7th World Congress

Quality of Life

in Interdisciplinary Approach

BOOK OF ABSTRACTS

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21–23 OCTOBER 2026

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Book of Abstracts

These are the original abstracts submitted to 7th World Scientific Congress “Quality of Life in Interdisciplinary Approach”, Kochcice, Poland, October 21 – 23, 2026

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7th WORLD SCIENTIFIC CONGRESS

QUALITY OF LIFE IN INTERDISCIPLINARY APPROACH

21–23 OCTOBER 2026 • KOCHCICE, POLAND

Dear Colleagues and Friends,

We are delighted to welcome you to Kochcice, near Częstochowa, for the **7th World Scientific Congress "Quality of Life in Interdisciplinary Approach"**, taking place in Poland from **October 21–23, 2026**.

This year's Congress demonstrates that, despite global challenges, we can successfully bring together diverse academic communities and research perspectives.

We are honored to bring together researchers whose **submitted abstracts represent 7 countries — Poland, Slovakia, the Czech Republic, Ukraine, United Kingdom, Denmark, and Italy — and 19 academic, research, and healthcare institutions.**

This Congress provides a unique platform for interdisciplinary dialogue, knowledge exchange, and collaboration. As organizers, we hope it will inspire meaningful discussions and foster lasting research partnerships.

We wish you every success in your presentations and an enriching experience throughout the Congress.

With warm regards,

Organizing and Scientific Committee

Prof. Dr hab. Jacek Wąsik
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7th WORLD SCIENTIFIC CONGRESS

QUALITY OF LIFE IN INTERDISCIPLINARY APPROACH

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Programme

21 October 2026, Wednesday	
From 14.00	Arrival, accommodation - Strzelnica Family Resort & SPA, ul. Lubliniecka 9, Kochcice, 42-713 Kochanowice, Poland
15.30	***Opening ceremony - Gold Banquet Room***
15.35 – 16.15	**Opening Ceremony and Invited Lectures** **1) Wojciech M. Glinkowski** "Patient-Reported Outcomes in the Digital Age: PROMIS, Telemedicine, and Quality of Life in Musculoskeletal Care" **Moderators:** *Michalina Błażkiewicz and Jacek Wąsik*
16.15 – 16.30	***Coffe break***
16.30 – 17.15	**– Gold Banquet Room –** **Interdisciplinary Perspectives on Sport, Health, Biomechanics and Quality of Life** **Moderators:** *Michalina Błażkiewicz and Jacek Wąsik*
	1) Miroslav Bendík, Robert Rozim, Elena Bendíková "Archery within the framework of an active school and the promotion of student health" 2) Jakub Kacprzak, Dariusz Mosler, Jacek Wąsik "Effective mass transfer and biomechanical reconfiguration across punching techniques in orthodox and southpaw boxing stances" 3) Paulina Przepióra, Jacek Wąsik, Michalina Błażkiewicz "Comparison of postural stability parameters between participants after a basic scuba diving course and non-swimmers" 4) Dominik Jurasiński, Tadeusz Ambroży "Sports policy of the Democratic People's Republic of Korea and the development of taekwon-do as an element of physical culture and quality of life"
17.15 – 19.00	***Social program***
19.00 – 20.30	***Dinner***

22 October 2026, Thursday	
7.30 – 9.00	***Breakfast***
9.15 – 10.30	**– Gold Banquet Room –** **Invited Lectures** **1) Roozbeh Naemi** "Biomechanics and Emerging Technologies in Diabetic Foot Care" **2) Joanna Korczyńska** "Psychological Consequences of Imprisonment: Can We Mitigate Them?" **Moderators:** *Štefan Balkó and Dariusz Mosler*
10.30 – 11.00	Joint photo
11.00 – 12.00	**– Gold Banquet Room –** **Instrumented Assessment and Biomechanical Analysis of Human Movement** **Moderators:** *Ingrid Ružbarská and Grzegorz Sobota*
	1) Sławomir Winiarski "From functional tests to digital biomarkers: Instrumented assessment of human movement quality using wearable biomechanical technologies" 2) Justyna Satławska "Kinematic changes following a single coaching instruction in the wheelchair fencing lunge" 3) Maciej Skorulski, Jan Gajewski "Low-Intensity Tethered Swimming as a Priming Strategy: Acute Effects on Stroke Kinematics in Young Swimmers" 4) Kamil Radecki, Dariusz Mosler "Validation of author-developed modifications to balance tests by comparing force plate and Noraxon Ultium accelerometer data"
12.00 – 12.15	***Coffe break***
12.15 – 13.15	**– Gold Banquet Room –** **Physical Activity, Sport, Health, and Scientific Development (PL)** **Moderators:** *Eligiusz Małolepszy, Ryszard Asienkiewicz*
	1) Adrianna Kosior-Lara, Jacek Wąsik, Małgorzata Kuchta, Dorota Ortenburger "Physical activity and depressive symptoms in adult women: A cross-sectional study on the mediating role of perceived stress" 2) Tomasz Góra, Jacek Wąsik "Biomechanical determinants of maximum resultant impact force during the ITF Taekwon-do reverse turning kick"

	3) Mariusz Kuberski, Jacek Wąsik "The impact of lifeguard training on the effectiveness of towing a mannequin using various techniques" 4) Amadeusz Bryła "From collaboration to development: A practical approach to gold open access" Paradigm
13.30 – 14.30	***Lunch***
14.45 – 15.30	**– Gold Banquet Room –** **Invited Lecture** **Nachiappan Chockalingam** "The Growing Spine, the Moving Child: Rethinking Meaningful Outcomes in Adolescent Idiopathic Scoliosis" **Moderators:** *Jan Gajewski and Jaromír Šimonek*
15.45 – 16.45	**– Conference Room –** **Biomechanics, Physical Performance, and Technology in Sport and Rehabilitation (PL)** Moderators: *Justyna Krzepota and Svitlana Indyka*
	1) Mariusz Kuberski, Karolina Gabarska, Jacek Wąsik "Does greater lower-limb power mean greater effectiveness for a lifeguard An analysis of the relationship between CMJ and functional performance in an aquatic environment" 2) Tomasz Góra, Jacek Wąsik, Michalina Błażkiewicz "Biomechanical factors associated with effective mass during the ITF Taekwon-do side kick" 3) Karolina Radecka, Błażej Cieślik "The use of virtual reality in cardiac rehabilitation: a randomized controlled trial" 4) Przemysław Stalka, Tomasz Rutkowski, Błażej Cieślik "Association of smartphone screen time with neck pain, disability, cra-niovertebral posture, and cervical mobility in adolescents"
16.45 – 18.00	**– Multimedia Room –** **Posters Session** **Moderators:** *Anatolii Tsos and Ladislav Bláha*
	1) Jaromír Šimonek, Pavol Horička, Ľubomír Paška, Bianka Bodnárová *"The relationship between intelligence, cognitive performance, and reactive agility in adolescents"*

	2) Ryszard Asienkiewicz, Damian Worchacz *"Directions of changes in body composition among the population of boys and girls in Zielona Góra in the years 2002-2018"* 3) Ryszard Asienkiewicz, Damian Worchacz *"Variability of the BMI index of the population of boys and girls in Zielona Góra"* 4) Eligiusz Małolepszy, Krzysztof Kościański, Teresa Drozdek-Małolepsza *"Activities of the Lwów district football association (1928–1934): Football in a multiethnic society "* 5) Liudmyla Vashchuk, Olena Demianchuk *"Interdisciplinary frameworks for assessing and enhancing psychological resilience and quality of life in high-stress environments"* 6) Teresa Drozdek-Małolepsza, Eligiusz Małolepszy *"Women's Sport in Poland as Reflected in the Lwów Periodical Sport, 1932–1933"* 7) Svitlana Indyka, Natalia Bielikova, Anatolii Tsos *"Physical activity patterns and gender differences among university academic staff in Ukraine"* 8) Ingrid Ružbarská, Tamara Novotná *"Psychometric evaluation of the MOBAK - test battery among Slovak primary school children: A confirmatory factor analysis"* 9) Miłosz Czuba, Kamila Płoszczyca, Adam Niemaszyk, Natalia Grzebisz-Zatońska, Małgorzata Chalimoniuk, Józef Langfort, Katarzyna Kaczmarczyk, Robert Gajda *"NT-proBNP after exhaustive exercise is lower under moderate normobaric hypoxia"* 10) Martin Nosek, Jiří Nechvátal, Tomáš Dufek *"Health and perceptual effects of heat training in cross-country skiers: does wellness predict the physiological response"* 11) Anna Brachman, Paweł Janik, Michał Pielka, Bogdan Bacik, Grzegorz Sobota *"From perturbation to recovery: Age effects on gait stability following a trip"* 12) Michał Pawłowski, Anna Brachman, Grzegorz Juras *"Unintentional force drift: Trial requirements and age-related differences"* 13) Krzysztof Kościański, Eligiusz Małolepszy, Teresa Drozdek-Małolepsza *"The origins and development of football in secondary schools in multiethnic Eastern Galicia up to 1914"* 14) Agata Horbacz, Ferdinand Salonna, Zuzana Küchelová *"Association between adherence to the mediterranean diet and quality of life among university of the third age graduates"* 15) Štefan Balkó, Šimon Fridrich, David Cihlář, Iva Balkó *"Reaction time in the context of age"* 16) Ladislav Bláha, Josef Heidler, Jaroslava Jírová *"Selected indicators of movement behaviour in children living in socially excluded localities"* 17) Julius Evelley, Peter Polan, Martin Vicen, Alena Bukova, Iveta Nagyova *"Responsiveness of pain catastrophizing in patients with osteoarthritis undergoing total knee and hip arthroplasty"*

	18) Dávid Kaško, Alena Buková, Ferdinand Salonna, Zuzana Küchelová, Patrik Berta, Petra Melicharová *"Baseline level and changes in endurance performance among upjš female students with different training frequencies"* 19) Alena Buková, Ferdinand Salonna, Patrik Berta, Petra Melicharová, Dávid Kaško, Zuzana Küchelová, Vlasta Demečková, Mária Ryníková *"Mediterranean diet adherence in female university students in Slovakia"* 20) Students' Scientific Association Activity-Culture-Health, Tomasz Gora, Dorota Ortenburger *"Exploring by students understanding of physical activity,sport, health – continuation"* 21) Paweł Kożuch, Katarzyna Sztafa-Cabała, Grzegorz Mikulski "*Occupational differences in skeletal muscularity and adiposity profiles among production workers, administrative employees, and teachers"* 22) Jolanta Pilarczyk, Dorota Sadowska, Justyna Krzepota *"A multidimensional analysis of health behaviours and quality of life among women in military service"* 23) Adrianna Kosior-Lara, Małgorzata Glin, Wioletta Skowron-Zięba *"Physical activity in the prevention of musculoskeletal disorders in people over 60"* 24) Brajan Załęcki, Michalina Błażkiewicz *"Sleep quality, perceived stress, and dynamic balance in physical education students"* 25) Sylwia Bęcławska, Nachiappan Chockalingam, Michalina Błażkiewicz *"Plantar pressure redistribution, gait progression and visual dependency following diabetic foot ulcer healing"* *26)* Tomasz Góra, Dorota Ortenburger, Jacek Wąsik, Jakub Kacprzak "*Student Scientific Club 'Activity-Culture-Health'- activities and prospects*" 27) Ewa Świndryk, Aleksandra Pięta, Katarzyna Świtała, Aniela Frączek, Ewa Karpęcka-Gałka "*Dietary Preferences and Adherence to Dietary Recommendations in Physically Active Individuals"*
18.00 – 18.30	**– Conference Room –** **Invited Lecture** **Marcin Kapczyński** "Advancing Impact in Sport Science Through Interdisciplinary Research, Collaboration and Strategic Publishing" Clarivate™ **Moderators:** *Michalina Błażkiewicz and Jacek Wąsik*
19.00 –2.00	***Gala Dinner** – Gold Banquet Room*

23 October 2026, Friday	
8.00 – 10.00	***Breakfast***
10.00 – 10.30	***Closing ceremony – Gold Banquet Room***

KEY LECTURES

7th World Scientific Congress

"Quality of Life in Interdisciplinary Approach"

21–23 October 2026

Kochcice, Poland

Selected keynote lectures by invited experts

Interdisciplinary research • innovation • health • wellbeing • quality of life

Assoc. Prof. Wojciech M. Glinkowski

Medical University of Warsaw, Poland

KEY LECTURE

Patient-Reported Outcomes in the Digital Age: PROMIS, Telemedicine, and Quality of Life in Musculoskeletal Care

KEYNOTE SPEAKERS

Associate Professor Wojciech M. Glinkowski, MD, PhD, DSc, MBA. Clinician, orthopedic, trauma, and spine surgeon, and specialist in sports medicine. Researcher at the Medical University of Warsaw. His interdisciplinary work connects musculoskeletal medicine, patient-reported outcome measurement, telemedicine, telerehabilitation, clinical informatics, and the responsible use of artificial intelligence in healthcare.

He serves as Poland's representative in the PROMIS National Centers network of the PROMIS Health Organization and contributes to the translation, cross-cultural adaptation, validation, and harmonized implementation of PROMIS measures. His research focuses on transforming patients' reports of pain, physical function, mental health, social participation, and quality of life into standardized, comparable, and clinically actionable information.

With more than three decades of academic, clinical, and research experience, he promotes integrating PROMs into routine practice, remote and hybrid care, longitudinal outcome monitoring, shared decision-making, and value-based healthcare. His keynote will examine how PROMIS can move outcome assessment beyond isolated questionnaires toward interoperable digital measurement systems centered on what matters to patients.

