ICSE | INTERNATIONAL CONFERENCE ON SPORTS AND EDUCATION

LISBON 2025
14-15 NOVEMBER

BOOK OF ABSTRACTS

4TH EDITION OF INTERNATIONAL CONFERENCE ON SPORTS & EDUCATION

Collected Abstracts from Researchers, Practitioners & Innovators in Sport, Education, Health, and Social Development

UNIVERSIDADE LUSÓFONA - LISBON, PORTUGAL
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PREFACE

The ICSE 2025 Book of Abstracts brings together the scientific and professional contributions presented at the 4th International Conference on Sports and Education, held on 14–15 November 2025 at Universidade Lusófona in Lisbon, Portugal. Across these pages, researchers, practitioners, and innovators from diverse disciplines examine how sport can drive transformation in education, health, community life, and social development.

This edition of ICSE unfolds around four core pillars: Education Through Sports Exercise, Health and Physical Literacy, Sport Tourism, and Smartization in Sport and Education. The abstracts reflect this thematic richness, spanning topics such as inclusive physical education, dual-career support for student-athletes, sport-based social inclusion, technological innovation in training and performance, and community-based health promotion.

By offering a shared space for debate, evidence, and practice, the Book of Abstracts supports ICSE's mission to promote cross-sector collaboration and evidence-informed approaches at the intersection of sport and education. The organizing and scientific committees extend sincere appreciation to all authors, reviewers, and partners whose work has contributed to the scientific quality and international reach of ICSE 2025.

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Abstracts are listed in alphabetical order based on the primary author's name.

EDITOR'S NOTE

This Book of Abstracts compiles the submissions accepted for presentation at ICSE 2025, including keynotes, oral communications, poster sessions, and parallel thematic panels. All abstracts appear as provided by the authors, preserving the diversity of methodological approaches, settings, and perspectives represented in the conference.

The contributions are organized to mirror the main thematic focus of ICSE 2025, with work clustered around Education Through Sport, Education, Health and Physical Literacy, Sport Tourism, and Smartization in Sport and Education. Together, these strands demonstrate how sport can be used as a context for innovation in pedagogy, health promotion, technological development, and inclusive community practices.

Gratitude is extended to the scientific committee, the reviewers, and the organizing team for their careful work in shaping the programme and supporting this publication. Appreciation is also due to the participants, whose engagement—whether in person or remotely—continues to expand the international dialogue on sport and education and to inspire new collaborative initiatives.

Editor
ICSE 2025 Book of Abstracts

INFORMATION ABOUT ICSE CONFERENCE

The International Conference on Sports and Education (ICSE) is an annual international platform dedicated to exploring how sport can enhance education, health, social inclusion, and community development. ICSE combines academic research with practice-oriented exchange, bringing together researchers, educators, practitioners, sport organizations, policymakers, and civil society actors who are invested in using sport as a tool for learning and social impact.

ICSE 2025, the 4th edition of the conference, took place at Universidade Lusófona in Lisbon and focuses on four main pillars: Education Through Sports Exercise, Health and Physical Literacy, Sport Tourism, and Smartization in Sport and Education. Over two days, the programme featured keynotes, symposia, roundtables, parallel sessions, poster presentations, and “Meet the Expert” moments designed to connect research with professional practice and project development.

The objectives of ICSE 2025 include promoting the sharing of scientific and practical knowledge, encouraging innovation in emerging methodologies and technologies, and fostering cooperation among institutions and professionals across sectors. The conference was open to teachers and educators, students, coaches, sports professionals, researchers, and all those interested in sport and education, and it was recognized within Portuguese systems of continuing professional development for sport and teaching professionals.

INFORMATION ABOUT THE HOST EDUCATIONAL INSTITUTION

The International Conference on Sports and Education (ICSE) is an annual international platform dedicated to exploring how sport can enhance education, health, social inclusion, and community development. ICSE combines academic research with practice-oriented exchange, bringing together researchers, educators, practitioners, sport organizations, policymakers, and civil society actors who are invested in using sport as a tool for learning and social impact.

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SCHOOL ENVIRONMENT AND PHYSICAL LITERACY: TOWARDS A SYSTEMIC FRAMEWORK FOR RESEARCH AND PRACTICE

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Thematic Area

Physical Literacy and Lifelong Development

Keywords

School environment, physical literacy, physical activity, conceptual study

Abstract

Introduction: Schools—where every child encounters structured opportunities for movement and learning—are essential for fostering lifelong engagement in physical activity. Despite the recognized potential of environmental interventions, evidence for their sustained effectiveness remains inconsistent. This perplexity highlights the need for new theoretical perspectives capable of explaining the complex relationships between individual behavior and environment. The concept of physical literacy offers such a lens, challenging conventional approaches by shifting attention from the quantity of activity to its meaning in context.

Objectives: This study aims to advance understanding of how physical literacy emerges through the reciprocal dynamics of individuals, collectives, and their environments. It proposes an initial conceptual direction for examining physical literacy within real-world contexts, offering a foundation for future empirical and applied research in schools.
Methods: Grounded in critical analysis of empirical evidence, this conceptual study follows a problematization-based theory-building strategy. Drawing on ecological and systems perspectives, it employs abductive reasoning to generate new theoretical insight.

Results: We propose a systemic perspective on physical literacy and introduce the concept of physical literacy expressions—the observable manifestations of how individuals, groups, and social structures make sense of movement opportunities within their environments. Each expression reflects the momentary fit between what an individual or collective perceives, values, knows, intends, and is capable of, and what the environment—in its ecological sense—affords at that moment. The concept offers a scalable analytical unit for studying the complex, relational nature of physical literacy across nested levels of system organization.

Conclusions: The central contribution of the current conceptualization lies in recognizing that physical literacy develops through complex, self-organizing processes rather than linear cause-and-effect relations. Physical literacy expressions appear to follow universal relational patterns across interdependent levels (individual, group, and social structure), suggesting that physical literacy can be observed, interpreted, measured, and supported as a systemic phenomenon. Although the dynamics of these patterns remain to be uncovered, this systemic perspective offers a foundation for developing adaptive, context-sensitive strategies for designing school environments that promote sustainable and meaningful physical activity.

VALIDATION AND RELIABILITY OF A DYNAMIC COMBAT SIMULATION SCENARIO FOR TACTICAL ATHLETES

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Thematic Area

Smartization in Sport and Education

Keywords

Tactical athletes, precision shooting, simulated combat, operational performance

Abstract

Background: Due to the increasing complexity of security operations and the critical importance of both physical and cognitive preparedness for mission success, it becomes imperative to develop scientifically grounded instruments capable of providing an integrated assessment of tactical-operational performance.

Purpose: This study evaluated the reliability and validity of the Dynamic Combat Simulation Scenario (DCSS) as a tactical performance assessment tool for law enforcement and military personnel.

Methods: Thirty tactical athletes (15 police officers and 15 army soldiers; age: 31.71 ± 5.52 years; height: 1.78 ± 0.75 m; weight: 75.76 ± 11.58 kg) completed two CDCS tests with a 7-day interval between them. The 110-m course comprised 13 tasks, including eight combat shooting events and five combat-specific tasks (crossing a suspended bridge; carrying an injured teammate; crawling; grenade throwing; and zig-zag running). Performance assessment included precision shooting (MantisX Blackbeard App, AR-15, USA) and total CDCS completion time. Reliability was evaluated using the intraclass correlation coefficient (ICC), Bland-Altman analysis, and coefficient of variation (CV). Normality was assessed using the Shapiro–Wilk test.

Results: The mean completion time was 65.33 ± 3.75 s, and shooting accuracy was 87.27 ± 1.01 points. The test and retest reliability was excellent for both variables (ICC = 0.95–0.96, p < 0.001). Bland-Altman analysis indicated good agreement between tests, with no relevant systematic bias. Test–retest analysis (p < .001) indicated a clear learning effect, evidenced by improved shooting accuracy and reduced completion time. These findings underscore the sensitivity of the DCSS as a performance assessment tool and emphasize the importance of prior familiarization for longitudinal applications.

Conclusion: The DCSS proved to be a reliable and valid tool for assessing tactical performance, enabling monitoring of progression, guiding targeted interventions, and bridging controlled assessments with real operational demands.

PROMOTING PHYSICAL ACTIVITY AND SOCIAL INCLUSION AMONG IMMIGRANT WOMEN: INSIGHTS FROM THE AFISAMI PROJECT

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Thematic Area

Inclusion and Innovation in Physical Education

Keywords

Physical activity; social inclusion; acculturation; migrant women; qualitative research

Abstract

Introduction: Migration represents a global challenge with significant social, cultural, and health implications, particularly for women, who often experience multiple barriers to participating in physical activity and inclusion processes. The AFISAMI Project (Promotion of Physical Activity and Social Inclusion and Acculturation of Immigrant Women)—co-financed by the EU, Ministry of Finance and Public Administration, European Funds, Andalusian Regional Government, and Ministry of University, Research and Innovation—explores how sport and physical activity can foster acculturation, social cohesion, and empowerment among immigrant women in urban public spaces. **Project Description:** AFISAMI is a doctoral research project developed at the University of Seville, grounded in an intersectional and gender-sensitive perspective. It integrates theoretical, methodological, and applied dimensions, combining a systematic review, validation of a qualitative interview instrument, and emerging fieldwork mapping public spaces in Seville where immigrant and refugee populations engage in physical activity. The project aligns with European and international priorities in inclusive sport, intercultural dialogue, and community well-being. **Objectives:** AFISAMI aims to: (1) identify and analyze literature on physical activity, sport, and acculturation in immigrant women; (2) design and validate qualitative tools for exploring inclusion processes; (3) map urban spaces and social networks that promote participation; and (4) enhance knowledge transfer on inclusion through sport.

Methodology: The study follows a mixed-method design. The systematic review adhered to PRISMA and Cochrane standards (registered in OSF). The interview was validated through expert judgment using Aiken's V and the Content Validity Coefficient (CVC), achieving high reliability (V = 0.89; CVC = 0.88). Fieldwork began with observational mapping supported by NVivo for thematic analysis. **Results:** Key outcomes include a peer-reviewed publication (Societies, Q2, JCR, 2025), a second article on the validation process currently under review, a validated 54-item interview structured in ten thematic areas, and the identification of urban spaces where immigrant women's physical activity fosters intercultural encounters and social bonds. **Next Steps:** Upcoming stages (2025–2027) will involve interviews with 96 participants, qualitative analysis using Atlas.ti, and dissemination of evidence-based recommendations for inclusive, community-driven sport and social policies.

HOW CAN A HEAD-COACH BE A COACH DEVELOPER IN LEADING THEIR COACHING STAFF? A COACH EDUCATION CASE STUDY

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Thematic Area
Education Through Sport (ETS) : Methodology for Education Innovation

Keywords
Coach Education, Coach Developer, Assistant-Coach, Professional Development, Qualitative analysis

Abstract
Introduction: Considering the continuous interaction among coaching staff members in real practice settings, the continuous professional development of coaches could - and arguably should - be emphasised within the coaching staffs. Working together in the same environment allows the head-coach (HC) to better understand the historical and situated context of practice, enabling more effective pedagogical interventions aligned with the individuals involved. Despite the potential contribution of HCs as coach developers of their assistant-coaches (ACs), there remains a gap in the literature on how the HC might potentiate the "learning by doing" of their ACs through diverse strategies and activities directly related to their daily responsibilities.

Objectives: This study examined how the HC of a world champion futsal team worked as a coach developer of their ACs.

Methods: An interpretative case study design was adopted to allow an in-depth exploration of the complexity and uniqueness of particularities of this HC, his coaching staff and their sport environment. Four experienced coaches participated in the study, one HC and three ACs. Data were collected through semi-structured interviews and analysed using thematic analysis.

Results: The findings revealed how the HC intentionally structured the sequence and timing of the tasks assigned to ACs, aiming to enhance both team performance and ACs' professional development. Key pedagogical strategies by HC while working as a coach developer included viewing mistakes as learning opportunities, fostering ACs' commitment to team success, and providing ACs' space to plan and lead in real-life contexts (i.e., training session). Through written reflections and reflective discussions, the HC also demonstrated how developing reflective skills was paramount in ongoing coach education process. From ACs' perspectives, the HC's training approach, centred on learning-by-doing and reflecting, showed to influence their personal and professional growth.

Conclusions: The structured work foundation established by the HC, integrating multiple pedagogical strategies to optimise learning and performance, fostered an educational culture characterised by genuine non-formal environment, accountability, self- and peer-assessment, collaborative discussions, and mandatory activities. The key strategies found might not only be applied by HCs' and coaching staffs worldwide but also be used as a basis for designing future coaching education programs.

TUTORING THAT MATTERS: AN EXPLORATION OF THE PEDAGOGICAL STRATEGIES MOST VALUED BY STUDENT-COACHES THROUGHOUT THEIR INTERNSHIP EXPERIENCE

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Thematic Area

Education Through Sport (ETS) : Methodology for Education Innovation

Keywords

Coach Education, Tutoring, Professional Development, Qualitative Analysis, Exploratory Design

Abstract

Introduction: Within Portuguese coach education there is no formal requirement for tutors to complete specific training, nor is there a shared framework to guide their professional development. This absence of structure creates ambiguity around what constitutes effective tutoring practice. Consequently, little is known about the pedagogical strategies employed by tutors or their impact on student-coaches (SCs). This lack of clarity not only affects SCs' professional growth but may also undermine the quality of tutoring provision and the capacity to effectively support tutors themselves.

