additional validation through empirical research to establish its effectiveness and practical applicability.

O5

Content Knowledge of Sports Students

Lea Železnik Mežan
University of Ljubljana, Faculty of Sport, Ljubljana, Slovenia

PURPOSE: The aim of this study was to investigate common (CCK) and specialised content knowledge (SCK) of students at the Faculty of Sport after they had completed one semester of track and field. We aimed to determine whether there were differences between the experimental group (EG), taught by peer teaching and the control group (CG) taught in a practise style. METHODS: 33 students completed a test of CCK and a content map (standardised test to measure SCK). The EG consisted of 17 students (11 males, 6 females; 19.46 ± 0.66 years old) and the CG consisted of 16 participants (5 males, 11 females; 19.64 ± 1.03 years old). Data were analysed using descriptive statistics and the T-test for independent samples or its non-parametric alternative. RESULTS: The Levene's test showed homogeneity of variances for all variables except one. The Shapiro-Wilk test confirmed the normal distribution of five variables in both groups, but not of five other variables. EG scored higher than CG on the informing and refining tasks. The difference between the groups was statistically significant in the refining tasks. EG also achieved a higher SCK index, collected more total points on the content maps and performed better than CG on the CCK test. Nevertheless, these differences were not statistically significant. CONCLUSION: Peer teaching proved to be more effective than the practise style in teaching SCK to future physical education teachers and coaches.

O6

Urban-Rural comparison in prevalence of overweight and obesity among children aged 7-11 years from Kosovo

Besnik Morina, Florian Miftari
Faculty of Physical Education, University of Pristina "Hasan Prishtina", 10000 Pristina, Kosovo

The prevalence of overweight and obesity in children aged 7-11 in Kosovo, as in many other countries, can vary based on several factors, including geographical location urban - rural areas), socioeconomic status, dietary habits, physical activity levels, and cultural norms. PURPOSE: The purpose of this research was to verify the prevalence of overweight and obesity in children aged 7-11 in Kosovo, and the differences between urban and rural areas. METHODS: The sample consisted of n=1000 children, from them n=500 children from the urban areas and n=500 children from rural areas, separated by age and sex (7, 8, 9, 10, and 11 years old). RESULTS: The prevalence of overweight and obesity in Kosovo has been increasing in recent years in both urban and rural areas, reflecting trends observed globally. The prevalence of overweight and obesity was significantly higher in children in urban areas than in children in rural areas. The prevalence of overweight in children in urban areas was 14.6% and 13.2% in children in rural areas, while the prevalence of obesity in children in urban areas was 13.4% and 9.4% in children in rural areas. Regarding the statistical difference, the result of the chi-square test was p-value .00221, which indicates that we have statistically significant differences between children from urban and rural areas. CONCLUSION: Overweight and obesity in Kosovo represent significant public health concerns, reflecting broader global trends of increasing rates of overweight and related conditions. The government should pay particular attention to public education campaigns, healthy eating, increasing physical activity through various programs, and health care interventions, as some of the crucial steps in the fight against overweight and obesity. Keywords: Prevalence, school children, BMI, obesity, overweight.

O7

Physical Demands During the Game and Compensatory Training Session (MD + 1) in Football, are we Really Compensating?

Mark Dodaj[1], Agron Kasa[2]
[1]Department of Sports Performance, Sports Research Institute, Sports

DOI 10.26773/mjssm.250401

University of Tirana, Albania, [2]Department of Project and Technology, Sports Research Institute, Sports University of Tirana, Albania

In elite football, the physical demands placed on players can vary significantly depending on their role and playing time during matches. PURPOSE: The objectives of this study were to analyze the varying physical demands placed on non-starter players based on their playing time during competitions and to evaluate the effectiveness of compensatory training (MD +1), comparing them with their teammates who played nineteen minutes. METHODS: We assessed external load of match and MD +1 for substitute players from a professional Albanian football club "K.F Teuta" using a 25-Hz global positioning system (GPS) Kappa Sport GPS device, which is widely recognized as a reliable and valid method for performance analysis in team sports. RESULTS: The results indicate that substitutes players often experience lower training loads compared to starters. They cover less total distance and engage in less high-intensity actions compared to starters. This study emphasizes the importance of individualizing training workloads for both substitutes and starters. Furthermore, complementary training sessions should be tailored to account for the minutes played by substitutes. CONCLUSION: Therefore, it is crucial to implement specific training sessions designed for each substitute in order to achieve optimal training loads that reflect their playing time during matches. Keywords: GPS, high-intensity, total distance.

O8

Impact of Body Asymmetries on Road Cycling Performance

Samo Rauter, Jožef Šimenko
University of Ljubljana, Faculty of sport

Body asymmetries in road cycling can significantly affect performance levels, making their evaluation crucial for optimizing competitive outcomes. PURPOSE: This study aimed to investigate the morphological asymmetry profiles of elite road cyclists using advanced 3D scanning technology and electrical bioimpedance analysis. METHODS: Forty-eight male top-level cyclists participated in the study. Morphological asymmetry was quantified using the Standardised Absolute Asymmetry (AA) formula: $AA = (|R - L|)/(1/2(R + L)) \times 100\%$. Competition performance (CP) was assessed by the total racing points collected during national and international competitions at the end of the competitive season. RESULTS: Results showed that high-performing cyclists demonstrated greater symmetry and fewer morphological asymmetries than lower-performing cyclists. CONCLUSION: These findings highlight the potential of morphological symmetry as a key determinant of performance in road cycling and suggest that addressing asymmetries could enhance competitive outcomes.

O9

The Effect of Exercises on Shear Wave Velocity of the Median Nerve and 3rd FDS in Patients with Carpal Tunnel Syndrome

Jošt Peterca[1,2],Žiga Snoj[2], Gregor Omejec[2]
[1]University of Ljubljana, Faculty of Sport, [2]University Medical Centre Ljubljana

Carpal tunnel syndrome (CTS) is the most common peripheral neuropathy, and studies suggest exercises can be used for symptom management. Purpose: The study evaluated the impact of exercise protocols on the ultrasound shear wave velocity (SWV) of the median nerve and 3rd flexor digitorum superficialis (3rd FDS) in patients with mild to moderate CTS. Methods: Forty-six CTS patients (87 hands) were divided into control group, nerve and tendon gliding exercise group, and strength exercise group. The participants followed a three-week daily exercise plan. The SWV measurements were conducted using Canon Aplio i800 ultrasound and linear probe (LX18i5). Regions of interest were positioned within the nerve epineurium and hyperechogenic borders of the 3rd FDS tendon. The pre- and post-intervention SWV values were recorded. Results: No statistically significant differences in SWV were observed between pre- and post-intervention across groups. However, trends indicated reduced SWV in both the median nerve and 3rd FDS in the nerve and tendon gliding group and reduced SWV in the median nerve in the strengthening group. No measurable change was observed in the control group. Conclusion: While statistical significance was not achieved, trends suggest specific exercises may decrease stiffness in the median nerve and 3rd FDS in CTS patients. Further research with larger samples and extended interventions is recommended.

O10

Comparative Analysis of Physical Demands in Domestic and International Soccer Matches: Insights from Kosovo Super League Teams

Malsor Gjonbalaj, Faton Tishukaj
University of Prishtina, Faculty of Physical Education and Sports, Prishtina, Kosovo

Soccer match demands involve high-intensity actions, requiring players to cover extensive distances through running, sprints, and transitions, all of which play a critical role in determining the outcome of the match. PURPOSE: The purpose of the study was to evaluate and compare the physical and running performance demands in soccer players across different competitive levels (international vs. domestic matches) to better understand how match intensity, distance covered, and sprinting metrics vary across these scenarios. METHODS: Eighteen matches (8 international; 10 domestic) from two Kosovo Super League teams were analyzed to evaluate and compare the physical and running performance demands across different competitive levels. RESULTS: Players covered significantly greater total distances in EU Cup matches compared to domestic matches (domestic: 10,342.52 ± 780.8 m; EU: 10,948.45 ± 1299.9 m, $p = 0.007$) and had a higher distance per minute (domestic: 109.2 ± 8.6 m/min; EU: 115.2 ± 15.1 m/min, $p = 0.020$). No difference was observed in playing time between match types ($p = 0.289$). However, high-speed running distance ($p = 0.264$), sprint distance ($p = 0.137$), number of sprints ($p = 0.454$), and maximal running speed ($p = 0.916$) were not statistically different across competitive levels. Midfielders covered slightly greater running distances, but no significant differences were found between playing positions ($p = 0.062$). CONCLUSION: Players exhibit higher overall running demands in international matches than domestic matches, yet high-intensity running metrics, sprinting demands, and positional differences remain consistent, indicating that the physical demands of soccer transcend competitive level and positional roles.

O11

Prevalence of increased upper extremity strength in female volleyball players

Anisa Nurja, Enkeleida Lleshi
Department of Sports Performance, Sports Research Institute, Sports University of Tirana, Albania

Improving physical fitness such as muscular strength and power is very crucial for young female volleyball players. It helps to reduce injury risk and enhance overall performance. PURPOSE: The aim of the study is to design an effective exercise program to increase upper

extremity strength in young female volleyball players. METHODS: A total of 24 young volleyball players participated in the study. Participants in the interventional group followed a supervised 'Plyometric exercises' in upper extremities. An overhead medicine ball throw test and seated medicine ball throw test was performed to evaluate the ability of generating explosive power on upper extremities. Push-up test was assessed to evaluate the upper body- strength. The12-week interventional program includes plyometric exercises. t-test was used to test the differences in data between groups. RESULTS: There was a statistically significant difference between control group and experimental group ($p < 0.01$) in push-up test. Comparisons between first measurements and the 12-week following up indicated that the upper body power (medicine ball throw test) was improved in experimental group ($p < 000$) difference [d%] 7.5 %, while in control group there was no difference found ($p > 0.05$). CONCLUSION: The findings of this study suggest that 12-week plyometric exercise are recommended to be used in young female volleyball players in order to increase strength in the upper extremities.

O12

Is cervical movement control related to sprinting performance in trained track-and-field athletes

Ziva Majcen Rosker[1], Ladislav Mesaric[2], Maja Pajek[1], Jernej Rosker[3]
[1]University of Ljubljana, Faculty for Sport, Ljubljana, Slovenia, [2]Univerity of Maribor, Faculty of Education, Maribor, Slovenia, [3]Univerity of Primorska, Faculty of Health Sciences, Izola, Slovenia

The neck is suggested to be part of the musculoskeletal core which importantly contributes towards preserving stability of the upper body and center-of-mass movement trajectory during high frequency running. Moreover, it has been suggested, that neck muscles via their involvement in propulsion and stabilization kinetic chains help stabilize the pelvis during running. PURPOSE: The goal of this study was to analyse the relationship between the neck movement functions and acceleration and maximal velocity sprinting performance. METHODS: Twenty trained male track-and-field athletes (age: 19±0.8 years; body mass: 72±2.6 kg; height: 170±9.1 cm) performed neck movement control test (at three difficulty levels), measuring ability to track the target with head and neck/overshooting/undershooting, three 30m maximal acceleration and three 60m maximal velocity runs. RESULTS: Linear regression analysis presented with statistically significant relationship between undershoot parameter of the neck movement control test measured at the difficult level and acceleration time measured at 30m distance ($R2 = 0,278$), but not between time of the second half of the 60m runs. CONCLUSION: The findings suggest that ability to accurately move one's head and neck (not lagging behind anticipated movement trajectory) has significant relationship with acceleration ability in trained track-and-field athletes. Our study warrants further research on this topic.

O13

Enhancing Sustainable Adventure Tourism in Albania. Integrating Infrastructure Development, Sport Education, and Economic Growth

Adri Kasmi[1], Aldo Muçalliu[2], Holtjon Orhani[2]
[1]Sport University of Tirana, Institute of Scientific Research in Sports, Department of Sports Performance, [2]Sport University of Tirana, Institute of Scientific Research in Sports, Department of Projects and Technology

This study examines the role of infrastructure development and sports education in advancing sustainable adventure tourism in Albania, a country with rich natural and cultural assets yet hindered by underdeveloped infrastructure and limited sustainability awareness. A mixed-methods approach was employed, utilizing surveys of tour operators and guides to assess infrastructure adequacy, accessibility, accommodation availability, and sustainability awareness, alongside analyzing stakeholder perspectives on sports education's role in promoting responsible tourism. Findings reveal that 47.4% of stakeholders consider Albania's adventure tourism infrastructure inadequate, citing challenges such as poor trail markings, limited access to remote sites, and insufficient amenities. Additionally, 73% of tourists face accommodation shortages during peak seasons, negatively impacting local economies. Sports education is identified as a key driver for sustainable practices, though awareness remains low. Infrastructure improvements, such as enhanced trails and access roads, have shown positive economic effects, with 63.2% of respondents reporting benefits, while 73.7% anticipate growing demand for sustainable tourism. The study concludes that Albania must invest in eco-friendly infrastructure and integrate sports education into tourism programs to enhance accessibility, accommodation, and sustainability awareness. Collaborative stakeholder efforts are essential for long-term success, positioning Albania as a premier destination for sustainable adventure tourism. Strategic investments and education are critical for achieving environmentally responsible tourism growth.

O14

Associations Between 24-Hour Movement Behaviours and Cognitive Abilities in Slovak Adolescents: The Role of Physical Activity, Sedentary Behaviour, and Sleep

Beata Ruzbarska, Peter Kacur, Lenka Hnidkova, Mojmir Trebunak, Erika Chovanova
Department of Sports Educology and Humanistics, Faculty of Sport, University of Prešov, Presov, Slovakia

PURPOSE: This study examined associations between 24-hour movement behaviours (physical activity, sedentary behaviour, and sleep) and cognitive abilities (attention, intelligence, and memory) in Slovak adolescents. METHODS: A total of 82 adolescents (55% girls, 16.5 ± 1.1 years) participated. Physical activity and sedentary behaviour were measured using an ActiGraph wGT3X-BT accelerometer worn on the non-dominant wrist for seven days and the PAQ-A questionnaire. Cognitive abilities were assessed using the Intellectual Potential Test, Attention Concentration Test, and Visual Memory Test. RESULTS: A significant relationship was found between errors in the Attention Test and sleep duration ($p = 0.041$), sedentary behaviour ($p = 0.002$), low-intensity physical activity ($p = 0.017$), and the most active periods of 60 minutes ($p = 0.017$), 30 minutes ($p = 0.012$), and 5 hours ($p = 0.013$). A correlation was also observed between the least active 5-hour period and memory scores ($p = 0.040$). However, intelligence showed no significant association with any movement behaviour component. CONCLUSIONS: Findings suggest that sleep and physical activity may positively influence adolescent attention. The low sensitivity of self-reported physical activity assessments limited movement-cognition correlations, highlighting the value of accelerometry for precise analysis. Further research is needed to confirm these associations. These findings are part of the research grant project VEGA 1/0481/22.

O15

Extracurricular Physical Activity as a Factor in Schoolchildren's Socialization

Joca Zurc[1], Tinka Delakorda Kawashima[2]
[1]University of Maribor, Faculty of Arts, Department of Pedagogy, Maribor,

DOI 10.26773/mjssm.250401

Slovenia, [2]Hiroshima University, Graduate School of Humanities and Social Sciences, Higashi-Hiroshima City, Hiroshima, Japan

Ensuring the well-being of schoolchildren is a priority in today's education system. Due to ever-increasing performance demands in schools, parental expectations, peer competition and intense digitalization within society, a growing number of children are retreating into passive leisure time. This shift is reflected in rising behavioural problems, deteriorating mental health, and academic failures. Therefore, one of the most important strategies for schoolchildren is to promote and facilitate their active leisure time. PURPOSE: This study aims to investigate the impact of extracurricular physical activity (e.g. school-based sports clubs) on a child's development of social skills. METHODS: A structured self-reported questionnaire was administered to a random sample of 1,520 Slovenian primary schoolchildren to gather data on their leisure physical activity, while teachers evaluated children's social skills in school using the Social Skills Rating System. RESULTS: The participating children were classified in the average group (60.8%) according to the development of positive social skills, such as cooperation with others, assertion, and self-control. The chi-square test confirmed a statistically significant correlation between social skills and extracurricular physical activity (p=0.003). The group with lower socialization had the highest number of inactive children. CONCLUSION: The study's findings show that extracurricular physical and sports activities positively improve children's social skills and contribute to their socialization and well-being in school.

O16

Young adolescents with excess body weight: less active and more prone to obesogenic lifestyles

Vjollca Shpata, Klejda Tani, Aisel Oseku, Fregen Dhamaj, Jonida Drizaj, Andromeda Lalaj, Robert Çina
Faculty of Rehabilitation Sciences, Sports University of Tirana, Albania

PURPOSE: To examine the relationship between body mass index (BMI), physical activity, sports participation, and lifestyle patterns among young adolescents in Tirana. METHODS: A cross-sectional study was conducted among 10- to 15-year-old students from nine public secondary schools in Tirana. Participants completed a self-reported questionnaire assessing their lifestyle habits and physical activity/sports engagement level. Based on the World Health Organization (WHO) growth reference data for children and adolescents 5-19 years old and BMI classification, participants were categorised into healthy weight (without excess body weight), overweight, and living with obesity. RESULTS: Among the 2020 study participants, 20.9% were overweight, and 16.1% were obese. Adolescents with a healthy weight were more physically active than their overweight or obese peers, spending 3.24 (SD: 3.56) hours/week on sports compared to 2.73 (SD: 2.94) hours/week (P=0.0009). They were more likely to meet the WHO recommendation of at least one hour of daily physical activity (OR: 1.71, 95%CI: 1.25-2.34, P=0.0007) and had higher odds of eating breakfast daily (OR:1.84, 95%CI:1.39-2.43, P<0.0001). CONCLUSIONS: Although physical activity is one of the most important ways to prevent overweight or obesity, overweight young adolescents and those living with obesity are more physically inactive than their peers without excess body weight. Additional efforts are needed to boost their participation in sports and physical activities.

O17

Secular Trends in Somatic and Physical Performance Parameters of 11-Years Old School Pupils in Slovakia

Jaromir Sedlacek, David Stun
Faculty of Sport, Presov University in Presov, Slovakia

Purpose: In the second half of the last century, the somatic, motor and physiological development of the Czech and Slovak school population took place with a slight acceleration. This secular trend was recorded from the post-war years to the 1990s, when the acceleration trends started step by step change to stagnation and later to reduction of somatic and motor parameters, too. The aim of the work is to contribute to compare the level of selected movement abilities of today´s 11-years old school pupils in context of secular changes. Methods: In this research we have available 75 boys and 72 girls. They were tested in seven parameters, 2 somatic and 5 motor tests: body height, body weight, standing broad jump, sit-ups in 1 minute, overhead medicine ball throw (2 kg), 50 m sprint and 12 minutes run. We had also available results of former Slovak (Czechoslovak) national testing published 1990 and 2011. Our measurements were taken in region of Eastern Slovakia school in year 2021. Processing and evaluation were done with basic statistical methods and with logical methods. Results and conclusions: We confirmed negative changes in somatic parameters of present school population as well as the level of selected movement abilities both of boys and girls was in all tests significantly lower comparing former testing of Slovak population published in the past.