Patient-Reported Outcomes in the Digital Age: PROMIS, Telemedicine, and Quality of Life in Musculoskeletal Care

Wojciech M. Glinkowski

Department of Medical Informatics and Telemedicine, Medical University of Warsaw, Warsaw, Poland

Abstract

Quality of life in musculoskeletal disorders is shaped not only by pain and structural pathology, but also by physical function, psychological well-being, social participation, independence, and the ability to perform meaningful daily activities. Patient-reported outcome measures (PROMs) are therefore increasingly important for evaluating treatment effectiveness, healthcare value, and outcomes that matter to patients across orthopedics, rehabilitation, trauma care, and chronic musculoskeletal disease.

Traditional joint- and disease-specific PROMs remain clinically valuable, but their fragmentation, administrative burden, and limited comparability constrain their use across conditions and healthcare settings. The Patient-Reported Outcomes Measurement Information System (PROMIS) addresses these limitations through calibrated item banks, item response theory, computer-adaptive testing, and standardized T-scores, enabling multidimensional assessment within a common measurement framework.

Evidence from peer-reviewed musculoskeletal studies involving more than 100,000 patients indicates that PROMIS domains demonstrate strong measurement performance relative to established instruments while reducing response burden. Physical function and pain interference are the most frequently assessed domains; measures of anxiety, depression, fatigue, sleep disturbance, and ability to participate in social roles add information about recovery and well-being that is often underrepresented in conventional orthopedic outcome assessment.

PROMIS is increasingly integrated with electronic health records, telemedicine platforms, clinical registries, and remote monitoring systems. Such integration can support interoperable data collection, longitudinal outcome tracking, and prognostic assessment across in-person, remote, and hybrid models of care. However, improved measurement should not be equated with proven improvement in treatment outcomes: evidence establishing a direct causal effect of PROMIS implementation on clinical decisions or patient outcomes remains limited.

The principal contribution of PROMIS is therefore not the automatic replacement of established instruments, but the transformation of the patient perspective into standardized, comparable, and potentially actionable digital information. This keynote will discuss how PROMIS can broaden health-related quality-of-life assessment and support scalable, patient-centered musculoskeletal care in the digital age.

Keywords: patient-reported outcome measures; PROMIS; health-related quality of life; musculoskeletal disorders; telemedicine; digital health

Prof. Roozbeh Naemi

University of Salford, United Kingdom

KEY LECTURE

Biomechanics and Emerging Technologies in Diabetic Foot Care

KEYNOTE SPEAKERS

Professor Roozbeh Naemi, BSc MSc PhD SFHEA CEng MIMechE CSci MIPEM MSCF is Professor of Rehabilitation and Assistive Technology at the University of Salford and a Chartered Engineer and Scientist with interdisciplinary expertise spanning biomechanics, mechanical, and biomedical engineering.

His research focuses on predicting and mitigating foot trauma - particularly diabetic foot ulceration - through biomechanics, tissue assessment, and innovative orthotic and footwear technologies.

He has authored over 100 publications across areas including ultrasound imaging, computational modelling, microcirculatory perfusion, and thermal imaging of the foot.

Biomechanics and Emerging Technologies in Diabetic Foot Care

Roozbeh Naemi

Faculty of Community, Heal and Life Sciences, University of Salford, Manchester, UK

Abstract

Diabetic foot ulceration remains one of the most debilitating and costly complications of diabetes, profoundly affecting mobility, independence, and quality of life. Despite advances in clinical management, current assessments provide limited insight into how an individual foot responds to repetitive mechanical loading and the risk of tissue damage.

Diabetes alter the biomechanical behaviour of plantar soft tissues, compromising their ability to deform, distribute load, and recover during unloading. Also in diabetic peripheral neuropathy diminishes protective sensation and allows repetitive and excessive plantar loading to go unnoticed. Together, these factors can promote the accumulation of tissue damage and contribute to ulceration.

This keynote will examine how emerging technologies, including ultrasound elastography, thermal imaging, wearable sensing, and computational modelling could identify tissue vulnerability before tissue damage occurs. It will explore the complex interactions among external loading, internal tissue deformation, and diabetes-related changes in plantar soft-tissue properties. The lecture will also consider how advanced footwear and orthotic interventions can reduce mechanical trauma and support personalised prevention.

The case is made to go beyond measuring plantar pressure alone and considering an equally important aspect of whether the tissues exposed to that pressure have the capacity to tolerate repeated loading without sustaining damage. By integrating tissue assessment with biomechanics and emerging technologies the tissue vulnerability and risk of damage can be assessed before ulcer happens. This approach could enable earlier and more personalised interventions within routine, real-world clinical practice settings to reduce the risk of ulceration. These would preserve mobility, independence, and can enhance the quality of life for people living with diabetes.

Keywords: diabetic foot; foot ulcer; plantar tissue; biomechanics; peripheral neuropathy; repetitive mechanical loading; ultrasound elastography

Prof. Nachiappan Chockalingam

United Kingdom • Malta • India

KEY LECTURE

The Growing Spine, the Moving Child: Rethinking Meaningful Outcomes in Adolescent Idiopathic Scoliosis

KEYNOTE SPEAKERS

Professor Nachiappan Chockalingam is Director of Research and Innovation at Reading Central Primary Care Network, UK, and an internationally recognised researcher in clinical biomechanics, rehabilitation, assistive technology and innovation. A Chartered Engineer, Chartered Scientist and HCPC registered Clinical Scientist, his work integrates engineering, allied health and clinical practice to develop and evaluate technologies, interventions and service models that improve mobility, independence and quality of life. His research spans diabetic foot prevention, orthotic and prosthetic design, gait and movement analysis, footwear science, scoliosis, rehabilitation, telehealth and assistive technology. He has produced around 880 scholarly outputs, including more than 320 peer reviewed papers and four books. His translational work has informed product development, clinical and rehabilitation practice, orthotic service provision, workforce planning, telehealth guidance and assistive technology policy in the United Kingdom and internationally. Professor Chockalingam has contributed extensively to World Health Organisation initiatives on assistive technology, including the UK Rapid Assistive Technology Assessment and international standards for prosthetic and orthotic service provision. His professional standing is reflected in several prestigious fellowships. He is a Fellow of the International Society of Biomechanics. He is also a Fellow of the Institute of Physics and Engineering in Medicine, a Principal Fellow of the Higher Education Academy, an Honorary Fellow of the Royal College of Podiatry, and an Honorary Fellow of the Royal College of Physicians and Surgeons of Glasgow. He holds visiting and honorary academic appointments in the United Kingdom, Malta, India, China and Poland. He was President of the International Research Society on Spinal Deformities and also the Chair of the Footwear Biomechanics Group of the International Society of Biomechanics.

The Growing Spine, the Moving Child: Rethinking Meaningful Outcomes in Adolescent Idiopathic Scoliosis

Nachiappan Chockalingam

Staffordshire University, Stoke-on-Trent, Stoke-on-Trent, UK

Abstract

Adolescent idiopathic scoliosis is commonly assessed through structural measures such as Cobb angle, but these measures do not fully describe how a young person moves, functions, adapts, or experiences their condition. This keynote explores the need for a broader approach to meaningful outcomes in adolescent idiopathic scoliosis, bringing together spinal structure, movement analysis, functional performance, patient experience, and quality of life. Drawing on research in AIS biomechanics, gait and movement analysis, and paediatric orthotic management, the talk considers how clinicians and researchers can develop a more complete picture of change over time. The central message is simple: if we want to understand the growing spine, we must also understand the moving child.

Keywords: adolescent idiopathic scoliosis; biomechanics; movement analysis; gait analysis; functional performance; patient-reported outcomes; quality of life; paediatric orthotic management

Marcin Kapczyński

Strategic Customer Success Consultant • Academia & Government

KEY LECTURE

Advancing Impact in Sport Science Through Interdisciplinary Research, Collaboration and Strategic Publishing

KEYNOTE SPEAKERS

Marcin Kapczynski is a Strategic Customer Success Manager at Clarivate specialising in research analytics, bibliometrics, and data-driven solutions for academic institutions. Holding a degree in Psychology from Cardinal Stefan Wyszyński University in Warsaw.

Since 2010, he has worked with universities, research organisations, and policymakers across Europe to support research strategy, evaluation, collaboration, and performance improvement. Marcin regularly advises institutions on research assessment, benchmarking, and the strategic use of data and AI to increase research impact and visibility.

Advancing Impact in Sport Science Through Interdisciplinary Research, Collaboration and Strategic Publishing

Marcin Kapczyński

Strategic Customer Success Consultant at Clarivate | Solution Consultant at Clarivate Analytics | Strategic Business Manager at Thomson Reuters

Abstract

The growing complexity of challenges in sport science requires researchers to move beyond disciplinary boundaries and embrace collaborative approaches that enhance both scientific excellence and societal impact. This presentation explores how interdisciplinary research, national and international partnerships, and strategic publishing can increase the visibility, influence, and real-world application of sport science research.

The session will discuss emerging trends in research evaluation, collaboration networks, and scholarly communication, highlighting practical strategies for identifying impactful research opportunities, selecting appropriate publication venues, and strengthening research influence through evidence-based dissemination. By integrating collaboration, innovation, and strategic publishing practices, researchers can maximize the reach and impact of their work while contributing to advancements in sport, health, and society.

Keywords: sport science; interdisciplinary research; research collaboration; international partnerships; strategic publishing; research impact

Joanna Korczyńska

Katowice Business University• Penitentiary Institution in Wojkowice, Poland

KEY LECTURE

Psychological Consequences of Imprisonment: Can We Mitigate Them?

KEYNOTE SPEAKERS

Lt. Col. Dr Joanna Korczyńska - psychologist, psychotherapist, and Assistant Professor in the Department of Psychology at Katowice Business University, as well as Deputy Director of Wojkowice Prison. Within the penitentiary institution, she is responsible for the implementation of correctional and therapeutic interventions and oversees the external branch in Ciągowice.

She collaborates with numerous academic institutions, initiating research projects that bridge scientific knowledge and penitentiary practice. These initiatives have resulted, among other things, in the development and implementation of social reintegration programmes for people deprived of their liberty, including programmes promoting physical activity.

Her research interests focus on the relationship between individual differences and psychological functioning under conditions of imprisonment. She is the author and co-author of scientific and popular science publications in the fields of correctional psychology, social reintegration, and therapeutic programmes.

Psychological Consequences of Imprisonment: Can We Mitigate Them?

Joanna Korczyńska

Katowice Business University • Penitentiary Institution in Wojkowice, Poland

Abstract

Imprisonment entails functioning within a highly specific institutional environment characterised by restricted autonomy, limited opportunities for physical and social activity, an authoritarian system of power, and strict, rule-based regulations. Undoubtedly, prison is an environment characterised by limited stimulation, in which monotony and routine prevail. Such restrictions may significantly shape an individual's functioning under conditions of incarceration and contribute to the deprivation of needs across psychosocial, physical, and biological domains, including sensory needs. Consequently, they may adversely affect psychophysical well-being, as documented in the interdisciplinary literature.

The aim of this keynote is to review existing research on the functioning of people deprived of their liberty, with particular emphasis on the psychological dimensions of adaptation to imprisonment. These include time perspective, self-esteem, perceived psychological control over the environment, anxiety, loneliness, and the sense of meaning in life.

Against this background, particular attention will be given to the role of physical activity and sport in the penitentiary environment and their potential to strengthen a sense of agency and self-worth, foster social relationships, and support the psychological well-being of people deprived of their liberty.

This perspective will provide a basis for discussing the potential of physical activity as a component of rehabilitation and social reintegration interventions, as well as its role in preparing individuals for successful functioning after release from prison.

Keywords: imprisonment; psychological consequences; psychological well-being; social reintegration; correctional rehabilitation; physical activity; sport in prison; individual difference

ABSTRACTS

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Book of Abstracts

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The relationship between intelligence, cognitive performance, and reactive agility in adolescents

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Abstract

Introduction: The interaction between mental and motor skills in sports is not sufficiently proven. The study analyzes the relationships between innate intelligence, cognitive skills (measured by the Stroop test) and reaction agility in a sample of 100 adolescents. The main goal of the research was to determine whether there is a statistically significant dependence between cognitive processes and motor performance, which requires a rapid change of direction in response to an unpredictable stimulus.

Methods: The research group consisted of 100 respondents (high school students) who completed a series of three diagnostic measurements: a test of innate intelligence (T.I.P. Visual test), a Stroop test for measuring the level of cognitive skills and a motor test of reaction agility - Y test. The data obtained were processed using descriptive and inductive statistical methods. Due to the non-normal distribution of the data (verified by the Kolmogorov-Smirnoff test), a non-parametric form of correlation analysis using Spearman's rank correlation coefficient (ρ) was used to determine relationships.

Results: The results showed that there is no statistically significant relationship between reaction agility and intelligence ($\rho=-0.124$; $p=0.221$), nor between reaction agility and cognitive abilities ($\rho=-0.025$; $p=0.806$). On the contrary, a significant relationship was confirmed between the level of innate intelligence and cognitive abilities ($\rho=0.686$; $p<0.001$).

Conclusion: The findings indicate that although mental performance in the area of information processing is closely related to the intellectual abilities of an individual, the motor performance itself in the reaction agility test in adolescents is independent of general intelligence or cognitive control measured by the Stroop test, and is probably determined primarily by specific movement and coordination factors.