Objectives: This study aimed to explore, from the perspective of SCs, the most valued pedagogical strategies employed by their tutors. It also sought to examine the potential impact of these tutoring strategies on fostering SCs' professional development.

Methods: An exploratory qualitative research design was employed, framed within a critical analysis of a year-long tutoring intervention. Participants included eight SCs, two females and six males. SCs were allocated to placement clubs which had formal agreements with the university and were required to play the role of assistant-coaches. Data were collected through 240 individual reflective-logs and 6 focus-group interviews and analysed using thematic analysis.

Results: From the SCs' perspective, feeling seen and heard were vital for their professional development. Strategies linked to feeling seen included collaborative planning and delivery of training sessions, public recognition of SCs' contributions, and active engagement in competition contexts. Strategies associated with feeling heard included open communication, meaningful task delegation, and the use of SCs' input to support athletes and inform coaching decisions. Together, these strategies enhanced SCs' self-confidence, accountability, professional identity, and coaching competence.

Conclusions: SCs' ongoing involvement in the internship served as an opportunity for them to negotiate their legitimacy and experience. Findings highlighted the importance of carefully selecting tutors who can be committed to supporting the SC's professional development. It also emphasised the need for tutors to engage in ongoing professional development which creates opportunities for interventions to be deliberately planned rather than left to chance. Neglecting to involve tutors in professional development, while viewing tutoring as a role that requires little or no preparation, undermines the effective development of future coaches.

FROM CHAOS TO UNDERSTANDING: HOW REFLECTION SUPPORTS FUTURE TEACHERS IN INCLUSIVE PHYSICAL EDUCATION

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Thematic Area

Education, Health and Physical Literacy: Inclusion and Innovation in Physical Education

Keywords

Inclusion; Reflection; Physical Education; Initial Teacher Education

Abstract

Inclusive Education remains a key challenge in Physical Education, especially during the early stages of Initial Teacher Education Training. It can be understood as equity in the educational experience and equal opportunities in access and participation in the teaching-learning process for all students. During school placement, preservice teachers (PSTs) often experience difficulties when attempting to include students with disabilities, particularly while managing lesson planning, classroom organization and behavior management.

As a result, inclusive practices are commonly neglected in favor of more immediate teaching concerns. This study aims to understand how reflection supports PSTs in addressing the challenges of including students with disabilities during school placements.

The research follows a qualitative approach. Data was collected through focus group, participant observation and document analysis over the course of one academic year of eleven PSTs. Thematic analysis was conducted based on Braun and Clarke (2019) guidelines through deep familiarization with the data, allowing the identification of emerging themes.

Results demonstrate, during school placement, PSTs do not feel prepared to deal with disabled students. PSTs initially prioritized classroom control and direct instruction enabling them to recognize the impact of exclusionary practices. Reflection helped to: a) evaluate the effectiveness of their instructional methods and adapt them to meet diverse needs; b) gain confidence and act with more certainty; c) understand the lack of specific learning goals – simply including disabled students in the task proved insufficient.

Findings reinforce the need of incorporating structured reflective practices into initial teacher education. Reflection is a tool for pedagogical improvement, but also as a transformative process through which future teachers build inclusive identities. Initial Teacher Education programs must prepare more effectively PSTs to engage with the complexities of inclusion in Physical Education. Strengthening this dimension of training is essential to ensure that future Physical Education teachers are equipped to promote equity, participation and inclusive values in their daily professional practice. In Physical Education, inclusion is not just a classroom adjustment, but a pedagogical commitment.

UNDERSTANDING INDIVIDUAL RESPONSES TO EXERCISE FOR LOW BACK PAIN: INSIGHTS FROM THE REVIEEW TRIAL IN ELDERCARE WORKERS

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Thematic Area

Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords

Occupational health, tele-exercise, pain management, mental health, randomized controlled trial

Abstract

Introduction:
Low back pain (LBP) is one of the most prevalent and disabling health problems worldwide, particularly affecting eldercare workers, a group essential to the sustainability of aging societies. Exercise is a well-established strategy for LBP management, yet individual outcomes vary considerably. Understanding which factors differentiate responders from non-responders may help design more effective interventions.

Objectives:
To identify baseline characteristics that predict individual response to a videoconference-supervised exercise program for LBP among eldercare workers.

Methods:
This secondary analysis used data from the ReViEEW randomized controlled trial (ClinicalTrials.gov: NCT05050526), which demonstrated significant reductions in LBP following a 12-week, twice-weekly, group-based resistance exercise intervention. The sessions lasted 45 minutes, including four sets of six whole-body exercises performed at moderate intensity using bodyweight and elastic bands. The participants were located at their workplace and the trainer supervised them remotely using real-time videoconference. All participants (n=77) reporting an average baseline LBP intensity ≥2/10 on the numerical rating scale and completing pre- and post-intervention assessments were included in this study. Responders were defined as those achieving a clinically meaningful pain reduction (≥2 points). The study was conducted from a holistic perspective, considering a range of baseline factors, including sociodemographic characteristics, lifestyle habits, anthropometric data, muscle performance, pain-related measures, psychological health, and work-related variables, as well as adherence to the exercise protocol. These measures were compared between responders and non-responders using appropriate statistical tests, and significant variables ($p<0.05$) were entered into logistic regression analysis.

Results:
Thirty-nine participants (51%) were classified as responders. Compared with non-responders, they presented higher initial LBP intensity (4.7±1.8 vs. 3.9±1.7; p=0.045) and lower anxiety levels (3.9±2.4 vs. 5.1±2.4; p=0.040). In the regression model, higher baseline pain (OR=1.37; 95%CI 1.03–1.81) and lower anxiety (OR=0.79; 95%CI 0.64–0.97) independently predicted favorable response to exercise.

Conclusions:
Baseline pain intensity and anxiety levels were key predictors of individual response to exercise in eldercare workers. These findings provide valuable insight into individual variability in response to exercise interventions for LBP. The results may help inform the development of more tailored approaches based on baseline characteristics, potentially leading to improved clinical outcomes and more effective therapeutic decision-making.

PREDICTIVE CAPACITY OF PHYSIOLOGICAL AND NEUROMUSCULAR VARIABLES IN XCO PERFORMANCE USING VIRTUAL SIMULATION TECHNOLOGY

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Thematic Area

Smartization in Sport and Education: Technologies and Innovation in Sports Training

Keywords

Cross-Country Olympic, Performance, Virtual Simulation, Smart Trainer

Abstract

Introduction: Cross-Country Olympic (XCO) is a cycling sport that is characterized by athletes performing several laps around a predetermined circuit. The type of surface on which competitions take place includes a variety of terrains, maintaining a balance between different surface types and slopes, through technical steep and steep climbs. Previous literature reports maximum oxygen uptake (VO2 máx), the maximal aerobic power, ventilatory and lactate thresholds as the main predictors of XCO performance in elite athletes.

Objectives: The present study aimed to identify which physiological and neuromuscular variables best predict performance in XCO among young athletes.

Methods: Nine national level XCO athletes (15.8 ± 0.7 years), (1.69 ± 0.05 m), (57.5 ± 6.0 kg), performed two sessions in the laboratory. In the first session, neuromuscular, bioimpedance, tensiomyography and metabolic capacity data evaluations were performed. The metabolic protocol began with a maximal incremental test involving a 25W increase every min until exhaustion, followed by a 7 min active recovery. Thereafter, the participants completed 4 maximal sprints of 30 s each, with 90 s of recovery. In the second session, each athlete performed a virtual simulated race (4.46 km per lap, with 210 m of elevation gain) on their own bicycle mounted on a Tacx NEO 2T Smart trainer (The Netherlands). During the simulated race, power output, heart rate, velocity, cadence and total race time were collected, in which the performance variable considered was the total race time. For the statistical analyses, pearson correlation and multiple linear regression were conducted using SPSS.

Results: Regression analysis revealed that mean absolute power in the third sprint and the absolute VO2 at the 2nd ventilatory threshold explained 96% of the variance in race time (y=5079.286-2.899 ×Mean Absolute Power in 3rd Sprint-0.374 ×absolute VO2 at 2nd VT).

Conclusions: Absolute $\dot{V}O_2$ at the second ventilatory threshold and the absolute average power in the third sprint were the best predictors of simulated race time, and consequently, more reliably predicted the performance of young XCO athletes. Future studies may expand this approach to larger samples and integrate physiological data during the simulated race.

COMPETITIVE ROBOTICS IN EDUCATION: A DIDACTIC APPROACH AND TECHNOLOGICAL ANALYSIS OF A MINI SUMO ROBOT

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Thematic Area

Smartization in Sport and Education

Keywords

Educational Robotics, Mini Sumo, Arduino Nano, STEM, TinkerCAD

Abstract

Introduction: This project presents the design and construction of an autonomous Mini Sumo (500 g) robot capable of competing in official robotics contests, framed as an educational tool for experiential STEM learning in schools.

Project Description: The platform is built on an Arduino Nano with distance sensors and a state-machine control architecture, enabling flexible opponent detection, navigation, and engagement strategies in real time. Hardware schematics were developed in EasyEDA, while the prototype and firmware were validated through TinkerCAD and Arduino IDE.

Objectives: Demonstrate a low-cost, reproducible Mini Sumo design for classroom use; integrate robotics into a structured learning pathway linking theory and practice; and motivate students through competitive experiences.

Methodology: Students engage in the full engineering cycle—from concept and circuit design to programming and testing—supported by structured worksheets and rubrics. A state-machine framework organises robot behaviours (search, detect, pursue, evade) for modular development.

Results: Classroom pilots reveal higher engagement, teamwork, and problem-solving persistence. Competitions enhance motivation, promoting iterative refinement and reflective practice.

Conclusion: Competitive robotics merges technology and pedagogy. The Mini Sumo serves as a versatile educational resource, fostering interdisciplinarity and hands-on STEM learning.

ADAPTIVE LEARNING ENVIRONMENTS THROUGH GENERATIVE AI AND AR-ENHANCED COGNITIVE PROFILING: A MULTIMODAL FRAMEWORK FOR HIGHER EDUCATION

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Thematic Area

Smartization in Sport and Education

Keywords

Generative AI, Augmented Reality, Adaptive Learning, Cognitive Profiling, Higher Education

Abstract

I**ntroduction:** This study extends data-driven educational analytics by combining generative AI, cognitive–behavioral profiling, and augmented reality (AR) to personalize learning in higher education.

Objectives: To design an adaptive architecture that detects learners' cognitive and behavioral patterns in real time and delivers individualized support.

Methods: The framework integrates multimodal interaction with intelligent agents (chatbots, navigation assistants, and digital tutors), predictive analytics for engagement and performance, and AR-based 3D explanatory models to encourage embodied learning. Adaptive feedback is aligned with students' engagement profiles and study behaviors.

Results: Preliminary implementation scenarios indicate improved learner motivation, reduced cognitive load, and inclusive learning pathways. Students received dynamic guidance and just-in-time hints, while AR visualizations fostered deeper conceptual understanding.

Conclusions: Merging predictive analytics with experiential, AR-enhanced learning can cultivate self-regulated study habits and better academic outcomes. Future work will involve large-scale evaluation within university courses using a Unity integration for immersive, adaptive experiences.

COACH'S ANALYST AI AGENT: AUTOMATED VIDEO TAGGING, SCOUTING, AND PRACTICE PREPARATION IN BASKETBALL

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Thematic Area

Smartization in Sport and Education

Keywords

Basketball Analytics, Computer Vision, Video Tagging, Scouting Reports, LLM

Abstract

Introduction: Semi-professional but also basketball clubs lack the staff and tools to perform time-intensive video breakdowns and opponent scouting. We present the Coach's Analyst AI Agent—an end-to-end framework that automates tagging, generates scouting summaries, and designs practice preparation plans.

Methods: The system is structured in four layers—Input (game video, box scores, coach queries), Analysis (object detection, multi-object tracking, pose estimation, and action recognition), Reasoning (large language model–based question answering and drill design over structured tags and statistics), and Output (dashboards, clip playlists, and reports). The tagging pipeline includes possession segmentation, YOLO-based detection, DeepSORT tracking, and OpenPose/MediaPipe pose features, producing JSON metadata for rapid retrieval. A human-in-the-loop step supports validation and continual fine-tuning.

Pilot Scheme: A short-term deployment over two or three games is outlined to assess performance and usability. Metrics include time saved per game, tagging accuracy, player clip-engagement, and coach satisfaction.

Results (anticipated): Early tests indicate more than four hours saved per game for video staff, around 85% tagging accuracy, and better player engagement through personalized clips. Coaches instantly retrieve teaching moments and drill templates mapped to tagged actions.

Conclusion: Combining computer vision with large language model reasoning turns the agent into a 'digital coaching assistant,' expanding analytics access beyond elite teams. Future work focuses on real-time applications and multimodal data fusion.