O18

Health-Related Behavioural Patterns in University Students: A Cluster Analysis

Joca Zurc[1], Matej Majerič[2]
[1]University of Maribor, Faculty of Arts, Department of Pedagogy, Maribor, Slovenia, [2]University of Ljubljana, Faculty of Sport, Ljubljana, Slovenia

Previous studies have undoubtedly proved causal relationships between health-related behaviour, health status and life expectancy. An unhealthy lifestyle has been shown to be a strong predictor of chronic diseases and mortality today. University students are at a vulnerable stage of life as they make the transition from adolescence to adulthood, which significantly affects their health-related lifestyle. PURPOSE: This study aims to gain insights into students' eating and exercise habits, alcohol and tobacco consumption, psychological well-being, motives for lifestyle change and to identify groups of students with homogeneous health-related behavioural patterns. METHODS: A structured, closed-ended questionnaire was administered to a sample of 171 students at the University of Ljubljana to collect data on their health-related behaviour. Data analysis was performed using hierarchical and non-hierarchical cluster analyses. RESULTS: On average, students rated their health and health maintenance as very good (Mean=4.84). They reported regular consumption of vegetables and fruit and being physically active on a daily basis. The hierarchical grouping revealed two distinct patterns of health-related behaviour among university students: "healthy lifestyle awareness" (52.7%) and "sedentary lifestyle with poor mental health" (47.3%). Better health-related behaviour was found in senior male students. CONCLUSION: The identified patterns of health-related behaviour in university students require a tailored approach to health promotion and health education to improve their lifestyle.

O19

Gender Dynamics in Athletic Instruction: University Students' Perceptions of Male and Female Trainers at the Sports University of Tirana

Elona Mehmeti[1], Anxhela Llaftiu[2]
[1]Sport University of Tirana, Institute of Research in Sports, Department of Projects and Technology, [2]Sport University of Tirana, Institute of Research in Sports, Department of Projects and Technology

Purpose: The aim of this study is to evaluate the university students' perceptions of male and female sports trainers at the University of Sports of Tirana, Albania, by their role, effectiveness, and their associated qualities. Methods: Using a mixed-methods design, the data were collected through questionnaires and focus group discussions with a heterogeneous student sample. The study also sought to determine the presence of gender-based prejudices, stereotypes, and preconceived notions among students towards trainers. Results: The overall results showed that while both male and female trainers were valued for technical and leadership abilities, students perceived and attributed different mentoring qualities and communication styles to each gender. There were some gender-based prejudices, suggesting the dominance of traditional stereotypes in sports education. Students also showed varying levels of sensitivity regarding gender equality in the context of sports training settings. Conclusions: The paper draws to a close by giving the following suggestions to promote inclusivity and gender equality, including incorporating gender sensitivity training and open discussion as part of the sport education curriculum. These measures are vital in rendering the environment more even and conducive to trainers and students.

O20

Women's success in sport despite discrimination in the interwar period

Magdalena Zmuda Palka
Akademia Kultury Fizycznej, Institute of Humanities

When the modern Olympic Games were initiated, women slowly began to take part in sporting competitions. Every subsequent Game saw more and more of them. In addition, many international competitions were organised, and one of the most important was the Women's World Games, where women could compete. Due to the loss of Poland's independence, athletes from Poland, including women, did not start competing internationally until the interwar period. Despite many situations of discrimination against women in sport and the lack of equal rights for women, it was because of the numerous successes of Polish women that sports became popular in Poland. It is particularly noteworthy that the first ever gold medal for Poland was won by Halina Konopacka in the discus throw at the 9th Olympic Games in Amsterdam in 1928. The presentation shows the successes of Poland's most notable female athletes of the inter-war period despite discrimination against women in sport. It was decided to bring the issues of Polish female Olympians closer to the public for two reasons. First of all, there is a lot of different scientific information about the history of the Olympics of the interwar period of each country, but there are few scientific papers based on reliable sources. The second reason for the presentation of this theme was the international successes of Polish women, which overshadowed those of men at a time when women in most countries did not have many rights, including the right to vote. The presentation was based on an analysis of sources, mainly press and works of the inter-war period, as well as contemporary studies. Keywords: Women, Sport, Olympic Games, Women's World Games, Poland, Polish.

O21

Physical fitness of police force applicants: trends from 2010 to 2023

Kristina Nema[1], Tomas Kozak[2], Miroslav Ligday[1], Lukasz Rydzik[3]
[1]University of Presov, Faculty of Sports, Department of Educology of Sports, Presov, Slovakia, [2]University of Presov, Faculty of Sports, Department of Sports Kinanthropology, Presov, Slovakia, [3]Institute of Sports Sciences, University of Physical Education in Krakow, Krakow, Poland

The physical fitness of applicants for recruitment to security forces is a key selection criterion. This performance encompasses a wide range of physical abilities necessary to cope with the demanding situations associated with these occupations. PURPOSE: The aim of this study is to analyze long-term trends in the physical performance of police service applicants and identify key changes in individual components of physical preparedness. METHODS: The research sample included 254 male applicants (28.99 ± 6.34 years) for police service. The following tests were used to assess physical fitness: 50-meter sprint, sit-ups, standing long jump, 1000-meter run, overhead medicine ball throw, and push-ups. The Kruskal-Wallis ANOVA was used for inferential analysis. The significance of the measurements was assessed at $\alpha = 0.05$. RESULTS: The analysis of police applicants' physical performance levels revealed statistically significant differences with a large effect size in anaerobic power of the lower limbs ($p < 0.001$), upper body explosive power ($p < 0.001$), and upper body muscular endurance ($p = 0.025$). In contrast, no statistically significant differences were found for abdominal muscle strength and endurance, lower body explosive power, or aerobic endurance. CONCLUSSIONS: The results highlight the need for a detailed assessment of physical fitness trends among police applicants, with an emphasis on factors that may influence their performance across different time periods.

O22

The influence of parents for fostering children in extra-school mobility activities and the importance of improving these skills

Erjon Peqini[1], Bardhyl Misja[2]
[1]Department of Physical Education and Sports. Faculty Science of Education. University Luigj Gurakuqi. Albania, [2]Department of Education and Health. Faculty of Movement Sciences. Sports University of Tirana. Albania

Moving and sports activities are a very important element of multidimensional development in children in sensory terms. [4] Organized extra-school programs help children grow and develop, giving them a sense of achievement. As they increase dynamic mobility activity helps them build skills of teamwork, problem solving leadership, decision-making, knowing and visualizing themselves, communicating, etc. PURPOSE: This study aims to illustrate that the best support for children's development can be achieved through physical activity, and certainly, senso-perceptive skills play a significant role. METHODS: data was created through semi-structured interviews conducted with parents. [3] N = 265 of the 5 schools of Shkodra city attended randomly selected. Parents of children aged 8-9 asked three essential questions, enough to answer many questions. RESULTS: 31% of respondents did mobility and sports activities organized outside the curriclum, 69% did not. 25.1% of the children who were physically active came from parents who had previously been engaged in sports. 74.9% have children who do not do any lawful activities or sports outside the teaching process with parents who have not exercised sports. We have a 6% increase in parents encouraging their children to engage in organized sports. CONCLUSION: participation in various sports, and this age group is very low, referring to other studies[1] although there is a significant increase in parents' incentive to activate their children with sports activity, the number is still very small.

O23

Differences in the speed of U15 croatian female cadet soccer players of different levels of the competition

Josip Cvenić, Hrvoje Ajman, Gabriela Gačić
University J.J. Strossmayer in Osijek, Faculty of kinesiology Osijek, Osijek, Croatia

DOI 10.26773/mjssm.250401

In soccer, speed is of great importance because speed is one of the abilities that most affects a player's performance. The reason for this is that there are faster and slower players, and players with their speed gain an advantage over the rival player. PURPOSE: The aim of this paper is to determine whether there is a difference in speed between female cadets of two different levels of competition, ZNK Osijek and ZNK Šokadija from Stari Mikanovci. METHODS: The sample consisted of 20 female players aged 14.95 ± 1.15 years. The sample of variables included two tests, 10m (S10) and 20m (S20) sprint, to assess speed. Each subject performed three sprints with 2 minute rest intervals between each repetition, with the average time achieved as the final result. All data were descriptively analyzed and independent samples T-test was used to determine the differences between teams. RESULTS: Results have showed that there is no statistically significant difference in the S10 and S20 tests between teams of two different levels of the competition ($p > 0.05$). CONCLUSION: The findings suggest significant insights into sprint speed among young soccer players, but further research is needed to provide better insight into the development of young soccer players' abilities. The young female cadets from first division had better results in tests, but not statistically significant comparing to cadets from second division.

O24

Contemporary and Traditional Teaching Methods and Techniques In Albanian Primary Education- Physical Education Teachers' Perspectives

Mirjeta Cenaj, Alketa Çaushi, Blerina Aliaj
Faculty of Movement Sciences, Sports University of Tirana, Albania

Introduction: Teaching is a complex process and is related to the type of methods used as well as the efficacy of their delivery and application by the respective teachers. Objective: This study aims to determine the prevalence of contemporary methods and techniques used in continuity by Albanian PE teachers. It seeks to highlight the most commonly used methods in the PE classes and identify the most effective methods. Methodology: To conduct this study, both quantitative (questionnaire) and qualitative (interviews, discussions) methods were used. A questionnaire and unstructured interviews were conducted with school directors and 20 PE teachers at three 9-year schools in the city of Tirana. Results: Contemporary methods are practiced in our schools, but teachers, especially those with many years of experience, still tend to be traditional in the classroom. Meanwhile, for new teachers, there is a need for more training, informal discussions, open workshops within departments. Conclusions: It is concluded that contemporary teaching methods bring significant changes to the instructional process as a result of teachers' efforts to implement learner-centered teaching models that are essential for contemporary and qualitative education. These findings support the positive correlation between contemporary teaching and educational quality, affirming the initial hypothesis. Key Words: Contemporary methods, traditional methods, educational quality, Albanian schools, PE teachers.

O25

Is the PAQ-C a valid measurement tool for evaluating physical activity levels in rural children? Cross-sectional study in southern Croatia

Petra Rajkovic Vuletic[1,2], Paula Matijasevic[1,2], Vladimir Pavlinovic[1]
[1]Faculty of Kinesiology, University of Split, Split, Croatia, [2]Faculty of Kinesiology, University of Zagreb, Zagreb, Croatia

The physical activity level (PAL) of rural children has rarely been studied, especially considering the validity of measurement tools used for the evaluation of PAL. PURPOSE: The aim of this study was to evaluate the criterion validity of the Physical Activity Questionnaire for Children (PAQ-C) in rural children from Croatia by comparing the data obtained via the PAQ-C to those recorded via direct measurement via accelerometers. METHODS: The participants were 47 children from rural regions in southern Croatia who were simultaneously tested on the PAL directly, via GENEActiv triaxial accelerometers, and indirectly, via the PAQ-C. Gender-stratified Pearson's correlations and multiple regressions were calculated to evaluate associations between variables, whereas a t test was used to determine differences between genders in the study variables. RESULTS: Associations between direct and indirect measurements were weak (boys: R: 0.08–0.29, $p > 0.05$; girls: R = 0.04–0.35, $p > 0.05$). Boys had higher directly measured vigorous PAL (t test = 3.22, $p < 0.05$) and PAQ-C (t test = 2.04, $p < 0.05$). CONCLUSION: The results revealed poor criterion validity of the PAQ-C in rural children. Therefore, more comprehensive and context-specific assessment indirect measurement tools that capture the diverse range of activities common in rural settings are needed.

O26

Outdoor Activities and Their Role in Promoting Physical Health and Well-Being Among Children: A Literature Review

Adri Kasmi[1], Juel Jarani[2]
[1]Department of Sport Performance, Sports Research Institute, Sports University of Tirana, Albania, [2]Department of Education and Health, Faculty of Movement Sciences, Tirana, Albania

This literature review explores the impact of outdoor activities on the physical health, cognitive function, and general well-being of children. PURPOSE: The primary aim is to evaluate the relationships between outdoor time and physical activity, sedentary behavior, cardiorespiratory fitness, musculoskeletal fitness, and motor skill development among children aged 3 to 12 years. METHODS: A systematic search of major databases, including PubMed, Scopus, Google Scholar, Web of Science, was conducted using a comprehensive search strategy. Inclusion criteria focused on studies published within the past decade that examined the effects of outdoor activities on children's development. The research was carried out in alignment with the PRISMA guidelines to ensure a systematic and transparent approach. RESULTS: The findings highlight the multifaceted benefits of outdoor activities in nature-based play. These activities contribute to increased physical activity levels, improved cardiovascular health, enhanced cognitive functions, and better psychosocial well-being. Despite these benefits, the review identifies several challenges, including limited longitudinal studies, disparities in access to outdoor spaces, and a decline in outdoor play due to urbanization and safety concerns. CONCLUSION: The review underscores the importance of integrating outdoor activities into children's daily routines and public health policies. Promoting outdoor activities can support global health goals and foster healthier, more active lifestyles among youth.

O27

Motivation on Using Doping in Adolescents Athletes Involved in Sports in Albania

Surven Metolli
Sports University of Tirana, Faculty of Physical Activity and Recreation. Tirana, Albania

Introduction: While performance-enhancing drugs are increasingly prevalent among adolescents involved in sports, relatively little attention has been devoted to understanding why adolescent ath-

letes choose to use these substances. Purpose: A structural equation model was employed to test the relationships between motivational variables, attitudes and doping behaviours among adolescent athletes. The study sampled adolescents engaged in competitive sports from various regions across Albania. Methodology The Performance Enhancement Attitude Scale (PEAS) was used to assess attitudes toward doping.To further explore the mediating role of attitudes in the relationship between sports motivation and doping, we incorporated two well-established theories of sports motivation: goal achievement theory and self-determination theory. Results: Within the proposed model, we hypothesize that task orientation will be positively associated with intrinsic motivation and negatively with amotivation, while ego orientation will be positively associated with external regulation and amotivation. Conclusion: Based on the anticipated findings, we argue that fostering intrinsic satisfaction, self-referenced success criteria, and self-improvement may be linked to more negative attitudes toward doping and cheating, fewer doping intentions, and lower engagement in doping behaviors. Conversely, a focus on competitive success, social comparison, and external motivation may lead to opposite outcomes. Keywords: Anti-doping, Psychological factors, Performance, Athlete achievement.

O28

How individually structured exercise-based program influences ability to walk in patients with symptomatic lumbar spinal stenosis: A pilot study

Katja Plaskan[1], Maja Pajek[1], Miha Vodičar[2]
[1]University of Ljubljana, Faculty of Sport, Slovenia, [2]University Medical Centre Ljubljana, Orthopedic Clinic, University of Ljubljana, Medical faculty, Chair of orthopedics

The results of our systematic review of a limited number of studies show that physical exercise may significantly improve walking ability. Furthermore, we designed an individualized program, which mostly constists of spinal stabilization exercises, mobility and stretching. PURPOSE: The goal of this study is to show how 12 weeks of supervised and individually tailored exercises in experimental group help improve walking ability in comparison to control group. METHODS: The study included 26 patients with LSS at baseline, with 13 in control and 13 in experimental group after randomization was done. They all completed physical performance tests (6-minute walk test, sit and reach test and McGill's torso muscular endurance test battery). General linear model with repeated measures was performed to analyze the differences between groups. RESULTS: The associations between groups for 6MWT were p=0,503, but there was significant improvement within experimental group p=0,008 between 1 st and 2 nd measurements, respectively, even more significantly lower among 1 st and 3 rd (p=0,001). CONCLUSION: There were no significant associations between groups. We hypothesize that was due to the drop out in control group till 2 nd measurements at 8 weeks and 3 rd measurements at the end of the 12 th weeks. However, the question remains how to maintain the motivation to participate in the control group.

O29

The Influence of Vision and Hearing on Body Control During Jumps on a Large Trampoline

M. Pezdirc, I. Čuk, K. Šibanc, M. Pajek
University of Ljubljana, Faculty of Sport, Ljubljana, Slovenia

Purpose: The aim of this study was to investigate impact of vison and hearing system on body while jumping on a large trampoline. Sensory imputs regulate body positions with visual, auditory, and somatosensory receptors. The gymnast uses these three systems to maintain straight body position while performing straight jumps. Methods: Each subject performed 6 sets of 10 consecutive jumps under different sensory conditions: 1) with looking down at the edge of the trampoline, 2) with looking forward, 3) without hearing and with looking down at the edge of the trampoline, 4) without hearing and with looking forward, 5) without sight and 6) without sight and hearing at the same time. For each jump, we measured the contact forces on the trampoline at take-off for the left and right foot separately, to determine differences in forces and correlation between variables, to see which have the biggest impact on the quality of the straight jump. Results: Vision is the most important factor for successful control of the body during jumps. The subjects jumped significantly lower and less reproducibly during the jumps, where vision was removed, and the differences in forces between the left and right leg were greater. Conclusion: When jumping on trampoline, there are differences in forces between the left and right leg, which are caused by the gymnast's control over the body, which strives to jump as vertically as possible. However, different sensory data jumps have a great influence on the duration of the flight and on the demonstration of force during push-off. In jumps without visual data flight times and ground forces are significantly lower than other types of jumps.

O30

Building Evidence: Systematic Review and Meta-analysis Essentials

Ahsen Büyükaslan
Faculty of Sport, University of Ljubljana

This course provides a comprehensive introduction to systematic reviews and meta-analyses, focusing on their importance in evidence-based research. Participants will learn how to design, conduct, and interpret systematic reviews using essential frameworks like PICOS (Population, Intervention, Comparison, Outcomes, and Study Design). Key tools and guidelines, such as PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) for reporting standards and PROSPERO for systematic review registration, will be covered. By the end of the course, participants will be equipped to critically appraise literature, synthesize data, and apply these methodologies in their research projects.

O31

The association between cervical spine movement control and ageing in healthy individuals

Izabela Luznik, Maja Pajek, Ziva Majcen Rosker
University of Ljubljana, Faculty of Sport, Ljubljana, Slovenia

Due to various age-related declines in the musculoskeletal system, the ageing process can lead to changes in cervical spine function, with studies also suggesting a decrease in sensorimotor control of the cervical spine during ageing. PURPOSE: The aim of the study was to investigate the association between cervical spine movement control and age in healthy adults. METHODS: Twenty-six healthy adults (28-77 years) performed the Butterfly test using a head-mounted inertial measurement unit, where participants had to track an unpredictably moving target with active head and neck movements along three different trajectories (3 repetitions per trajectory). The association between age and the Butterfly test parameters (amplitude accuracy - AA, time-on-tar-

DOI 10.26773/mjssm.250401

get - ToT, undershoot - U and overshoot - O) was assessed using Pearson's (r) or Spearman's rank (r s) correlation. RESULTS: The results revealed a significant moderate to strong association between increasing age and the AA (r: 0.539-0.683, p<=0.005), ToT (r: -0.619 and -0.750, r s : -0.632, p<0.001) and U (r:0.662-0.803, p<0.001) parameters, while no association was found between age and the O parameter (p>0.05). CONCLUSION: The results of this study suggest that movement control of the cervical spine decreases with increasing age in healthy individuals. These changes may affect sensorimotor control, including postural control, in older adults and potentially lead to an increased risk of falls..