Keywords: intelligence; cognitive abilities; reactive agility; adolescence

Directions of changes in body composition among the population of boys and girls in Zielona Góra in the years 2002-2018

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Abstract

Aim of the study: To demonstrate trends in body composition among students aged 7-15.

Material and methods: The study was conducted in the 2017/2018 school year with the consent of parents and the Bioethics Committee among 806 students (including 378 boys and 428 girls) from Zielona Góra aged 7-15. Based on height and weight measurements, BMI was calculated for all age groups, broken down by gender. The obtained BMI values were compared to the recommendations of the International Obesity Task Force (Cole et al. 2000, 2007). Calculations were performed using an Excel spreadsheet and the Statistica statistical package.

Results: Boys' teams from Zielona Góra surveyed in 2018, compared to their peers from medium-sized cities in the Lubusz Voivodeship in 2002, were characterized by higher BMI values at ages 8-15, and lower at ages 7. Statistically significant differences between the arithmetic means were observed at ages 10, 11, 14, and 15. Girls' teams from Zielona Góra surveyed in 2018 were characterized by higher BMI values compared to their peers from 2002 at ages 7-8 and 10-15, and lower at ages 9. Statistically significant differences between the arithmetic means were observed at ages 10-15.

Conclusions: Between 2002 and 2018, both genders saw an increase in the percentage of overweight and obese children.

Keywords: BMI; trends; boys; girls

Variability of the BMI index of the population of boys and girls in Zielona Góra

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Abstract

Aim of the study: To demonstrate the variation in body composition among students aged 7-15.

Material and methods: The study was conducted during the 2017/2018 school year among 806 students (including 378 boys and 428 girls) from Zielona Góra, aged 7-15. Based on height and weight measurements, BMI was calculated for all age groups, broken down by gender. The obtained BMI values were compared to the recommendations of the International Obesity Task Force as developed by Cole et al. (2000, 2007). Calculations were performed using an Excel spreadsheet and the Statistica statistical package.

Results: During the ontogenetic period under study (age 7-18), the average BMI values for both genders increased with each age group. The largest inter-adolescent increases in BMI occur between ages 13 and 14 in boys (d = 1.94), while in girls between ages 12 and 13 (d = 1.44), with statistically significant differences. Based on the coefficient of variation (V), the greatest variation in BMI was observed among 14-year-old boys and 11-year-old girls.

Conclusions: The populations of boys and girls from Zielona Góra during the ontogenetic period under study (age 7-15) demonstrate different growth dynamics. Boys, relative to girls, are characterized by a stockier build at ages 7-10, 12, and 14-15, while they are more slender at ages 11 and 13. BMI dimorphism is most pronounced at ages 9 and 14 (this is the period when girls become more stocky and boys become more slender).

Keywords: boys; girls; body composition; diversity

Effective mass transfer and biomechanical reconfiguration across punching techniques in orthodox and southpaw boxing stances

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Abstract

Background: Effective mass (Me) and force impulse are critical biomechanical determinants of punching performance, reflecting how efficiently an athlete integrates whole-body mass into impact. However, the extent to which fighting stance orientation (orthodox vs. southpaw) modifies mass transfer kinetics across different punching techniques remains insufficiently understood. This study aimed to examine the kinetic differences in effective mass index (%Me), force impulse, fist acceleration, and the novel Impulse-to-Acceleration Ratio across four fundamental boxing techniques (jab, cross, lead hook, rear hook) executed in both orthodox and southpaw stances.

Methods: Thirty trained male boxers (mean age: 27.4 ± 8.8 years; body mass: 84.8 ± 12.9 kg; height: 180.5 ± 6.8 cm; training tenure: 6.1 ± 5.6 years) performed maximal-effort repetitions of each punch in both stances. Kinetic and kinematic parameters were recorded using an AMTI MC12-2K force plate and wireless Noraxon Ultium EMG inertial sensors. Non-parametric statistical analyses (Kruskal–Wallis and Wilcoxon signed-rank with Benjamini–Hochberg correction) and multivariate linear regression were conducted.

Results: Straight punches exhibited significantly higher mass transfer efficiency (%Me 35-45%) and Impulse-to-Acceleration Ratios than rotational hooks (%Me 10-20%), despite hooks generating higher peak force and acceleration ($p < 0.001$). Transitioning to an unnatural southpaw stance induced technique-specific reconfigurations: the lead jab achieved greater peak force ($p = 0.021$) and slightly higher %Me in southpaw, whereas the rear cross ($p < 0.001$) and rear hook ($p < 0.001$) suffered severe declines in force and mass transfer efficiency (%Me dropping from 37% to 25% for the cross). Multivariate regression ($R2 = 0.79$, $p < 0.001$) confirmed absolute %Me ($\beta = 0.98$), fist acceleration ($\beta = 0.72$), and force impulse ($\beta = 0.57$) as primary force drivers, while body fat percentage was the only significant somatic predictor ($\beta = 0.31$, $p = 0.045$).

Conclusions: Stance switching selectively impairs rear-side mass transfer kinetics due to coordination deficits, whereas dominant-hand lead positioning enhances linear jab dynamics. Bilateral stance training should prioritize neuromuscular joint-locking and lower-limb power to optimize mass transfer efficiency.

Keywords: biomechanics; boxing; punch; stance; effective mass transfer

From functional tests to digital biomarkers: Instrumented assessment of human movement quality using wearable biomechanical technologies

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Abstract

Background: Conventional functional tests, including the Timed Up and Go (TUG), Five Times Sit-to-Stand (5xSTS), Tandem Walking Test (TWT), and Functional Reach Test (FRT), are widely used to assess mobility, balance, and functional performance. However, their traditional application relies mainly on task completion time or qualitative clinical observation. Wearable biomechanical technologies enable objective, multidimensional assessment of movement and may transform conventional functional outcomes into candidate digital biomarkers.

Aim: This study aimed to develop an instrumented approach to functional assessment and evaluate the variability of spatiotemporal and kinematic parameters derived from 4 instrumented functional tests as a model of functional task.

Methods: Seventy-three healthy adults (37 women, 36 men; age: 31.0 ± 5.5 years) participated in the study. Movement was recorded using a wearable inertial measurement unit (IMU) system integrated within a biomechanical assessment environment. The functional tests were segmented into functional components, including sit-to-stand transition, walking, turning, and stand-to-sit transition. Spatiotemporal and kinematic variables, including bilateral measures, were extracted. Their inter-individual variability was assessed using descriptive statistics and coefficients of variation.

Results: Most instrumentally derived variables showed relatively low variability, indicating their potential usefulness as quantitative reference measures in healthy adults. Greater variability was observed during transitional phases, particularly turning, suggesting individual motor-control strategies during directional changes. Small bilateral differences indicated a generally symmetrical movement pattern in healthy participants.

Conclusions: Instrumentation extends functional testing beyond simple task completion outcomes by providing quantitative information on movement strategy and quality. Spatiotemporal, kinematic, and symmetry-related measures obtained from wearable sensors may constitute candidate digital biomarkers of functional mobility. Further research involving older adults and clinical populations, test–retest reliability, and additional kinetic measures is required to establish normative values and determine their clinical relevance for rehabilitation, healthy aging, and quality-of-life assessment.

Keywords: digital biomarkers; functional assessment; wearable sensors; IMU; movement quality; functional mobility

Activities of the Lwów district football association (1928–1934): Football in a multiethnic society

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Abstract

The aim of this article is to present the activities of the Lwów District Football Association (Lwów OZPN). Between 1928 and 1934, the Lwów OZPN covered a relatively extensive area. Its jurisdiction encompassed the Stanisławów and Tarnopol voivodeships, a substantial part of the Lwów Voivodeship, and, from 1928 to 1930, also the Volhynian Voivodeship. The area was inhabited by Polish, Ukrainian, and Jewish populations, as well as, to a lesser extent, by members of other nationalities.

The organizational structure of the Lwów OZPN included the following football subdistricts: the Lwów subdistrict, which functioned as a competition subdistrict; the Przemyśl subdistrict; the Subcarpathian subdistrict; the Stanisławów subdistrict; the Tarnopol subdistrict; and the autonomous Volhynian subdistrict (1928–1930). The Lwów OZPN was affiliated with the Polish Football Association and was one of its largest districts in terms of the number of sports clubs and footballers. In 1930, the Volhynian District Football Association was established in the Volhynian Voivodeship, while in 1934 the Stanisławów District Football Association was established in the Stanisławów Voivodeship and the south-eastern part of the Tarnopol Voivodeship. The Lwów OZPN organized Class A competitions, whereas Class B and Class C competitions were organized by the individual subdistricts. The Lwów OZPN was the first district in Poland, apart from Silesia, to introduce a district league competition.

In the highest tier of football competition in Poland, the Polish Football League (PLPN), the Lwów OZPN was represented by Pogoń Lwów, Czarni Lwów, Hasmonea Lwów, and Lechia Lwów. Of these clubs, Pogoń Lwów achieved the greatest success, finishing as runners-up in the Polish championship in both 1932 and 1933. The district champions that subsequently competed for promotion to the PLPN were Czarni Lwów, Lechia Lwów, Polonia Przemyśl, and Rewera Stanisławów. Among the clubs operating within the Jewish community, Hasmonea Lwów was the strongest, while among those operating within the Ukrainian community, Ukraina Lwów was the strongest.

Keywords: Second Polish Republic; Lviv; football; District Football Association

Interdisciplinary frameworks for assessing and enhancing psychological resilience and quality of life in high-stress environments

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Abstract

Contemporary social transformations, rapid technological advancement, and persistent socioeconomic challenges increasingly affect quality of life, making psychological resilience a central focus of interdisciplinary research. This study examines strategies for assessing and enhancing mental well-being through the integration of psychology, behavioral medicine, and social pedagogy.

A mixed-methods design was applied to a sample of 280 adults. Quantitative data were collected using standardized psychometric instruments, while qualitative insights were obtained through structured interviews. Stress adaptation indicators were monitored over a nine-month period, with particular attention to coping strategies, social support systems, and lifestyle interventions.

The findings revealed significant positive associations between proactive lifestyle changes, resilience-oriented practices, and higher perceived quality of life. Interdisciplinary intervention programs that combined cognitive-behavioral approaches, physical health optimization, and social engagement initiatives demonstrated greater effectiveness in reducing stress than single-domain interventions. Participants engaged in integrated well-being programs reported lower levels of chronic stress, improved emotional self-regulation, and enhanced personal effectiveness.

The results highlight the importance of comprehensive frameworks that address psychological, physical, and social dimensions of well-being simultaneously. Implementing multi-level preventive models across educational, occupational, and community settings may strengthen resilience and support sustainable quality-of-life outcomes. An integrated interdisciplinary approach offers practical guidance for researchers, healthcare professionals, educators, and policymakers seeking to promote psychological resilience, individual fulfillment, and public health.

Keywords: psychological resilience; quality of life; stress adaptation; interdisciplinary interventions; mental well-being; social support

Women's Sport in Poland as Reflected in the Lwów Periodical Sport, 1932–1933

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Abstract

The aim of this study is to present women's sport in Poland as reflected in the Lwów periodical Sport in 1932–1933. Rudolf Wacek served as editor-in-chief of the periodical. During the 1930s, the periodical was published between 1932 and 1934. It appeared irregularly, most often on a weekly basis, and was distributed primarily among residents of the south-eastern voivodeships of the Second Polish Republic.

The periodical focused primarily on football. It should be noted, however, that it also devoted considerable attention to women's sport. With regard to women's sport in Poland, Sport published articles, materials, and reports concerning sports games, including hazena and volleyball, as well as athletics, archery, swimming, shooting, and tennis. These publications addressed the organization of instructor training courses, qualifying tests for the State Sports Badge, and women's sporting competition at local, regional, national, and international levels. The periodical also published materials and reports on women's sport within the Polish, Jewish, and Ukrainian communities.

The periodical reported on major successes achieved on the international stage, including those of the Polish athletes Stanisława Walasiewicz and Jadwiga Wajs, as well as the archer Janina Spychajowa. Among the notable sporting achievements of women from the south-eastern voivodeships of the Second Polish Republic was the third-place finish of the Academic Sports Association (Akademicki Związek Sportowy, AZS) Lwów team in the 1933 Polish Women's Volleyball Championships.

Keywords: Second Polish Republic; Lviv; Women's Sport in Poland

Physical activity patterns and gender differences among university academic staff in Ukraine

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Abstract

Introduction: Physical activity is an important determinant of health, professional capacity and quality of life. Academic staff are exposed to substantial cognitive workload, sedentary behaviour and occupational stress, which are particularly relevant in Ukraine under martial law. The study aimed to assess physical activity patterns among university academic staff and identify gender differences in physical activity and selected health-related characteristics.

Material and methods: The study involved 229 academic staff members of Lesya Ukrainka Volyn National University aged 21–64 years (47.19 ± 9.36 years), including 154 women and 75 men. Physical activity was assessed using the International Physical Activity Questionnaire – Long Form (IPAQ-LF), covering occupational, transport-related, household and leisure-time activity. Body mass index (BMI) was assessed. Descriptive statistics, the Mann–Whitney U test and Chi-square test were applied.

Results: High physical activity was identified in 63.0% of women and 69.4% of men, moderate activity in 28.6% and 25.3%, and low activity in 8.4% and 5.3%, respectively, with no significant gender differences in IPAQ categories ($\chi^2 = 1.16$; $p > 0.05$). Median total physical activity was 4209 MET-min/week (IQR: 2097–7337) and was significantly higher in men than women: 5580 (2303–8400) versus 3903.25 (1859.63–6731.25) MET-min/week. Household activity showed the highest median contribution among the assessed domains. Leisure-time activity was also significantly higher in men (1848 vs 660 MET-min/week). Obesity was more prevalent among men than women (37.3% vs 15.6%; $p < 0.05$).