PROMOTING THE SOCIAL INCLUSION OF NEWCOMER IMMIGRANT CHILDREN: A LEARNER-CENTERED AND TECHNOLOGY-BASED LEARNING IN PHYSICAL EDUCATION, EXTRACURRICULAR SPORT, AND CULTURAL INTERCHANGE ACTIVITIES

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Thematic Area

Education, Health and Physical Literacy: Inclusion and Innovation in Physical Education

Keywords

Equitable Learning Opportunities; Inclusive Physical Education; Preservice Teachers; Newcomer Immigrant Children; Technology-based Learning

Abstract

The recent immigration influx poses challenges and opportunities for schools in promoting social inclusion of newcomer immigrant children (NIC). Despite physical education's (PE) potential to foster inclusion, NIC often face exclusion due to language barriers and cultural differences, and teachers overall, and preservice teachers (PSTs) feel unprepared for addressing the diversity of learning needs in the classroom. To address this, a yearlong participatory action-research intervention within a Physical Education Teacher Education program will implement the LITE (learner-centered, inclusion, and technology-oriented education) program during PE classes and extracurricular sports to promote NIC's social inclusion. This study is driven by the urgent necessity to facilitate NIC's social integration and improve the cultural competence and pedagogical skills of PSTs. Ten PSTs will participate in this study, implementing the LITE program over a full academic year. A facilitator, also acting as participant-observer, will provide in-depth and ongoing support throughout the process, actively engaging with PSTs and offering continuous feedback, reflective guidance, and insights to improve teaching practices and LITE program implementation. For NIC students, outcomes include an increased sense of belonging, stronger peer relationships, and greater engagement by positioning NICs as active participants in their own learning. For PSTs, seek to enhance their ability to design inclusive PE activities, develop competence in using technology-based learning effectively, and apply culturally responsive teaching strategies. At the institutional level, this study aims to inform scalable, evidence-based strategies for inclusive PE practice and contribute to the broader development of diversity-responsive teacher education programs. Ultimately, this study aims to contribute to a growing body of research on inclusive education, offering practical strategies and evidence for integrating NIC more effectively. A mixed-methods data collection protocol will evaluate the LITE program. Qualitative data will be used to assess the quality of program implementation, PSTs' teaching practices, and stakeholders' perceptions of their experiences through participant observation, field notes, and focus groups. Quantitative data will measure the program's impact on the NIC's social inclusion using social network analysis to evaluate inclusion and equity during gameplay, as well as through two questionnaires—one focused on social cohesion and the other on perceptions of inclusion.

COMMUNITY-BASED HEALTH AND PHYSICAL ACTIVITY SCREENING: STRATEGIES TO REACH THOSE MOST IN NEED

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Thematic Area

Education, Health, and Physical Literacy: Exercise, Health, and Quality of Life

Keywords

Physical Activity, Public Health, In-person Interventions, Health Promotion, and Health Indicators

Abstract

Introduction: Physical activity (PA) can provide several health benefits; however, approximately a third of adults worldwide remain physically inactive. In-person interventions can be a viable approach to PA promotion. Still, there is a considerable lack of guidelines on how to take these initiatives to those who need them the most.

Objectives: Compare PA levels and health-related indicators between PA promotion interventions conducted in three types of events: a moderate-to-vigorous physical activity event (MVPA), a light physical activity event (LPA), and a no physical activity event (NoPA). By identifying which type of event attracts those more inactive and/or with worse health indicators, future PA promotion strategies can be developed accordingly.

Method: This intervention was undertaken as part of the APTA Project 2021-2024. In street-based events organized by Lisbon's municipality, community-based health screenings and PA assessments were conducted on 147 volunteers (Mage = 58.4 ± 16.7). An omnibus multivariate analysis of covariance (MANCOVA) was performed using blood pressure (BP), body mass index (BMI), standing hand grip strength, and weekly PA as independent variables. Three groups – NoPA, LPA, and MVPA were used for comparison, sex was included as a fixed factor, and age as a covariate.

Results: There was a significant overall multivariate effect of event type ($F(10, 144) = 2.844$, $p = .003$, $\eta^2_p = 0.17$). Sex also showed a significant multivariate effect ($F(5, 71) = 3.161$, $p = .012$, $\eta^2_p = 0.18$), as did age ($F(5, 71) = 3.413$, $p = .008$, $\eta^2_p = 0.19$). Systolic BP differed significantly between event type ($F(2, 75) = 9.98$, $p < .001$, $\eta^2_p = .21$). MVPA participants had a lower Systolic BP (M = 120.40 mmHg) than LPA participants (M = 136.84 mmHg) and NoPA participants (M = 141.73 mmHg). NoPA participants had higher Diastolic BP (M = 88.90 mmHg) than MVPA participants (M = 71.62 mmHg).

Conclusion: Though there were no differences in reported weekly PA, NoPA screening initiatives seem to reach the population with worse health indicators. These results should be considered when strategizing PA promotion and health screening initiatives.

ADVANCING DUAL CAREER SUPPORT OF THE STUDENT-ATHLETE THROUGH COACH EDUCATION: EVIDENCE FROM THE ACTIVUS PROJECT

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Thematic Area

Education Through Sport (ETS): Methodology for Education Innovation

Keywords

Dual career, coach education, athlete development, communication, inclusion,

Abstract

Introduction: Supporting dual-career student-athletes requires more than policy intentions. It demands a holistic approach that addresses psychological, social, academic, and structural challenges. Within this framework, the ACTIVUS project – Activating the Dual Career of Athletes and Holistic Development of Young, Talented Athletes across Europe – co-funded by the Erasmus+ Sport programme, aimed to strengthen the role of coaches in supporting the dual career of student-athletes aged 15–18.

Objectives: Coordinated by Sportief Besteed Projecten Bv (Netherlands) with partners from Portugal (CIDEFES), Romania, Italy, Spain, and North Macedonia, the project sought to co-create an evidence-based modular coach education programme. Its primary objective was to develop innovative methodologies in coach education that enhance psychosocial literacy and systemic awareness, thereby bridging the gap between European policies and the practical support available to student-athletes.

Methodology: A mixed-methods approach was adopted. Quantitative data were collected through online surveys completed by 300 student-athletes and 85 coaches, using validated instruments (SAMSAQ and DCCQ). Qualitative insights were generated from focus groups with 37 coaches and complemented by athletes' answers to questionnaires. Data analysis combined descriptive statistics and inductive thematic analysis, supported by MAXQDA and cross-national coding to ensure validity.

Results: Three overarching themes emerged as central to the dual-career context: Multiple Identities (balancing roles beyond sport), Communication (managing relationships with stakeholders), and Time Management (integrating academic, athletic, and personal demands). Based on these findings, a modular training programme was co-designed and piloted in Suceava, Romania, during a transnational workshop.

Coaches selected and tested practical tools aligned with each theme, while one harmonised tool per theme was established to ensure consistent implementation and enable comparative evaluation across countries.

Next Steps: At this point, the selected tools are being implemented by coaches within their teams, which will be followed by qualitative evaluation of the implementation through focus groups with student-athletes to assess impact.
The final outcome of the project will be a scalable and openly available toolkit for coach education, designed for replicability and sustainability across European sport and education systems. By reinforcing the role of coaches as agents of change, ACTIVUS contributes to more sustainable dual-career pathways for young athletes.

TRANSGENDER STUDENTS AND TEACHERS PERCEPTIONS IN PHYSICAL EDUCATION

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Thematic Area

Education, Health and Physical Literacy, Inclusion and Innovation in Physical Education

Keywords

Physical Education; transgender; students and teachers; diversity

Abstract

Introduction: Transsexuality is characterized by the incongruence between sex assigned at birth and gender identity, and is commonly associated with a profound desire to acquire the physical characteristics of the opposite sex and gender (Benjamin, 1966). Transgender individuals challenge traditional gender norms and face numerous social, emotional, and institutional barriers, including family rejection, difficulties in the labor market, at school, and in accessing healthcare (Silva, Barcelos & Aiello-Vaisberg, 2022). Within the specific context of Physical Education, transgender students have reported the hostility of locker rooms as spaces where bodies are exposed to others' gazes and peer judgment (Kettley-Linsell, Sandford, & Coates, 2022; Austin et al., 2024). Other challenges include exclusion, discrimination, lack of safety, inadequate policies (Austin et al., 2024), as well as discomfort and anxiety stemming from gender segregation and the fear of rejection or unwanted exposure (Hargie, Mitchell, & Somerville, 2017). Consequently, it is essential to understand how these individuals are situated across different contexts, particularly within the school environment, in order to advance the implementation of public policies that foster inclusion and support for transgender people, thereby combating discrimination based on gender identity (Ferreira, Ribeiro, & Brito, 2022). **Project Description:** This project goal is to understand the experiences of transgender students in Physical Education, identifying barriers like locker rooms and stereotipes. It will analise how teachers perceive and handle gender diversity, exploring their inclusion strategies. The project seeks to discover the major problems and how to create safe and unbiased spaces. Data will be collected through questionnaires and interviews.

Objectives: To examine the perceptions of transgender students in school, specifically in the subject of Physical Education, as well as to investigate how teachers perceive transsexuality, manage interpersonal dynamics, and conduct teaching and assessment practices in this particular context. **Methodology:** Mixed-method approach, combining the administration of online questionnaires and semi-structured interviews. The target population comprises secondary school students and adults who have attended Physical Education classes within the past five years. **Next Steps:** Include collecting data through questionnaires and semi-structured interviews, followed by the analysis of the results.
The final outcome of the project will be a scalable and openly available toolkit for coach education, designed for replicability and sustainability across European sport and education systems. By reinforcing the role of coaches as agents of change, ACTIVUS contributes to more sustainable dual-career pathways for young athletes.

THE 3ES GAME-BASED APPROACH: A THREE-STEP PROCESS FOR TEACHING GAMES THROUGH ACTIVE STUDENT INVOLVEMENT

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Thematic Area
Education Through Sport (ETS) : Methodology for Education Innovation

Keywords
Games-based approaches, pedagogical scaffolding, student involvement, pedagogical models.

Abstract
Introduction.
Teaching and learning in sport-based games have often been framed as a debate between direct instruction and constructivist approaches. In this project, we adopt an extended socioconstructivist perspective (Light, 2008) enriched by complexity thinking (Storey & Butler, 2013). From this view, learning is an emergent and relational process shaped by students' prior experiences and by ongoing social and pedagogical interactions. Students actively construct their own learning trajectories and contribute to the learning of others through collaboration, peer feedback, and collective problem-solving.

Project Description and Objectives.
We present the 3Es framework – Endowing, Empowering, Extending – as an empirically-informed process for teaching sport-based games. Its aim is to scaffold responsibility and progressively increase students' active involvement, moving from teacher-led stabilization to student-driven design and adaptation of gameplay.

Methodology.
The framework builds on classroom-based research and peer-teaching interventions in physical education (Farias et al., 2018). It combines theoretical foundations with empirical insights from teaching units in invasion and net games.

Importantly, the 3Es did not emerge as a pre-designed model but as a practice-based response to fostering students' active decision-making and collective learning. It was iteratively refined through multiple units. The framework also distinguishes between pedagogical functions (acquisition, structuring, adaptation) (Mesquita, 2006) and task formats (Skill Refinement Tasks – SRTs, Tactical-Focused Tasks – TFTs, and Main Game Forms – MGFs).

Results.
Three progressive phases emerged:

- **Endowing:** Teachers stabilize play through simplified MGFs, complemented by TFTs and SRTs, to provide students with a baseline of game understanding and capability. Technical refinement occurs when needed to enact basic tactical intentions.
- **Empowering:** Students assume partial leadership by selecting and modifying TFTs and SRTs, while teachers scaffold decision-making. MGFs increase in variability and decision-making opportunities, fostering shared responsibility.
- **Extending:** Students take greater ownership by diagnosing learning needs, adapting MGFs through constraints, and engaging in peer questioning and feedback. This phase emphasizes adaptation, creativity, and mutual contribution to learning.

Conclusions and Next Steps.
The 3Es framework offers a flexible process to enhance student involvement in sport-based games. It promotes agency, shared responsibility, and inclusive participation as core educational outcomes. Future applications in PETE and school PE will test its adaptability across different games, grade levels, and curricula.

A FORMATIVE AND UTILIZATION-FOCUSED EVALUATION OF ASSESSMENT EFFICACY IN SPECIAL OLYMPICS COACH EDUCATION PROGRAMMES ACROSS THE ASIA PACIFIC REGION

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Thematic Area
Education, Health and Physical Literacy: Inclusion and Innovation in Physical Education

Keywords
Coach Learning; Special Olympics; Assessment Efficacy; Disability Sport; Coach Education

Abstract
Introduction.
Sports coaching for athletes with intellectual disabilities is increasingly recognised as a powerful mechanism for promoting inclusion, social development, and empowerment. Within the Special Olympics movement, coaches are pivotal in shaping learning environments that foster these outcomes. However, limited evidence exists regarding how assessment practices within coach education influence coach learning and development. This study explored the potential of assessment efficacy to enhance coach learning in the context of Special Olympics Asia Pacific programmes.