O32

Differences in jumping characteristics between different competitions in volleyball: A Case report

Jernej Pleša[1], Tine Sattler[2]
[1]Basketball club Cedevita Olimpija, Ljubljana, Slovenia, [2]University of Ljubljana, Faculty of Sport, Ljubljana, Slovenia

Jumping performance is a crucial aspect of volleyball. Vertical jumps in volleyball are performed in serving, attacking and blocking the opponent. The higher a player can jump, the greater their potential for success in both defensive and offensive actions. PURPOSE: In recent years load monitoring is a hot topic in sports performance field. The aim of this study was to check differences between jumping characteristics during different competitions in volleyball. METHODS: Female volleyball player (outside hitter) competing at the elite level (champions league, middle Europe league (MEVZA), domestic league, domestic cup). The player analysed in this study was the most important and most efficient player of the team. Data were obtained during a total of 29 games, using G-vert technology (Mayfonk Athletic, LLC). Data were analyzed as average jump height and number of jumps per set. RESULTS: Our results showed no differences between number of jumps per set, nor average jump height between different competitions (Champions league, MEVZA, domestic league, domestic cup) (p = 0.36-0.82), opponent level (high, middle, low level) (p = 0.30-0.94) and type of the competition (domestic vs international) (p = 0.24- 0.45). CONCLUSION: Results suggest that jumping characteristics (number of jumps and jump height) depend mainly on players physical ability and players status in the team and do not significantly differ between different competitions and opponents.

O33

A 12-week quasi-experimental study examined the combined effects of OTAGO exercises and walking on nursing home residents' ability to improve their balance

Robert Çitozi, Klajdi Xhebexhiu, Vlad Adrian Geantă
Sports University of Tirana, Faculty of Physical Activity and Recreation, Tirana, Albania, Aurel Vlaicu University of Arad, Faculty of Physical Education and Sport, Arad, Romania

Mobility and freedom are compromised in nursing home patients due to balance issues and fall hazards, which have a substantial negative impact on their well-being. It takes extensive interventions that incorporate both psychological and physical elements to address these issues. The purpose of this study was to assess how a 12-week intervention that included music therapy, the Otago Exercise Program (OEP), and outdoor walks affected the balance of nursing home residents 65 and older. Materials and Procedures: 42 people were used in a quasi-experimental design, with 24 in the experimental group and 18 in the control group. The experimental group participated in music therapy, OEP sessions, and planned outdoor walks. Using the Leonardo Mechanograph platform, the balance was evaluated both before and after the intervention. Functional tests like the Chair Raising Test and Romberg (eyes open/closed) and Semi-Tandem evaluations were used. Results: In tests that required sensory integration and postural changes under difficult circumstances (such as the Romberg and Semi-Tandem with eyes closed), the experimental group significantly outperformed the control group in both static and dynamic balance. Better performance on the Chair Raising Test demonstrated an improvement in functional mobility as well. OEP, music therapy, and walking all showed synergistic effects, improving postural stability and lowering fear of falling. Conclusions: Assessments using the Leonardo platform show significant improvements in functional and biomechanical measures, demonstrating that walking, OEP, and music therapy can effectively enhance balance and mobility in nursing home residents.

Poster presentations

P1

Sociodemographic Factors Associated with Doping Tendency in Recreational Athletes; Cross-sectional analysis

Natasa Zenic, Barbara Gilic, Jelena Rodek
Faculty of Kinesiology, University of Split, Split, Croatia

Doping is not uncommon in recreational sports, but studies rarely have examined factors associated with doping tendency (DT) in recreational sport settings. PURPOSE: The aim of this study was to evaluate the sociodemographic factors associated with DT in recreational athletes. METHODS: The participants were athletes involved in various recreational sports (n = 503; 272 females, 31.1±6.7 years of age) who were tested for sociodemographic factors (gender, age, experience in recreational sports, partnership/marital status, parenthood, educational level, and personal knowledge and awareness of doping). The DT was evaluated by one question, and participants were grouped into those who reported negative DTs and those who reported neutral/positive DTs. RESULTS: A lower neutral/positive DTs was detected in better educated athletes (OR = 0.62, 95% CI: 0.43–0.89) and in participants who were parents (OR = 0.66, 95% CI: 0.50–0.78). Males were more prone to neutral/positive DTs than females were (OR = 1.41, 95% CI: 1.28–1.59). CONCLUSION: Sociodemographic factors are strongly associated with DT, and future studies should explore this problem in more detail, including evaluations of the impacts of other potential factors, such as health literacy, recreational sport type, training intensity, and social influences within specific recreational sport communities. Key words: gender identity; educational status; health knowledge; logistic regression models.

P2

Promoting a healthy lifestyle through physical activities and sport

Iber Alaj[1], Milazim Kamberi[2], Fitim Arifi[2,3]
[1]Sports Departmant, MCYS, Pristina, Kosova, Kosova, [2]University of Tetovo, Physical Education and Sport, Tetovo, North Macedonia, [3]Faculty of Sport Science and Movement, UBT, Pristina, Kosova,

Sports in our country remains one of the main challenges, supported through various policies and programs, with its development being slow due to the difficulties faced by our society and the sports activi-

ty over the past decades. The purpose of the study was to analyze the management and structuring of sports organizations in the country, the involvement of the population in physical and sports activities, and the promotion of a healthy lifestyle. Investments and the growth of sports infrastructure are important opportunities for the development of sports activities, both for individuals and for sports clubs and organizations. The study results show that participation in physical and sports activities is very low compared to the general population. Only a small percentage of the population engages in regular sports activities, such as participating in competitions, while there is no data on individuals involved in recreational or casual physical activities. If appropriate measures are taken to invest in sports infrastructure, such as building walking and running tracks, as well as sports fields in neighborhoods and cities, including potential investors in public-private partnership projects, an increase in sports infrastructure would be enabled. This would, in turn, provide the population with more opportunities to engage in physical and sports activities. This investment would directly impact the improvement of the population's health and the prevention of diseases. Keywords: Sport, lifestyle, Investment, Physical Activity, Be Active.

P3

Sport-Specific Skills in Novice Basketball Players (Ages 9–14): The Role of Maturation

Jakov Sanader, Ana Kezic, Mario Tomljanović
University of Split, Faculty of Kinesiology, Split, Croatia

Some previous studies are inconsistent in their conclusions regarding research on youth basketball players particularly in examining the complex interplay between biological maturation, training experience, and skill development. PURPOSE: The goal of this study was to analyze relations between maturation, training experience, motor abilities and sport-specific skills in young players. METHODS: The sample consisted of 28 novice male basketball players aged 9 to 14 years from one basketball club in Croatia. The skeletal age of the participants was checked with the use of the SonicBone device, the ultrasound technology for assessment of bone maturity. Three motor abilities tests were used: hand grip strength, the 2-kg standing medicine ball throw, and 60-second sit-ups. Also, two validated sport-specific basketball tests were conducted according to specified protocol (shooting and dribbling). RESULTS: Early maturers predominate in basketball with a total absence of late maturers. Also, early maturers present significantly higher results in specific basketball shooting test (p=0.01). Regression analysis revealed that maturation, training experience and motor abilities all have significant influence on sport-specific skills, with strength being the most important predictor. CONCLUSION: Early maturers demonstrated superior performance in basketball shooting skills, influenced by advanced skeletal maturity and greater strength. Strength was identified as the strongest predictor of sport-specific skills, emphasizing the importance of integrating strength-focused and maturation-aware training strategies to enhance skill acquisition in young novice basketball players.

P4

Injury Analysis in Enduro Mountain Biking

Daniela Chlíbková[1], Samo Rauter[2]
[1]Brno University of Technology, Centre of Sport Activities, [2]University of Ljubljana, Faculty of sport

Enduro is a popular mountain biking discipline combining technical descents and challenging climbs. Riders compete in stages where only descents are timed, while climbs are untimed but necessary for transitions. This demanding sport requires fitness, skill, and adaptability to tackle varied terrain, from forest trails to rocky paths. Enduro provides an adrenaline-packed experience that is appealing to both professionals and enthusiasts. PURPOSE: Mountain biking is a high-risk sport regarding injuries, with common occurrences being lower limb injuries from falls to the side and head, neck, or face injuries from over-the-handlebar falls. This study examines the prevalence and types of injuries among Enduro cyclists. METHODS: An anonymous online survey collected demographic data and injury-related variables from Enduro cyclists via an online questionnaire. RESULTS: The study included 169 participants (91% male, 9% female) with an average of 2.8 ± 2.7 years of experience, attending 5.9 ± 4.8 events annually and training 4.8 ± 7.2 hours weekly. Serious injuries affected 35% of riders, 83% during training and 17% during competitions. The most common injuries were shoulder/clavicle (48%), wrist (16%), and neck/cervical spine (12%), primarily due to falls on difficult terrain or adverse weather. Riders were out for an average of 65.6 ± 60.1 days, yet 31% continued training with modifications. Long-term consequences were reported by 13%, impacting their sports performance. CONCLUSION: Although many Enduro cyclists avoid injuries due to good preparation and experience, the nature of common injuries highlights the need for further training and education to enhance safety.

P5

Assessment of Lower Limb Asymmetry in Elite U16 Football Players Using Counter-Movement and Squat Jump Tests and Kineo Technologies

Danail Ivanov
National Sports Academy "Vassil Levski", Faculty for Sport, Sofia, Bulgaria

The state of lower limb asymmetry in football players has always been interesting. Its assessment can help prevent injuries and promote the harmonious development of the athlete. PURPOSE: The present study aimed to evaluate knee extensor asymmetry using the more specific tests of counter-movement jump (CMJ) and squat jump (SJ) with Optojump and Kineo technology, which allows us to measure the force and velocity of each resistance of the lower limbs. METHODS: The study involved 18 elite U16 footballers. Maximum power, maximum force, and impulse during CMJ and SJ tests, total work, and maximum torque at 60, 180, and 300°-s-1 during isokinetic leg and curl tests were determined separately for each leg. Factor analysis was performed on all variables examined, showing that isokinetic and CMJ tests are largely independent methods for assessing bilateral differences. RESULTS: Maximum force during CMJ with SQ, total work, and maximum torque at 60, 180, and 300°-s-1 during isokinetic leg extension can diagnose differences. Impulse and maximum force during CMJ and SJ on an optojump system are suitable additional variables for identifying bilateral differences in elite footballers. CONCLUSION: In the different playing positions of the football players we see serious differences in asymmetry.

P6

The influence of the type of clothing material on the agility of paravolleyball players

Zvonimir Tomac, Zoran Špoljarić, Lucija Sabolek
Josip Juraj Strossmayer University of Osijek, Faculty of Kinesiology Osijek, Osijek, Croatia

Agility is a complex motor ability that is essential for paravolleyball. It can depend on various factors, and in paravolleyball, one

DOI 10.26773/mjssm.250401

such factor is the type of clothing material worn by players. Using a modified T-test for agility, the aim of this study was to determine the influence of clothing material on the agility of paravolleyball players. The sample included 30 students from the Faculty of Kinesiology in Osijek, who had completed the "Parasport" course. Participants performed the test wearing long cotton and polyester trousers, and the results were analyzed separately for male and female participants. The results showed a statistically significant advantage of polyester trousers among male participants ($t = 2.99$, $p = 0.01$), with an average difference of 152.80 milliseconds in favor of polyester. Among female participants, although the results indicated better performance in polyester trousers, the differences were not statistically significant ($t = 1.29$, $p = 0.22$), which may be attributed to greater variability in the results. A positive correlation between results in cotton and polyester trousers ($r = 0.56$ for males; $r = 0.58$ for females) highlights the importance of individual abilities, while arm span did not show a significant impact. In conclusion, clothing material can significantly influence agility, especially among males. Expanding the sample and including additional variables in future research would allow for more precise conclusions and improvements in sports equipment for sitting volleyball.

P7

Distance covered and movement intensities of football players at the 2022 World Cup in Qatar - differences according to game positions

Ekrem Čolakhodžić, Adnan Ademović, Amer Hero
Nastavnički fakultet Univerziteta „Džemal Bijedić" u Mostaru, Mostar, Bosna i Hercegovina

Modern football is characterized by playing both in defense and attack, which requires greater energy demands from players, and the amount and intensity of movement increases from year to year. PURPOSE: The aim of the study is to determine differences in the distance covered and movement intensities of players in relation to their position in the team. METHODS: The sample is players who played all 90 minutes of the knockout phase of the 2022 World Cup (N=224), according to positions: goalkeepers (n=31), defense (n=101), midfielders (n=61), attackers (n=31). Data were taken from the official FIFA website (www.fifa.com): distance covered (m), distance covered in zone 1 (speed 0-7 km/h), in zone 2 (7-15 km/h), in zone 3 (15-20 km/h), in zone 4 (20-25 km/h) and in zone 5 (>25 km/h), number of runs in zone 4, number of sprints in zone 5, maximum achieved speed (km/h). Differences between positions were determined by discriminant analysis. RESULTS: Three discriminant functions were isolated that are statistically significant at the 99% level (sig .000) (Can. Cor.=.934; Can. Cor=.492 and Can. Cor.=.356). The highest correlations with the first function, which maximally differentiates positions (Wilks Lambda= .085; sig.=.000), have the variables: intensity of movement in zone 2, number of runs in zone 4 and total distance covered. The second function (Wilks Lambda=.662; sig.=.000) is determined by the maximum achieved speed and distance covered in zone 3. The third function (Wilks Lambda= .873; sig..000) is determined by intensity of movement in zone 4, number of sprints, distance covered in zone 5 and in zone 1. CONCLUSION: Excluding the goalkeeper position, it is evident that positions in the team are approaching each other in relation to distance covered, intensity of movement and maximum speed of movement, which supports the thesis that in modern football, polyvalent football players who can be used in multiple positions in the team are increasingly profiled.

P8

Blocked and/or random practice effecting the contextual interference during dance classes

Alen Miletić, Katarina Šimunović, Đurđica Miletić
University of Split, Faculty for Kinesiology

In dance classes is important to find out how to sequence the dance practice in order to optimize motor learning and achieve higher contextual interference and increase active learning. PURPOSE: The main aim of the present research was to identify which model of learning practice, blocked or random, should be provided while learning a complex motor skill, such as dance structures with adult novices. METHODS: Forty-two students attending a university study programme for a physical education teacher, aged between 20 and 22 (29 male students and 13 female students), participated in this study. At the beginning of the teaching process, students were randomly assigned to two study groups: a) blocked practice group where students practiced a skill the same way with many repetitions within a given practice session, and b) random practice group where students practiced many variations of a skill mixed together with other skills within a given practice session. RESULTS: Variable for assessing cha cha dance level of performance shows good metric characteristic of sensitivity, reliability and homogeneity. According to a One – way ANOVA significant differences were obtained between the blocked and random practice in favour of the random practice group ($F = 5.7$; $p = 0.01$). CONCLUSION: Organizing dance classes as random practice can increase contextual interference effects and improve active learning in dance classes. Observed gender differences can be implemented in co-education during PE classes for optimization of dance learning according to the preferences of each gender. Key words: motor learning, active learning, gender differences.

P9

Prevention and Complications of Type 2 Diabetes in According to Knowledge and Attitudes of the Population

Silviya Filkova[1], Silviya P. Nikolova[2], Donika Kandilarova[3]
[1]Medical University, Educational sector "Rehabilitator" - Varna Bulgaria, [2]Medical University, Faculty of Public Health – Varna, Bulgaria, [3]PhD Student, Medical University, Faculty of Public Health, Varna, Bulgaria.

PURPOSE: The aim of this study was to assess the knowledge and attitudes of the population regarding and type 2 Diabetes, with a special focus on prevention, and complications. METHODS: The study was conducted under project No. 23001 under the "Science" Fund at the Medical University - Varna, Bulgaria. Data from a survey of 64 office workers in September-October 2024 were analyzed. Statistical analysis was performed using IBM SPSS v.25, with chi-square tests used to compare differences between participants with and without a family history of Diabetes. RESULTS: For the prevention of diabetic complications, 43.8% of participants with a family history of Diabetes believe that screenings should be done every 6 months, while over 70% of those without a family history consider annual preventive check-ups sufficient ($\chi^2 = 5.61$, $p < 0.05$). Among those with a family history of Diabetes, 42.6% recognize the symptoms of hypoglycemia, while only 29.4% of participants without a family history show similar confidence ($\chi^2 = 4.12$, $p < 0.05$). CONCLUSION: The prevalence of Diabetes - diagnosed and undiagnosed - is increasing. Knowledge of the complications resulting from its underestimation would improve preventive measures. KEYWORDS: type 2 Diabetes, prevention, complications.

P10

Evaluation of Handgrip Strength: A Comparison Between Two Groups of School-Aged Students

Iva Macan[1,2], Klara Findrik[1,2], Mirela Šunda[1]
[1]Faculty of Kinesiology, University of J.J. Strossmayer in Osijek, Osijek, Croatia, [2]Faculty of Kinesiology, University of Zagreb, Zagreb, Croatia

Handgrip strength in high school students is important as it serves as an indicator of overall physical health, muscular strength, and contributes to the assessment of their ability to perform daily activities and sports performance. PURPOSE: The aim of the study was to examine and compare handgrip strength between two different groups of high school students, with the goal of identifying potential differences related to age, gender, level of physical activity, or other relevant factors influencing muscular strength. METHODS: In this study, 26 healthy high school students participated. Thirteen students were in their first year of high school, while the other thirteen were in their fourth year. During their physical education class, the students' handgrip strength was measured following the protocol prescribed for a hand dynamometer. RESULTS: The normality of the data distribution was tested using the Kolmogorov-Smirnov test, which indicated that the data were normally distributed. Consequently, an independent samples t-test was used for analysis. It was determined that there is a statistically significant difference between the groups ($p = 0.00$). First-year high school students had lower handgrip strength compared to fourth-year high school students. CONCLUSION: The differences in handgrip strength between first-year and fourth-year high school students can be explained by greater physical development, more experience in physical activity, hormonal changes, and increased involvement in physical education among fourth-year students.