Conclusions: Most academic staff demonstrated high overall physical activity; however, household activity contributed substantially to its structure. Men had significantly higher total and leisure-time physical activity than women. The findings support targeted, gender-sensitive strategies to promote recreational and sport-related physical activity among university employees under prolonged occupational and psychosocial stress.

Keywords: : academic staff; gender differences; leisure-time activity; MET-min/week; health promotion

Psychometric evaluation of the MOBAK 1-2 test battery among Slovak primary school children: A confirmatory factor analysis

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Abstract

Introduction: Valid assessment of basic motor competencies is critical in primary physical education for effectively evaluating and supporting children's motor development. The aim of this study was to investigate the construct validity of the MOBAK 1-2 test battery for assessing basic motor competencies in primary school children in Slovakia.

Material and Methods: A total of 375 children (50.10% girls) were assessed, including 188 first-grade pupils (49.70% girls) and 187 second-grade pupils (50.30% girls). The construct validity of the proposed two-factor structure, comprising the competence domains of object movement and self-movement, was analysed using confirmatory factor analysis (CFA). Relationships between basic motor competencies and age, sex, and BMI were examined using structural equation modelling.

Results: The baseline two-factor model showed an acceptable overall fit (CFI = .931). The extended model, which included sex, age, and BMI as covariates, demonstrated a weaker fit (CFI = .802). Item factor loadings were relatively low (λ = .30 – .54), indicating limited support for the construct validity of the MOBAK 1-2 test battery. BMI was negatively associated with both competence domains, whereas age showed positive associations with both domains. Sex was significantly associated with object movement.

Conclusions: The findings provide partial support for the proposed structure of the MOBAK 1-2 while also indicating the need for further psychometric evaluation and possible adaptation of the instrument in the Slovak context.

Funding: The study was supported by scientific project No. 1/0253/26, entitled Children's motor skills and abilities as related competence domains and goal categories in the context of pre-primary and primary education, funded by the Scientific Grant Agency of the Ministry of Education, Research, Development and Youth of the Slovak Republic and the Slovak Academy of Sciences.

Keywords: motor assessment; basic motor competencies; construct validity; primary education

NT-proBNP after exhaustive exercise is lower under moderate normobaric hypoxia

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Abstract

Introduction. Post-exercise release of cardiac biomarkers reflects a physiological, training-related myocardial response rather than necessarily indicating injury, but hypoxia adds a hemodynamic and neurohumoral stimulus. In a recent study, we found that moderate normobaric hypoxia (2000–3000 m) reduced the post-exercise increase in myoglobin (Mb) and N-terminal pro-B-type natriuretic peptide (NT-proBNP) after a single bout of exercise to volitional exhaustion - explained by a lower mechanical workload from earlier peripheral fatigue under hypoxia. Aim. To verify these observations in an expanded cohort and to further characterize the kinetics of NT-proBNP – a marker of cardiac hemodynamic overload – under normoxia (N) and hypoxia equivalent to 3000 m a.s.l. (H3000).

Methods. Fifty-eight men performed a graded exercise test followed by a constant-workload test, both to volitional exhaustion, under N and H3000 (FiO_2=14.4%). Venous blood was drawn at rest and immediately, 2, 6, and 24 h post-exercise for determination of h-FABP, Mb, CK-MB, cTnI, and NT-proBNP by ELISA. As most variables showed non-normal distributions, non-parametric tests were used throughout: Wilcoxon signed-rank for changes vs. rest and for paired N vs. H3000 comparisons and Friedman ANOVA for the time effect.

Results. The increase in NT-proBNP was significantly smaller under hypoxia, both immediately post-exercise (+2.9 vs. +2.4 pg/ml, p=0.025) and at 2 h (+10.1 vs. +7.6 pg/ml, p=0.0048). A comparable downward trend, not reaching statistical significance, was observed for myoglobin, with a smaller median absolute increase under H3000 than under N at 2 h post-exercise (p=0.08). Additionally, mechanical workload was significantly lower under H3000 than under N (–18.5%, $p<0.05$).

Conclusions. In an expanded cohort, these findings confirm that moderate hypoxia reduces the cardiac biomarker response to exhaustive exercise. We interpret the lower NT-proBNP rise under hypoxia as indirect evidence of a smaller hemodynamic overload of the heart, most likely secondary to the lower absolute mechanical workload performed under hypoxic conditions – itself a consequence of earlier peripheral fatigue during exercise to volitional exhaustion

Funding: This work was supported by the grant no. NdS- II/SP/0431/2024/01 from the Ministry of Science and Higher Education, Poland.

Keywords: cardiac biomarkers; NT-proBNP; normobaric hypoxia; volitional exhaustion; peripheral fatigue

Health and perceptual effects of heat training in cross-country skiers: does wellness predict the physiological response?

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Abstract

Introduction: Heat training is increasingly used by endurance athletes to promote favourable hematological adaptations, particularly increased hemoglobin mass (Hbmass), but its effects on subjective health, wellness and perceived load remain insufficiently explored. This study assessed how a 30-day heat training block affected health- and perception-related indicators (RPE, thermal sensation, sRPE, ESQ-14, daily wellness, weekly upper-respiratory-tract symptoms [URTS]) in cross-country skiers, and whether these indicators related to changes in Hbmass and maximal oxygen uptake (VO2max).

Material and methods: Eleven male cross-country skiers (FIS points 65–180) completed 13 heat training sessions (stationary cycling in a heat suit, 50 min, 3×/week) over 30 days. RPE (Borg 6–20) and thermal sensation (0–8) were recorded each session; sRPE (CR10) post-session. Daily wellness (Hooper & Mackinnon) and weekly URTS questionnaires were completed throughout. Hbmass (CO-rebreathing) and VO2max were assessed before and after. Pearson correlations were calculated between mean questionnaire scores and relative changes (%) in Hbmass and VO2max, significance set at $p<0.05$ and $p<0.01$.

Results: Mean RPE, thermal sensation and sRPE decreased progressively across sessions (session 1 vs. 13: 16.6 vs. 10.2; 7.2 vs. 5.5; 6.8 vs. 2.9), consistent with heat acclimation. Hbmass increased in all athletes (+4.8±2.1%, range 0.2–7.0%), while VO2max changed only marginally (+0.3±1.0%). A higher (worse) mean Hooper wellness score was significantly associated with a smaller Hbmass increase ($r=-0.73$; $p=0.011$), and higher mean thermal sensation was significantly associated with a smaller VO2max change ($r=-0.72$; $p=0.013$). No relationship reached $p<0.01$.

Conclusions: A 30-day heat training block was associated with progressively improving perceived load and a favourable Hbmass increase in nearly all athletes, without systematic VO2max change. Poorer subjective wellness and higher perceived thermal strain were associated with smaller physiological benefit, suggesting simple health and perceptual questionnaires may help identify athletes responding less favourably to heat training.

Keywords: heat training; hemoglobin mass; wellness; cross-country skiing

From perturbation to recovery: Age effects on gait stability following a trip

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Abstract

Introduction: Understanding the mechanisms controlling motor output after perturbation is crucial for developing effective fall prevention and rehabilitation strategies. Current laboratory-based perturbation methods often occur at fixed locations, reducing unpredictability and potentially inducing anticipatory postural adjustments that may affect the assessment of reactive balance.

Aim: To develop and evaluate a novel device and protocol for assessing gait stability following a trip-like perturbation that closely resembles real-world obstacle contact. We hypothesized that older adults would exhibit poorer stability after perturbation than healthy young adults, while stability during steady-state walking would be similar in both groups.

Material and Methods: Sixteen healthy young adults (YA; 22 ± 2.4 years) and seventeen healthy older adults (OA; 67 ± 4.5 years) participated. Following TUG assessment and treadmill familiarization, participants were exposed to trip-like perturbations generated by a custom-made device that applied resistance to the toes during the swing phase. The device provided six degrees of freedom of foot motion. Perturbation timing and duration were controlled by a microcontroller synchronized with the swing phase via footswitch sensors. Kinematic data were collected using a 3D motion capture system (100 Hz). Stability was quantified using the anteroposterior Margin of Stability (MoS).

Results: OA demonstrated significantly higher TUG values ($p<.05$, $g=0.75$) and selected slower treadmill walking speeds than YA ($p<.001$, $g=1.9$). During perturbation, OA exhibited significantly lower MoS values ($p<.05$, $r=0.54$), indicating reduced reactive stability. In contrast, no between-group differences were observed in steady-state AP MoS for either limb ($p>.05$).

Conclusions: Healthy older adults showed impaired reactive balance recovery despite preserved steady-state gait stability. The proposed device successfully induced ecologically valid trip-like perturbations and may be a useful tool for assessing reactive gait stability and age-related fall risk.

Acknowledgments: The project is supported by the Ministry of Science and Higher Education (RID/SP/0053/2024/01, "Promoting healthy lifestyles and extending lifespan").

Keywords: reactive balance recovery; tripping; ageing; gait stability

Unintentional force drift: Trial requirements and age-related differences

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Abstract

Introduction: Unintentional force drift (UFD) is a gradual change in force output that emerges when visual feedback is removed despite an intention to maintain the prescribed level of force. Reliable quantification of this phenomenon is necessary before it can be used to characterize individual force production performance. This study examined the within-session reliability of UFD, the number of trials needed to obtain a stable estimate, and exploratory variation across different age groups.

Material and Methods: Twenty-four healthy adults performed six trials of bilateral isometric elbow flexion at 20% of maximal voluntary contraction (MVC) under continuous visual feedback and after feedback removal. Mean force and force drift were calculated separately for each trial and condition. Relative reliability was evaluated using intraclass correlation coefficients (ICC), whereas absolute measurement error was characterized using the standard error of measurement (SEM), minimal detectable change (MDC95), and trial-to-trial variability (TTV). Reliability was examined as a function of the number of averaged trials.

Results: Mean force and force drift remained stable across consecutive trials. Mean force demonstrated good reliability with visual feedback (ICC = 0.85) and excellent reliability without visual feedback (ICC = 0.90). Force drift showed moderate reliability during continuous feedback (ICC = 0.53) and good reliability after feedback removal (ICC = 0.84). A single trial was insufficient to characterize individual UFD, whereas reliability progressively improved as additional trials were averaged. Five trials produced a stable estimate in the complete sample. Exploratory subgroup results suggested lower reliability and greater measurement error among older participants, although the small subgroup sizes prevented definitive age-specific conclusions.

Conclusions: UFD can be assessed with good within-session reliability when the estimate is based on multiple repetitions of force production task. Five trials offer a practical balance between measurement reliability and protocol duration under the present experimental conditions. Reliability across separate testing sessions and age-specific trial requirements remain to be established.

Acknowledgments: This research was funded by the Minister of Science under the "Regional Initiative of Excellence" programme, no. RID/SP/0053/2024/01, "Promoting Healthy Lifestyles and Extending Lifespan."

Keywords: visual feedback; isometric force control; measurement error; intraclass correlation coefficient

The impact of lifeguard training on the effectiveness of towing a mannequin using various techniques

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Abstract

Introduction: Effectively towing a victim is a fundamental skill in aquatic rescue operations. Its efficiency depends on factors such as the lifeguard's technical preparation and the specific towing technique employed. Specialized training can improve performance by refining the movement patterns and skills essential to water rescue. The study aimed to evaluate the impact of specialized lifeguard training on the time taken to tow a victim using three different rescue techniques.

Material and methods: The study involved 31 men (aged 22.69 ± 3.35 years) participating in a lifeguard training course. The training comprised a total of 63 hours, including 20 hours of theory and 43 hours of practical sessions. Before and after the course, participants performed a 50-meter tow of a rescue mannequin using three techniques: the two-handed back tow, the chin tow, and the sailor's tow. Each trial was performed twice, with the better result used for analysis. A linear mixed-effects model was used to assess differences, accounting for the towing technique, the time of measurement, and the interaction between them.

Results: Following the training, a reduction in the mean towing time was observed across all analyzed techniques. For the two-handed supine technique, the time decreased from 108.95 ± 19.49 s to 100.35 ± 15.32 s; for the jaw-grip technique, from 108.47 ± 17.64 s to 102.90 ± 16.13 s; and for the sailor's tow technique, from 111.10 ± 14.69 s to 105.44 ± 12.56 s. Analysis revealed a significant effect of the time of measurement ($F(1,155) = 31.60$; $p < 0.001$; Cohen's $f = 0.45$), indicating an overall improvement in towing efficiency following the course. A significant effect of technique was also observed ($F(2,155) = 3.35$; $p = 0.038$), whereas the technique × time of measurement interaction was not significant ($p = 0.49$). After FDR correction, differences between the individual techniques did not reach statistical significance.

Conclusions: Completion of specialized lifeguard training was associated with a significant improvement in the efficiency of towing a mannequin over a distance of 50 m, regardless of the technique used. The results highlight the importance of systematically refining specialized rescue skills. The absence of a significant interaction between technique and time of measurement suggests that the training effect was similar across all analyzed towing methods.

Keywords: water rescue; victim towing; training; rescue techniques

The origins and development of football in secondary schools in multiethnic Eastern Galicia up to 1914

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Abstract

The article examines the origins and development of football in secondary schools in Eastern Galicia, from the emergence of the first forms of the game in school environments at the end of the nineteenth century to World War I. The aim of the study is to demonstrate the role of schools, physical education teachers, sports organisations, and infrastructure in the process of popularising football among young people, as well as to determine the place of this sport within the transformations of physical culture in the region.