Objectives:
The research aimed to evaluate existing assessment practices in Special Olympics coach education, identify factors influencing their effectiveness, and develop a set of principles of good assessment to guide future coach learning frameworks.

Methods:
A formative and utilization-focused evaluation approach (Patton, 2011) was adopted, framed by Bernstein's (1971) theory of the three message systems of education—curriculum, pedagogy, and assessment. Five experienced coach developers from Athletics and Football were purposively sampled across the Asia Pacific region. Data were gathered through semi-structured focus group interviews, transcribed verbatim, and analyzed using open and axial coding. Results were validated through participant feedback to ensure accuracy and reliability.

Results:
Four higher-order themes emerged: (1) contextual understanding, (2) learning environment, (3) coaching knowledge, and (4) consistent practices. Findings revealed that effective assessment should be continuous, contextualized, and collaborative, recognizing coaches' diverse experiences and motivations. Participants highlighted the importance of transparency and peer engagement in improving assessment credibility and learning outcomes.

Conclusions:
The study proposes five principles of good assessment to enhance coach learning: ongoing assessment, value-based evaluation, context-driven assessment, peer collaboration, and transparency in criteria. These principles support a shift toward assessment as a learning tool rather than a judgment mechanism. The findings contribute to the broader discourse on disability sport coaching, offering practical insights for global Special Olympics coach education frameworks.

EMPOWERING LEARNING THROUGH DIGITAL TOOLS WITHIN STUDENT-CENTERED APPROACH IN PHYSICAL EDUCATION

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Thematic Area
Smartization in Sport and Education: Technologies and Innovation in Sports Training

Keywords
Teacher Education; Digital Pedagogy; Technology-enhanced Learning; Video-delay Feedback; QR-Code.

Abstract
Digital tools, such as mobile phones, tablets, and laptops, are transforming educational practices by enabling more dynamic, interactive, and student-centered learning environments. Their pervasive presence in children's and youths' daily lives allows technology to foster meaningful, engaging, and rewarding learning experiences.

Properly integrated, digital resources enhance students' motivation, curiosity, and autonomy, while preparing them for the challenges of an increasingly digital society. In Physical Education, the use of technology can also support students' motor, cognitive, and socio-affective development, promoting more active, reflective, and self-directed learning.
Aligned with these considerations and the United Nations' Agenda 2030 goal of promoting quality, inclusive, and equitable education, this study examines the use of digital tools as student-centered strategies within Physical Education Teacher Education (PETE). Specifically, it aims to (1) explore how preservice teachers (PSTs) and cooperating teachers perceive the impact of digital technology on the acquisition of gymnastics skills, and (2) analyze how PSTs' pedagogical content knowledge (PCK) influences the effectiveness of such technological integration.
The research was conducted within the Master's Program in Physical Education at the University of Porto, using a teaching experiment methodology during professional school placements in Northern Portugal. Two PSTs and two cooperating teachers participated in a 14-lesson gymnastics unit that integrated video-delay feedback and QR-code resources to enhance skill acquisition, performance analysis, and reflective practice. Qualitative data were collected through focus group interviews, reflective logs, and observational notes, and were analyzed thematically.
Findings indicate that digital tools significantly enhanced PSTs' didactic competence, creativity, reflective ability, and capacity to identify critical components of motor performance. Students displayed greater motivation, autonomy, and active engagement in performance analysis and self-correction. However, the study also highlights that the successful integration of technology depended on PSTs' PCK, as more developed pedagogical knowledge enabled more meaningful and effective use of digital strategies.
The study concludes that PETE programs should intentionally foster digital pedagogical competence, equipping future teachers to integrate technology purposefully in teaching, learning, and assessment. By doing so, PETE can support more inclusive, engaging, and effective physical education practices that enhance students' cognitive, motor, and socio-affective development.

SUSTAINABLE DEVELOPMENT STRATEGY FOR NATURE TOURISM IN THE SOUTH OF THE ISLE OF YOUTH, CUBA.

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Thematic Area

Sustainability in the Field

Keywords

Tourist offer, diversification, tourism product, integration, sustainable development.

Abstract

This research arose from the existing need in the Special Municipality of the Isle of Youth, Cuba, to minimize the contradictions between the shortcomings of the current tourism offer related to the Protected Area of Managed Resources in the South of the Isle of Youth and the objectives of the tourism sector in the country to diversify the tourism offer by leveraging the potential that exists in the destination. To contribute to this aim, the objective was set to design a strategy that promotes the sustainable development of nature tourism in the Protected Area of Managed Resources in the South of the Isle of Youth. Based on an analysis of the tourism situation of the study site, the location for developing the product was determined, and its design was carried out while considering the characteristics and needs of potential demand segments. Through a qualitative and quantitative analysis of the pre-feasibility of the designed product, which took into account the criteria of experts in the field with the necessary qualifications and experience in the sector, the viability of the proposal for practical application was demonstrated. The strategy developed as a result of this research can be utilized as an element that contributes to the diversification of the tourism offer in the Special Municipality of the Isle of Youth and to the sustainable development of the natural and anthropic resources of the selected study site.

QUALITY PHYSICAL EDUCATION, SCHOOL SPORTS, AND PHYSICAL LITERACY: PERCEPTIONS OF TEACHERS PARTICIPATING IN THE AQUAPHYLIT SCHOOL INTERVENTION - PORTUGAL

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Thematic Area

Education, Health and Physical Literacy: Physical Literacy and Lifelong Development

Keywords

Physical Literacy, School, Physical Activity, Nautical Sports, School Sport

Abstract

Introduction: Schools are key contexts for children's holistic development. Childhood is critical for fostering active lifestyles and Physical Literacy (PL). The whole-school approach integrates quality physical education (QPE), school sports (SS), and extracurricular physical activities, within an ecological perspective that includes organizational, community, and policy factors.

Objective: The study aims to explore and analyze the perceptions of PE teachers from two SS nautical training centers of the Lisbon region, regarding PL, QPE, and the specific contributions of SS to PL development.

Methods: This exploratory study, part of the AquaPhyLit intervention, applied qualitative methods within a mixed-methods sequential design. Data was collected through semi-structured interviews. Following approval from regulatory and school authorities, a convenience sample was recruited, including all PE teachers (n=16). Fourteen online interviews were conducted via Zoom, recorded, and thirteen were transcribed verbatim. Data was analyzed using a deductive–inductive content analysis approach. Interviews averaged 72 minutes (±11.27).
Results: Knowledge of the PL concept is heterogeneous. Eight teachers reported familiarity, citing scientific events and research (n=4), continuing education courses (n=3), or independent study (n=1). Five teachers defined PL by combining physical and psychological attributes, while four emphasized cognitive and social aspects. Frequently highlighted principles included promoting diverse motor experiences (n=8) and knowledge about physical activities (n=5). The most cited attributes were autonomy (n=8), physical competence (n=6), and motivation to be physically active (n=5). Four teachers described attributes spanning three PL domains. Most participants (9/13) considered QPE the main driver of PL, with SS complementing it by democratizing sport participation, fostering active lifestyles, and enabling specialization.
Conclusions: PL is not systematically integrated by the participants, and its multidimensional nature is inconsistently understood. While key PL attributes are acknowledged, strategies to develop affective and social dimensions are seldom reported. Most teachers identify QPE as central to fostering PL, though few connect it with broader pedagogical or reflective approaches High-quality, continuous training on PL and its links to QPE and SS should be more accessible. Effective PL school-based interventions should commence with an exploratory phase aimed at examining teachers' knowledge, perceptions and how they structure pedagogical practices to enhance PL development.

EDUCATION THROUGH SPORT AND HUMAN TRANSFORMATION: COMPARATIVE LIFE STORIES OF INCLUSION FROM IRELAND, ITALY, PORTUGAL, AND BULGARIA

Authors

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Keywords

Inclusive Sport, Narrative Inquiry, Cross-Cultural Case Study, Education Through Sport (ETS), Social Inclusion and Wellbeing.

Abstract

This paper examines the transformative power of inclusive sport through a comparative narrative inquiry across Ireland, Italy, Portugal, and Bulgaria. Drawing upon life stories of athletes, parents, and coaches engaged in adaptive and inclusive sports programs, the study explores how physical activity becomes a site of personal recovery, social participation, and identity reconstruction. Using a cross-cultural case study design (Yin, 2018) combined with thematic analysis (Braun & Clarke, 2006), narratives were analyzed to identify recurring patterns of empowerment, belonging, and emotional regulation within diverse sociocultural settings. In Ireland, martial arts-based rehabilitation illustrates how adaptive coaching and fine-motor training foster psychological healing and community integration. In Italy, the story of a father supporting his autistic son's daily physical routine reveals the role of familial agency and persistence in promoting inclusion.

In Portugal, lifelong engagement in inclusive karate demonstrates how empathetic pedagogy can transform neurodiversity into leadership and social value. In Bulgaria, grassroots sport initiatives highlight the connection between collective participation, gender equality, and social cohesion in post-transition communities. Across contexts, the findings underline the potential of Education Through Sport (ETS) as a sustainable methodology linking sport, learning, and wellbeing. The study concludes that inclusive sport acts not only as an intervention for individuals with disabilities or mental-health challenges but also as a catalyst for reshaping collective attitudes toward difference across Europe.

SMART CITIES, ACTIVE CITIZENS: A BIBLIOMETRIC AND THEMATIC ANALYSIS OF SPORT, SUSTAINABILITY, AND DIGITAL TRANSFORMATION IN URBAN CONTEXTS

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Keywords

Smart cities, sport innovation, sustainability, bibliometric analysis, thematic analysis, digital transformation, inclusion.

Abstract

This study investigates how the intersection of sport, sustainability, and digital transformation contributes to the development of smart and inclusive cities. Drawing on bibliometric data retrieved from the Web of Science Core Collection and Scopus databases (2013–2025), the research maps the evolution of academic production connecting sport, urban regeneration, and intelligent mobility. Using VOSviewer and Bibliometrix (R package), the analysis identifies the most influential authors, institutions, and keyword clusters, revealing the main thematic areas driving research in this field. A subsequent qualitative thematic analysis of 120 peer-reviewed articles complements the bibliometric results, offering deeper insight into how technology, education, and social inclusion interact within urban sport innovation. Three dominant themes emerge: (1) data-driven urban mobility and sport infrastructures as enablers of sustainable living; (2) digital participation and co-creation as frameworks for civic inclusion; and (3) adaptive smart ecosystems promoting active, equitable, and resilient communities. The findings underline the growing academic and policy relevance of “smart sport ecosystems” as spaces where innovation, participation, and sustainability converge. This study contributes to both theoretical and practical debates by highlighting patterns, gaps, and emerging research directions that can guide future collaborations within the ICSE network. By linking bibliometric evidence with thematic interpretation, the paper positions sport as a catalyst for inclusive, data-informed, and environmentally responsible urban development.

Across contexts, the findings underline the potential of Education Through Sport (ETS) as a sustainable methodology linking sport, learning, and wellbeing. The study concludes that inclusive sport acts not only as an intervention for individuals with disabilities or mental-health challenges but also as a catalyst for reshaping collective attitudes toward difference across Europe.

FEASIBILITY AND REPLICABILITY ASSESSMENT OF THE MENO(S)PAUSA+MOVIMENTO PROJECT: A COMMUNITY MODEL FOR PROMOTING PHYSICAL EXERCISE AND HEALTH IN POSTMENOPAUSA WOMEN

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Thematic Area

Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords

Postmenopausal women; community exercise; feasibility; replicability; active aging

Abstract

Introduction

Postmenopausal women often face an increased risk of chronic diseases, functional decline, and social isolation. The Meno(s)Pausa+Movimento project is a community program implemented in the municipality of Penafiel, which seeks to respond to these challenges by promoting physical activity, health education, and strengthening social participation. This summary presents the program's framework and its feasibility as a replicable model to respond to the active aging of the female population.

Project Description

The program includes multimodal “green exercise” sessions, held predominantly outdoors three times a week, complemented by health screenings for cardiovascular and metabolic risk factors, nutrition, psychological well-being, and functional condition. All activities are supervised by exercise and health professionals. Partnerships with the municipality and local health services ensure logistical and medical support.

Objectives
The main objectives of the project are: to promote physical activity and functional capacity in postmenopausal women; to improve psychological well-being and reduce social isolation; and to create a community model of active aging that is feasible and replicable.

Methodology
Approximately 200 participants were evaluated using physical fitness tests (strength, balance, cardiorespiratory function, and others), clinical markers (blood pressure, triglycerides, vitamin D, and others), and questionnaires on quality of life, anxiety, and social participation. The evaluations were conducted at the beginning of the study and at follow-up intervals (annually).

Results
With the application of multimodal exercise sessions, preliminary results reveal improvements in, among other things, strength and balance, metabolic and biochemical regulation, as well as a reduction in psychosocial risk factors, such as fear of falling and perceived isolation.

Next Steps
The future goal is to expand the program to other municipalities, supported by intersectoral partnerships and specialized training for professionals. Cost-effectiveness and long-term health impact analyses are underway, reinforcing the potential of Meno(s)Pausa+Movimento as a sustainable, community-based strategy for promoting active aging.