P11

Eating habits and eating disorders in female dancers

Petra Zaletel, Vedran Hadžić, Daša Pruš
University of Ljubljana, Faculty of Sport, Ljubljana, Slovenia

INTRODUCTION: Research indicates that dancers, particularly in aesthetic disciplines like ballet, are at an increased risk of eating disorders. Body image dissatisfaction, fuelled by dance's competitive demands, often results in unhealthy eating behaviours. Early dance exposure and insufficient nutritional guidance contribute to long-term eating issues. PURPOSE: This study aimed to analyse eating habits among female dancers, assess the prevalence of eating disorders (ED) across dance styles, and explore risk factors for ED such as body weight variability. METHODS: A cross-sectional study, approved by the National Medical Ethics Committee, involved 100 elite female dancers divided into "artistic" (ballet, modern dance, jazz) and "sport" (ballroom dance, rock and roll, hip hop) groups. The DEAQ questionnaire was used to assess nutritional status and eating behaviours. Descriptive statistics were used to analyse eating disorders and other variables that influence them. RESULTS: Body weight fluctuations averaged 10.41 %. Over 80 % attempted weight loss during their careers, with nearly one-third engaging in intentional weight loss in the last year. Social media influenced the eating behaviours of 60.6 % of participants. Diagnosed eating disorders included anorexia nervosa (7.4 %), bulimia nervosa (6.4 %), and purging disorder (4.3 %), with 29.8 % intentionally losing weight recently (average loss: 1.2 kg) and 43.6 % believing that weight loss impacts their performance. Food restriction was common, with 66 % avoiding certain food groups, often due to trainer advice, and over 37 % receiving weight loss guidance. Physical health issues were prevalent, with menstrual disorders affecting 50 % of dancers (38.3 % experiencing secondary amenorrhea, 21.3 % oligomenorrhea, and 16 % primary amenorrhea). Additionally, high injury rates were reported, with 61.7 % experiencing soft tissue injuries. Self-esteem was affected by food and weight management, with averages of 3.7/6 for freshness and 4.0/6 for sleep quality. CONCLUSION: The findings highlight critical challenges for female dancers, including significant weight fluctuations and high rates of eating disorders. Effective monitoring and intervention strategies are essential to promote healthy eating habits and mitigate related health risks. KEY WORDS: energy deficiency, eating habits, weight management, sport dance.

P12

Analyzing the Gender-Specific Criterion Validity of the Physical Activity Questionnaire for Children (PAQ-C) Among Urban Children from Croatia

Damir Sekulic[1], Boris Metikos[2], Tamara Flegar[1], Mate Brekalo[3], Miran Pehar[3]
[1]Faculty of Kinesiology, University of Split, Split, Croatia, [2]Zagreb University of Applied Sciences, Zagreb, Croatia, [3]Faculty of Science and Education, University of Mostar, Mostar, Bosnia and Herzegovina

The aim of this study was to examine the gender-specific criterion validity of the Physical Activity Questionnaire for Children (PAQ-C) in a sample of urban Croatian early school-age children. The participants were 80 children (aged 9-11 years; 36 girls, 44 boys) from southern Croatia. The PAQ-C was used to indirectly measure physical activity (PA), whereas the GENEActiv accelerometers were used to obtain data on PA directly. Spearman's correlations between variables, and forward multiple regressions were calculated separately for boys and girls. The differences in the studied variables between genders were established via a t-test for independent samples. Boys reported higher PAQ-C scores (t test $= 3.6$, $p < 0.05$), had more vigorous PA (t test $= 3.87$, $p < 0.05$), and performed more steps than girls did (t test $= 3.44$, $p < 0.05$). The correlations between the PAQ-C and accelerometer-derived data were similar in magnitude across genders. However, vigorous PA was determinant of the PAQ-C in boys (Beta $= 0.44$, $p < 0.05$), while moderate PA was found to be a determinant of the PAQ-C in girls (Beta $= 0.51$, $p < 0.05$). While the criterion validity of the PAQ-C is similar for both boys and girls, by acknowledging and addressing potential gender differences in activity patterns associated with questionnaire-based scores, we can develop more effective strategies to encourage PA in children. Key words: Children, Adolescent, Survey, Accelerometry; Survey.

P13

How much importance do recreational runners attach to the choice of running shoes - case study Osijek Ferivi half marathon?

Tvrtko Galić, Ivica Franjko
Josip Juraj Strossmayer University of Osijek, Faculty of Kinesiology

The sports industry in the past decade has largely oriented itself towards recreational sports, and especially recreational runners. This is confirmed by the extremely large increase in the number of recreational runners and half-marathon races. PURPOSE: The purpose of this paper is to make a structural analysis of the brands of running shoes worn by runners at the Osijek Ferivi Half Marathon, and to compare it with world trends, market shares and financial indicators of individual manufacturers on a global level. METHODS: The research is based on primary research that covered the past six

DOI 10.26773/mjssm.250401

years of the race, where the brands of sneakers of all runners were recorded. The sample included more than 5,000 runners. Secondary research obtained global data on revenues and market shares in the same period to compare them with the data obtained in the primary research. RESULTS: The results showed that recreational runners largely follow the trends at the global level. As expected, the most famous sports equipment brands globally have a very high share, but it is very important, and perhaps the key data, that certain brands of sports equipment specialized for runners have a good representation and a considerable share. These are Saucony, Hoka or Brooks brands. CONCLUSION: The market of the Republic of Croatia is very small in global terms, but it largely reflects the awareness of recreational runners when we talk about the importance of choosing quality running shoes.

P14

Normative Values of Growth and Development of Morphological Characteristics of Student Ages 12, 13, 14 and 15 in Kosovo

Besim Halilaj[1], Ilir Gllareva[1], Hasim Rushiti[1], Florim Gallopeni[2], Ard Kryeziu[1]

[1]University of Pristina "Hasan Pristina", Faculty of Physical Education and Sport, Kosovo, [2]IBM College Mitrovica, Faculty of Social Sciences, Kosovo

PURPOSE: Of the study was to determine the normative values of student's growth and development from Kosovo in height, body weight, body mass index, as well as to compare them with the World Health Organization normative values. Anthropometric characteristics were collected in 1950 student (997 boys and 949 girls) aged 12 to 15 in Kosovo. METHODS: From methods were used descriptive analysis, T-test, Data Transform were used to recode into different variables, to form BMI groups, Shapiro Wilk test, and Box-Cox transformation were used to adjust the distribution of anthropometric data to a normal distribution by minimizing the effects of asymmetry. RESULTS: There is a linear development of student by the years. No significant differences were found between the sexes, except for height and weight at the age of 14 and 15. No significant differences were found between Kosovo and the WHO standards, except for Kosovar boys aged 13 who were shorter than the WHO standards. CONCLUSION: Kosovo sample had a higher BMI than the WHO norms (girls & boys). Student from Kosovo do not have significant differences in height, but they have significant differences in BMI with WHO norms. Key words: Kosovo norms, student, growth, development, WHO norms, anthropometry.

P15

How do Serbian Gymnastics Coaches Make Decisions?

Edvard Kolar[1], Sasa Velickovic[2], Rado Pisot[1], Marijo Moznik[3], Matej Tusak[4]

[1]Science and Research Centre Koper, Institute for behavioural economics, Slovenia, [2]University of Nis, Faculty of sport and physical education, Serbia, [3]University of Zagreb, Faculty of Kinesiology, Croatia, [4]University of Ljubljana, Faculty of Sport, Slovenia

Different authors argue that coaching is fundamentally a decision-making (hereinafter: DM) process, while coaches' DM has been identified as a key element of a coaches' practice. PURPOSE: In the present study we dealt with the DM behaviour of Serbian gymnastics coaches. METHODS: The sample consisted of 53 coaches (age: 40.96±13.04 years). Manifested DM behavior was measured during the national coaching seminar by General DM Style Inventory, which includes five DM styles defined as rational, intuitive, dependent, spontaneous and avoidant DM style. Factor analyses were performed to reveal the DM style's structure. Pearson's correlation coefficient was used to identify the association between DM styles, demographic and professional characteristics, and ANOVA to detect differences between more experienced and less experienced coaches. RESULTS: The results showed that coaches use a combination of all five DM styles when making decisions, but mostly use rational and dependent DM styles. Based on the discovered average structure of the DM styles, we can conclude that Serbian gymnastics coaches are mostly rational decision-makers who increasing their rationality by seeking advice, opinions and knowledge from colleagues when making decisions and that more experienced coaches can make decisions more independently and also faster when the situation is urgent.

P16

Perception of Sports Among Schoolchildren: Differences between Urban and Suburban Areas through Gender Perspective

Tamara Karalić[1], Adriana Ljubojević[1], Nikolina Gerdijan[1], Kristina Pantelić Babić[1], Anđela Pepić[2]

[1]University of Banja Luka, Faculty of Physical Education and Sports, Banja Luka, Bosnia and Herzegovina, [2]University of Banja Luka, Faculty of Political Sciences, Banja Luka, Bosnia and Herzegovina

Sports are widely recognized as a pivotal factor in the physical, social, and psychological development of children and adolescents. However, young individuals' perception of and participation in sports are influenced by contextual factors such as their living environment and prevailing gender norms. PURPOSE: The objective was to collect quantitative data on the level of sports participation among children from different living environments, identify reasons and barriers to sports engagement, and understand attitudes toward sports through a gender lens. METHODS: The research sample included 1,332 primary school children from Banja Luka region, with 726 (54.50%) from urban areas and 606 (45.50%) from suburban areas. Data was collected using a modified questionnaire with four key questions. The analysis was conducted using non-parametric statistical methods, including the χ^2 test to examine group differences. RESULTS: Schoolchildren from urban areas participated in sports more frequently (85.81%) compared to their suburban peers (57.76%). The most common barriers to sports participation for urban children were fear of injury (23.45%), while for suburban children, it was the distance from their residence (30.47%). Reasons for choosing sports included the attractiveness of the sport (urban population 53.02%; suburban population 56.17%) and inspiration by successful athletes (urban population 28.76%; suburban population 4.81%). Attitudes toward gender differences in sports varied: 51.52% of children from urban areas believed there are "male" and "female" sports, whereas 57.76% of suburban children believed such differences do not exist. Statistically significant differences were observed across all examined questions, favouring urban schoolchildren. CONCLUSION: Children from urban and suburban areas exhibit different patterns of sports engagement and attitudes toward gender roles, highlighting the importance of contextual factors in shaping these perceptions. The findings provide a foundation for further research and recommendations for the development of sports programs that consider the specific characteristics of different environments while addressing individual needs and socio-cultural contexts. Keywords: sports perception, schoolchildren, gender perspective, urban and suburban areas, reasons and barriers to sports participation.

P17

Differences in Anthropometric Characteristics of High School Students

Klara Findrik[1,2], Iva Macan[1,2], Danijela Kuna[1]
[1]Faculty of Kinesiology, University of J.J. Strossmayer in Osijek, Osijek, Croatia, [2]Faculty of Kinesiology, University of Zagreb, Zagreb, Croatia

Physical growth and development during adolescence are complex biological processes influenced by genetic, environmental, and social factors, with anthropometric characteristics such as height, body weight, and BMI serving as key indicators of overall health and physical development. PURPOSE: The aim of this study was to determine whether statistically significant differences exist in anthropometric characteristics between first-year and fourth-year high school students. METHODS: The study involved 40 high school students (20 girls and 20 boys) who were in the 1st and 4th grades. The Kolmogorov-Smirnov test was used to assess the normality of the distribution, confirming that the data followed a normal distribution. Consequently, an independent samples t-test was employed for further data analysis. RESULTS: A statistically significant difference was found in the variables of body weight (p=0,02), body mass index (BMI) (p=000), and body fat percentage (p=0,00). CONCLUSION: Differences in anthropometric characteristics between 1st and 4th grade high school students can be attributed to different levels of physical development, since older students are often in the final stages of puberty. These changes may be related to the intensity of physical activities, dietary habits and other environmental factors that change during high school education.

P18

Psychological coping skills of young gymnasts

Sunčica Delaš Kalinski, Boris Milavić, Katarina Dobrić
University of Split, Faculty of Kinesiology, Split, Croatia

Psychological skills are an important determinant of sports performance. OBJECTIVE: The aim of the study was to determine the basic characteristics of psychological coping skills. METHODS: A revised version of the Athletic Coping Skills Inventory-28 (ACSI-28) was applied to a sample of 48 young gymnasts, aged 10 to 18 years, which measures the characteristics of psychological coping skills important for predicting improved sports performance. Metric characteristics and descriptive parameters were analyzed, ANOVA was used to determine differences between subgroups categorized according to different criterias. RESULTS: Almost all applied scales had at least satisfactory metric characteristics of reliability, homogeneity, and sensitivity. The exception was the anxiety freedom scale. The sample has very high self-confidence - motivation (4.09), high availability for training (3.85), moderately expressed concentration (3.48) and mental preparation – setting goals (3.26), and coping with difficulties (3.19), a very low level of performance under pressure (2.33). Those who train 16+ hours a week have a higher level of concentration compared to those who train up to 10 hours a week (LSD test p=0.03), those who train 11 - 15 hours a week have a lower level of performance under pressure compared to those who train 16+ hours per week (LSD test p=0.03). CONCLUSION: There is a need for the education of young gymnasts and their coaches in the areas of psychological coping skills.

P19

The Difference in Motor- Functional Abilities of Football Players in Younger Age Categories

Hrvoje Ajman, Zvonimir Tomac, Sergej Kuček
Josip Juraj Strossmayer University of Osijek, Faculty of Kinesiology Osijek, Osijek, Croatia

Football belongs to the group of polystructural complex sports. Football players in all categories are expected to be at a very high level of physical fitness and to possess a high level of motor and functional abilities. PURPOSE: The main goal of this research was to determine the differences in motor- functional abilities among football players of U9 and U11 categories. METHODS: This research was conducted on a sample of 40 football players divided into two groups U9 (n=20) and U11 (n=20). Anthropometric measurements of body height, body weight and percentage of subcutaneous fat were implemented. The subjects were tested in three motor tests (30 m sprint, T-Test Agility, 10 m sprint) and in three tests to assess functional abilities (Beep test, 100-yard test, standing long jump). Descriptive parameters were calculated and Kolmogorov-Smirnov test for normality of distribution. T-test for independent samples was used to analyze the differences between the two groups. RESULTS: Results indicate that the respondents of this study differed statistically significantly in all six tests of functional motor abilities conducted. The largest statistically significant difference was found in the T-Test Agility variable, while the smallest statistically significant difference was found in the 100-yard test. CONCLUSION: The obtained results confirmed that previous experience in the training program also plays an important role in addition to anthropometric characteristics.

P20

Motivation of students during the teaching process of folk and standard dances

Rebeka Stojkovic[1,2], Marin Marinovic[1,2], Mijo Ćurić[1]
[1]University Of Osijek, Faculty of Sport and Physical Education, Osijek, Croatia, [2]University Of Zagreb, Faculty Of Sport and Physical Education, Zagreb, Croatia

Folk dances are part of folklore and passed down from generation to generation with the aim of cultural heritage. Many previous studies showed that students in primary and secondary schools show desire to dance both standard and folk dances in Physical education classes. PURPOSE: The goal of the research is to determine the effect of the implementation of the teaching process of folk and standard dances on student motivation during the semester and, based on these results, to expand or reduce the number of dances that are performed in the next semester. METHODS: Specific key words "dance", "waltz", "physical education" and "motive" were used to search relevant electronic databases. After the folk and standard dance classes, a questionnaire was conducted to the student population about attitudes and motivation for the class after it. RESULTS: Most of the students agreed that the content of the course is extremely interesting and necessary in their future job. More than 65% liked the folk dance class very much and consider it well organized, however, only 47.5% remembered more than four folk dances. After learning the most well-known standard dances, students still decided that they would rather participate in folk dance classes. CONCLUSION: According to the results of the questionnaire, the students are extremely motivated and show an interest in dance classes, however, it is considered that the content of the course should not be expanded, but its duration should be extended so that the students can remember more types of dances.

P21

The Silent Pandemic: Long-Term Effects of COVID-19 on Children's Motor Development

Maja Pajek[1], Sara Valentina Pajek[2]
[1]University of Ljubljana, Faculty of Sport, Gortanova 22, 1000 Ljubljana, Slovenia, [2]Gimnazija Bežigrad, Peričeva ulica 4, 1000 Ljubljana, Slovenia

DOI 10.26773/mjssm.250401

PURPOSE: The COVID-19 pandemic disrupted children's daily routines, significantly impacting their physical and motor development. This study explored the long-term effects of the pandemic on primary schoolchildren in urban and rural environments. METHODS: Data from the SLOfit database included two cohorts: a pre-pandemic group (2017–2019, N=756) and a pandemic group (2019–2021, N=853), with children aged 11–13 undergoing eight standardized fitness tests. RESULTS: The pandemic cohort exhibited a significant decline in the overall physical fitness index ($p < 0.001$), with the most pronounced reductions in endurance (600-meter run), coordination (polygon course backwards), and trunk strength (60-second sit-ups). Unexpectedly, rural children showed a greater decline in overall fitness than urban peers, except in endurance, where urban children were more affected. CONCLUSIONS: These findings underscore a "silent pandemic" of reduced physical fitness, highlighting the urgent need for interventions. Increasing physical education hours and providing structured opportunities for physical activity are vital to addressing these deficits. Policymakers and educators must implement recovery strategies to support the pandemic-affected generation and prioritize physical fitness as a key component of health and well-being.

P22

Sociodemographic correlates of physical literacy and health literacy in older females

Martina Musa[1], Lucija Mudrinic[2], Damir Sekulic[2]
[1]University of Mostar, Faculty of Science and Education, Mostar, Bosnia and Herzegovina, [2]University of Split, Faculty of Kinesiology, Split, Croatia

BACKGROUND: Health literacy (HL) and physical literacy (PL) are important determinants of health status and are theoretically influenced by sociodemographic status, but studies rarely have examined this problem in older persons. PURPOSE: This study aimed to evaluate the associations between certain sociodemographic indices (predictors), PL, and HL (criteria) in older females. METHODS: The sample of participants included 41 females (mean age: 68 ± 4.2 years) from Split, Croatia, who were recreationally physically active. Sociodemographic factors included age (in years), educational level, partnership/marital status, living environment (urban/suburban), and familial living situation (living alone, partnership, family). The PL was evaluated via the Perceived Physical Literacy Questionnaire for Adults (PPLQ), and the HL was evaluated via the European Health Literacy Survey Questionnaire (EHLSQ). Both criteria were dichotomized (low score vs. high score, with lower 50 percentiles as low scores for each questionnaire), and logistic regression was applied. RESULTS: The educational level was the only significant predictor of PL (OR = 1.34, 95% CI: 1.02–1.56), with better education being associated with higher PL scores. Age was negatively associated with HL (OR = 0.76, 95% CI: 0.44–0.97), and educational level was positively associated with HL (OR = 1.67, 95% CI: 1.33–2.21), indicating better HL in younger and better educated females. CONCLUSION: In conclusion, this study highlights the vulnerability of older, less educated females to lower levels of both PL and HL. These findings underscore the need for targeted interventions to improve HL and PL, specifically within these vulnerable groups, to promote better health outcomes.

P23

Analysis of the associations between physical literacy and health literacy in older females

Ivana Cerkez Zovko[1], Ante Sestan[2], Damir Sekulic[2]
[1]University of Mostar, Faculty of Science and Education, Mostar, Bosnia and Herzegovina, [2]University of Split, Faculty of Kinesiology, Split, Croatia

BACKGROUND: Both physical literacy (PL) and health literacy (HL) are important concepts related to overall health and well-being, but studies have rarely examined their associations in older adults. The aim of this study was to evaluate the status of HL and PL and the associations between HL and PL in older females. PURPOSE: The sample comprised 32 females older than 60 years. All of them were recreationally physically active. The PL was evaluated via the Perceived Physical Literacy Questionnaire for Adults (PPLQ), and the HL was evaluated via the European Health Literacy Survey Questionnaire (EHLSQ). After analysis of the test-retest reliability of both questionnaires, an association between the PPLQ and EHLSQ was established by calculating Pearson's correlation coefficient. RESULTS: The results revealed appropriate test–retest reliability of both the PPLQ and the EHLSQ, with test–retest correlations of 0.71 and 0.75 (for the PPLSQ and EHLSQ, respectively). The correlation between the questionnaires was significant (Pearson's $R = 0.56$, $p < 0.001$), but the relatively small proportion of the common variance (<32%) indicated relative independence of the HL and PL concepts among the studied participants. CONCLUSION: In conclusion, HL and PL in the studied population were moderately, although significantly, correlated. Further studies evaluating similar associations in other populations are warranted.