The analysis is based on the relevant scholarly literature, school reports, materials concerning the activities of sports organisations, and press sources. Particular attention is devoted to Lviv, which, as the largest urban and educational centre of Eastern Galicia, played a key role in the development of school football. The activities of, among others, Edmund Cenar and Eugeniusz Piasecki are discussed, together with the development of physical games and activities, the establishment of playing fields and recreation grounds, and the activities of the Towarzystwo Zabaw Ruchowych (Society for Physical Games). The functioning of football in secondary schools in Stryi, Tarnopol, Stanislaviv, Buczacz, Drohobych, Kolomyia, Brzeżany, and other localities is also examined.

The article highlights the gradual transition of football from a form of play and physical activity among pupils to more organised forms of competition, including school teams, sports clubs within schools, and football clubs. It also discusses the participation of Polish, Ukrainian, and Jewish youth communities in the development of football, as well as the importance of sports organisations associated with particular social and national groups.

The study demonstrates that secondary schools constituted one of the principal environments for the popularisation of football in Eastern Galicia, while the development of infrastructure and the activities of teachers and sports organisations contributed to its lasting establishment in the lives of young people. By 1914, football had become an important element of the physical culture of the younger generation and one of the significant manifestations of the sporting transformations taking place in the region.

Keywords: football; secondary schools; Eastern Galicia; Lviv; physical education

Association between adherence to the mediterranean diet and quality of life among university of the third age graduates

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Abstract

Introduction: Adherence to the Mediterranean diet has been associated with a range of beneficial health outcomes; however, its relationship with quality of life among older adults remains insufficiently understood. This study aimed to compare quality of life between University of the Third Age graduates with lower and higher adherence to the Mediterranean diet.

Material and methods: The study sample consisted of 133 University of the Third Age graduates UPJŠ in Košice (women: n =114; mean age: 68.22 ± 6.106 years). Dietary habits were assessed using the FFQ-6 food frequency questionnaire. An adapted Mediterranean Diet Adherence Score (aMED7; range: 0–7 points) was calculated based on the consumption frequency of whole grains, vegetables, fruits, legumes, nuts and seeds, fish and seafood, and red and processed meat. Individual components were scored using their median consumption values in the study sample. Based on the median total score, participants were classified as having lower (n = 57) or higher adherence (n = 76). Quality of life was assessed using the WHOQOL-BREF across four domains: physical health, psychological health, social relationships, and environment. Differences between the groups were examined using independent-samples t-tests. Welch's t-test was used when the assumption of equal variances was not met.

Results: Participants with higher adherence to the Mediterranean diet had significantly higher physical health scores than those with lower adherence (75.33 ± 15.11 vs. 70.43 ± 10.60; Welch's $t(130.48) = -2.20$, $p = 0.030$). They also had significantly higher scores in the environment domain (72.16 ± 12.23 vs. 66.61 ± 16.10; $t(131) = -2.26$, $p = 0.025$). Psychological health scores were also higher among participants with greater adherence, although the difference narrowly failed to reach statistical significance (67.93 ± 11.49 vs. 63.45 ± 14.69; $p = 0.051$). No significant differences were observed in social relationships ($p = 0.450$), overall quality of life ($p = 0.284$), or satisfaction with health ($p = 0.221$).

Conclusions: Greater adherence to the Mediterranean diet was associated with more favourable perceptions of physical health and the conditions of everyday life captured by the environment domain among University of the Third Age graduates. These findings suggest a potentially beneficial relationship between diet quality and selected aspects of quality of life. However, the cross-sectional design does not allow conclusions regarding the direction or causality of these associations. Future research should account for participants' sociodemographic, economic, and health-related characteristics.

Keywords: mediterranean diet; quality of life; WHOQOL-BREF; FFQ-6; older adults

Reaction time in the context of age

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Abstract

The aim of our study was to examine simple reaction time (SRT) and choice reaction time (CRT) across three age groups: youth, adults, and seniors.

A total of 153 participants took part in the study (youth [YT]: n = 52; 26 boys/26 girls, mean age 14.58 ± 0.78 years; adults [AD]: n = 55; 34 men/21 women, mean age 20.27 ± 1.13 years; and seniors [SN]: n = 46; 10 men/36 women, mean age 81.22 ± 6.07 years). The Blazepod® system was used to measure reaction time. SRT was measured first, followed by CRT. For SRT, participants responded to a red light with their dominant hand (20 trials); for CRT, they responded to a red light with their right hand and a blue light with their left hand (10 trials for each color).

The results indicate that age can significantly influence reaction time. Among men, significant differences in CRT were found between the youth and senior categories ($p < 0.01$) and between the adult and senior categories ($p < 0.01$). No difference was found between the youth and adult groups. Regarding SRT, differences were found between all observed categories: YT vs. AD ($p < 0.05$), AD vs. SN ($p < 0.01$), and YT vs. SN ($p < 0.01$). For women, a trend in CRT similar to that of men was observed—specifically regarding the Y vs. SN and also in AD vs. SN comparisons ($p < 0.01$). However, no difference in SRT was confirmed for women in the YT vs. AD comparison ($p = 0.155$).

Based on these findings, a link between age and reaction time can be inferred, particularly regarding the results achieved by seniors. These results could prove useful, for instance, in establishing protocols for the regular assessment of reaction times to ensure the safe operation during traffic situations in seniors.

Keywords: reaction time; age; traffic situation

Selected indicators of movement behaviour in children living in socially excluded localities

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Abstract

Background: Pedometers combined with subjective recording provide information on children's movement behaviour. Indicators of physical activity (PA) among children living in socially excluded localities may reflect cultural practices as well as the socio-economic status of families, the local environment and school attendance. In the Czech Republic, disadvantaged environments are a widely debated issue in relation to educational opportunity.

Objective: The study aimed to establish indicators of participation in PA and of sedentary behaviour (SB) among primary school-aged children on school days and at weekends. Data from these localities may point to features specific to the lifestyle and conditions in which the children grow up; the findings are intended for educational institutions.

Materials and Methods: Physical activity was monitored objectively for seven consecutive days using Yamax SW-700 and SW-800 pedometers, with concurrent subjective recording on a participant record sheet. The sample comprised primary school-aged children (n = 42) living in socially excluded localities in the Ústí nad Labem Region, Czech Republic. Differences between days of the week and between boys and girls were tested using the Wilcoxon signed-rank test and the Mann–Whitney U test. Normality of distribution was verified using the Shapiro–Wilk test.

Results and conclusion: Daily step counts (SC) in boys met health-related recommendations (SCboys = 14,200 ± 6,994), whereas in girls they were low for their age (SCgirls = 9,446 ± 3,796). SC decreased at weekends compared with school days, while discretionary SB increased significantly in both boys and girls. In girls, SC values remain well below the recommended health-related criteria.

Keywords: physical activity; sedentary behaviour; step counts; children; socially excluded localities

Responsiveness of pain catastrophizing in patients with osteoarthritis undergoing total knee and hip arthroplasty

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Abstract

Introduction: Osteoarthritis (OA) is a leading cause of disability, substantially affecting pain, function, and quality of life. Pain catastrophization is a cognitive-affective response characterized by rumination, magnification, and helplessness, and is associated with pain and poor outcomes after total knee and hip arthroplasty. However, it remains unclear whether pain catastrophization is primarily a stable trait or a modifiable state responsive to changes in pain and function. The main aim of the study was to analyse the differences between pre and postoperative pain catastrophization in patients undergoing total knee and hip arthoplasty.

Material and methods: The sample comprised 377 patients (mean age 64.2 ± 9.03 years) assessed before and one year after total joint replacement (TJR) for end-stage osteoarthritis (OA) of the knee (58.6%, 38.9% male) and hip (41.4%, 57.0% male). Functional outcomes were assessed with Knee Injury/Hip Disability Osteoarthritis Outcomes Score (KOOS/HOOS) and pain catastrophization with Pain Catastrophization Scale (PCS). Paired sample t-tests were used to analyse data.

Results: Both groups of patients scored better in PCS total score (21.0±11.4 vs 13.1±12.0 in knee, and 21.1±10.3 vs 11.6±10.8 in hip, $p<0.001$, for both) including rumination (7.3±4.1 vs 4.7±4.4 in knee, and 7.4±3.8 vs 4.1±4.0 in hip), magnification (4.2±2.9 vs 2.9±2.7 in knee, and 4.3±6.7 vs 2.8±2.5 in hip), and helplessness (9.4±5.6 vs 5.5±5.5 in knee, and 9.4±5.1 vs 5.0±5.0 in hip) as well as in functional outcomes (41.6±16.4 vs 77.5±17.6 for knee, and 36.1±15.3 vs 80.7±18.4 for hip, $p<0.001$, for all).

Conclusions: Pain catastrophization significantly decreased following both total knee and hip arthroplasty across the total PCS score and all three dimensions—rumination, magnification, and helplessness—while functional outcomes substantially improved. These findings suggest that pain catastrophization may represent a modifiable state impacted by clinical improvement. Findings can be useful in preoperative counselling as well as in postoperative rehabilitation intervention to support recovery in patients undergoing arthroplasty.

Funding: APVV-22-0587.

Keywords: osteoarthritis; knee and hip arthroplasty; pain catastrophizing

Baseline level and changes in endurance performance among upjš female students with different training frequencies

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Abstract

Introduction: When evaluating a training intervention, it is important to determine whether superior outcomes in one group reflect higher baseline performance. This study compared baseline endurance performance among female students with different training frequencies and evaluated subsequent changes after an exercise programme.

Material and methods: The sample comprised 48 healthy first-year female students at Pavol Jozef Šafárik University in Košice, aged 18–30 years, who completed both assessments. Participants were initially randomly allocated to three groups. The final analysis included a control group (n = 16), a twice-weekly training group (n = 21), and a three-times-weekly training group (n = 11). The 10-week programme consisted of 90-minute aerobic and combined aerobic–strength sessions. Endurance performance was assessed using the 20 m shuttle run test and expressed as completed shuttles. Data were analysed by analysis of variance at $p < 0.05$.

Results: At baseline, the control group completed 32.50 ± 11.52 shuttles, the twice-weekly group 29.10 ± 10.24, and the three-times-weekly group 33.27 ± 10.48. Baseline differences were not significant, $F(2,45) = 0.73$; $p = 0.489$; $\eta^2 = 0.031$. Following the intervention, control-group performance decreased by 2.31 shuttles (approximately 46 m). Performance increased by 4.14 shuttles (83 m) in the twice-weekly group and by 8.36 shuttles (167 m) in the three-times-weekly group. The between-group difference in performance change was significant, $F(2,45) = 12.44$; $p < 0.001$; $\eta^2 = 0.356$.

Conclusions: The group with the highest training frequency did not have significantly better baseline endurance performance. Its greater improvement therefore cannot be explained by an initial performance advantage. The findings support a favourable association between regular organised training and endurance development.

Funding: VEGA project No. 1/0424/25, "Aerobic Training and Its Impact on Gut Microbiota in the Female Population".

Keywords: cardiorespiratory fitness; young women; organised physical activity; repeated measures; field testing

From collaboration to development: A practical approach to gold open access

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Abstract

Paradigm Publishing Services works with academic journals, publishers, libraries, and institutions, providing publishing technology, global distribution, discoverability, and Open Access solutions. Its Gold Open Access program supports established academic journals through an APC-funded model that combines publishing services with support tailored to the needs and goals of individual titles.

This presentation will show how the model works in practice. Editorial teams retain control over the scientific direction of their journals, including peer review and editorial decisions, while Paradigm provides support in areas such as production and online publication, APC management, distribution, indexing, performance analysis, and journal development.

The example of two journals, Physical Culture and Sport. Studies and Research and Biomedical Human Kinetics, will illustrate how Paradigm works with individual journals. Their different needs and priorities will demonstrate how the scope of collaboration can be adapted to each title and its particular circumstances.

The presentation will be delivered by Amadeusz Bryła, Publishing Advisor at Paradigm, who works directly with editorial teams and supports journals in identifying their needs and priorities. Drawing on this perspective, the presentation will also consider how communication and analysis can inform decisions about the areas in which a journal may benefit from additional attention or resources.

Overall, the presentation will provide a practical overview of Paradigm's Gold Open Access model, showing how editorial independence can be combined with publishing infrastructure, specialist expertise, and ongoing support while taking into account the individual position and objectives of each journal.

Keywords: Gold Open Access; scholarly publishing; academic journals; journal visibility; journal development

Association of smartphone screen time with neck pain, disability, craniovertebral posture, and cervical mobility in adolescents

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Abstract

Introduction: Smartphones have become an integral part of adolescents' lives, and prolonged use of mobile devices may be associated with sustained cervical flexion and increased mechanical loading of the cervical spine. The aim of this study was to determine whether smartphone use duration was associated with neck pain intensity, neck-related disability, craniovertebral angle (CVA), and cervical range of motion in secondary school adolescents.

Materials and Methods: This cross-sectional observational study included 100 secondary school students aged 15–18 years, including 50 females and 50 males. Smartphone screen time was obtained from monitoring tools. Neck pain, disability, and physical activity were assessed using VAS, NDI, and IPAQ-SF. CVA was determined from a sagittal-plane photograph analyzed using Kinovea software, and cervical range of motion was measured using a smartphone-based compass application. BMI and body fat percentage were assessed.