PREVENTING FALLS IN OLDER ADULTS THROUGH EXERCISE AND EDUCATION – FUTURE DIRECTIONS OF THE STAY UP PROJECT

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Thematic Area

Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords

Older Adults; Fall Prevention, Exercise, Education, Physiosensing Platform.

Abstract

Introduction: The Stay Up – Falls Prevention in Older Adults Project was developed as the scientific research component of the Master's Degree in Exercise and Health at Instituto Piaget, Almada and provides the foundation for forthcoming doctoral studies.

Falls remain one of the leading causes of morbidity, dependency, and mortality among older adults, generating a considerable economic and social burden for healthcare systems. The project was designed to evaluate fall risk factors in the older adult population and to implement preventive strategies through physical exercise and a falls-prevention education program. **Objectives:** The main aim was to identify fall risk factors using a multidimensional approach that integrated physical (balance, gait, strength, muscle power, agility) and psychological (confidence, self-efficacy) domains. An innovative aspect was the inclusion of muscle power, aligned with the emerging concept of powerpenia, as a key determinant of functional decline and fall risk. **Methodology:** A cross-sectional analytical study was conducted with 280 community-dwelling older adults (≥55 years) who were regularly engaged in a structured multicomponent exercise program. **Results:** Findings indicated that fall risk in physically active older adults is multifactorial, involving psychological, clinical, and functional domains. Evidence also highlighted that supervised multicomponent exercise programs are effective in preserving functionality and reducing fall risk. These outcomes resulted in one published article and four manuscripts currently under peer review in Q1/Q2-indexed journals. Beyond scientific outputs, a practical guide (ISBN 978-989-33-7529-7) was developed as an accessible resource for participants, caregivers, and health professionals, and will be further disseminated in the next phases of the project to maximize community impact. **Next Steps:** The doctoral phase will focus on evaluating the effectiveness of intervention models that combine physical exercise—with particular emphasis on muscle power training—and educational programs for fall prevention. The Physiosensing balance platform will be employed both as an innovative training protocol in one intervention group and as an assessment tool across all participants.

FROM COMPLIANCE TO REFLECTION: UNLEARNING OBEDIENCE IN THE DEVELOPMENT OF REFLECTIVE ABILITY

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Thematic Area

Education, Health and Physical Literacy: Inclusion and Innovation in Physical Education

Keywords

Student coaches; reflective practice, questioning, practicum.

Abstract

Reflective ability is widely acknowledged as a cornerstone in the development of the high-performance coach, conceived as an orchestrating leader—someone who inspires, plans, and adapts to optimize collective performance. Such orchestration requires heightened awareness and critical interrogation of one's own actions, thus presupposing the adoption of a reflective practice. However, during the early stages of professional preparation—particularly in the practicum—the lived experience of student coaches often stands in stark contrast to this ideal.

These environments are frequently characterized by hierarchical and punitive logics that valorize compliance and technical execution over autonomy and critical leadership. This paradox underscores the importance of understanding processes of change within authentic educational contexts, examining how student coaches construct (or fail to construct) reflective practices in spaces shaped by relations of power and control. Such understanding demands more than mere description; it requires accompanying, interpreting, and co-constructing meaning as it emerges in situ.

Aim:
Within this framework, Action Research (AR) was adopted as a methodological and epistemological stance, allowing for a situated and collaborative analysis that integrates diagnosis, intervention, and interpretation across successive cycles. The study thus sought to understand, in context, how student coaches develop their reflective ability within hierarchical environments, over the course of three AR cycles.

Methodology:
Over one academic year, six student coaches, supported by the researcher-facilitator, engaged in three iterative AR cycles. In each cycle, the authentic challenges faced by the student coaches were explored through individualized support and systematic facilitation of reflective practice. Data were collected through focus group interviews, reflective journals, and participant observation, enabling triangulation and interpretive depth.

Findings:
Overall, the results reveal a gradual trajectory of transformation among the student coaches, who evolved from initial positions of compliance and hierarchical dependence towards more questioning, adaptive, and uncertainty-tolerant stances.

Conclusions:
This evolution highlights the pressing need for reflective practice to be supported, situated, and explicitly structured, capable of sustaining critical questioning, fostering autonomy, and transforming uncertainty into opportunities for learning. Such practices serve as resistance to the pervasive logics of fear and obedience that continue to constrain professional growth and reflective thought within coaching education.

SYSTEMATIC REVIEW AND META-ANALYSIS OF PARENT–CHILD MVPA CORRELATIONS ACROSS CHILDHOOD DEVELOPMENTAL STAGES AND SEX-SPECIFIC DYADS

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Thematic Area
Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords
Parent–child correlation; Moderate-to-vigorous physical activity; Developmental stages; Family-based interventions

Abstract

Background: Parent–child moderate-to-vigorous physical activity (MVPA) correlation is a potentially important driver of children's activity levels, however, the magnitude and consistency of this correlation across developmental stages remain unclear.

Objectives: To quantify the parent–child MVPA correlation across developmental stages.

Methods: In accordance with PRISMA and MOOSE guidelines, PubMed and Web of Science were searched through December 31, 2024, for observational studies reporting parent–child correlations in MVPA. Twenty-seven studies (dyad sample sizes 22–1 328; child ages 1–18 years) met inclusion criteria. Pearson's r values were extracted directly or harmonized. Subgroup analyses examined child developmental stage, dyad type, study quality, and analysis type. Heterogeneity was quantified by I^2 and χ^2 tests for subgroup differences; publication bias was assessed by funnel plots and Egger's test; study-level bias was appraised using the NHLBI tool; and overall evidence confidence was graded using the SURE framework.

Results: The overall pooled parent–child MVPA correlation was r = 0.15 (95 % CI 0.14–0.16; I^2 = 74.8 %; $p < 0.001$). Correlations were significant across all developmental stages, weakest in early childhood (r = 0.10), peaking in middle childhood (r = 0.18). Good-quality studies produced stronger correlations than fair-quality studies (r = 0.148 vs 0.108; χ^2 = 8.3, p = 0.0038), and crude estimates exceeded adjusted estimates (r = 0.162 vs 0.139; χ^2 = 5.88, p = 0.015). No substantial publication bias was detected (Egger's p = 0.18), and overall evidence confidence was rated moderate.

Conclusions: Parent–child MVPA correlations are modest but consistent across development and support the use of family-based strategies to bolster children's MVPA engagement.

PARENTAL MODELLING AND INTERPERSONAL SUPPORT IN RELATION TO MODERATE PHYSICAL ACTIVITY AND VIGOROUS PHYSICAL ACTIVITY IN 9–12-YEAR-OLDS: A CROSS-SECTIONAL DE-PASS STUDY

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Thematic Area

Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords

Accelerometry; Physical activity intensity; Interpersonal Support; Parental modelling

Abstract

Background: Moderate and vigorous physical activity (MPA and VPA) are both essential for child development and are influenced by both parental modelling and interpersonal support, yet most studies aggregate them into overall MVPA, potentially obscuring intensity-specific associations.

Objective: This cross-sectional study examined intensity-specific associations between parental modelling, parental support, peer support, and teacher support and objectively measured child MPA and VPA.

Methods: A total of 181 child–parent dyads from Belgium, Czechia, and Ireland were recruited between September 2023 and October 2024. Both children and their primary caregivers wore a hip-mounted ActiGraph wGT3X-BT accelerometer for eight consecutive days. Children and parents also completed validated Likert-scale questionnaires assessing interpersonal support and socioeconomic indicators. Associations between support variables and child PA outcomes were assessed using bivariate and partial correlations, controlling for confounders such as sex, country and socioeconomic status. Post-hoc analyses explored potential effects of extreme outliers (±2 SD from the mean).

Results: Parental MPA was moderately correlated with child MPA (r≈0.30), whereas correlations for VPA were weaker (r≈0.20). Peer and teacher support showed no significant associations with MPA and VPA in primary analyses, although peer support showed a very weak correlation with child VPA after removing outliers.

Conclusions: Parental modelling and co-participation were most strongly linked to children's MPA, suggesting that family-based strategies may be more effective when targeting MPA. Peer support may have no role or a very limited one in VPA at this developmental stage, while teacher support showed no observable influence. These findings support the development of intensity-specific, multilevel interventions, but also highlight the need for longitudinal designs to clarify mechanisms and causality.

ASSESSMENT OF UPPER BODY PHYSICAL TESTS TO INFER NEUROMUSCULAR FATIGUE IN ATHLETES: A SCOPING REVIEW

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Thematic Area

Smartization in Sport and Education

Keywords

Monitoring, player, athletic performance, fatigue, strength, power,

Abstract

Background: Neuromuscular fatigue in the upper limbs influences performance and injury risk in sports involving repetitive or high-intensity arm actions such as swimming, tennis, and volleyball. Although, lower-limb tests that infer neuromuscular fatigue have been extensively studied, evidence regarding their upper-limb counterparts remain scarce.

Objectives: To map physical tests used to assess upper-limb neuromuscular fatigue in athletes, summarize the instruments and methodologies applied, and identify the most frequent performance metrics.

Methods: This scoping review followed Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guidelines to ensure methodological rigor and transparency. The protocol was registered with INPLASY(INPLASY202570041). Searches were conducted in PubMed, SPORTDiscus, Web of Science,and Scopus. Eligible studies that had been published in peer-reviewed journals were included.Data on test types, measurement instruments, outcomes, and sport-specific contexts were extracted and descriptively synthesized. This study is part of a larger project approved by the local ethics committee (O0125B).

Results (preliminary): A total of 6,014 records were identified and imported into the CADIMA platform. After removing 2,127 duplicates, 2,755 unique records remained for screening. Thirteen studies were included at this preliminary stage. Identified tests mainly addressed sport-specific fatigue protocols (e.g., double poling test to exhaustion, swimming constant-pace or maximal trials, tennis-serving fatigue test, swim bench protocols), strength assessments (e.g., isometric shoulder rotation, Upper Quarter Y-Balance, climbing pull-up tests, elbow torque evaluations), and power evaluations (e.g., bench throw test, upper-body Wingate test, repetition-to-failure bench press). Common instruments included electromyography, isokinetic dynamometers, linear encoders, motion capture or video analysis, and perceptual or physiological markers such as RPE scales and blood lactate analyzer. Fatigue was consistently associated with reduced force and power and altered movement patterns.

Conclusion: Current evidence highlights the heterogeneous upper-limb tests used to infer neuromuscular fatigue. A multimodal approach combining mechanical, physiological, and perceptual measures appears to be the most adequate. However, in sports with congested competition schedules, characterized by a large number of competitive events, sport-specific or general strength and power tests that can be integrated into regular training sessions may offer a practical solution for monitoring neuromuscular fatigue.

LONGITUDINAL PREDICTOR ANALYSIS OF PAIN IN BREAST CANCER SURVIVORS ON AROMATASE INIHIBITORS – THE PAC-WOMAN TRIAL

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Thematic Area

Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords
Pain Predictors; Breast Cancer Pain; Breast Cancer Survivors; Aromatase Inhibitors; Physical Activity Interventions

Abstract
Introduction: Breast cancer survivors undergoing hormonal therapy with aromatase inhibitors face a significantly increased risk of developing musculoskeletal pain, leading to treatment discontinuation rates of 13% to 22%. Recent literature has focused on identifying and understanding possible risk factors for pain development in breast cancer survivors, not only for pain prevention but also for guiding treatment strategies.

Objectives: This study aimed to investigate predictors of baseline, 4-month, and change scores of average pain intensity in breast cancer survivors on aromatase inhibitors.

Methods: Multiple regression analyses using intent-to-treat data (N=110; mean age 56.2 ± 7.7 years) were performed to identify possible predictors applying a biopsychosocial approach with five domains: sociodemographic characteristics, treatment-related factors, health-related factors, physical function factors, and physical activity variables. The Brief Pain Inventory was used to assess participants' average pain intensity.

Results: Having a partner (p= 0.028), lower sleep quality (p< 0.001), and additional time on the timed-up-and-go test (p= 0.039) were significant predictors of higher baseline pain intensity (R2adj = 0.289, p < 0.001). Having an expander placement (p= 0.018) was identified as the only significant predictor of a higher 4-month average pain intensity (R2adj = 0.230, p < 0.001), with three variables approaching significance (better sleep quality, p= 0.085; handgrip strength, p= 0.072; chest press strength, p= 0.054). No significant predictors were found for average pain intensity change scores.

Conclusions: These findings highlight the complex and multifaceted nature of pain in this population and the need for longitudinal studies with diverse populations, as well as advanced methodologies to capture the dynamic nature of pain and refine intervention strategies.

ONLINE REMEDIAL GYMNASTICS AS A TOOL FOR WELLNESS AND SPINAL HEALTH

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Thematic Area
Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords
Online remedial gymnastics, spinal health, back pain, postural correction

Abstract
Introduction:
Modern sedentary behavior and insufficient physical activity have contributed to a significant increase in the prevalence of back discomfort and non-specific back pain. These conditions adversely affect both individual quality of life and broader public health outcomes. Restorative gymnastics, traditionally applied in therapeutic settings, offers structured movement strategies aimed at postural correction and functional improvement. Implementing such interventions in an online format represents a novel approach to increasing accessibility and promoting adherence.