P24

Kinematic Parameters of the Kick Start: A Systematic Review

Ivan Matus, Kristina Nema, Tomas Elias
Department of Educology of Sports, Faculty of Sport, University of Prešov, 08001 Presov, Slovakia

PURPOSE: This study aimed to analyze recent changes in the kinematic parameters of the kick start. METHODS: Following PRISMA guidelines, a systematic review was conducted using Web of Science, Scopus, PubMed, and EBSCO. The primary search term kick start was combined with swimming, swimming start, biomechanics, and performance. After screening 665 studies and applying inclusion criteria, 18 studies analyzing kick start kinematics were included. This research is part of VEGA project No. 1/0462/22, titled "The effect of starting block configuration on the kinematic parameters affecting starting performance in swimming." RESULTS: The review highlights differences in the block, flight, underwater, and swim phases based on gender, swimming style and performance level. Various modifications optimizing the kick start include adjustments to the kick plate (three or four levels), neutral- or rear-weighted positioning, a narrow basic position, and a higher hip joint position, depending on individual factors. These modifications significantly enhanced the above-water, underwater, and swim phases, reducing the time to 5-m, 10-m, and 15-m. Additionally, biomechanical improvements in hip position and weight distribution contributed to faster starts, emphasizing the importance of individualized technique adjustments. CONCLUSIONS: Findings provide valuable insights for swimmers and coaches, aiding in technique refinement. Given its use in elite competitions, optimizing the kick start can lead to measurable performance gains, reinforcing the need for targeted training approaches.

P25

Physical and Performance Differences Between More and Less Experienced Wrestlers

Krešo Škugor[1], Barbara Gilić[1], Ivan Kvesić[2]
[1]Faculty of Kinesiology, University of Split, Split, Croatia, [2]Faculty of Science and Education, University of Mostar, Mostar, Bosnia and Herzegovina

PURPOSE: This study aimed to compare anthropometric characteristics, body composition, and physical performance parameters between more and less experienced wrestlers to determine the influence of competitive experience on key performance indicators. METHODS: A total of 47 male wrestlers were divided into two groups based on their competitive experience: more experienced (n = 22, >6 years) and less experienced (n = 25, <6 years). Anthropometric measurements included body mass, height, body mass index (BMI), and body fat percentage (BF%). Performance assessments consisted of the countermovement jump (CMJ), handgrip strength (HGS), and the Specific Wrestling Fitness Test (SWFT). Group differences were analyzed using t-tests for independent samples. RESULTS: More experienced wrestlers had significantly lower body fat percentage ($p = 0.04$) and better performance in the SWFT repetitions test ($p = 0.001$) compared to their less experienced counterparts. They also exhibited a lower heart rate response during the SWFT ($p = 0.01$), indicating better conditioning. CONCLUSIONS: Wrestling experience appears to be associated with better conditioning, lower body fat percentage, and improved muscular endurance, as demonstrated by the SWFT results. However, experience did not significantly influence absolute strength or explosive power. These findings suggest that training programs for less experienced wrestlers should emphasize conditioning and endurance development to improve performance. Keywords: combat sports, physiological adaptation, training experience, muscular endurance, cardiovascular fitness.

P26

Prevalence of Foot Deformities and Their Impact on Balance, Gait, and Load-Bearing in School-Aged Children in Tirana, Albania

Klejda Tani, Vjollca Shpata, Aisel Oseku, Robert Çina, Fregen Dedja, Andromeda Lalaj, Ana Sulaj, Elizabeta Dodaj, Jonida Drizaj, Denis Ballo
Sports University of Tirana, Faculty of Rehabilitation Sciences, Albania

This study aims to assess the prevalence of foot deformities among school-aged children in Tirana's public schools and examine their impact on balance, gait, and the influence of overweight and external load. PURPOSE: The purpose of this study was to measure and observe changes in static and dynamic foot pressures with the subject's body weight and when the subjects carried external loads. METHODS: The study was conducted in nine public schools in Tirana, involving students aged 10 to 14 years. Physiotherapists assessed foot deformities using a goniometer, specifically measuring the Navicular Position Test to evaluate the position of the navicular bone at rest and under load. Balance tests, including the Trendelenburg and Unterberger tests, were also performed. RESULTS: A total of 2020 participants were examined for foot deformities, aged 10-14 years, 1032 boys (51.1%) and 988 girls (48.9%). 474 students (23,5%) resulted with flat feet, 20.65% of girls and 26.16% of boys, so the boys had a significantly higher prevalence than girls. No significant correlation was found between flat feet and balance test performance. Additionally, BMI did not influence balance outcomes or show an association with flat feet. CONCLUSION: In conclusion flat feet were more prevalent in boys than girls, but they did not affect balance. BMI also showed no correlation with balance or flat feet. Further research is needed to explore other contributing factors to foot deformities in children.

P27

The relationship between postural stability and dynamic function of the lower limbs in university students with diverse professional focuses

Rút Lenková[1], Stanislava Ivanová[1], Eva Lukáčová[2], Cyril Grus[2], Iveta Borzíková[1]
[1]University of Presov, Faculty of Sports, Prešov, Slovakia; [2]University of Presov, Faculty of Health Care, Prešov, Slovakia

PURPOSE: The aim of the study was to evaluate the correlation between postural stability and dynamic function of the lower limbs among university students and to identify the differences depending on their professional focus. METHODS: The study sample consisted of 68 students from University of Presov (age: 23.06±2.48; BMI: 22.81±2.50) divided by professional focus: Faculty of Health Care (FHC) (n=32; age: 21.88±0.71; weight: 67.44±12.37 kg; height: 1.72±0.08 m; BMI: 22.62±2.80) and Faculty of Sport (FS) (n=36; age: 24.11±2.98; weight: 72.44±10.17 kg; height: 1.77±0.09 m; BMI: 22.99±2.23). To evaluate the monitored parameters, we used the Freemed baropodometric platform and Y balance test (YBT). RESULTS: The YBT composite scores of FS students were Lsin=97.31±6.41; Ldex=96.42±7.76, and of FHC students were Lsin=87.49±7.24; Ldex=86.50±8.10. We found no significant differences between the composite scores of the left ($p=0.48$) and right ($p=0.80$) lower limbs of both groups ($p<0.05$). In the study sample statistical significance (Lsin R2=0.017; Ldex R2=0.010) between postural stability and dynamic function of the lower limbs was not found. CONCLUSION: The results of the study indicate a very low correlation between postural stability and dynamic function of the lower limbs among tested students, which may be due to the influence of several variables that affect the monitored parameters.

P28

Preparing Future Physiotherapists: Integrating Tele-Rehabilitation Into the Curriculum at the Sports University of Tirana

Klejda Tani, Aisel Oseku, Fregen Dedja, Adnromeda Lalaj, Ana Sulaj
Sports University of Tirana, Faculty of Rehabilitation Sciences, Albania

The E-Physio project aims to revolutionize physiotherapy education in the Western Balkans by integrating digital technologies, especially tele-rehabilitation. PURPOSE: The purpose of this study is to provide information on the innovations and the purpose of the project, which is to provide an online platform for learning and practice, facilitating access to educational materials and supporting the professional development of students. METHODS: An important part of the project was the reform of the curriculum. The physiotherapy curriculum was revised to include core competencies in telerehabilitation, including the principles of telerehabilitation such as ethical considerations, legal frameworks and best practices in remote patient care. It also included technologies in telerehabilitation such as the use of videoconferencing platforms, telemonitoring devices and secure data exchange systems. RESULTS: Preliminary findings from the E-Physio project show some positive initial results. An important preliminary result is the increased engagement and interest among students in telerehabilitation, as they recognize its potential to enhance their future professional careers and improve the quality of patient care. CONCLUSION: The integration of telerehabilitation into the physiotherapy curriculum at the University of Sports of Tirana represents a significant step forward in the modernization of physiotherapy education in Albania. This initiative is designed to equip future physiotherapists with the knowledge and skills necessary to effectively incorporate telerehabilitation into their practice, thereby addressing several critical areas. Keywords: Tele-rehabilitation, Physiotherapy, Digital Technology, Western Balkans, Telemedicine.

DOI 10.26773/mjssm.250401

P29

The role of food safety in nutrition of sportiest

Oltiana Petri, Genti Pano, Edona Hebovija
Sports University of Tirana, Faculty of Rehabilitation Sciences, Albania

Nutritional safety is a critical aspect of athletes' health and performance. Appropriate food safety awareness, knowledge and practices can significantly impact the prevention of foodborne illness and the improvement of athletic performance. PURPOSE: The aim of this study is to analyze the awareness, knowledge and practices of athletes in Shkodër regarding food safety, to identify gaps that require further improvements. METHODS: The study was carried out through a structured questionnaire included questions on demographics, food safety knowledge, attitudes and practices related to food handling and storage, which was distributed to different athletes in Shkodër. RESULTS: The study sample consisted of 113 athletes, over 18 years of age, living in Shkodër and studying or having studied at the Sports University of Tirana, with over a year of experience in various athletic fields. Results showed that most participants (85%) were aware of foodborne illness, and common sources of contamination were identified as improper cooking and poor personal hygiene. Athletes showed positive attitudes towards the importance of food safety and were willing to participate in food safety training (78%). Their food storage and expiration date control practices were compliant with safe food standards. CONCLUSION: The study showed a high level of awareness and good practices for food safety among athletes in. However, some areas need further improvement, such as improved personal hygiene and continuing education on food preservation practices.

P30

Discrepancies in Lower Limb Average Power Calculation in Repeated Vertical Jump Tests: A Preliminary Study

Vlad Adrian Geantă[1,2], Pierre Joseph De Hillerin[1,2]
[1]Doctoral School of Sport Science and Physical Education, National University of Science and Technology Politehnica Bucharest, Pitesti University Center, Pitești, Romania [2]Information for Sport and Human Performance Ltd. by Neuromotrica Program, Bucharest, Romania [3]Aurel Vlaicu University of Arad, Faculty of Physical Education and Sport, Arad, Romania

Vertical jump tests are widely used to assess motor skills and lower limb power in sports. Over time, various power calculation methods have been developed, leading to inconsistencies in reported values and raising concerns about their accuracy and comparability. PURPOSE: This study aimed to compare three methods for calculation average power (Bosco, Miron Georgescu, and MGM-15) in repeated vertical jump tests. The goal was to identify which method provides the most accurate representation of lower limb power and refine assessment protocols. METHODS: Five male athletes performed the 15-second repeated vertical jump test using the Opto-Jump system. Average power output was calculated using the three calculation models mentioned, based on jump height, flight time, and contact time for each jump. By analyzing these parameters, possible discrepancies between the calculation models were identified. Statistical analyses were conducted to assess the significance of these differences. RESULTS: Significant differences were found in average power results. Bosco's method yielded the highest values (M=39.43±7.74 W/kg), Miron Georgescu's method produced lower values (M=20.39±5.60 W/kg), and MGM-15 resulted in the lowest estimates (M=4.14±0.54 W/kg). Paired t-tests confirmed statistical significance (p<.001). CONCLUSION: Average power calculation in vertical jump tests varies substantially depending on the calculation method. Bosco's model tends to overestimate power, Miron Georgescu's provides more conservative values, and MGM-15 offers a potentially more realistic measure. These findings highlight the need for standardized models to improve the accuracy and comparability of jump-based power assessments. Further research with a larger sample is needed to validate results and optimize testing protocols.

P31

Moderate-intensity continuous training and high-intensity interval training improves physical fitness and reduces lipid levels in physical inactive females with obesity

Karuppasamy Govindasamy[1], Robert Çitozi[2], Vlad Adrian Geantă[3]
[1]Symbiosis International (Deemed University), Department of Sports, Recreation and Wellness, Hyderabad Campus, Modallaguda (V), Nandigama (M), Rangareddy, 509217 Telangana, India, [2]Sports University of Tirana, Faculty of Physical Activity and Recreation, Tirana, Albania, [3]Aurel Vlaicu University of Arad, Faculty of Physical Education and Sport, Arad, Romania

PURPOSE: To assess the effects of two different exercise interventions (moderate-intensity continuous training (MICT) and high-intensity interval training (HIIT)) on the physical fitness and lipid profiles of inactive adult obese females. METHODS: Sixty-four obese adults (mean age: 25.3 ± 6.1 yrs; BMI: 31.2 ± 1.7 kg/m 2) were randomly assigned to three groups: (1) MICT –moderate intensity (70% VO 2 peak) exercise training for 40 minute per day for 12 weeks; (2) HIIT –high intensity treadmill exercise (90% VO 2 peak) for 4 minutes per set, 10 sets per day for 12 weeks; (3) Control group (CG) – continued their daily routine for 12 weeks. The time and intervention effects on physical fitness and lipid biomarkers were assessed using generalised mixed methods. RESULTS: MICT and HIIT improved cardiovascular endurance ($F = 11.38$, $p < 0.001$, $2p = 0.326$), muscular endurance ($F = 5.91$, $p = 0.005$, $2p = 0.201$) and flexibility ($F = 22.83$, $p < 0.001$, $2p = 0.493$) compared to the CG, with no difference between the two intervention groups. Only low-density lipoproteins (LDL) levels were decreased after MICT and HIIT compared to the CG ($F = 20.28$, $p < 0.001$, $2p = 0.463$). CONCLUSION: Both MICT and HIIT caused similar physiological improvements in cardiovascular endurance, muscular endurance, flexibility and reduced only LDL in obese adult females.

P32

Correlates of doping tendencies in martial arts: specific analysis of Olympic and non-Olympic sports

Ivan Zeljko[1], Dean Kontic[2], Nataša Zenic[3]
[1]University of Mostar, Faculty of Science and Education, Mostar, Bosnia and Herzegovina, [2]University of Dubrovnik, Dubrovnik, Croatia, [3]University of Split, Faculty of Kinesiology, Split, Croatia

BACKGROUND: The problems of doping behavior and doping tendency (DT) are rarely examined in martial arts, especially in Olympic vs. non-Olympic sports. PURPOSE: This study aimed to evaluate the DT and specific correlates of DT in one Olympic- (judo) and one non-Olympic- martial art (kick-boxing). METHODS: In total, 58 athletes (24 females) were tested for DT (criterion) and predictors, including sport-specific factors (i.e., experience in sport, competitive achievement) and knowledge of legal issues related to doping in sports (knowledge of doping – KD). Comparisons between sports were performed via t-test and Mann–Whitney test (MW). The associations between the predictors and criteria were determined via univariate logistic regression, with the type of sport as a confounding factor. RESULTS: A lower likelihood of positive DT was detected in

judo-athletes (MW = 3.41, p < 0.001). Greater sport achievement was negatively associated with positive DT, with no significant influence of type of sport (OR = 0.66, 95% CI: 0.34–0.97). Greater involvement in sport was associated with a lower likelihood of positive DT but with a significant confounding effect of the type of sport (as a result of longer sport experience in judo athletes). The KD was not associated with DT, although judo athletes achieved better results in KD than kick-boxers (t test = 2.67, p < 0.01). CONCLUSION: The results revealed the possible influence of sport (Olympic vs. non-Olympic) on DT in athletes. Further studies are needed to evaluate the problem of predictors of DTs in more detail.

P33

Cognitive Function and Performance in Brazilian Jiu-Jitsu

Tomas Peric[1], Pavel Ruzbarsky[1], Stanislav Novicichin[2]
[1]University of Presov, Faculty of sport, Slovak Republic, [2]Charles University, Faculty of Physical Education and Sport, Czech Republic

This study examines the theoretical foundations of Brazilian Jiu-Jitsu (BJJ) in relation to cognitive function, emphasizing the role of decision-making, reaction time, and motor control in athletic performance, while exploring the potential of virtual reality (VR) as a tool for cognitive assessment and training in combat sports. Purpose: This study explores the influence of cognitive function on Brazilian Jiu-Jitsu (BJJ) performance, focusing on reaction time, decision-making accuracy, and motor response variability. Understanding these cognitive differences can enhance training methodologies and competition strategies. Methods: Ten male BJJ practitioners (ages 18–35) were categorized into professionals (10+ years, brown/black belts) and semi-professionals (4+ years, blue/purple belts). Virtual reality (VR)-based cognitive tests assessed reaction time, accuracy, and spatial awareness. The Mann-Whitney U test was applied to compare group performance. Results: Professionals exhibited superior decision-making accuracy and cognitive efficiency but slightly longer reaction times, possibly indicating a trade-off between speed and precision. Semi-professionals showed higher motor response variability and lower decision accuracy. Statistically significant differences suggest that experience influences cognitive function differently across various parameters. Conclusion: Cognitive abilities play a crucial role in BJJ performance. Professionals demonstrate refined cognitive processing, prioritizing accuracy over reaction speed. These findings underscore the importance of cognitive training in combat sports and highlight VR-based assessments as valuable tools for optimizing performance and strategic decision-making.

P34

Doping attitudes of high-level swimming coaches: analysis of sport and sociodemographic predictors

Ninoslav Silic[1], Jelena Rodek[2], Nataša Zenic[2]
[1]University of Mostar, Faculty of Science and Education, Mostar, Bosnia and Herzegovina; [2]University of Split, Faculty of Kinesiology, Split, Croatia

BACKGROUND: Doping remains one of the most important problems in modern sports, but studies rarely examine the correlates of doping attitudes (DA) among sport coaches, particularly in a specific sport. PURPOSE: The aim of this study was to evaluate sociodemographic and sport factors correlated with DA in swimming coaches. METHODS: Fifty-six swimming coaches from Croatia and Slovenia were tested for sociodemographic and sport factors (predictors) and personal DA. The logistic regression for the binarized criterion (negative DA vs. neutral/positive DA) was calculated for each predictor univariately and then multivariately for significant univariate predictors, to control for possible confounding effects. RESULTS: A lower likelihood of neutral/positive DA was observed for female coaches (OR = 0.81, 95% CI: 0.60-0.97), those whose swimmers achieved better competitive success (OR = 0.71, 95% CI: 0.50-0.93). The older coaches were more leaned toward neutral/positive DA (OR =1.21, 95% CI: 1.03--1.51). Multivariate regression revealed a significant association between female sex (OR = 0.82, 95% CI: 0.61–0.98) and neutral/positive DA. CONCLUSION: The results highlighted specific associations between the studied sociodemographic-, and sport-factors and DA among swimming coaches, indicating potentially vulnerable groups with regard to doping.

P35

Are physical literacy and health literacy associated with physical activity levels in older females?