Results: No significant associations were found between smartphone use duration and neck pain intensity, NDI score, CVA, or cervical range of motion ($p > 0.05$). Lower CVA values were associated with pain intensity ($p = 0.015$) and higher NDI scores ($p = 0.045$), whereas higher CVA values were associated with cervical extension ($p = 0.003$). Higher BMI and body fat percentage were associated with lower CVA values and reduced cervical flexion. Female participants had lower CVA values, reduced cervical extension, and higher NDI scores than male participants. No significant associations were found between physical activity level and cervical spine outcomes.

Conclusions: In this sample, smartphone use duration was not significantly associated with neck pain, neck-related disability, craniovertebral posture, or cervical range of motion. The observed associations involving CVA, body composition, and sex suggest that cervical postural and functional characteristics in adolescents are multifactorial. Future studies should consider not only smartphone use duration but also patterns of use, body posture, and individual characteristics.

Keywords: smartphone; screen time; neck pain; neck disability; craniovertebral angle

Mediterranean diet adherence in female university students in Slovakia

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Abstract

Background: The Mediterranean diet is associated with several health benefits and may contribute to gut microbiome composition and function. University students may nevertheless have irregular dietary habits and limited adherence to recommended dietary patterns. This study aimed to describe adherence to the Mediterranean diet and the consumption frequency of its individual components among female university students participating in the GutGirl study.

Methods: This cross-sectional descriptive analysis used baseline data from the GutGirl randomized controlled trial investigating physical activity and the gut microbiome in female university students at Pavol Jozef Šafárik University in Košice, Slovakia. Baseline dietary data were collected online before the intervention in autumn 2025. The present analysis included 72 female university students. Dietary habits were assessed using the FFQ-6 food frequency questionnaire. An adapted Mediterranean Diet Adherence Score (aMED8; range: 0–8 points) was calculated from the consumption frequency of whole grains, vegetables, fruits, legumes, nuts and seeds, fish and seafood, red and processed meat, and animal fats. Animal fat consumption was included as an inverse proxy for olive oil use. For beneficial food groups, consumption at or above the sample median was assigned one point; for red and processed meat and animal fats, consumption below the median was assigned one point. Data were summarized using descriptive statistics.

Results: The mean aMED8 score was 3.46 out of 8 points. The median score was 3, the most frequent score was 2, and observed scores ranged from 0 to 8. Among the beneficial components, vegetables had the highest mean consumption frequency (0.373 ± 0.201), followed by whole grains (0.273 ± 0.257). Lower mean frequencies were observed for fruit (0.155 ± 0.123), legumes (0.130 ± 0.159), nuts and seeds (0.105 ± 0.175), and fish and seafood (0.034 ± 0.061). The mean frequencies of the two inverse components were 0.110 ± 0.109 for red and processed meat and 0.246 ± 0.164 for animal fats. A frequency value of 1 represented daily consumption.

Conclusion: Female university students achieved a mean aMED8 score of 3.46 points. Vegetables and whole grains were the most frequently consumed beneficial components, whereas fish and seafood, nuts and seeds, legumes, and fruit were consumed less frequently. These findings identify food groups that could be targeted in dietary interventions for female university students. Subsequent analyses within the GutGirl study may examine the relationships between dietary adherence, physical activity, and gut microbiome characteristics.

Acknowledgement: This work was supported by the Scientific Grant Agency of the Ministry of Education, Research, Development and Youth of the Slovak Republic and the Slovak Academy of Sciences (VEGA), grant No. 1/0424/25.

Keywords: dietary adherence; female university students; FFQ-6; aMED8; physical activity; gut microbiome

Does greater lower-limb power mean greater effectiveness for a lifeguard? An analysis of the relationship between CMJ and functional performance in an aquatic environment

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Abstract

Introduction: Water rescue performance requires both an adequate level of motor abilities and skills specific to the aquatic environment. However, it remains unclear to what extent lower-limb power, assessed under land-based conditions, translates into the efficiency of performing specialized rescue tasks in the water (such as towing a manikin). The aim of the study was to evaluate the relationship between selected lower-limb power parameters—assessed via the countermovement jump (CMJ) test—and the functional performance of women undergoing water rescue training.

Material and methods. The study involved 19 female lifeguard candidates (age: 18.68 ± 5.89 years). The participants completed a 63-hour training course comprising 20 hours of theory and 43 hours of practical training. Before and after the course, CMJ parameters were assessed, and specialized water-based tests were conducted, including—among others—swimming with a breaststroke kick on the back and towing a mannequin.

Results: Following the training, jump height increased by 8.47% ($p = 0.008$; $d = 0.685$), peak concentric power by 8.72% ($p = 0.047$; $d = 0.489$), and push-off velocity by 3.77% ($p = 0.022$; $d = 0.574$). Concurrently, the time for the 50 m breaststroke kick test decreased by 5.48% ($p < 0.001$; $d = -1.161$), and the time for the double-arm under-armpit manikin tow by 7.30% ($p = 0.004$; $d = -0.746$). However, cluster analysis revealed two distinct functional profiles. Participants characterized by higher lower-limb power values achieved poorer results in the specialized water-based tests. The greatest differences between the profiles were observed in the double-arm under-armpit tow ($d = 2.73$) and the 50 m breaststroke kick test ($d = 1.87$).

Conclusions: Completing the lifeguard training program led to improvements in both selected lower-limb power parameters and performance in specialized water-based tests. However, the results indicate that a high level of power assessed on land does not directly translate into greater effectiveness in performing in-water rescue tasks. Rescue proficiency may depend to a greater extent on specific technical skills, coordination, and the efficiency of generating propulsion in the aquatic environment.

Keywords: water rescue; CMJ; lower-limb power; mannequin towing; functional fitness

Biomechanical determinants of maximum resultant impact force during the ITF Taekwon-do reverse turning kick

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Abstract

Background: The reverse turning kick (bandae dollyo chagi) is one of the most powerful techniques in ITF taekwon-do, yet its biomechanical determinants remain poorly understood. In particular, the relative contributions of effective mass and lower-limb segmental accelerations to impact force production have not been comprehensively investigated. This study aimed to identify the biomechanical determinants of maximum resultant impact force during the ITF taekwon-do reverse turning kick.

Methods: Nineteen experienced adult male ITF taekwon-do practitioners (34.2 ± 12.0 years) performed five maximal reverse turning kicks with each lower limb against an instrumented force-platform target. Resultant impact force was measured using a force platform, whereas thigh, shank, and foot accelerations were recorded using wearable inertial measurement units (IMUs). Effective mass was calculated as the ratio of maximum resultant impact force to foot acceleration at the instant of peak force. Inter-limb differences were assessed using the Wilcoxon signed-rank test. Relationships among variables were examined using Spearman's correlation analysis, while multiple linear regression, Least Absolute Shrinkage and Selection Operator (LASSO) regression, Relative Importance Analysis (LMG), and Principal Component Analysis (PCA) were used to identify the principal biomechanical determinants of impact force.

Results: The right limb generated significantly greater maximum resultant impact force and foot resultant acceleration than the left limb ($p < 0.05$). Maximum resultant impact force was positively correlated with foot ($\rho = 0.640$) and thigh ($\rho = 0.640$) resultant accelerations. The regression model explained 46.8% of the variance in impact force ($R^2 = 0.468$, $p = 0.051$). Relative importance analysis (LMG) that thigh (42.8%) and foot (41.2%) resultant accelerations together accounted for approximately 84% of the explained variance, whereas effective mass contributed only 10.0%. PCA indicated that the first two principal components explained 84.3% of the total variance.

Conclusions: Segmental accelerations, particularly those of the thigh and foot, were the primary biomechanical determinants of maximum resultant impact force during the ITF taekwon-do reverse turning kick, whereas effective mass played a comparatively smaller role. These findings improve the biomechanical understanding of this technique and provide evidence-based guidance for optimizing taekwon-do training and performance.

Keywords: effective mass; lower-limb acceleration; martial arts; taekwon-do

Biomechanical factors associated with effective mass during the ITF Taekwon-do side kick

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Abstract

Background: Effective mass has been proposed as an important biomechanical determinant of striking performance in combat sports; however, the biomechanical determinants influencing effective mass during taekwon-do kicking remain poorly understood. This study aimed to identify the biomechanical determinants of effective mass during the ITF taekwon-do side kick (yop chagi) and to examine its associations with impact force, inter-limb symmetry, and sex-related differences.

Methods: Twenty-seven experienced adult ITF taekwon-do practitioners (19 men and 8 women) performed maximal side kicks against an instrumented target. Impact force was measured using an AMTI force platform, while thigh, shank, and foot accelerations were recorded simultaneously using triaxial accelerometers. Effective mass was calculated using the resultant impact force and the corresponding foot acceleration measured at the instant of peak impact force. Associations among variables were assessed using Spearman's rank correlation, and multiple linear regression was performed to identify independent predictors of effective mass.

Results: Effective mass was moderately correlated with impact force ($\rho = 0.566$, $p = 0.006$). The regression model explained 65.9% of the variance in effective mass ($R^2 = 0.659$, adjusted $R^2 = 0.579$, $p < 0.001$). Male sex ($\beta = 0.343$, $p = 0.028$) and thigh acceleration ($\beta = -0.524$, $p = 0.018$) were identified as significant independent predictors of effective mass, whereas foot and shank accelerations were not. No statistical evidence of sex-related differences in inter-limb symmetry indices was observed.

Conclusions: Effective mass appears to reflect coordinated whole-body mechanics rather than the acceleration of individual lower-limb segments alone. These findings suggest that training should emphasize efficient momentum transfer through the kinetic chain and whole-body coordination rather than focusing exclusively on increasing distal-segment acceleration. Effective mass may therefore represent a valuable biomechanical indicator for monitoring technical proficiency and evaluating training effectiveness in taekwon-do.

Keywords: effective mass; impact force; lower-limb acceleration; martial arts; taekwon-do

The use of virtual reality in cardiac rehabilitation: a randomized controlled trial

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Abstract

Introduction: Cardiovascular diseases (CVD) rank as the primary cause of death globally. Psychosocial factors have been linked to the onset and progression of cardiovascular diseases. Among these, depression diminishes quality of life in cardiac patients and is an independent risk factor for severe cardiovascular events. Meanwhile, virtual reality (VR) is increasingly used in mental healthcare. The aim of this study was to compare standard cardiac rehabilitation with cardiac rehabilitation combined with virtual therapy in reducing levels of depression, kinesiophobia, and stress in CVD patients.

Material and methods: In our study, we examined 68 patients randomly divided into two groups: control group (n=34) receiving four weeks of standard cardiac rehabilitation with three daily exercise sessions and experimental group (n=34) following the same protocol plus eight additional VR-based therapeutic sessions. Mental state parameters were measured using PSS-10, TSK, PHQ-9, and SF-36. We evaluated functional status using a treadmill test, measuring resting and exercise heart rate, blood pressure, and metabolic equivalent of task (MET).

Results: Significant between-group differences favoring the VR group were observed in stress (PSS-10) $p=0.03$, depressive symptoms (PHQ-9) $p<0.01$, physical role functioning (SF-36 Role Physical) $p=0.04$, peak exercise capacity (METs) $p=0.04$, and HRV Stress index $p=0.03$. No significant differences were found for kinesiophobia (TSK-17), resting cardiovascular parameters, RMSSD, or other SF-36 and exercise test variables.

Conclusions: In our patient group, adding immersive virtual reality relaxation to standard cardiac rehabilitation helped reduce stress and depressive symptoms, with potential benefits for physical role functioning and exercise capacity. However, larger trials with longer follow-up are needed to confirm these findings and determine their clinical relevance.

Keywords: cardiac rehabilitation; virtual reality; physical activity; depression; mental state

Validation of author-developed modifications to balance tests by comparing force plate and Noraxon Ultium accelerometer data

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Abstract

Introduction: Postural balance is very important in combat sports to make techniques better and prevent injuries. Standard balance tests on force plates are often not sensitive enough to find small balance problems in athletes. We used modified single-leg balance tests simulating kick phases (t1, t2, t3). The aim of this study was to check if these modified balance tests work well by comparing force plate center of pressure (COP) data with wearable sensor (Noraxon Ultium IMU) data in combat athletes.

Material and methods: Thirty-three combat sports athletes (6 females, 27 males; mean age 25.7 ± 7.4 years, mass 76.8 ± 11.5 kg, height 176.1 ± 7.0 cm) performed three 30-second modified single-leg stance tests (t1: knee/hip flexed 90°; t2: hip abducted 45° with full knee flexion; t3: hip abducted 45° with full knee extension) on an AMTI BMS 400600 force plate with IMU sensors on lower limbs (foot, knee, thigh). Friedman tests checked task difficulty differences, and Spearman rank correlation (ρ) assessed agreement between force plate COP parameters and IMU sensor signals.

Results: Higher task difficulty significantly increased force plate COP path length and velocity (Friedman test $p<0.001$; Left leg $\chi^2=29.43$ and 31.24; Right leg $\chi^2=30.30$ and 36.24). COP path length increased from 1490.97±616.41" mm" (t1) to 2597.86±1361.52" mm" (t3) for the left leg, and from 1458.97±455.85" mm" (t1) to 2710.39±1680.05" mm" (t3) for the right leg. Spearman analysis showed moderate positive correlations between force plate and IMU signals, especially in t1 (left leg Sensor 1 X-axis: $\rho=0.603$, $p<0.001$) and t3 (right leg Sensor 1 Y-axis: $\rho=0.638$, $p<0.001$; Sensor 6 Resultant 3D: $\rho=0.511$, $p=0.0055$). Test t2 showed no significant correlations.