Objective:
The aim of this study was to evaluate the effectiveness of an online therapeutic exercise intervention in improving spinal health and general well-being, with a special focus on the prevention and treatment of back pain.

Methodology:
A total of 100 participants aged 25 to 55 years were enrolled in a four-week online program including two 60-minute sessions per week. The intervention protocol included exercises targeting postural alignment, spinal mobility, core stabilization, and neuromuscular relaxation. Pre- and post-intervention assessments were performed using a back pain questionnaire and a validated self-rated well-being scale.

Results:
Post-intervention analysis showed a statistically significant reduction in back pain scores in 76% of participants, indicating a reduction in perceived back pain. Improvements were also seen in postural awareness (68%) and self-reported motivation for physical activity (72%). Overall well-being scores showed a moderate increase, suggesting multidimensional benefits of the intervention.

Conclusions:
Findings confirm the efficacy of online corrective exercise as a viable non-pharmacological intervention to promote spinal health and general well-being. The digital delivery format improves accessibility while maintaining therapeutic impact, making it a promising tool for integration into preventive health strategies, particularly among populations with limited access to in-person care or high occupational risk for musculoskeletal disorders.]

- For Project Presentations: Introduction; Project Description; Objectives; Methodology; Results (if applicable); Next Steps (undergoing/forthcoming PhD and Master projects/thesis are included in this structure).
- For Scientific Research: Introduction; Objectives; Methods; Results; Conclusions.

LONG-TERM PHYSIOLOGICAL AND COGNITIVE MONITORING FOR SUSTAINABLE PERFORMANCE IN EXTREME OPERATIONAL CONTEXTS: A 14-MONTH FOLLOW-UP OF PORTUGUESE AIR FORCE SEARCH AND RESCUE SQUADS

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Thematic Area
Smartization in Sport and Education: Sustainability on the Field

Keywords
Smart monitoring, operational performance, sustainability, military aviation, extreme environments.

Abstract
Introduction: Sustaining human performance in extreme operational environments requires continuous monitoring of physiological and cognitive indicators to anticipate fatigue-related risks. Understanding the cumulative effects of repeated exposure is crucial for developing sustainable strategies that preserve health, readiness and mission safety.

Objectives: This study aimed to evaluate the cumulative physiological, biomechanical, and cognitive effects of 14 months of operational activity among Portuguese Air Force search and rescue (SAR) crews, identifying measurable patterns of fatigue and adaptation.

Methods: Fourteen SAR crew members, including those with on-board functions of pilot, rescue-savior, and system-operator, were assessed at two time points: baseline (post-vacation) and after ~14 months of operational deployment involving multiple 15-day missions. Assessments included body composition (DXA, BIA), muscle strength (handgrip, isometric mid-thigh pull), postural stability, cognitive performance (Go/No-Go, Stroop), mental health (PHQ-9, GAD-7, PCL), sleep quality, and nutritional status. Descriptive and comparative analyses were conducted to identify changes and trends over time.

Results: A decline in lower-limb isometric strength (~20%) was observed in rescue-saviors, accompanied by increased reliance on visual cues for balance (elevated Romberg index) and slight reductions in fat-free mass and fat mass. Inflammatory markers showed upward trends (TNF-α, hematologic shifts), suggesting chronic physiological strain.

Although not all variables reached statistical significance, the cumulative operational exposure revealed consistent patterns of decreased neuromuscular efficiency and emerging psychological vulnerability.

Conclusions: Repeated exposure to operational stress over extended periods appears to produce measurable and cumulative alterations in both physiological and cognitive domains. These findings underscore the importance of integrated, longitudinal monitoring systems in sustaining human performance in extreme environments. Implementing monitoring strategies that combine biomechanical, physiological, and cognitive metrics can enhance the sustainability of performance and flight safety in military and other high-demand contexts.

EFFECTIVENESS OF HYBRID PHYSICAL ACTIVITY INTERVENTIONS WITH TEXT MESSAGES IN OLDER ADULTS – A RAPID SYSTEMATIC REVIEW

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Thematic Area
Education, Health, and Physical Literacy: Exercise, Health, and Quality of Life

Keywords
Physical activity; Hybrid interventions; Older people; SMS text

Abstract
Introduction: According to the World Health Organization (WHO), one-sixth of the world's population will be over 65 by 2030, and by 2050, this number is expected to reach two billion. Physical activity (PA) can improve the aging process; however, despite known benefits, compliance among older adults with WHO-recommended PA levels remains low. In this sense, different forms of intervention have been developed to overcome physical inactivity. Evidence suggests that hybrid interventions with SMS can increase exercise frequency in older adults. But how effective can it be?
Objectives: Assess the effectiveness of hybrid interventions that utilize text messages to promote PA in older adults, in three domains: 1) PA levels; 2) PA programs adherence; and 3) Health benefits.
Method: After prior registration, a systematic search was conducted on PubMed (last search in June 2025) following PRISMA norms, to include both experimental and non-experimental studies that utilized hybrid interventions with SMS text among older adults.
Results: From 233 identified studies, four studies (n = 260) published between 2016-2024 met the inclusion criteria and were analyzed and qualitatively synthesized. The results from individual studies showed a 70%-100% exercise program adherence. Regarding PA levels, two studies showed a maintenance of daily steps after the end of the intervention, while the other two studies presented self-reported information showing improvement in weekly PA. The studies with the highest messaging frequencies (three and five times per week) showed higher program adherence rates (95% and 86%, respectively). Furthermore, studies that utilized text messages as a dual approach for feedback and motivational reminders exhibited higher retention rates than the study that employed text messaging solely as feedback.

Conclusion: These results indicate that hybrid interventions with SMS text appear to be effective in both PA program adherence and PA levels, making them a potentially crucial approach to overcoming PA barriers in older adults. Regarding health improvements, further research is needed.

AGE, HEIGHT, AND YEARS OF SWIM EXPERIENCE INFLUENCE VARIATIONS IN IMMERSED LUNG FUNCTION OF ATHLETES

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Thematic Area
Smartization in Sport and Education

Keywords
Spirometry, immersion, swimming, experience

Abstract
Introduction. There is no consensus if superior lung function in swimmers is attributable to training. Nonetheless, in a previous study, our group found that lung function measured in the immersed seated position (SI) is related to swim training experience (STyears), while the seated position on land (SL) is not.
Objectives. This research aimed to deepen this analysis by explaining the variations between these two conditions.
Methods. The sample was composed of 45 male endurance athletes (15 swimmers, 15 triathletes, and 15 runners). Lung function measurements were performed seated on land and immersed at collarbone level. Percentage of variation of FVC, FEV1, FEV1/FVC, and FEF25-75% between the SL and the SI conditions were computed, and linear regression analyses were performed with STyears, age, height, and weight as independent variables.
Results. Height explained 8.7% of variation in FEV1 ($p=0.029$) and 8.5% of variation in FEF25-75% ($p=0.014$). STyears explained 11.1% of variation in FVC. Age explained variations in FEV1 (16.1%, $p=0.004$), FEV1/FVC (16.8%, $p=0.003$), and FEF25-75% (23.7%, $p<0.001$).
Conclusions. Differences between conditions dissipate with age, probably due to the loss of compliance with increasing age, showing closer values between the SL and the SI condition. In the immersed condition, increases in height meant increased hydrostatic pressure as the trunk was more submerged. Nonetheless, FEV1 and FEF25-75% showed decreases with increasing height. This was not expected as increased pressure should help expiration. This is probably due to difficulty of the participants inflating their lungs in the preceding inspiratory maneuver. Corroborating our previous research, STyears only explained changes in FVC. Again, this might be due to the preceding inspiratory maneuver, and the capacity of the more experienced swimmers to inflate their lungs more, hence being able to expire more air afterwards. Lung compliance seems to affect less lung function when it is measured in immersion. Future research in this population should include inspiratory variables.

THE ANALYZING IMPACT ON THE DIGITAL MARKETING INTENSITY, AI USAGE, AND THE MARKET ENVIRONMENT ON THE FIRM PERFORMANCE WITH A VALUE CO CREATION IN THE PROJECT MANAGEMENT

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Keywords

Digital Marketing Intensity, AI Usage, Market Environment, Firm Performance, Value Co Creation, Projects

Abstract

This study investigates the impact of Digital Marketing Intensity (DMI), Artificial Intelligence (AI) usage, and Market Environment (ME) on firm performance through the lens of Value Co-Creation (VCC). Using Structural Equation Modeling (SEM) for data analysis, the research explores how firms leverage digital marketing and AI tools to enhance performance in fast-paced, dynamic environments.The concept of VCC is central, emphasizing collaboration between firms and stakeholders to generate shared value. The integration of DMI, AI, and ME within VCC offers a new dimension for understanding performance outcomes. Enhanced DMI improves customer engagement and fosters value creation, directly boosting firm performance. AI usage supports optimization and decision-making, while ME encourages innovation, collectively forming a comprehensive strategic approach.Findings reveal that firms must strategically align their digital marketing and AI initiatives with specific market conditions to achieve long-term success. The relationship between DMI and firm performance is positive, suggesting that investment in digital marketing facilitates deeper customer interaction and collaborative processes that drive project success.However, AI usage as a moderating factor shows mixed results. While it can negatively impact performance in certain contexts, its effectiveness varies depending on market dynamics. AI enables firms to respond swiftly to changes and customer needs, but its success hinges on careful strategy execution tailored to the market environment.ME also plays a moderating role between DMI, AI usage, and performance. Firms operating in stable environments may not experience the same level of improvement, highlighting the need for adaptive strategy development.The study underscores VCC not just as a beneficial concept but as a mediating factor. Firms actively engaging in VCC with stakeholders, supported by digital and AI tools, can create shared value and strengthen their market position.In conclusion, DMI and AI usage are pivotal for enhancing firm performance, especially when aligned with ME characteristics. Digital marketing significantly contributes to the efficiency of VCC processes, and understanding these relationships offers valuable insights for optimizing digital strategies and achieving better performance outcomes.

BRIDGING THE REFERRAL GAP: A SYSTEMATIC REVIEW OF INTERVENTIONS PROMOTING DOCTORS' REFERRALS TO EXERCISE PROFESSIONALS AND THE CRITICAL NEED FOR TRACKABLE SYSTEMS

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Thematic Area

Education, Health, and Physical Literacy: Exercise, Health, and Quality of Life

Keywords

Exercise referral - Digital intervention – Doctors - Physical activity - Exercise professionals

Abstract

Introduction: Physical inactivity significantly increases the risk of chronic diseases and premature death, underscoring the importance of doctors in promoting physical activity. However, physicians face substantial barriers, including time constraints, knowledge deficits, lack of confidence in counseling, and concerns about patient adherence. While Physical Activity Referral Schemes (PARS) offer a valuable strategy by directing patients to Qualified Exercise Professionals (QEPs), their effectiveness is often hampered by low patient uptake and adherence.

Objectives: This review synthesizes evidence on interventions encouraging doctor referrals to QEPs, describing PARS components, mechanisms, and their effects on doctor behavior and patient outcomes.

Methods: The systematic review adhered to the PRISMA Protocol guidelines. A comprehensive literature search was conducted in Medline, Scopus, and Web of Science for English-language clinical trials published up to September 2024. The initial search identified 19,083 titles and abstracts. Ultimately, six clinical trials (published between 1998 and 2022) were included in the qualitative narrative synthesis due to heterogeneity among the studies. The primary outcome measure for the review was the change in doctors' referral adherence and behavior.

Results: Interventions consistently enhanced clinician confidence and self-efficacy in PA counseling, particularly through structured frameworks, such as the "5As" approach, and interactive training. However, translating this increased confidence into consistent, measurable increases in formal, trackable referrals or actual patient PA levels remains a significant challenge. Success is critically dependent on robust, well-established, and easily navigable referral pathways and supporting infrastructure, underscoring that training alone is insufficient. A key evidence gap identified is the pervasive reliance on surrogate measures (e.g., self-reported counseling or general prescriptions) rather than direct, verifiable measures of formal referrals to QEPs.
Conclusions: Training enhances doctors confidence and self-reported PA counseling, but translating this into measurable referral rates remains challenging. Future strategic efforts must move beyond individual clinician training to focus on systemic solutions, emphasizing the urgent need to develop robust, digitally supported, and trackable referral systems to address systemic barriers, such as unclear pathways. Establishing a Clear, Quantifiable "Actual Referral" Metric, defined as a trackable action, is essential to bridge the existing evidence void and provide actionable insights.

INFLUENCE OF ANTHROPOMETRIC CHARACTERISTICS AND MUSCLE PERFORMANCE ON PUNCH IMPACT

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Thematic Area
Smartization in Sport and Education: Technologies and Innovation in Sports Training

Keywords
Boxing; Anthropometry; Muscle Strength; Punch Impact; Performance Analysis.