Marin Corluka[1], Tamara Flegar[2], Damir Sekulic[2]
[1]University of Mostar, Faculty of Science and Education, Mostar, Bosnia and Herzegovina, [2]University of Split, Faculty of Kinesiology, Split, Croatia

BACKGROUND: It is theorized that physical literacy (PL) and health literacy (HL) have significant influences on physical activity levels (PALs), but studies in which this problem has been investigated in older persons are lacking. PURPOSE: The aim of this study was to identify a possible association between PL, HL, and PAL in older females. METHODS: The participants included 38 recreationally active females (mean age: 67 ± 4.5 years) from Split, Croatia, who were regularly involved in recreational exercise. The PL was evaluated via the Perceived Physical Literacy Questionnaire for Adults (PPLQ), the HL was evaluated via the European Health Literacy Survey Questionnaire (EHLSQ), and the PAL was evaluated via the Physical Activity Scale for the Elderly (PASE). Pearson's correlation was used to establish simple correlations between scales. In the second phase, the PAL results were categorized into low-physical activity (LPA) vs. high-physical activity (HPA), and logistic regression was applied to determine the correlations between HL, PL, and age (predictors) and the criterion. RESULTS: The correlation between PL and PAL was significant but low (R = 0.34, p < 0.05), indicating a relatively low level of association between PL and PAL. No significant correlation between HL and PAL was detected. When logistic regressions were applied, PL and HL were not significantly associated with PAL, possibly due to the strong influence of age on PL (odds ratio: 0.44, 95% confidence interval: 0.11–0.69). CONCLUSION: Studies where the correlation between PL and PAL is evaluated should consider the strong influence of age on PAL and the evidently lower PAL in older participants. Therefore, in such studies, special attention should be given to age, and participants should be clustered within a narrow age span.

P36

Targeted shooting accuracy: A comparison of male and female cadet handball players

Ivan Belcic, Mateja Ocic, Damir Knjaz
University of Zagreb, Faculty of Kinesiology, Zagreb, Croatia

Shooting on goal is considered one of the most important technical skills in competitive handball as it is the main determinant of all actions players undertake during the game. PURPOSE: The aim of this study was to determine the differences in shooting accuracy from in-game positions between male and female national cadet selections of the Croatian Handball Federation. METHODS: The sample consisted of 30 participants divided into two equal groups. The first group

DOI 10.26773/mjssm.250401

consisted of 15 male handball players, and the second group consisted of 15 female handball players from the national cadet selections. RESULTS: Statistical analysis, employing an independent samples t-test, revealed a statistically significant difference in shooting accuracy exclusively for shots directed at the upper right corner of the goal ($p = 0.01$). This finding suggests potential disparities in physical capabilities, namely explosive strength, shoulder girdle strength, and wrist joint release power, between male and female cadet players. Both groups demonstrated the highest shooting accuracy towards the opposite lower corner of the goal, indicating a preferred target area during gameplay. The absence of statistically significant differences in shooting accuracy for the remaining three target areas suggests a comparable level of skill and precision between male and female cadet selections in most shooting techniques. CONCLUSION: Certain specific shot types may highlight gender-based performance variations, overall shooting proficiency is largely consistent across both groups at the cadet level. The results provide valuable insights for coaches and trainers in developing targeted training programs to address specific areas of weakness and enhance overall shooting performance.

P37

Explosive Lower Limb Strength of Volleyball Players: Field Position Differences

Pavol Cech, Jaroslav Sucka, Terezia Kovalik Slancova
University of Presov, Faculty of Sports, Presov, Slovakia

In volleyball, the ability to jump high, fast and explosively is essential for most of the game skills. In addition, a thorough understanding of the physiological differences that are characteristic for each player's function is essential in order to optimize the training process. PURPOSE: The aim of this study is to describe the differences in lower limb explosive power in professional volleyball players with respect to their field positions. METHODS: Professional volleyball players of the top Slovak league (n = 54) were divided on the basis of their field position into four groups: Opposite (n = 10), Libero (n = 6), Middle-blocker (n = 15), Outside hitter (n = 23). The level of lower limb explosive strength was assessed using vertical jump tests: countermovement jump (CMJ), countermovement jump with free arms (CMJ FA) and squat jump (SJ). To assess lateral asymmetries of lower limb explosive strength, unilateral vertical jumps on each limb were performed. RESULTS: Anova results showed significant differences among field positions in the CMJ test ($F = 3.767$; $p = 0.016$) and the SJ test ($F = 3.099$; $p = 0.035$), supported by a large effect size. Furthermore, a significant difference among the field positions, supported by a large effect size, was also found in the laterality assessment ($F = 7.178$; $p = 0.001$). CONCLUSION: The results highlight the different physiological demands associated with different field positions, which must be considered in the planning and implementation of training programmes. At the same time, regular diagnostics of lower limb explosive power is needed to provide objective data to monitor performance progression and identify specific areas requiring optimization.

P38

The Relationship Between Body Composition and Cognitive Ability of Adolescents

Beata Ruzbarska, Pavol Cech, Dalibor Dzugas, Terezia Kovalik Slancova, Mojmir Trebunak, Alica Snincakova
University of Presov, Faculty of Sports, Presov, Slovakia

The current prevalence of obesity is a factor creating the need to monitor the possible consequences of this negative condition on the population. PURPOSE: The aim of the study was to describe the effect of body composition variables on selected cognitive functions in adolescents. METHODS: The sample consisted of 552 young healthy participants (girls n= 342; boys n= 210) aged 11-19 years. Psychological tests focusing on intellectual potential, attention and visual memory were performed to monitor cognition; body composition was assessed using a bioimpedance analysis. The study was supported by the grant project no. VEGA 1/0481/22. RESULTS: In boys, Pearson's correlation coefficient showed a moderate positive significant effect of soft lean mass, fat free mass and skeletal muscle mass on attention ($r = 0.328$ - 0.361). A similar effect of soft lean mass on intellectual potential scores was found ($r = 0.320$). A low positive significant level of association was observed between intellectual potential test scores and fat free mass and skeletal muscle mass ($r = 0.276$ - 0.279). In terms of adiposity, a low negative significant rate of association was identified between percentage body fat and intellectual potential test results ($r = -0.181$ respectively -0.188). In the group of girls, a small positive significant correlation was found in the relationship between the assessed indicators of body composition and attention ($r = 0.108$ - 0.186). Interestingly, a positive relationship was observed for both active body mass and adiposity parameters equally. The other tests of cognition did not show any significant relationship with body composition. CONCLUSION: It can be concluded that the relationship between the body composition variables and selected cognition variables is stronger in boys compared to girls.

P39

Isokinetic Strength, Bilateral and Ipsilateral Differences Among Elite Athletes

Jaroslav Sucka, Pavol Cech, Tomas Kozak
Isokinetic Strength, Bilateral and Ipsilateral Differences Among Elite Athletes

Sports games, despite the existence of similarities such as intermittent load, create specific demands based on the course and content of the activities performed. PURPOSE: The aim of this paper is to identify differences in concentric strength, ipsilateral and bilateral knee flexor-extensor ratios among top players in soccer, ice hockey and volleyball. METHODS: 140 health elite players (soccer n=59, ice hockey n=56, volleyball n = 25) took part in measurements of isokinetic concentric strength at angular velocities of 60°/s and 180°/s when the peak torque was recorded. RESULTS: One Way Anova confirmed the existence of differences in concentric strength of hamstrings among sports players for both right and left leg at both angular velocities of 60°/s and 180°/s, respectively ($p<0.05$). The highest values for the right leg were achieved by the volleyball players, while for the left leg by the soccer players with a minimal difference with the volleyball players. The lowest values were achieved by the hockey players in all tests. Concerning the assessment of quadriceps strength, differences among players were not significant. Kruskal-Wallis Anova revealed ipsilateral differences and quadriceps bilateral differences in concentric strength at both angular velocities ($p<0.05$) among players with respect to their sport game. On the contrary, hamstrings bilateral differences among players of a different type of sport game were not significant. Soccer and volleyball players also showed higher rates of ipsilateral differences in concentric strength production than hockey players, while volleyball players showed the highest rate of bilateral differences. CONCLUSION: The results confirmed differences in concentric strength produced by hamstrings and therefore different requirements in terms of the type of sport, without assessing differences in quadriceps strength.

P40

Preliminary Evaluation of Measurement Tools for Assessing Vertical Jump Performance in Water Polo Players

Alexandru Ioan Băltean[1,3], Pierre Joseph De Hillerin[1,2]
[1]Doctoral School of Sport Science and Physical Education, National University of Science and Technology Politehnica Bucharest, Pitesti University Center, Pitești, Romania, [2]Information for Sport and Human Performance Ltd. by Neuromotrica Program, Bucharest, Romania [3]Aurel Vlaicu University of Arad, Faculty of Physical Education and Sport, Arad, Romania

Explosive leg power is crucial in water polo, particularly for vertical jumps that allow players to reach above water for shooting, passing, or blocking. Reliable methods for assessing this ability in aquatic conditions are essential for performance optimization. PURPOSE: This preliminary study aims to verify the suitability of specific instruments for measuring lower limb force and vertical displacement in water polo players. METHODS: Four male competitive water polo players (two seniors, two juniors) performed vertical jumps under two arm conditions: both hands submerged, and one arm raised above water. Lower limb force parameters Peak Force (PF), Average Force (AF), and Time to Peak Force (TTPK) were measured using an EasyForce dynamometer adapted for aquatic conditions. Maximum vertical jump height was recorded using an Xbox 360 Kinect camera sensor. RESULTS: The integration of force measurement and motion-tracking technology provided valuable data on jump performance. CONCLUSION: The findings suggest that the combination of a dynamometer and Kinect sensor may be a viable approach for assessing vertical jump ability in water polo. Further studies with larger samples and refined protocols are needed to validate these methods and improve their practical application.

P41

Atrial fibrillation in patients with ST elevation myocardial infarction and its impact on in-hospital treatment outcome

Doris Djurdjevic, Milenko Cankovic
Faculty of Medicine, University of Novi Sad, Novi Sad, Serbia

Ischemic heart disease is due to atherosclerosis. The acute form of coronary artery disease is ST-elevation myocardial infarction (STEMI). Atrial fibrillation (AF) is the most common rhythm disorder and significantly contributes to cardiovascular morbidity and mortality. PURPOSE: One-year follow-up of hospitalized patients with STEMI and AF, and evaluation of AF as a predictor of adverse cardiovascular events of those patients. METHODS: The total of 62 patients diagnosed with STEMI and AF were divided into three groups. Group A: patients with pre-existing AF, Group B: patients with newly developed AF, and Group C: patients with unknown time of AF onset. Types of AF were correlated with the occurrence of major adverse cardiovascular events (MACE). RESULTS: The overall mortality was 16.1%, and 59.7% of patients experienced MACE. Newly developed AF was associated with fewer adverse events (42.9%) compared to pre-existing AF (68.8%). There was no significant association between AF status and MACE. In-hospital mortality was higher in patients with pre-existing AF (18.8%) compared to newly developed AF (0%). Mortality is the only adverse event significantly different concerning AF status. CONCLUSION: There is no significant association between the AF onset time and MACE. A significant association between AF status and treatment outcome was found. Mortality of patients with STEMI and AF (16.1%) is higher compared to patients without AF (5.6%).

P42

Relationships of selected parameters of isokinetic strength and explosive power in mixed martial arts fighters

Tomáš Kozák, Marek Kokinda, Monika Vašková, Kristína Němá, Jaroslav Sučka, Pavel Ružbarský
University of Prešov, Faculty of Sports, Prešov, Slovakia

In mixed martial arts (MMA), muscle strength manifests in multiple directions, movement velocities and all types of muscle contractions. PURPOSE: The aim of the study was to elucidate the relationships between isokinetic strength and explosive power in MMA fighters. METHODS: The research sample consisted of 17 MMA fighters. The following tests were administered to determine explosive power by Optogait: standard countermovement push-up, kneeling countermovement push-up and kneeling squat push-up for upper limbs and countermovement push-up, countermovement push-up with free arms and squat jump for lower limbs. Time to peak torque (TTPT) and peak torque (PT) as indicators of isokinetic strength were measured by HUMAC NORM with a focus on the extensors and flexors of knee, hip, shoulder, and elbow joints in concentric, eccentric, and isometric muscle contraction. RESULTS: The results showed significant correlation (p<0.05; r>0.5) between explosive power of lower limbs and PT of knee and hip extensors in all muscle contractions. In upper limbs, results showed significant correlation (p<0.05; r>0.5) between PT of elbow and shoulder flexors in all muscle contractions. The results showed that TTPT does not affect the level of explosive power. CONCLUSION: The level of isokinetic strength of lower limbs affects the level of explosive power in complex movement, which may be beneficial for executing specific movements during the fight.

P43

EUROFIT reference values of 7-11 aged children in urban areas of Kosovo; relations between age and gender

Bahri Gjinovci, Valon Nikqi
Faculty of Physical Education, University of Pristina "Hasan Prishtina", 10000 Pristina, Kosovo

Physical fitness, recognized as a fundamental component of overall quality of life, has gained increased public attention in recent years. With the sedentary lifestyle becoming more prevalent, especially during COVID-19 lockdowns, health issues associated with reduced physical activity have become a pressing concern. PURPOSE: This study establishes EUROFIT reference values for physical fitness and anthropometric measurements in children aged 7-11 years in urban Kosovo. METHODS: By analyzing data from 500 participants, the study examines age-and sex-based variations in motor abilities and morphological traits. RESULTS: Results reveal age-related increases in height, weight, and strength measures, consistent with growth trends during childhood. Boys showed higher performance in strength and power tests, while girls exhibited greater flexibility. The EUROFIT battery proved effective for assessing physical fitness across age groups. CONCLUSION: This research fills a data gap in Kosovo, providing valuable reference values for educators, coaches, and policymakers aiming to promote children's health and physical activity.
Keywords: Physical fitness, EUROFIT, motor abilities, children.

P44

Elastic band, fitball and balance board exercises - methodology for building strength in order to balance the postural muscles and enhance good posture as part of the physical fitness program for healthy middle school students

DOI 10.26773/mjssm.250401

Penka Mincheva-Bolgurova
Department "Theory and Methodology of Kinesitherapy" National Sports Academy, "Vasil Levski", Sofia, Bulgaria

Resistance training using elastic bands and fitballs as part of physical fitness programs is considered as an important part of building strength, balance and coordination and leads to maintaining good postural control. PURPOSE: The purpose of the study is to apply elastic band, fitball and balance board exercises as a means of training the trunk muscles in order to stabilize the core and reflect on posture and children's health. METHODS: Static and dynamic exercises for improving strength, endurance and coordination were applied with resistance bands, fit balls and balance boards in the programs for fitness for healthy middle school children ages 11-14. RESULTS: Elastic band exercises and fitball exercises for training and control of postural muscles stimulate the interest and the engagement of children and increased the muscular strength and balance reflecting on posture. CONCLUSION: Elastic band exercises along with fitball and balance board exercises can be included in the methodology for building strength, endurance and coordination as part of physical fitness programs for children. They create a positive emotional stimulus during exercises, improve muscular strength, balance and postural muscle equilibrium which aids in postural correction and postural control training. Keywords: resistance training, fitballs, posture, strength, fitness.

P45

First vs. Second Half Running Performance in Professional Soccer Matches: Insights from GPS Tracking

Dusko Bjelica[1], Borko Katanic[2], Arben Osmani[3], Mima Stankovic[4]
[1]University of Montenegro, Faculty for Sport and Physical Education, Niksic, Montenegro, [2]Montenegrin Sports Academy, Podgorica, Montenegro, [3]FC Ballkani, Suhareke, Kosovo, [4]University of Nis, Faculty of Sport and Physical Education, Nis, Serbia

Football players must sustain a high level of match running performance (MRP) across both halves of the game. The sustainability of high-intensity activities is particularly significant, as they have the greatest impact on gameplay. PURPOSE: This study aimed to determine, whether there are differences in the running performance of football players between the first and second halves. METHODS: For this study, 10 elite outfield footballers from FK Buducnost (Podgorica, Montenegro) who played the full duration of both halves in a single match were analyzed. Using Global Positioning System (GPS) technology (K-Sport Universal, Montelabbate, Italy), players' MRP was analyzed based on 13 variables related to distances at various intensities, total distance, number of sprints, high acceleration/deceleration metrics, distance per minute, maximum speed, and heart rate parameters. RESULTS: Based on the paired t-test, it was determined that there are significant differences between the first and second halves in eight out of thirteen MRP parameters of football players including distance at very high-intensity speed (p=0.018), a distance at sprinting speed (p=0.022), number of sprints (p=0.027), a distance at very high deceleration (p=0.023), distance per minute (p=0.014), maximum speed (p=0.007), number of decelerations (p=0.008), and average heart rate (p=.034). CONCLUSION: The results showed that football players' MRP significantly declined in the second half across most variables, particularly in key parameters such as high-intensity running, sprints, and decelerations. However, given the relatively small sample size, a larger group of participants should be included for more comprehensive conclusions.

P46

Differences in Movement Performance of Football Players Compared to Higher- and Lower-Ranked Opposing Teams in the Montenegrin First League

Borko Katanic[1], Dusko Bjelica[2], Azra Tojaga[3], Marin Corluka[4], Mima Stankovic[5]
[1]Montenegrin Sports Academy, Podgorica, Montenegro, [2]University of Montenegro, Faculty for Sport and Physical Education, Niksic, Montenegro, [3]University of Mostar, Faculty of Health Studies, Mostar, Bosnia and Herzegovina, [4]University of Mostar, Faculty of Science and Education, Mostar, Bosnia and Herzegovina, [5]University of Nis, Faculty of Sport and Physical Education, Nis, Serbia

Match running performance (MRP) of football players is one of the most frequently analyzed parameters in modern football. However, it remains unclear whether MRP depends on the quality of the opponent. PURPOSE: This longitudinal study aimed to determine whether there are differences in the running performance of football players based on the quality of the opposing team. METHODS: The performance of the FK Buducnost (Podgorica) team was analyzed over ten league matches, five against top-ranked teams and five against teams from the lower half of the Montenegrin First League table during the 2022/23 season. Using Global Positioning System Technology (GPS; K-Sport Universal, Montelabbate, Italy), various movement parameters were examined, including distance at high-intensity speed (14–19 km/h), distance at very high-intensity speed (19–25 km/h), distance at sprinting speed (>25 km/h), total distance, number of sprints, distance at very high acceleration (>3 m/s^2), distance at very high deceleration (<-3 m/s^2), distance per minute, maximum speed, number of accelerations (>3 m/s^2), number of decelerations (<-3 m/s^2), average heart rate (HR average), and maximum heart rate (HR max). RESULTS: An independent Student's t-test showed no significant differences between the groups in any parameters, indicating that MRP did not vary based on the quality of the opposing team. CONCLUSION: The findings suggest that football players maintain a similar level of running performance regardless of whether they compete against stronger or weaker teams within the same competition level. Future research should further explore differences in relation to the competition level of football players.

Guidelines for Authors

Revised Maj 2021

*** Please use the bookmark function to navigate within the guidelines. ***

When preparing the final version of the manuscripts, either NEW or REVISED authors should strictly follow the guidelines. Manuscripts departing substantially from the guidelines will be returned to the authors for revision or, rejected.

1. UNIFORM REQUIREMENTS

1.1. Overview

The *Montenegrin Journal of Sports Science and Medicine* (MJSSM) applies the Creative Commons Attribution (CC BY) license to articles and other works it publishes.