Conclusions: The modified balance tests show different difficulty levels for combat athletes. Wearable IMU sensors show moderate correlation with the force plate in specific stances (t1 and t3). Therefore, IMU sensors can be a useful tool for sport-specific balance testing, although results depend on the test position.

Keywords: postural control; martial arts; test validity; Noraxon Ultium IMU

Exploring by students understanding of physical activity,sport, health – continuation

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Abstract

Introduction: The Student Scientific Association is a student organization that brings students operating at UJD of the Collegium Medicum of dr. Władysław Biegański Jan Długosz University in Częstochowa, Częstochowa, Poland. Participation in conferences at the university, national and international levels, are an important element in the biography and scientific career of every graduate. The aim of this study was to present a selected results and few techniques that allows you to examine current views on youth perceptions of extra-curricular physical activity. Exploring children's and youth understanding of health and illness still is a special challenge for researchers and Scientific Association. Physical activity promotion is essential within childhood with physical activity levels in childhood influencing lifestyle choices in adulthood and active children tend to be active adults. Regular physical activity is associated with wide-ranging health benefits for children and averts many diseases. Research to increase physical activity in children has, to date, largely underrepresented youth's voices.
Material and methods: Depending on the issue, methods such as drawings, self-report questionnaires, and performance tests were used. The drawings professionals in the field of health education. Writing and drawing is popular in health research and in youth perceptions of physical activity, health and illness.
Results: Selected findings that describes the analysis of the expressive language of drawings and written comments, suggest that the draw-and-write technique has the potential to provide valuable insights into children's health perceptions. It is through their drawings children express the views for many situations, and interpretations of their physical connections related to the body and social experiences. The draw-and-write technique is interactive and youth's methodology that facilitates the exploration of a wide range of topics and increases the reliability of data
Conclusions: An interactive method that uses creative techniques (including writing and drawing) is a valuable complement to tests and questionnaire-based methods. Active listening is valued like key point -centred methodology to explore perceptions Selected findings that describes the analysis of the expressive language of drawings and written comments, suggest that the draw-and-write technique has the potential to provide valuable insights into health perceptions. It is through their drawings express the views for many situations, and interpretations of their physical connections related to the body and social experiences. The draw-and-write technique is interactive and youth's methodology that facilitates the exploration of a wide range of topics and increases the reliability of data. Youth health perception through creative drawing language demand future research - to a large degree it is through their performance and drawings that youth express the interpretations of experiences.

Keywords: out-of-school physical activity; express; drawings

Kinematic changes following a single coaching instruction in the wheelchair fencing lunge

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Abstract

In wheelchair fencing, the temporal coordination of the weapon arm and trunk is an important component of offensive technique. This study assessed whether a single coach-provided instruction to initiate the fencing lunge by moving the weapon hand first affects the sequence of movement initiation and the temporal organization of the action.

Materials and Methods: Ten members of the Polish National Wheelchair Fencing Team participated. Movement was recorded using the SIMI Reality Motion System at 100 Hz. Each athlete performed five or six technically correct lunges per condition (118 in total: 58 without instruction [condition 1] and 60 after instruction [condition 2]), always in this fixed order. Movement onset and peak linear velocity of the trunk reference point and the shoulder, elbow, and wrist joint centers were analyzed, together with forward-phase duration and the sequence of peak-velocity attainment.

Results: The instruction did not alter the movement-onset sequence in the expected direction, with no consistent shift toward earlier movement of the wrist joint center. Peak linear velocities did not differ significantly between conditions. A distal-to-proximal peak-velocity sequence (wrist–elbow–shoulder–trunk) occurred more frequently after the instruction (50% vs. 29% of lunges), although the difference was not statistically significant at the athlete level ($p = 0.063$). Forward-phase duration was longer in condition 2 for all athletes; however, a similar progressive prolongation was already evident across repetitions within condition 1.

Discussion: A single coaching instruction did not alter the sequence of movement initiation. The more frequent distal-to-proximal sequence of peak-velocity attainment may indicate a modification of temporal movement organization after movement onset, without changes in the peak linear velocities of the analyzed points. The longer forward-phase duration observed after the instruction should be interpreted cautiously because a comparable repetition-related increase was already present within condition 1. Given the small sample size and fixed condition order, these findings should be considered exploratory and require confirmation in larger studies using randomized condition order.

Keywords: wheelchair fencing; kinematics; motor coordination

Occupational differences in skeletal muscularity and adiposity profiles among production workers, administrative employees, and teachers

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Abstract

Background: Occupational groups may differ in skeletal muscularity and adiposity, but greater muscularity does not necessarily indicate a more favourable body-composition profile. This study examined differences in skeletal muscle mass index (SMI) among production workers, administrative employees, and teachers, and assessed whether these differences persisted after accounting for age, sex, total self-reported physical activity, and body fat percentage (BF%).

Methods: The cross-sectional study included 165 professionally active adults: 99 production workers, 31 administrative employees, and 35 teachers. Body composition was assessed using multifrequency bioelectrical impedance analysis. SMI was defined as appendicular skeletal muscle mass divided by height squared (kg/m²). Total physical activity was assessed using the International Physical Activity Questionnaire. Occupational-group differences in SMI were examined using multiple linear regression with HC3 heteroscedasticity-consistent standard errors.

Results: Mean SMI differed among occupational groups ($p = .006$), with higher values in production workers (7.94 ± 1.32 kg/m²) and teachers (7.98 ± 1.23 kg/m²) than in administrative employees (7.16 ± 0.84 kg/m²). After adjustment for age and sex, production workers had higher SMI than administrative employees ($B = 0.64$ kg/m², 95% CI: 0.38–0.89; Holm-adjusted $p < .001$). This difference remained after adjustment for total self-reported physical activity ($B = 0.66$, 95% CI: 0.35–0.98; $p < .001$) and, although attenuated, after adjustment for BF% ($B = 0.40$, 95% CI: 0.12–0.68; $p = .015$). Total physical activity was not independently associated with SMI ($p = .388$).

Conclusions: Occupational groups differed in appendicular skeletal muscularity independently of age and sex. Production workers had greater SMI than administrative employees, and this difference was not fully accounted for by total self-reported physical activity or BF%. These findings indicate that muscularity should be interpreted alongside adiposity and suggest that total physical activity volume may not adequately capture occupational differences relevant to skeletal muscularity.

Keywords: skeletal muscle mass index; occupational physical activity; body composition; adiposity; bioelectrical impedance analysis; workers

A multidimensional analysis of health behaviours and quality of life among women in military service

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Abstract

Aim: The aim of this study was to assess the relationship between self-reported health behaviours and quality of life among female military personnel.

Methods: The study included 234 women serving in the military. Quality of life was assessed using the brief version of the WHOQOL scale (WHOQOL-BREF – polish version), and health behaviours were assessed using the Inwentarz Zachowań Zdrowotnych – IZZ (Health Behaviour Inventory – HBI) (in polish – Juczyński 2001). The relationships between quality of life and health behaviours were analyzed using Spearman's rank correlation coefficient. Differences in quality of life according to the General Index of Intensity of Health Behaviours (GIIHB) were analyzed using the Kruskal-Wallis H test.

Results: Statistically significant positive correlations ($p \leq 0.001$) were observed between Overall Quality of Life, General Health, and all quality of life domains:Physical Health, Psychological, Social Relationships, Environmental and the all individual categories of health behaviors: Positive Thinking, Proper Nutritional Habits, Health Practices, and Preventive Behaviors. A comparative analysis of groups identified using the GIIHB revealed that the level of health-related behaviours was a significant factor ($p \leq 0.001$) in determining the quality of life of the women in the study. Across all dimensions of quality of life analyzed, women with low GIIHB reported significantly lower quality of life scores than women with average and high GIIHB. Furthermore, in the Physical, Psychological, and Environmental domains, women with average GIIHB reported significantly lower quality of life scores than women with high GIIHB.

Conclusion: A higher level of GIIHB was associated with a higher quality of life among the women in the study. Women with a low GIIHB reported significantly lower quality of life scores than women with average or high levels. The findings demonstrate a significant association between health behaviours and quality of life; however, no causal relationship can be inferred from the present study.

Keywords: health behaviours; quality of life; military; soldiers; women

Low-Intensity Tethered Swimming as a Priming Strategy: Acute Effects on Stroke Kinematics in Young Swimmers

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Abstract

Background: Traditional priming protocols such as post-activation performance enhancement rely on high-intensity stimuli, which may induce fatigue and impair fine motor control. This is a problem in swimming, where technical precision is critical. This study examined the acute effects of low-intensity technical tethered swimming (LITTS) as a constraints-led priming strategy.

Methods: In a randomised crossover design, 32 adolescent competitive swimmers (13.2 ± 0.6 years) completed two conditions one week apart: LITTS and non-tethered low-intensity swimming. Heart rate was kept below 150 bpm. About 90 s after the intervention, participants swam a maximal 50-m front crawl. Time and stroke length were determined from video analysis. Yaw was assessed as the maximum angular velocity about the sagittal axis (ωmaxY), measured with a pelvis-mounted triaxial accelerometer and gyroscope. Data were analysed with repeated-measures ANOVA.

Results: After LITTS, 50-m time was shorter (30.69 ± 1.91 s vs. 30.97 ± 1.99 s; ~1%; $F(1,29) = 9.71$, $p = 0.005$, $\eta^2 = 0.24$). Stroke length increased (0.97 ± 0.09 m vs. 0.92 ± 0.07 m; ~6%; $F(1,29) = 47.09$, $p = 0.001$, $\eta^2 = 0.61$), and 31 of 32 swimmers (97%) improved. Yaw angular velocity decreased (99.7 ± 25.2 vs. 109.5 ± 21.5 deg/s; $F = 10.85$, $p = 0.003$, $\eta^2 = 0.27$; Holm–Bonferroni $p = 0.006$), indicating less lateral instability. Prior tethered-swimming experience did not significantly modify the response.

Conclusions: LITTS acutely improved stroke length, reduced yaw and slightly shortened 50-m time without added physiological load. It may serve as a low-fatigue, technique-oriented alternative to high-intensity priming in young swimmers. The conditions were matched for duration rather than work volume, so the effect cannot be attributed solely to the tether. The duration of the effect and its transfer to other strokes and age groups need further study.

Keywords: priming; tethered swimming; constraints-led approach; stroke length; accelerometry

Physical activity in the prevention of musculoskeletal disorders in people over 60

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Abstract

Introduction and aim: The aging process is associated with the progressive involution of the musculoskeletal system, manifesting as, among other things, loss of muscle mass, degenerative joint changes, and a decline in bone mineral density. These phenomena significantly limit the independence of seniors and increase the risk of falls. The aim of this study was to evaluate the impact of regular, targeted physical activity on functional fitness and the prevention of musculoskeletal disorders in individuals over the age of 60.

Material and methods: The study involved a group of 120 individuals (84 women and 36 men) aged 62–78. Participants were divided into two groups: an experimental group (n=60) that followed a custom training program for 6 months (resistance, balance, and stretching exercises; 45-minute sessions three times a week), and a control group (n=60) that did not engage in regular exercise. Research tools included functional fitness tests (Senior Fitness Test, Timed Up and Go – TUG) and a custom questionnaire assessing pain levels (VAS scale) and quality of life.

Results: Upon completion of the program, the experimental group showed a statistically significant improvement in lower-limb muscle strength (by an average of 22%) and postural stability (a 1.8-second reduction in TUG test time; $p < 0.05$). Data analysis also revealed a reduction in perceived spinal and knee joint pain among 74% of the seniors who exercised. In the control group, a downward trend was observed in most fitness tests.

Conclusions: Regular, systematic physical activity tailored to the capabilities of seniors is an effective method of non-pharmacological prevention for musculoskeletal disorders. It counteracts the decline in physical performance, alleviates pain, and helps maintain independence in daily life after the age of 60.

Keywords: physical activity; seniors; musculoskeletal system; prevention; functional fitness

Comparison of postural stability parameters between participants after a basic scuba diving course and non-swimmers

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Abstract

Background: A basic scuba diving course may influence postural control and the ability to maintain balance. However, the relationship between diving experience and postural stability remains insufficiently characterized. The aim of this study was to compare selected postural control parameters between individuals without any swimming experience and participants who had completed a basic diving course.

Methods: Thirty participants were enrolled in the study and allocated into two groups: non-swimmers (n = 15) and participants who had completed a basic diving course (n = 15). Postural control was evaluated using center of pressure (CoP) parameters, including CoP path length, mean velocity, and 95% confidence ellipse area, across six testing conditions: double-leg stance (2), left-leg stance (L), and right-leg stance (P), each performed with eyes open (O) and eyes closed (Z). Data distribution was assessed prior to statistical analysis, followed by between-group comparisons using independent-samples t-tests or Mann-Whitney U tests, as appropriate. Statistical significance was set at $p < 0.05$, with false discovery rate (FDR) correction applied to account for multiple comparisons.

Results: Between-group differences were observed for selected CoP parameters, although none reached statistical significance. The lowest p-values were found for 2OZ CoP mean velocity ($p = 0.064$) and 2OZ CoP path length ($p = 0.075$). No statistically significant differences were observed for the remaining CoP parameters. Following FDR correction for multiple comparisons, none of the analyzed parameters reached statistical significance (all adjusted $p > 0.05$).

Conclusions: The results did not demonstrate statistically significant differences in the analyzed postural stability parameters between non-swimmers and individuals who had completed a basic diving course. The observed trends in selected CoP measures may warrant further investigation in larger samples and with controlled diving-training protocols.