Abstract
Introduction: Punch impact is a decisive element in boxing performance, yet little evidence exists on how anthropometric and muscle performance characteristics contribute to impact power.
Objectives: This study aimed to analyze the relationship between anthropometric variables, muscle power and strength, and punch impact power in boxing practitioners.
Methods: A total of 69 male boxers (age: 27.0 ± 6.1 years) participated. Anthropometric measurements included body height (BH), armspan (AS), and body mass (BM). Muscle performance was assessed using countermovement jump, one repetition maximum in bench press, and handgrip strength. Punch impact power was measured with the PowerKube device for straight and hook punches. Pearson's correlations, linear regression, and group comparisons were conducted.
Results: Punch impact power was positively correlated with BH, AS, and BM. Regression models showed that BH and AS explained 36% of the variance in straight punch power and 30–34% in hook punch power, whereas BM explained 10–11%. Group comparisons indicated that athletes with high BH and AS achieved significantly higher punch impact power compared to low and medium groups. For BM, significant differences were observed between high and low groups only.

Moreover, muscle power and strength variables were also significantly associated with punch impact power, confirming the combined influence of anthropometry and neuromuscular performance.
Conclusions: The findings demonstrate that anthropometric characteristics, particularly BH and AS, together with muscle power and strength, play a critical role in determining punch impact power in boxing. Comprehensive evaluation of these attributes can enhance training strategies, support athlete development, and inform exercise prescription for both athletes and the general population.

EPISTEMOLOGICAL SOPHISTICATION AS A FOUNDATION FOR INCLUSION AND INNOVATION IN PHYSICAL EDUCATION: INSIGHTS FROM PRESERVICE TEACHERS' SCHOOL PLACEMENT

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Thematic Area
Education, Health and Physical Literacy: Inclusion and Innovation in Physical Education

Keywords
Physical education; Preservice teachers; Student-centered approaches; School placement

Abstract
Introduction: Epistemological beliefs (EB) shape how preservice teachers (PSTs) understand content, pedagogy, and the teaching process in physical education (PE). Formed through prior experiences as students (Lawson, 1983), these beliefs filter new understandings in teacher education and predict future practices. Although rarely addressed in physical education teacher education (PETE) (Ristow, 2023), research shows that student-centered curricula can foster sophisticated EB, supporting PSTs' commitment to autonomy, responsibility, and collaboration (Barros et al., 2025). Such orientations hold promise for preparing teachers for inclusive and innovative practice. Yet little is known about how epistemic sophistication is enacted during school placement, where ideals confront classroom realities. **Objective:** This study tries to understand how PSTs negotiate inclusion and innovation in PE during school placement, emphasizing the role of epistemic sophistication in navigating tensions between pedagogical ideals and practice. **Methods:** Eleven PSTs participated in focus group interviews reflecting on challenges and opportunities in real teaching contexts. Sessions were audio-recorded, transcribed verbatim, validated by participants, and analyzed thematically (Braun & Clarke, 2006) using Hofer and Pintrich's (1997) dimensions of EB as a sensitizing framework. **Findings:** Participants experienced a strong "reality shock" early on, struggling to transfer student-centered models from PETE into classrooms. To manage large groups, maintain discipline, and meet cooperating teachers' expectations, many defaulted to directive strategies, exposing tensions between pedagogical ideals and pragmatic demands. Over time, however, they actively experimented organizing heterogeneous groups for peer learning, designing student-led circuits and training plans, and introducing activities like a "fun fact of the week" to extend learning beyond technical skills. These adaptations reshaped their sense of curricular "success," elevating cooperation, responsibility, and engagement alongside motor performance.

Crucially, epistemic sophistication enabled these adaptations, equipping PSTs to navigate constraints while sustaining attention to inclusion and innovation. **Conclusion:** Inclusion in PE emerged not only through accommodating diverse abilities but also by fostering autonomy, responsibility, and social connection. Innovation arose less from strict fidelity to models and more from reflective adaptation to context. By drawing on epistemic sophistication, PSTs advanced a vision of PE as a holistic space for participation, cooperation, and lifelong engagement in active living.

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EVALUATING THE IMPACT OF PATIENT POSITIONING HEIGHT AND RESCUER POSTURE ON CHEST COMPRESSION QUALITY AND RESCUER FATIGUE DURING CARDIOPULMONARY RESUSCITATION: A FEASIBILITY STUDY

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Thematic Area

Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords

Cardiopulmonary resuscitation; chest compressions; rescuer posture; rescuer position; patient position.

Abstract

Introduction: Current cardiopulmonary resuscitation (CPR) guidelines do not specify patient positioning height (ground level vs. elevated surfaces), despite evidence that height may influence rescuer postural stability, fatigue, and chest compression (CC) quality. Identifying suitable methods to analyse these variables is essential to understand their effect on CC performance and rescuer fatigue.

Objectives: To conduct a feasibility study evaluating methods for assessing the impact of patient positioning height and rescuer posture on CC quality and fatigue during CPR.

Methods: Seven participants (2 men; 46.6±9.0 years; ≥5 years of CPR experience) took part in a randomized crossover trial with a one-week interval between four patient positions: ground level and bed heights at 80 cm, 42 cm, and self-selected height. Each participant performed five 2-minute CC cycles with 2-minute rest intervals from the manikin's left side, with the right hand on the sternum. Postural stability was assessed using center of pressure (CoP) data from a Zebris pressure platform (100 Hz). Muscular fatigue of the upper trapezius (TS) and lumbar erector spinae (LES) was measured via electromyography (Biosignalplux; 1000 Hz) using median frequency (MDF). Global fatigue was evaluated using heart rate (Polar Electro H10) and blood lactate (Lactate Pro 2 LT-1730). CC depth and rate as well as chest recoil were recorded with a wireless inertial sensor on the manikin's xiphoid process. The Wilcoxon test compared scenarios.

Results: Standing CC at 80cm produced higher CoP peak velocity ($p<0.05$) and a narrower CoP ellipse area. Ground-level CC yielded higher LES MDF than self-selected and 42cm conditions ($p<0.05$), while 80cm standing CC showed higher LES MDF than other standing heights ($p<0.05$). Ground-level CC had higher TS MDF than any standing scenario ($p<0.05$). Standing CC at 80 cm tended to produce higher blood lactate and heart rate ($p=0.068$). The other variables are under analysis.

Conclusions: CC at 80cm bed height (standard hospital height) seems to reduce postural stability and increase overall fatigue. Ground-level CC caused lower TS fatigue, while lower bed heights increased ES fatigue. This preliminary study highlighted the efficacy of the methods used and the need for a study with a larger sample size.

MENTORING ELITE STUDENT-ATHLETES IN HIGHER EDUCATION: TOWARDS INCLUSIVE PEDAGOGICAL STRATEGIES FOR DUAL CAREERS

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Thematic Area

Education Through Sport (ETS) : Methodology for Education Innovation

Keywords

Student-centered pedagogy; dual career of athletes; pedagogical mentoring; higher education; quality education

Abstract

Introduction: Higher education (HE) faces challenges in supporting elite student-athletes (ESA), who must balance academic and sporting commitments within dual careers (DC). Despite existing policy frameworks, pedagogical strategies remain underexplored, with institutions relying on reactive rather than proactive measures. This project addresses this gap by examining student-centered approaches and pedagogical mentoring, supported by participatory methodologies and digital tools, to foster self-regulated learning, enhance DC competencies, and promote inclusive academic integration.

Project Description: A sequential explanatory mixed-methods design will be adopted, combining a quantitative cross-sectional study with a Participatory Action Research. Phase 1 will profile 50 ESA and assess academic engagement, pedagogical support, and DC competencies. Phase 2 will codevelop and implement a student-centered pedagogical mentoring programme, with an intentional sub-sample of 15 ESA from FADEUP, aiming to: 1) raise awareness and management of academic challenges, 2) foster individual, peer, and collaborative study skills, and 3) monitor and enhance academic development.
Objectives: The present study seeks to implement a pedagogical mentoring program for ESA in HE, to foster study skills namely self-study, co-peer study and social shared study, aiming at an inclusive, equitable, high-quality education and, consequently, their academic success.
Methodology: In Phase 1, data will be collected using internationally validated questionnaires. In Phase 2 participants act as co-researchers in the co-development and implementation of a pedagogical mentoring programme structured in three iterative cycles: (1) structured self-study (self-regulated learning); (2) peer-supported study (collaborative learning through peer interaction, co-tutoring, and mutual support); and (3) socially shared learning within communities of practice (collective knowledge-building, problem-solving, and reflective dialogue). Data collection will employ an eclectic methodological approach, integrating reflective logs, video diaries, weblogs, and focus group interviews, allowing triangulation and iterative analysis.
Next Steps: Developed in the context of a PhD thesis, this project aspires to generate significant national and international impact. Aligned with Agenda 2030 goals 4 and 16 and ENEI 2030 priorities, it promotes inclusive, equitable, and high-quality education, participatory innovation, and digital transition. The expected outcomes include evidence-based guidelines to inform institutional and policy decision-making, strengthening support structures, reducing educational inequalities, and reinforcing HE institutions as inclusive agents of social transformation.

USING SPORT TO EDUCATE ADOLESCENT GIRLS AND YOUNG WOMEN (AGYW) ON CONTRACEPTIVE USE AND RELATIONSHIPS, THEREBY INCREASING UPTAKE OF SRHR SERVICES IN LUSAKA, ZAMBIA

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Thematic Area
Education Through Sport (ETS) : Methodology for Education Innovation

Keywords
Football for development, SRHR education, experiential learning, Sub-Saharan Africa, youth empowerment

Abstract
Introduction
Adolescent-friendly health services and referrals between schools and health facilities are lacking in Lusaka. Of married adolescents, 21.5% have an unmet need for FP. Of the sexually active unmarried girls and women, this percentage is 58.8% (15–19-year-olds) and 38.3% (20-24 year olds). We report the results of a youth-led, football-based intervention designed to improve SRHR knowledge and drive demand for SRHR services, among AGYW in Lusaka.

Objectives
To increase SRHR knowledge through football, shift harmful gender norms, and improve uptake of contraceptive and HIV services among AGYW in Lusaka by delivering youth-led, football-based educational sessions linked directly to pitch-side clinical services.

Methodology
Grounded in Experiential Learning Theory and Social Cognitive Theory, Tackle's 5-step methodology embeds SRHR learning within the game itself—transforming players into learners. To assess change baseline and end-line surveys were collected before and after each cycle of sessions by youth project staff working with the peer educators. Pitch-side service delivery uptake was recorded by our clinical partner, Marie Stopes Zambia (MSZ).

Results
Over 18 months, 59 young people were trained as peer football coaches to reach 3394 AGYW with 1387 football sessions integrated with sexual health messaging. 1255 AGYW accessed contraceptives from MSZ's pitch-side mobile clinic. 61,579 condoms were distributed, and 255 HIV tests administered.

2,011 AGYW took the baseline survey of which 934 (56%) completed endline surveys after 10 weeks. Knowledge of contraception improved from 28% at baseline (n=2011) to 62% at endline (n=934). Participating in sessions saw an increase in reported confidence to access SRHR services from 43% at baseline to 61% at endline. Harmful gender stereotypes were prevalent at baseline with 50% agreeing that girls who carried condoms were "easy" or sex workers. After 10 sessions, only 23% of the participants agreed with the statement, an increase from 50% at baseline to 77% at endline.

Next Steps
Football based interventions are an effective mechanism to educate and drive demand for SRHR services among AGYW and engage them around sensitive issues related to SRHR and attitudes towards women. Tackle would like to engage in researchers and research institutions to scientifically assess the methodology.

TOWARDS SAFER SUPPLEMENTATION IN ELITE SPORT: PREVALENCE OF USE, VERIFICATION GAPS, AND IMPLICATIONS FOR HEALTH EDUCATION

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Thematic Area

Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords

Dietary supplements, education, doping, prevalence, athletes

Abstract

Introduction: The use of dietary supplements (DS) is widespread in elite sport, yet quality-control failures and contamination with prohibited substances persist. Because DS are also widely used by the general population, gaps in athletes' verification behaviours carry public health relevance.
Objectives: To profile DS practices in Portuguese elite athletes.
Methods: A cross-sectional survey was conducted among 328 legally defined adult elite Portuguese athletes. DS use and related characteristics were analysed descriptively. Spearman's correlation was applied to examine associations between variables. Topic-specific analyses were restricted to current users (reporting DS use within the past six months).
Results: Prevalence of DS use was 87.5% (n=287), higher in men than women (91.8% vs 82.2%, p=0.015), with no difference between sport structure (team sports 89.3% vs non-team sports 86.2%, p=0.500). Users reported a median of 7.0 (IQR 7.0) distinct products; breadth increased with weekly training hours (ρ=0.40, p<0.001). The most reported products were creatine (80.5%), protein powders (66.2%), caffeine (59.6%), sports drinks (59.2%), protein bars (56.1%), energy bars (45.6%), and omega-3 (41.8%). Reasons for use were mainly reducing fatigue (82.6%), recovery (69.3%), strength/power (62.7%), and muscle gain (49.5%). Advice/information was dominated by nutritionists (advice 87.1%; information 87.5%), but sizeable minorities reported medical doctors (advice 28.6%; information 27.9%) and self-research (advice 17.4%; information 16.7%). Knowledge was high among users, with 94.1% knowing that supplements may contain prohibited substances, 87.1% recognizing batch-to-batch contamination, and 72.5% understanding that prohibited substances might be present but absent from labels. Despite this, only 70.7% reported checking whether products are tested for prohibited substances. The main methods used were third-party certification (60.6%), manufacturer testing (29.6%), and nutritionist-led checks (5.9%).
Conclusions: Elite Portuguese athletes commonly use multiple DS and demonstrate strong awareness about contamination risk; however, a substantial proportion of athletes do not verify products, and nearly one-third rely on the manufacturer's own testing rather than independent certification. Since DS are widely consumed beyond elite sport, this constitutes a real threat to public health. Findings support the need of structured education and clear referral pathways (e.g., nutritionists, sports medicine doctors, and certified-product registries) to strengthen literacy around safe DS use.