There is no charge for submissions and no page charge for accepted manuscripts. However, if the manuscript contains graphics in color, note that printing in color is charged.

MJSSM adopts a double-blind approach for peer reviewing in which the reviewer's name is always concealed from the submitting authors as well as the author(s)'s name from the selected reviewers.

MJSSM honors a six-weeks for an initial decision of manuscript submission.

Authors should submit the manuscripts as one Microsoft Word (.doc) file.

Manuscripts must be provided either in standard UK or US English. English standard should be consistent throughout the manuscripts.

Format the manuscript in A4 paper size; margins are 1 inch or 2.5 cm all around. Type the whole manuscript double-spaced, justified alignment.

Use Times New Roman font, size eleven (11) point.

Number (Arabic numerals) the pages consecutively (centering at the bottom of each page), beginning with the title page as page 1 and ending with the Figure legend page.

Include line numbers (continuous) for the convenience of the reviewers.

Apart from chapter headings and sub-headings avoid any kind of formatting in the main text of the manuscripts.

1.2. Type & Length

MJSSM publishes following types of papers:

Original scientific papers are the results of empirically- or theoretically-based scientific research, which employ scientific methods, and which report experimental or observational aspects of sports science and medicine, such as all clinical aspects of exercise, health, and sport; exercise physiology and biophysical investigation of sports performance; sport biomechanics; sports nutrition; rehabilitation, physiotherapy; sports psychology; sport pedagogy, sport history, sport philosophy, sport sociology, sport management; and all aspects of scientific support of the sports coaches from the natural, social and humanistic side. Descriptive analyses or data inferences should include rigorous methodological structure as well as sound theory. Your manuscript should include the following sections: Introduction, Methods, Results, and Discussion.

☑Open Submissions ☑Indexed ☑Peer Reviewed

Original scientific papers should be:

- Up to 3000 words (excluding title, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References);
- A structured abstract of less than 250 words;
- Maximum number of references is 30;
- Maximum combined total of 6 Tables/Figures.

Review papers should provide concise in-depth reviews of both established and new areas, based on a critical examination of the literature, analyzing the various approaches to a specific topic in all aspects of sports science and medicine, such as all clinical aspects of exercise, health, and sport; exercise physiology and biophysical investigation of sports performance; sport biomechanics; sports nutrition; rehabilitation, physiotherapy; sports psychology; sport pedagogy, sport history, sport philosophy, sport sociology, sport management; and all aspects of scientific support of the sports coaches from the natural, social and humanistic side.

☑Open Submissions ☑Indexed ☑Peer Reviewed

Review papers should be:

- Up to 6000 words (excluding title, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References);
- A structured abstract of less than 250 words;
- Maximum number of references is 100.

Editorials are written or commissioned by the editors, but suggestions for possible topics and authors are welcome. It could be peer reviewed by two reviewers who may be external or by the Editorial Board.

☐Open Submissions ☑Indexed ☑Peer Reviewed

Editorials should be:

- Up to 1000 words (excluding title, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References);
- A structured abstract of less than 250 words;
- Maximum number of references is 10.

Short reports of experimental work, new methods, or a preliminary report can be accepted as two page papers. Your manuscript should include the following sections: Introduction, Methods, Results, and Discussion.

☑Open Submissions ☑Indexed ☑Peer Reviewed

Short reports should be:

- Up to 1500 words (excluding title, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References);
- A structured abstract of less than 250 words;
- Maximum number of references is 15.

Peer review - fair review provides authors who feel their paper has been unfairly rejected (at any journal) the opportunity to share reviewer comments, explain their concerns, and have their paper reviewed for possible publication in MJSSM.

☑Open Submissions ☑Indexed ☐Peer Reviewed

Peer review - fair review should be:

- Up to 1500 words (excluding title, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References);
- A structured abstract of less than 250 words;
- Maximum number of references is 15.

Invited papers and award papers include invited papers from authors with outstanding scientific credentials. Nomination of invited authors is at the discretion of the MJSSM editorial board. MJSSM also publishes award papers selected by the scientific committee of the MSA annual conference.

☐Open Submissions ☑Indexed ☐Peer Reviewed

Invited papers and award papers should be:

- Up to 3000 words (excluding title, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References);
- A structured abstract of less than 250 words;
- Maximum number of references is 30;
- Maximum combined total of 6 Tables/Figures.

Meeting Abstracts contain conference abstracts of the sports science papers presented at the MSA annual conference and MSA-sponsored meetings. This publication offers a first look into the current research in the field of Sports Science.

☐Open Submissions ☑Indexed ☐Peer Reviewed

Meeting Abstracts should be:

- Restricted to 250 words (including title, authors and institutions) and must include the following separate sections: [1] purpose; [2] methods; [3] results; [4] conclusion;
- Without references;
- Without Tables/Figures.

1.3. Submission

MJSSM only accepts electronic submission to the e-mail of the Journal Office: **office@mjssm.me**.

Submitted material includes:

- A manuscript prepared according to the Guidelines for the Authors;
- A signed form that states the study was not previously published, nor has been submitted simultaneously for consideration of publication elsewhere, that states that all of the authors are in agreement with submission of the manuscript to MJSSM, and that, for studies that use animal or human individuals, authors must include information regarding their institution's ethics committee, and which identifies the official approval number;
- A signed form that there is no conflict of interest.

Name the files according to the family name of the first author. Authors submitting revised versions of the manuscript can use the identification number of their manuscript as provided by the Journal Office. *See* example:

- ✓ FAMILY NAME-manuscript.doc – (main manuscript file)
- ✓ FAMILY NAME-statement.PDF – (authorship statement)
- ✓ FAMILY NAME-declaration.PDF – (declaration of potential conflict of interest)
- ✓ FAMILY NAME-fig1.tiff – (Figure 1)

1.4. Peer Review Process

An original manuscript submitted for publication will be submitted to the review process as long as it fits the following criteria:

- The study was not previously published, nor has been submitted simultaneously for consideration of publication elsewhere;
- All persons listed as authors approved its submission to MJSSM;
- Any person cited as a source of personal communication has approved the quote;
- The opinions expressed by the authors are their exclusive responsibility;
- The author signs a formal statement that the submitted manuscript complies with the directions and guidelines of MJSSM.

The editors-in-chief, executive editor and associate editors will make a preliminary analysis regarding the appropriateness, quality, originality and written style/grammar of the submitted manuscript. The editors reserve the right to request additional information, corrections, and guideline compliance before they submit the manuscript to the ad-hoc review process.

MJSSM uses ad-hoc reviewers, who volunteer to analyze the merit of the study. Typically, one or two expert reviewers are consulted in a double-blind process. Authors are notified by e-mail when their submission has been accepted (or rejected). Minor changes in the text may be made at the discretion of the editors-in-chief, executive editor and/or associate editors. Changes can include spelling and grammar in the chosen language, written style, journal citations, and reference guidelines. The author is notified of changes via email. The final version is available to the author for his or her approval before it is published.

1.5. Open Access License and Publisher Copyright Policies

MJSSM applies the Creative Commons Attribution (CC BY) license to articles and other works it publishes. If author(s) submit its paper for publication by MJSSM, they agree to have the CC BY license applied to their work. Under this Open Access license, the author(s) retain copyright, but agree that anyone can reuse their article in whole or part for any purpose, for free, even for commercial purposes. Anyone may copy, distribute, or reuse the content as long as the author(s) and original source are properly cited. This facilitates freedom in re-use and also ensures that MJSSM content can be mined without barriers for the needs of research. On the other hand, the author(s) may use content owned by someone else in their article if they have written permission to do so. If the manuscript contains content such as photos, images, figures, tables, audio files, videos, et cetera, that the author(s) do not own, MJSSM will require them to provide it with proof that the owner of that content has given them written permission to use it, and has approved of the CC BY license being applied to their content. Otherwise, MJSSM will ask the author(s) to remove that content and/or replace it with other content that you own or have such permission to use. MJSSM provides a form the author(s) can use to ask for and obtain permission from the owner.

In addition, the author(s) may freely use the content they previously published in a paper through another publisher and they own the rights to that content; however, that's not necessarily the case and it depends on the license that covers the other paper. Some publishers allow free and unrestricted reuse of article content they own, such as under the CC BY license. Other publishers use licenses that allow reuse only if the same license is applied by the person or publisher reusing the content. If the article was published under a CC BY license or another license that allows free and unrestricted use, the author(s) may use the content in the submitted manuscript provided that the author(s) give proper attribution, as explained above. If the content was published under a more restrictive license, the author(s) must ascertain what rights they have under that license. MJSSM advices the author(s) not to include any content in the submitted manuscript which they do not have rights to use, and always give proper attribution.

The editors of MJSSM consider plagiarism to be a serious breach of academic ethics. Any author who practices plagiarism (in part or totality) will be suspended for six years from submitting new submissions to MJSSM. If such a manuscript is approved and published, public exposure of the article with a printed mark ("plagiarized" or "retracted") on each page of the published file, as well as suspension for future publication for at least six years, or a period determined by the editorial board. Third party plagiarized authors or institutions will be notified, informing them about the faulty authors. Plagiarism will result in immediate rejection of the manuscript.

MJSSM only publishes studies that have been approved by an institutional ethics committee (when a study involves humans or animals). Fail to provide such information prevent its publication. To ensure these requirements, it is essential that submission documentation is complete. If you have not completed this step yet, go to MJSSM website and fill out the two required documents: Declaration of Potential Conflict of Interest and Authorship Statement. Whether or not your study uses humans or animals, these documents must be completed and signed by all authors and attached as supplementary files in the originally submitted manuscript.

1.6. After Acceptance

After the manuscript has been accepted, authors will receive a PDF version of the manuscripts for authorization, as it should look in printed version of MJSSM. Authors should carefully check for omissions. Reporting errors after this point will not be possible and the Editorial Board will not be eligible for them.

Should there be any errors, authors should report them to the Office e-mail address **office@mjssm.me.** If there are not any errors authors should also write a short e-mail stating that they agree with the received version.

1.7. Code of Conduct Ethics Committee of Publications

MJSSM is hosting the Code of Conduct Ethics Committee of Publications of the **COPE** (the Committee on Publication Ethics), which provides a forum for publishers and Editors of scientific journals to discuss issues relating to the integrity of the work submitted to or published in their journals.

2. MANUSCRIPT STRUCTURE

2.1. Title Page

The first page of the manuscripts should be the title page, containing: title, type of publication, running head, authors, affiliations, corresponding author, and manuscript information. *See* example:

Transfer of Learning on a Spatial Memory Task between the Blind and Sighted People Spatial Memory among Blind and Sighted

Original Scientific Paper

Transfer of learning on a spatial memory task

Selcuk Akpinar[1], Stevo Popović[1,2], Sadettin Kirazci[1]

[1]Middle East Technical University, Physical Education and Sports Department, Ankara, Turkey
[2]University of Montenegro, Faculty for Sport and Physical Education, Niksic, Montenegro

Corresponding author:
S. Popovic
University of Montenegro
Faculty for Sport and Physical Education
Narodne omladine bb, 84000 Niksic, Montenegro
E-mail: stevop@ac.me

Word count: 2,980

Abstract word count: 236

Number of Tables: 3

Number of Figures: 3

2.1.1. Title

Title should be short and informative and the recommended length is no more than 20 words. The title should be in Title Case, written in uppercase and lowercase letters (initial uppercase for all words except articles, conjunctions, short prepositions no longer than four letters etc.) so that first letters of the words in the title are capitalized. Exceptions are words like: "and", "or", "between" etc. The word following a colon (:) or a hyphen (-) in the title is always capitalized.

2.1.2. Type of publication

Authors should suggest the type of their submission.

2.1.3. Running head

Short running title should not exceed 50 characters including spaces.

2.1.4. Authors

The form of an author's name is first name, middle initial(s), and last name. In one line list all authors with full names separated by a comma (and space). Avoid any abbreviations of academic or professional titles. If authors belong to different institutions, following a family name of the author there should be a number in superscript designating affiliation.

2.1.5. Affiliations

Affiliation consists of the name of an institution, department, city, country/territory(in this order) to which the author(s) belong and to which the presented / submitted work should be attributed. List all affiliations (each in a separate line) in the order corresponding to the list of

authors. Affiliations must be written in English, so carefully check the official English translation of the names of institutions and departments.

Only if there is more than one affiliation, should a number be given to each affiliation in order of appearance. This number should be written in superscript at the beginning of the line, separated from corresponding affiliation with a space. This number should also be put after corresponding name of the author, in superscript with no space in between.

If an author belongs to more than one institution, all corresponding superscript digits, separated with a comma with no space in between, should be present behind the family name of this author.

In case all authors belong to the same institution affiliation numbering is not needed.

Whenever possible expand your authors' affiliations with departments, or some other, specific and lower levels of organization.

2.1.6. Corresponding author

Corresponding author's name with full postal address in English and e-mail address should appear, after the affiliations. It is preferred that submitted address is institutional and not private. Corresponding author's name should include only initials of the first and middle names separated by a full stop (and a space) and the last name. Postal address should be written in the following line in sentence case. Parts of the address should be separated by a comma instead of a line break. E-mail (if possible) should be placed in the line following the postal address. Author should clearly state whether or not the e- mail should be published.

2.1.7. Manuscript information

All authors are required to provide word count (excluding title page, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References), the Abstract word count, the number of Tables, and the number of Figures.

2.2. Abstract

The second page of the manuscripts should be the abstract and key words. It should be placed on second page of the manuscripts after the standard title written in upper and lower case letters, bold.

Since abstract is independent part of your paper, all abbreviations used in the abstract should also be explained in it. If an abbreviation is used, the term should always be first written in full with the abbreviation in parentheses immediately after it. Abstract should not have any special headings (e.g., Aim, Results…).

Authors should provide up to six key words that capture the main topics of the article. Terms from the Medical Subject Headings (MeSH) list of Index Medicus are recommended to be used.

Key words should be placed on the second page of the manuscript right below the abstract, written in italic. Separate each key word by a comma (and a space). Do not put a full stop after the last key word. *See example:*

Abstract

Results of the analysis of…
Key words: spatial memory, blind, transfer of learning, feedback

2.3. Main Chapters

Starting from the third page of the manuscripts, it should be the main chapters. Depending on the type of publication main manuscript chapters may vary. The general outline is: Introduction, Methods, Results, Discussion, Acknowledgements (optional), Conflict of Interest (optional), and Title and Abstract in Montenegrin (only for the authors from former Yugoslavia, excluding Macedonians and Slovenes). However, this scheme may not be suitable for reviews or publications from some areas and authors should then adjust their chapters accordingly but use the general outline as much as possible.

2.3.1. Headings

Main chapter headings: written in bold and in Title Case. *See* example:

- ✓ **Methods**

Sub-headings: written in italic and in normal sentence case. Do not put a full stop or any other sign at the end of the title. Do not create more than one level of sub-heading. *See* example:

- ✓ *Table position of the research football team*

2.3.2 Ethics

When reporting experiments on human subjects, there must be a declaration of Ethics compliance. Inclusion of a statement such as follow in Methods section will be understood by the Editor as authors' affirmation of compliance: "This study was approved in advance by [name of committee and/or its institutional sponsor]. Each participant voluntarily provided written informed consent before participating." Authors that fail to submit an Ethics statement will be asked to resubmit the manuscripts, which may delay publication.

2.3.3 Statistics reporting

MJSSM encourages authors to report precise p-values. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). Use normal text (i.e., non-capitalized, non-italic) for statistical term "p".

2.3.4. 'Acknowledgements' and 'Conflict of Interest' (optional)

All contributors who do not meet the criteria for authorship should be listed in the 'Acknowledgements' section. If applicable, in 'Conflict of Interest' section, authors must clearly disclose any grants, financial or material supports, or any sort of technical assistances from an institution, organization, group or an individual that might be perceived as leading to a conflict of interest.

2.4. References

References should be placed on a new page after the standard title written in upper and lower case letters, bold.

All information needed for each type of must be present as specified in guidelines. Authors are solely responsible for accuracy of each reference. Use authoritative source for information such as Web of Science, Medline, or PubMed to check the validity of citations.

2.4.1. References style

MJSSM adheres to the American Psychological Association 7th Edition reference style. Check the Publication Manual of the American Psychological Association (2019), Seventh Edition that is the official source for APA Style, to ensure the manuscripts conform to this reference style. Authors using EndNote® to organize the references must convert the citations and bibliography to plain text before submission.

2.4.2. Examples for Reference citations

One work by one author

- ✓ In one study (Reilly, 1997), soccer players…
- ✓ In the study by Reilly (1997), soccer players…
- ✓ In 1997, Reilly's study of soccer players…

Works by two authors

- ✓ Duffield and Marino (2007) studied…
- ✓ In one study (Duffield & Marino, 2007), soccer players…
- ✓ In 2007, Duffield and Marino's study of soccer players…

Works by three or more authors: cite only the name of the first author followed by et al. and the year

- ✓ Bangsbo et al. (2008) stated that…
- ✓ In one study (Bangsbo et al., 2008), soccer players…

Works by organization as an author: cite the source, just as you would an individual person

- ✓ According to the American Psychological Association (2000)…
- ✓ In the APA Manual (American Psychological Association, 2003), it is explained…

Two or more works in the same parenthetical citation: citation of two or more works in the same parentheses should be listed in the order they appear in the reference list (i.e., alphabetically); separated by a semi-colon

- ✓ Several studies (Bangsbo et al., 2008; Duffield & Marino, 2007; Reilly, 1997) suggest that…

2.4.3. Examples for Reference list

Works by one author
Borg, G. (1998). *Borg's perceived exertion and pain scales*: Human Kinetics.

Works by two authors
Duffield, R., & Marino, F. E. (2007). *Effects of pre-cooling procedures on intermittent-sprint exercise performance in warm conditions. European Journal of Applied Physiology, 100*(6), 727–735. https://doi.org/10.1007/s00421-007-0468-x

Works by three to twenty authors
Nepocatych, S., Balilionis, G., & O'Neal, E. K. (2017). Analysis of dietary intake and body composition of female athletes over a competitive season. *Montenegrin Journal of Sports Science and Medicine, 6*(2), 57–65. https://doi.org/10.26773/mjssm.2017.09.008

Works by more than twenty authors
Krustrup, P., Mohr, M., Amstrup, T., Rysgaard, T., Johansen, J., Steensberg, A.,… Bangsbo, J. (2003). The yo-yo intermittent recovery test: physiological response, reliability, and validity. *Medicine & Science in Sports & Exercise, 35*(4), 697–705. https://doi.org/10.1249/01.mss.0000058441.94520.32

Works by group of authors
NCD-RisC. (2017). Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128.9 million children, adolescents, and adults. *Lancet*, 390(10113), 2627-2642. https://doi.org/10.1016/s0140-6736(17)32129-3

Works by unknown authors
Merriam-Webster's collegiate dictionary (11th ed.). (2003). Merriam-Webster.

Journal article (print)
Scruton, R. (1996). The eclipse of listening. *The New Criterion, 15*(3), 5–13.