Keywords: postural control; center of pressure; scuba diving

Physical activity and depressive symptoms in adult women: A cross-sectional study on the mediating role of perceived stress

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Abstract

Introduction: The relationship between physical activity and depressive symptoms has been widely studied; however, its nature remains inconclusive. Increasing evidence suggests that the impact of physical activity on mental health may be indirect and conditional, depending on factors such as stress levels and socio-demographic characteristics. The aim of this study was to assess the relationship between physical activity and the severity of depressive symptoms in adult women, considering the mediating role of perceived stress and potential differences across the distribution of depressive symptom severity.

Materials and Methods: This cross-sectional study included 200 adult women aged 18–65 years. Physical activity was assessed using the International Physical Activity Questionnaire (IPAQ), depressive symptom severity using the Beck Depression Inventory (BDI), and perceived stress using a standardised stress assessment scale. Descriptive statistics, non-parametric tests, hierarchical regression, mediation analysis with bootstrap resampling, and quantile regression (Q25, Q50, Q75) were applied. Selected sociodemographic variables were included as covariates.

Results: Perceived stress was the strongest predictor of depressive symptom severity. Physical activity was not a significant independent predictor of depression after adjustment for stress; however, it demonstrated a significant indirect effect through stress reduction. Quantile regression analysis showed that the protective effect of physical activity was more evident in the lower and middle quantiles of depressive symptom severity and attenuated at higher levels of severity. Conclusions: Higher levels of physical activity were associated with lower severity of depressive symptoms at low and moderate levels of perceived stress, indicating a conditional protective effect. The relationship between physical activity and depressive symptoms is largely indirect and mediated by stress. These findings suggest that preventive strategies should combine the promotion of physical activity with interventions targeting stress reduction.

Keywords: physical activity; depressive symptoms; stress; women's mental health; mediation analysis; sociodemographic factors

Plantar pressure redistribution, gait progression and visual dependency following diabetic foot ulcer healing

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Abstract

Background: Following diabetic foot ulcer healing, pressure-relieving footwear and insoles aim to redistribute plantar pressure while supporting mobility. However, plantar pressure redistribution, gait progression and postural control are rarely considered together. This study examined changes in forefoot pressure and gait alongside the effect of visual deprivation on postural control in people following diabetic foot ulcer healing.

Methods: Ten adults with diabetes and a foot ulcer healed within the previous year were assessed barefoot and while wearing standard accommodative diabetic footwear with a diabetic insole. Walking was assessed using a Zebris FDM pressure platform, including forefoot maximum pressure, centre-of-pressure (CoP) gait-line length and spatiotemporal gait parameters. Dynamic postural stability was assessed using the Biodex Balance System and quiet-standing sway using the Zebris platform under eyes-open (EO) and eyes-closed (EC) conditions. Foot-specific analyses used the previously ulcerated foot.

Results: In the footwear–insole condition, maximum forefoot pressure in the previously ulcerated foot decreased by 45.3% (60.2 ± 21.5 to 32.9 ± 5.7 N/cm^2; $p<0.001$), consistent with a marked redistribution of plantar pressure. CoP gait-line length increased by 23.3% (219.1 ± 25.5 to 270.2 ± 41.3 mm; $p<0.001$). Stride length increased by 10.6% and walking velocity by 10.2% (both $p<0.001$). Postural control was strongly influenced by visual input. Eye closure increased Biodex Stability Index (vision effect $p<0.001$) and Zebris sway area ($p=0.004$), CoP path length ($p=0.003$) and CoP velocity ($p=0.003$). No significant vision × footwear–insole interaction was observed for Biodex Stability Index ($p=0.807$) or sway area ($p=0.212$).

Conclusions: Marked forefoot pressure reduction in the footwear–insole condition occurred alongside greater CoP progression, longer strides and faster walking, while sensitivity to removal of visual input remained evident during both dynamic and quiet-standing balance tasks. These findings suggest that plantar pressure redistribution, locomotor progression and visual-dependent postural control represent complementary dimensions of function following diabetic foot ulcer healing. Their combined assessment may provide a broader biomechanical characterisation than regional pressure reduction alone.

Keywords: diabetic foot; therapeutic footwear; gait; postural control; centre of pressure; DFU

Sleep quality, perceived stress, and dynamic balance in physical education students

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Abstract

Introduction: Sleep quality and stress may affect postural control and dynamic balance. The aim of this study was to investigate the relationships between sleep quality, perceived stress, and dynamic balance performance in physical education students, with particular attention to the results of the lower limbs.

Methods: Fifteen physical education students (men and women) participated in the study. Dynamic balance was assessed using the Y-Balance Test. At the same time, sleep quality and perceived stress were evaluated using a questionnaire based on the Pittsburgh Sleep Quality Index (PSQI) and the Perceived Stress Scale (PSS-10). Statistical analysis included descriptive statistics and Pearson's correlation coefficient.

Results: The mean Y-Balance Test score was 88.37 ± 4.72 cm. The mean PSQI score was 6.07 ± 3.13, while the mean PSS-10 score was 24.87 ± 2.07. Sleep quality, assessed using the PSQI, showed a weak negative correlation with dynamic balance performance ($r = -0.270$; $p = 0.330$), which was not statistically significant. In contrast, perceived stress was significantly and positively correlated with Y-Balance Test performance ($r = 0.609$; $p = 0.016$). Thus, higher perceived stress was associated with better dynamic balance performance in the studied group.

Conclusions: The results suggest that sleep quality was not significantly associated with dynamic balance performance in the study group. A significant positive relationship was observed between perceived stress and Y-Balance Test performance, indicating that participants reporting higher stress levels achieved better balance results. One possible explanation is that a moderate or higher level of stress may have been associated with increased arousal and concentration during test performance. However, this hypothesis cannot be confirmed as a causal mechanism based on the present data. Due to the small sample size and the correlational nature of the analysis, the findings should be interpreted with caution.

Keywords: Stress; sleep; dynamic balance; Y-Balance Test; questionnaire

Student Scientific Club 'Activity-Culture-Health'- activities and prospects

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Abstract

Introduction: The development of scientific activity within the Student Scientific Association *Activity–Culture–Health* has been systematically pursued since 2015. An important component of the Association's activities is students' participation in national and international scientific conferences, where they present the findings and successive stages of their research projects. A notable example is the *International Scientific Conference for Students and PhD Students: Physical Activity and Health in an Interdisciplinary Approach*, which brought together researchers and students representing eight countries: Japan, Sweden, Ukraine, Austria, Belarus, Slovakia, the Czech Republic, and Poland.

Material and methods: The analysis focused on documented student scientific activity and research collaboration undertaken within the framework of the Student Scientific Association *Activity–Culture–Health*. The analysis covered activities conducted during the 2024–2025 academic year, with particular emphasis on research projects carried out by student members of the Association in collaboration with academic staff of the Institute of Physical Culture Sciences at Jan Dlugosz University in Częstochowa, as well as researchers and students representing other academic and scientific institutions.

Results: Members of the Association were actively involved in the implementation and dissemination of successive stages of research conducted in collaboration with academic staff and students from various scientific and academic centers. The research topics addressed a range of psychological, psychosocial, and health-related determinants of physical activity, as well as the role of selected forms of physical activity in human functioning. The research presented included, among others: *Practical workshop attitude as a way to explore perception in and of out of school physical activity – longitudinal studies – Part III*; *Pain and physical activity referenced to selected personality traits*; *The psychosocial effects of taekwondo training: longitudinal perspective*; and *Psychological profile of people involved in sports and physical activity: A pilot study*.

Conclusion: The activities of the Student Scientific Association *Activity–Culture–Health* demonstrate the systematic and multifaceted engagement of students in scientific research and the development of national and international research collaboration. Members of the Association have actively participated in numerous scientific conferences, presenting both individually conducted research and studies undertaken in collaboration with academic staff and researchers from international academic institutions. The affiliations of co-authors included, among others, the Student Scientific Association *Activity–Culture–Health*, Jan Dlugosz University in Częstochowa, Poland; Stockholm University, Sweden; Lesya Ukrainka Eastern European National University, Ukraine; and Universidad de Castilla-La Mancha (UCLM), Faculty of Sport Sciences and Physical Education, Spain. Such interdisciplinary and international collaboration constitutes an important component of the internationalization of student research activity and contributes to the development of students' research, analytical, and scientific communication competencies.

Keywords: students scientific movement; sport; research

Dietary preferences and adherence to dietary recommendations in physically active individuals

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Abstract

Introduction: The aim of the study was to assess the degree of consistency between reported dietary preferences and dietary behaviors in a group of recreationally active individuals.

Methods: The study included 106 individuals engaged in recreational physical activity, including 57 women and 49 men, with a mean age of 30.5 ± 5.2 years. Two original research questionnaires were used. Dietary behaviors were assessed using the Quick Diet Survey (QDS), while food preferences were assessed using the Food Preference Questionnaire (FPQ), comprising 416 items grouped into 16 thematic categories: raw fruit, fresh vegetables, natural probiotics, wholegrain cereal products, highly processed meat products, fast food, sweets, savoury snacks, sugar-sweetened beverages and energy drinks, fried and breaded dishes, legumes, fish, vegetable fats, mineral and table water, cereal products, and natural dairy products. Preference scores, calculated as the sum of points within each category, were compared between participants reporting and not reporting each of 16 selected dietary behaviours using the Mann–Whitney U test or Student's t-test. Additionally, descriptive statistics for categorical variables were used to assess the frequency of consistency and discrepancy between food preferences and dietary behaviours.

Results: Statistically significant differences in preference levels were observed between individuals who reported engaging in a given behavior and those who did not in 10 of the 16 comparisons analyzed. Higher preference levels were observed, among others, among individuals who reported regularly consuming fruits, vegetables, probiotic products, legumes, and vegetable fats. In contrast, individuals who reported limiting their consumption of processed meats, fast food, sweets, and sweetened beverages, as well as replacing frying with other cooking methods, exhibited lower preference levels for the corresponding foods. The largest effect size was observed for preference for sweetened beverages ($r = 0.43$; $p < 0.001$). The most frequently observed discrepancy was between a low preference for vegetables and reported regular vegetable consumption (43.4%). In contrast, 37.1% of respondents reported a high preference for salty snacks while also indicating that they limited their consumption.

Conclusion: Reported food preferences were significantly associated with selected dietary behaviors. However, these associations were not observed across all areas analyzed. Some participants reported specific dietary behaviors despite their food preferences.

Keywords: food preferences; dietary behaviours; physically active individuals; sports nutrition

Sports policy of the Democratic People's Republic of Korea and the development of taekwon-do as an element of physical culture and quality of life

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Abstract

Sport in the Democratic People's Republic of Korea (DPRK) constitutes an integral component of state policy, combining educational, ideological, and diplomatic functions, with Taekwon-Do occupying a central position within this framework. The aim of this study was to analyse the influence of DPRK sports policy on the development of Taekwon-Do between 2015 and 2025, with particular reference to its role in physical education, health promotion, social cohesion, and consequently, the quality of life of citizens.

A qualitative approach with elements of a case study was applied, based on the triangulation of methods: in-depth interviews (n = 16) conducted in Pyongyang in April 2025, direct and participant observation (including the first author's participation in the Pyongyang International Marathon), and the analysis of institutional documents and media content (N = 64). Comparative material was provided by the first author's earlier stay in the DPRK in 2019.

The findings indicate that Taekwon-Do functions as a multidimensional instrument affecting quality of life through three complementary dimensions: educational and pedagogical, health-related, and community-identity. The centralised model of sports policy integrates the elite pillar – confirmed by the DPRK national team's leading position at the 2025 ITF World Championships – with the mass-participation pillar, documented by the routine, collective character of everyday practice. International engagement remains selective, yet retains the potential of cultural communication and sports diplomacy. The study contributes, to the best of the authors' knowledge, the first systematic field material on Taekwon-Do in the DPRK, extending knowledge on the role of sport in centralised systems and on martial arts as factors shaping individual and collective quality of life.

Keywords: sports policy; Taekwon-Do; quality of life; physical culture; DPRK

Archery within the framework of an active school and the promotion of student health

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Abstract

Active School represents a modern approach to education that promotes physical activity, a healthy lifestyle, and the overall physical, motor, social, and psychological development of students. In this context, archery represents an innovative and engaging physical activity that integrates these domains and contributes to students' physical and mental health.

The aim of this study was to analyze the potential of incorporating archery into the Active School concept and to assess its potential effects on selected health-related indicators in students. The study sample consisted of N=109 pubescent students attending primary schools, who were divided into an experimental group (EG N=51) and a control group (CG N=58). The EG participated in a 12-week archery program implemented within the Active School framework. The program comprised 24 lessons, performed twice a week, with each lesson lasting 120 minutes. The CG continued with its usual school routine without participating in the archery program and other additional physical activity interventions.

Data were collected using standardized health-related fitness tests and a non-standardized questionnaire. The obtained data were analyzed using descriptive and inferential statistics. The results present a comparison of changes in the selected factors between the EG and the CG. The EG demonstrated statistically significant improvements ($p < 0.05$) in the Ruffier test, the sit-up test, postural alignment, and body weight reduction. The questionnaire results also revealed statistically significant differences ($p < 0.05$), indicating that, compared with the CG, participation in archery provided students in the EG with opportunities to develop attention, patience, self-regulation, and the ability to cope with challenging situations. No positive changes in the monitored factors were observed in the CG.

These preliminary findings suggest that archery may enrich the range of physical activities offered within the Active School concept and contribute to a comprehensive approach to promoting students' health and well-being.

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Keywords: active school; archery; health; pupils

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