Journal article (electronic)
Aarnivala, H., Pokka, T., Soininen, R., Mottonen, M., Harila-Saari, A., & Niinimaki, R. (2020). Trends in age- and sex-adjusted body mass index and the prevalence of malnutrition in children with cancer over 42 months after diagnosis: a single-center cohort study. *European Journal of Pediatrics,* 179(1), 91-98. https://doi.org/10.1007/s00431-019-03482-w

Thesis and dissertation
Pyun, D. Y. (2006). *The proposed model of attitude toward advertising through sport*. [Unpublished Doctoral Dissertation]. The Florida State University.

Book
Borg, G. (1998). *Borg's perceived exertion and pain scales*: Human Kinetics.

Chapter of a book
Armstrong, D. (2019). Malory and character. In M. G. Leitch & C. J. Rushton (Eds.), *A new companion to Malory* (pp. 144-163). D. S. Brewer.

Reference to a Facebook profile
Little River Canyon National Preserve (n.d.). *Home* [Facebook page]. Facebook. Retrieved January 12, 2020 from https://www.facebook.com/lirinps/

2.5. Tables

All tables should be included in the main manuscript file, each on a separate page right after the Reference section.

Tables should be presented as standard MS Word tables.

Number (Arabic) tables consecutively in the order of their first citation in the text.

Tables and table headings should be completely intelligible without reference to the text. Give each column a short or abbreviated

heading. Authors should place explanatory matter in footnotes, not in the heading. All abbreviations appearing in a table and not considered standard must be explained in a footnote of that table. Avoid any shading or coloring in your tables and be sure that each table is cited in the text.

If you use data from another published or unpublished source, it is the authors' responsibility to obtain permission and acknowledge them fully.

2.5.1. Table heading

Table heading should be written above the table, in Title Case, and without a full stop at the end of the heading. Do not use suffix letters (e.g., Table 1a, 1b, 1c); instead, combine the related tables. *See* example:

- ✓ **Table 1.** Repeated Sprint Time Following Ingestion of Carbohydrate-Electrolyte Beverage

2.5.2. Table sub-heading

All text appearing in tables should be written beginning only with first letter of the first word in all capitals, i.e., all words for variable names, column headings etc. in tables should start with the first letter in all capitals. Avoid any formatting (e.g., bold, italic, underline) in tables.

2.5.3. Table footnotes

Table footnotes should be written below the table.

General notes explain, qualify or provide information about the table as a whole. Put explanations of abbreviations, symbols, etc. here. General notes are designated by the word Note (italicized) followed by a period.

- ✓ *Note.* CI: confidence interval; Con: control group; CE: carbohydrate-electrolyte group.

Specific notes explain, qualify or provide information about a particular column, row, or individual entry. To indicate specific notes, use superscript lowercase letters (e.g. [a, b, c]), and order the superscripts from left to right, top to bottom. Each table's first footnote must be the superscript [a].

- ✓ [a]One participant was diagnosed with heat illness and n = 19.[b]n =20.

Probability notes provide the reader with the results of the texts for statistical significance. Probability notes must be indicated with consecutive use of the following symbols: * † ‡ § ¶ || etc.

- ✓ *P<0.05,†p<0.01.

2.5.4. Table citation

In the text, tables should be cited as full words. *See* example:

- ✓ Table 1 (first letter in all capitals and no full stop)
- ✓ ...as shown in Tables 1 and 3. (citing more tables at once)
- ✓ ...result has shown (Tables 1-3) that... (citing more tables at once)
- ✓ ....in our results (Tables 1, 2 and 5)... (citing more tables at once)

2.6. Figures

On the last separate page of the main manuscript file, authors should place the legends of all the figures submitted separately.

All graphic materials should be of sufficient quality for print with a minimum resolution of 600 dpi. MJSSM prefers TIFF, EPS and PNG formats.

If a figure has been published previously, acknowledge the original source and submit a written permission from the copyright holder to reproduce the material. Permission is required irrespective of authorship or publisher except for documents in the public domain. If photographs of people are used, either the subjects must not be identifiable or their pictures must be accompanied by written permission to use the photograph whenever possible permission for publication should be obtained.
Figures and figure legends should be completely intelligible without reference to the text.

The price of printing in color is 50 EUR per page as printed in an issue of MJSSM.

2.6.1. Figure legends

Figures should not contain footnotes. All information, including explanations of abbreviations must be present in figure legends. Figure legends should be written bellow the figure, in sentence case. *See* example:

- ✓ **Figure 1.** Changes in accuracy of instep football kick measured before and after fatigued. SR – resting state, SF – state of fatigue, *p>0.01, †p>0.05.

2.6.2. Figure citation

All graphic materials should be referred to as Figures in the text. Figures are cited in the text as full words. *See* example:

- ✓ Figure 1
- × figure 1
- × Figure 1.
- ✓ ….exhibit greater variance than the year before (Figure 2). Therefore…
- ✓ ….as shown in Figures 1 and 3. (citing more figures at once)
- ✓ ….result has shown (Figures 1-3) that... (citing more figures at once)
- ✓ ….in our results (Figures 1, 2 and 5)... (citing more figures at once)

2.6.3. Sub-figures

If there is a figure divided in several sub-figures, each sub-figure should be marked with a small letter, starting with a, b, c etc. The letter should be marked for each subfigure in a logical and consistent way. *See* example:

- ✓ Figure 1a
- ✓ …in Figures 1a and b we can…
- ✓ …data represent (Figures 1a-d)…

2.7. Scientific Terminology

All units of measures should conform to the International System of Units (SI).

Measurements of length, height, weight, and volume should be reported in metric units (meter, kilogram, or liter) or their decimal multiples.

Decimal places in English language are separated with a full stop and not with a comma. Thousands are separated with a comma.

Percentage	Degrees	All other units of measure	Ratios	Decimal numbers
✓ 10%	✓ 10º	✓ 10 kg	✓ 12:2	✓ 0.056
× 10 %	× 10 º	× 10kg	× 12 : 2	× .056

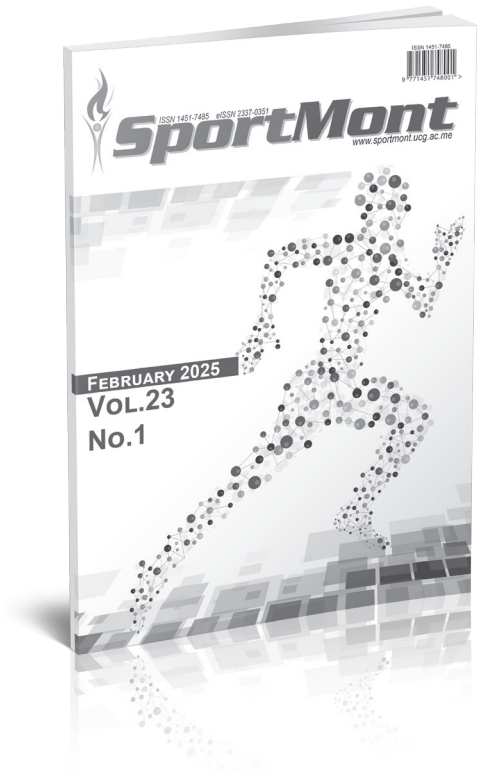
Signs should be placed immediately preceding the relevant number.		
✓ 45±3.4	✓ p<0.01	✓ males >30 years of age
× 45 ± 3.4	× p < 0.01	× males > 30 years of age

2.8. Latin Names

Latin names of species, families etc. should be written in italics (even in titles). If you mention Latin names in your abstract they should be written in non-italic since the rest of the text in abstract is in italic. The first time the name of a species appears in the text both genus and species must be present; later on in the text it is possible to use genus abbreviations. *See* example:

- ✓ First time appearing: *musculus biceps brachii*
- ✓ Abbreviated: *m. biceps brachii*

ISSN 1451-7485 eISSN 2337-0351
SportMont
www.sportmont.ucg.ac.me



ISSN 1451-7485

Sport Mont Journal (SMJ) is a print (ISSN 1451-7485) and electronic scientific journal (eISSN 2337-0351) aims to present easy access to the scientific knowledge for sport-conscious individuals using contemporary methods. The purpose is to minimize the problems like the delays in publishing process of the articles or to acquire previous issues by drawing advantage from electronic medium. Hence, it provides:

- Open-access and freely accessible online;
- Fast publication time;
- Peer review by expert, practicing researchers;
- Post-publication tools to indicate quality and impact;
- Community-based dialogue on articles;
- Worldwide media coverage.

SMJ is published three times a year, in February, June and October of each year. SMJ publishes original scientific papers, review papers, editorials, short reports, peer review - fair review, as well as invited papers and award papers in the fields of Sports Science and Medicine, as well as it can function as an open discussion forum on significant issues of current interest.

SMJ covers all aspects of sports science and medicine; all clinical aspects of exercise, health, and sport; exercise physiology and biophysical investigation of sports performance; sport biomechanics; sports nutrition; rehabilitation, physiotherapy; sports psychology; sport pedagogy, sport history, sport philosophy, sport sociology, sport management; and all aspects of scientific support of the sports coaches from the natural, social and humanistic side.

Prospective authors should submit manuscripts for consideration in Microsoft Word-compatible format. For more complete descriptions and submission instructions, please access the Guidelines for Authors pages at the SMJ website: http://www.sportmont.ucg.ac.me/?sekcija=page&p=51. Contributors are urged to read SMJ's guidelines for the authors carefully before submitting manuscripts. Manuscripts submissions should be sent in electronic format to sportmont@ucg.ac.me or contact following Editors:

Dusko BJELICA, *Editor-in Chief – sportmont@t-com.me*
Zoran MILOSEVIC, *Editor-in Chief – zoranais@eunet.rs*
Borko KATANIC, *Managing Editor – borkokatanic@gmail.com*
Nedim COVIC, *Managing Editor – nedimcovic@gmail.com*

Publication date: Summer issue – June 2025
Autumn issue – October 2025
Winter issue – February 2026

MONTENEGRIN SPORTS ACADEMY

Founded in 2003 in Podgorica (Montenegro), the Montenegrin Sports Academy (MSA) is a sports scientific society dedicated to the collection, generation and dissemination of scientific knowledge at the Montenegrin level and beyond.

The Montenegrin Sports Academy (MSA) is the leading association of sports scientists at the Montenegrin level, which maintains extensive co-operation with the corresponding associations from abroad. The purpose of the MSA is the promotion of science and research, with special attention to sports science across Montenegro and beyond. Its topics include motivation, attitudes, values and responses, adaptation, performance and health aspects of people engaged in physical activity and the relation of physical activity and lifestyle to health, prevention and aging. These topics are investigated on an interdisciplinary basis and they bring together scientists from all areas of sports science, such as adapted physical activity, biochemistry, biomechanics, chronic disease and exercise, coaching and performance, doping, education, engineering and technology, environmental physiology, ethics, exercise and health, exercise, lifestyle and fitness, gender in sports, growth and development, human performance and aging, management and sports law, molecular biology and genetics, motor control and learning, muscle mechanics and neuromuscular control, muscle metabolism and hemodynamics, nutrition and exercise, overtraining, physiology, physiotherapy, rehabilitation, sports history, sports medicine, sports pedagogy, sports philosophy, sports psychology, sports sociology, training and testing.

The MSA is a non-profit organization. It supports Montenegrin institutions, such as the Ministry of Education and Sports, the Ministry of Science and the Montenegrin Olympic Committee, by offering scientific advice and assistance for carrying out coordinated national and European research projects defined by these bodies. In addition, the MSA serves as the most important Montenegrin and regional network of sports scientists from all relevant subdisciplines.

The main scientific event organized by the Montenegrin Sports Academy (MSA) is the annual conference held in the first week of April.

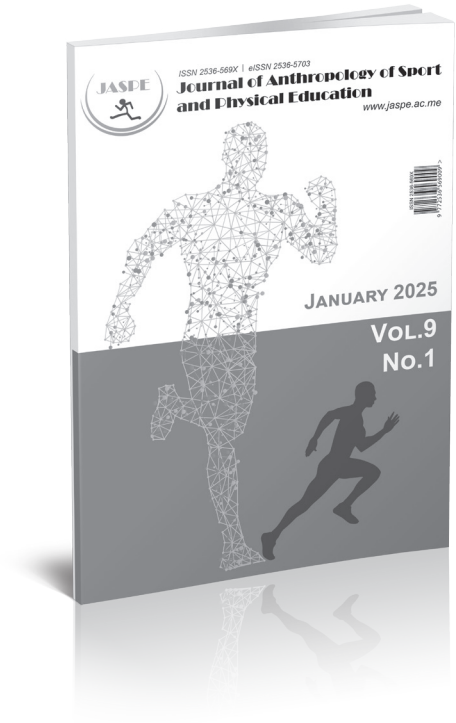
Annual conferences have been organized since the inauguration of the MSA in 2003. Today the MSA conference ranks among the leading sports scientific congresses in the Western Balkans. The conference comprises a range of invited lecturers, oral and poster presentations from multi- and mono-disciplinary areas, as well as various types of workshops. The MSA conference is attended by national, regional and international sports scientists with academic careers. The MSA conference now welcomes up to 200 participants from all over the world.

It is our great pleasure to announce the upcoming 22th Annual Scientific Conference of Montenegrin Sports Academy “Sport, Physical Activity and Health: Contemporary Perspectives” to be held in Dubrovnik, Croatia, from 3 to 6 April, 2025. It is planned to be once again organized by the Montenegrin Sports Academy, in cooperation with the Faculty of Sport and Physical Education, University of Montenegro and other international partner institutions (specified in the partner section).

The conference is focused on very current topics from all areas of sports science and sports medicine including physiology and sports medicine, social sciences and humanities, biomechanics and neuromuscular (see Abstract Submission page for more information).

We do believe that the topics offered to our conference participants will serve as a useful forum for the presentation of the latest research, as well as both for the theoretical and applied insight into the field of sports science and sports medicine disciplines.

Journal of Anthropology of Sport and Physical Education



ISSN 2536-569X

Journal of Anthropology of Sport and Physical Education (JASPE) is a print (ISSN 2536-569X) and electronic scientific journal (eISSN 2536-5703) aims to present easy access to the scientific knowledge for sport-conscious individuals using contemporary methods. The purpose is to minimize the problems like the delays in publishing process of the articles or to acquire previous issues by drawing advantage from electronic medium. Hence, it provides:

- Open-access and freely accessible online;
- Fast publication time;
- Peer review by expert, practicing researchers;
- Post-publication tools to indicate quality and impact;
- Community-based dialogue on articles;
- Worldwide media coverage.

JASPE is published four times a year, in January, April, July and October of each year. JASPE publishes original scientific papers, review papers, editorials, short reports, peer review - fair review, as well as invited papers and award papers in the fields of Anthropology of Sport and Physical Education, as well as it can function as an open discussion forum on significant issues of current interest.

JASPE covers all aspects of anthropology of sport and physical education from five major fields of anthropology: cultural, global, biological, linguistic and medical.

Prospective authors should submit manuscripts for consideration in Microsoft Word-compatible format. For more complete descriptions and submission instructions, please access the Guidelines for Authors pages at the JASPE website: http://www.jaspe.ac.me/?sekcija=page&p=51. Contributors are urged to read JASPE's guidelines for the authors carefully before submitting manuscripts. Manuscripts submissions should be sent in electronic format to jaspe@ucg.ac.me or contact JASPE's Editor:

Fidanka VASILEVA, *Editor-in Chief – vasileva.jaspe@gmail.com*

Publication date: Spring issue – April 2025
Summer issue – July 2025
Autumn issue – October 2025
Winter issue – January 2026

USEFUL CONTACTS

Editorial enquiries and journal proposals:
Dusko Bjelica
Damir Sekulic
Editors-in-Chief
Email: **damirsekulic.mjssm@gmail.com**

Selcuk Akpinar
Executive Editor
Email: **office@mjssm.me**

Marketing enquiries:
Fidanka Vasileva
Marketing Manager
Email: **damirsekulic.mjssm@gmail.com**

Sports Science and Medicine Journals

from Montenegrin Sports Academy

We have expanded the quality of our journals considerably over the past years and can now claim to be the market leader in terms of breadth of coverage.

As we continue to increase the quality of our publications across the field, we hope that you will continue to regard MSA journals as authoritative and stimulating sources for your research. We would be delighted to receive your comments and suggestions, mostly due to the reason your proposals are always welcome.

Look Inside!

Sport Mont Journal

Editors-in-Chief: **Dusko Bjelica**, Montenegro; **Zoran Milosevic**, Serbia
Managing Editor: **Borko Katanic**, Montenegro; **Nedim Covic**, Bosnia and Herzegovina

Volume 23, 2025, 3 issues per year; Print ISSN: 1451-7485, Online ISSN: 2337-0351

Sport Mont Journal is a scientific journal that provides: Open-access and freely accessible online; Fast publication time; Peer review by expert, practicing researchers; Post-publication tools to indicate quality and impact; Community-based dialogue on articles; Worldwide media coverage. SMJ is published three times a year, in February, June and October of each year. SMJ publishes original scientific papers, review papers, editorials, short reports, peer review - fair review, as well as invited papers and award papers in the fields of Sports Science and Medicine, as well as it can function as an open discussion forum on significant issues of current interest.

www.sportmont.ucg.ac.me

Montenegrin Journal of Sports Science and Medicine

Editors-in-Chief: **Dusko Bjelica**, Montenegro; **Damir Sekulic**, Croatia
Executive Editor: **Selcuk Akpinar**, Turkey
Associate Editors: **Mehmet Uygur**, USA; **Catalina Casaru**, USA; and **Predrag Bozic**, Serbia

Volume 14, 2025, 2 issues per year; Print ISSN: 1800-8755, Online ISSN: 1800-8763

Montenegrin Journal of Sports Science and Medicine (MJSSM) is published biannually, in September and March of each year. MJSSM publishes original scientific papers, review papers, editorials, short reports, peer review - fair review, as well as invited papers and award papers in the fields of Sports Science and Medicine, as well as it can function as an open discussion forum on significant issues of current interest. MJSSM covers all aspects of sports science and medicine; all clinical aspects of exercise, health, and sport; exercise physiology and biophysical investigation of sports performance; sport biomechanics; sports nutrition; rehabilitation, physiotherapy; sports psychology; sport pedagogy, sport history, sport philosophy, sport sociology, sport management; and all aspects of scientific support of the sports coaches from the natural, social and humanistic side.

www.mjssm.me

CRNOGORSKI OLIMPIJSKI KOMITET
MONTENEGRIN OLYMPIC COMMITTEE

CIP – Каталогизација у публикацији
Централна народна библиотека Црне Горе, Цетиње

796:61 (497.16)

MONTENEGRIN journal of sport science and medicine / urednik Duško Bjelica. – Vol. 1, no. 1 (2012) - . – Podgorica (Džordža Vašingtona 445) : Crnogorska sportska akademija, 2013 (Nikšić : Art grafika). – 30 cm

Polugodišnje.
ISSN 1800-8755 = Montenegrin journal of sports science and medicine (Podgorica)
COBISS.CG-ID 17824272

MSA Conference 2025

22th Annual Scientific Conference of Montenegrin Sports Academy "Sport, Physical Activity and Health: Contemporary perspectives"

http://www.csakademija.me/conference/

CRNOGORSKA SPORTSKA AKADEMIJA • MONTENEGRIN SPORTS ACADEMY •

03th - 06th April 2025,
Dubrovnik - Croatia