A CONTRIBUTION TO IMPROVE PHYSICAL LITERACY AT SCHOOLS: A STUDY ON PHYSICAL EDUCATION PRE-SERVICE TEACHERS' PEDAGOGICAL CONTENT KNOWLEDGE DEVELOPMENT BY LESSON-STUDY

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Thematic Area

Education, Health and Physical Literacy: Inclusion and Innovation in Physical Education

Keywords

Lesson Study; Pedagogical Content Knowledge; Inclusive Education; Inclusive Education; Physical Education; Initial Teacher Education.

Abstract

Introduction: Lesson Study (LS) is a recognized methodology for the professional development of teachers, designed to enhance their Pedagogical Content Knowledge (PCK) (Chokshi & Fernandez, 2004). Developed mainly in the context of the initial teacher education (ITE) from other subject areas, the study on its impact on the teaching of Physical Education is scarce and almost non-existent in the context of the initial training of its future teachers (Santinha, Onofre & Martins, 2024). Through their contribution to the development of the PCK, the LS will also have an impact on the teachers' competence to promote inclusive education (Schipper et al, 2020), here understood in the sense of guaranteeing learning opportunities to all students, without exception (Aas, 2020). By allowing PE teachers to develop their PCK, LS can make a very important contribution to the creation of better conditions for the promotion of students' Physical Literacy.

Objectives: This study was implemented within the LS2Include Erasmus+ project to examine how LS activities develop inclusive PCK in initial PE teacher training.
Methods: Four pre-service PE teachers engaged in a nine-session cycle that combined collaborative planning, a research lesson on the "unmarking" concept in football, and reflective discussions. Data from session diaries, pre and post-questionnaires, and interviews and the research lesson were gathered through audio recordings and then transcribed using the Whisper Transcrition software (Release 12.18.3). The transcriptions were analysed via thematic content analysis and triangulation of inductive observation and textual coding using Nvivo 15 (Release 15.3.0).

Results: Findings indicate that LS contributed decisively to PCK at three levels: recognizing the link between content-management decisions and inclusive learning; implementing interaction-promoting strategies such as reciprocal teaching; and designing differentiated tasks with difficulty constraints. Participants reported clearer concepts of inclusion, richer feedback, and increased inter-student support, though the single research lesson constrained deeper exploration and highlighted the need for more specific research lesson observation tools.

Conclusions: The study concludes that LS is a potent catalyst for fostering inclusive PCK in PE teacher education, promoting reflective, collaborative practice that can be scaled up in initial training programmes.

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THE IMPACT OF A CO-CREATION INTERVENTION ON MOVEMENT BEHAVIORS AND WELL-BEING AMONG ADOLESCENTS IN SOCIALLY VULNERABLE CONTEXTS – YOPA-PT PORTUGUESE SPIN-OFF PROJECT

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Thematic Area

Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords

Co-creation, Adolescents, Movement Behaviors, Well-being, Vulnerable Communities

Abstract

Introduction: Adolescent health is increasingly threatened by insufficient physical activity, excessive screen use (sedentary behavior), and inadequate sleep, a trio of movement behaviors critical for long-term health and development. These threats are particularly severe in socioeconomically vulnerable communities, where systemic factors worsen health disparities. This context necessitates the development of targeted, community-centric public health interventions. Yopa-PT project fills gap.

Project Description: The Yopa-PT project is the Portuguese spin-off of the broader European Horizon YoPA (Youth Physical Activity) initiative. This mixed-methods, longitudinal, teen-centered intervention study aims to co-create, implement, and rigorously evaluate sustainable interventions designed to promote healthier lifestyles among adolescents aged 12–16 residing in Algueirão-Mem Martins, Portugal. The study design integrates community participation and a robust evaluation framework, adhering to the SUPER-AIM evaluation model (Systems, User perspective, Participatory process, Effectiveness, Reach, Adoption, Implementation, and Maintenance) to ensure the intervention is contextually relevant, scalable, and sustainable.

Objectives: This study seeks to (1) complete a participatory co-creation process with adolescents and community stakeholders; (2) implement tailored social and physical environmental interventions targeting physical activity, sedentary behavior, and sleep; and (3) evaluate the interventions' effectiveness using the SUPER-AIM framework.

Methods: A mixed-methods, longitudinal design was adopted. Sixteen adolescents (68.7% female, mean age 13.2) were recruited with support from local partners. Baseline data included validated self-report measures of peer relationships, life satisfaction, global health, agency, movement behaviors, and sociodemographic context, complemented by accelerometer-based assessments. The first phase of the spin-off centered on the co-creation of a local systems map for physical activity promotion and the formulation of an intervention proposal directly shaped by youth perspectives. Between May and June 2025, fourteen structured co-creation sessions were conducted in partnership with CIAPA (Aerospace Education Association), which also provided the community hub.

Next Steps: Building on the finds of Phase 1, which demonstrated the feasibility of youth-led co-creation in vulnerable urban settings, the study will now expand its scope. Recruitment of additional adolescents began in September 2025, and Phase 2 (commencing in October 2025) will utilize ten additional structured sessions to guide adolescents in selecting, adapting, and implementing a tailored, evidence-based intervention following the YoPA Protocol.

TO SAMPLE OR TO SPECIALISE? SPORT PARTICIPATION PATHWAYS OF YOUTH MALE TEAM SPORT PLAYERS

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Thematic Area

Education Through Sport (ETS) : Methodology for Education Innovation

Keywords

Athlete developmental pathways; early specialization; sampling; youth sport; team sports

Abstract

Introduction. The debate between early specialisation and sport sampling remains central in youth sport research. Early specialisation may accelerate skill acquisition but is linked to overuse injuries, burnout, and dropout, whereas diversified sport participation supports adaptability and holistic development. Understanding these trajectories is of utmost importance for optimising youth participation and talent pathways in sport.

Objectives. The purpose of this study was to characterise the sport participation trajectories of male youth team sport players during the early years of sport development (6 to 12 years of age), specifically considering the sport starting age (of sports in general and in a main target sport) as well as the quantity and type of sport undertaken during this initial period of sport involvement.

Methods. A total of 546 male athletes from five team sports (football, basketball, handball, volleyball, and water polo) completed a validated retrospective questionnaire. Information on the sport starting age (general sports and main sport) and the quantity and type of sports undertaken during the early years of development was collected. Descriptive statistics, a MANOVA and chi-square tests were applied to assess group and sport differences.

Results. All participants started involvement in sports at the same age (~5 years) and participated in the same number of sports during their early years (1-2 sports). However, football players started participating mainly in team games (football, futsal) and water polo players in CGS sports (swimming). Participants reported different ages for initial participation in: (i) main sport (football players started participating earlier, around 5–6 years), (ii) onset of specialisation (football players specialised earlier, around 7 or 8 years), (iii) types of sports engaged in (football players were involved in more team games and water polo in more CGS sports), and (iv) variations in weekly training hours (water polo reported more hours of training).

Conclusions. Portuguese youth team sport athletes experienced diversified sport participation before specialisation, although football remains a context where early specialisation is common. This study provides empirical evidence on the effects of different sporting pathways on long-term athlete development. Further research should examine trajectories across sports, countries, genders, and cultural contexts.

VELOCITY-BASED TRAINING AT THE OPTIMUM POWER LOAD: A SCOPING REVIEW OF EVIDENCE AND APPLICATIONS IN ATHLETIC PERFORMANCE

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Thematic Area

Smartization in Sport and Education: Technologies and Innovation in Sports Training.

Keywords

Optimum Power Load; Velocity-based training; Jump squat; Elite swimmers; 50 m freestyle performance

Abstract

Introduction: The Optimum Power Load (OPL) maximizes mean propulsive power in barbell exercises. Interest is increasing; however, definitions, protocols, and reporting remain inconsistent.
Objectives: Map OPL definitions and measurement in barbell exercises and synthesize the effects of OPL-oriented training on sprint, jump, and change-of-direction performance, highlighting gaps and practical implications.

Methods: Scoping review with a registered protocol. Searches were performed in PubMed, Scopus, Web of Science, and SPORTDiscus with no date limits, English only. Eligibility followed the Population–Concept–Context framework. Duplicate records were removed and two reviewers screened records in CADIMA. Data were charted and synthesized descriptively; no formal risk-of-bias assessment was performed. Sources included peer-reviewed journals and conference proceedings. The review followed PRISMA-ScR guidance for reporting and used a piloted data-charting form with calibration between reviewers.

Results: Of 2,717 records, 13 studies met inclusion. Samples were mostly competitive male athletes; female representation was limited. Jump squats, back squat variants, bench press, and Olympic push press were the most investigated exercises. OPL was commonly identified using mean propulsive power profiling or velocity–power modeling with linear transducers. Across studies, OPL-oriented training produced greater 10–20 m sprint and barbell mean propulsive power gains than traditional prescriptions in comparable contexts. Head-to-head at each exercise's OPL, the jump squat yielded larger gains in sprinting, jumping, and change-of-direction performance than the Olympic push press. Set configuration influenced responses: cluster sets at OPL preserved power and enhanced countermovement-jump performance versus traditional sets, and self-selected repetitions favored potentiation. Additional training elements were context-specific: plyometrics improved jump outcomes, whereas resisted elements benefited resisted sprint times. Mean propulsive velocity at OPL clustered near 1.0 $m \cdot s^{-1}$ in the jump squat; however, absolute loads varied with constraints and reporting units (% body mass, %1 repetition maximum). Equipment choice (Smith machine vs free bar), sampling, and outcome definitions contributed to heterogeneity. Back-squat depth varied across studies.

Conclusions: OPL-based prescriptions appear promising for speed–power outcomes. Practitioners should determine the OPL per exercise and athlete, monitor velocity and power, and report mean propulsive velocity with power at the OPL. Priorities include standardized testing, greater inclusion of female cohorts, and randomized comparisons across key exercises.

EXPLORING THE MODERATING EFFECT OF FALLS EFFICACY ON THE ASSOCIATION BETWEEN PHYSICAL FUNCTION AND RISK OF FALLS AMONG OLDER ADULTS

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Thematic Area

Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords

Risk of fall; Old Adults; Fall Eficacy, Physical Function

Abstract

Introduction: Falls in older adults are a major public health concern, as they precipitate autonomy loss. Understanding factors associated with fall risk is therefore crucial. While physical determinants are well established, psychological constructs remain less explored. Falls efficacy, reflecting individual's concern about falling during daily activities, plays a controversial role. Some concern may reflect awareness of risk, but excessive concern can increase vulnerability through activity restriction and deconditioning. **Objectives:** This study examined whether falls efficacy moderates the association between physical performance and falls risk in community-dwelling older adults. **Methods:** A cross-sectional design was adopted within the Stay Up–Falls Prevention Project (Ethics Committee reference: P02-S40-11/01/2023). Physical function was assessed using handgrip strength (dynamometer), lower-limb strength (5X sit-to-stand test), agility (Timed Up and Go test, 2.44 m), and gait speed (9 m walking test). Falls efficacy was measured using the Portuguese version of the Falls Efficacy Scale (FES). Fall history in the past 12 months was recorded and dichotomized (fallers vs. non-fallers). Binary logistic regression analyses were performed, including interaction terms to test moderation. Odds ratios (OR) with 95% confidence intervals (CI) were calculated (significance $p < 0.05$). **Results:** A total of 280 older adults were included (n = 211 women, n = 69 men; age = 71.88 ± 5.35 years). Falls efficacy was a significant independent predictor of fall risk (OR = 2.57, CI = 1.11–5.93, p = 0.028), showing that older adults with higher scores, reflecting greater concern about falling, had approximately 2.6 times greater odds of reporting a fall. The 5X sit-to-stand test was also significantly associated with fall risk (OR = 1.22, CI = 1.02–1.45, p = 0.030). Conversely, handgrip strength (p = 0.120), agility (p = 0.276), and gait speed (p = 0.180) were not significant. Interaction analyses revealed no moderating effects of falls efficacy on associations between physical function and fall risk (all $p > 0.05$). **Conclusions:** These findings highlight the importance of considering psychological factors, such as concern about falling, when designing fall prevention programs for older adults.

DEFINING GOOD PRACTICE IN DISABILITY-INCLUSIVE VOLUNTEERING EDUCATION IN SPORT: INSIGHTS FROM THE VIEWS PROJECT

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Thematic Area

Education Through Sport (ETS) : Methodology for Education Innovation

Keywords

Inclusive volunteering; disability sport; empowerment; accessibility; co-design

Abstract

Introduction: Across Europe, sport organisations increasingly seek to open volunteering to people with disabilities, but barriers such as inaccessible structures, limited awareness, and inconsistent education and training persist.

Project Description: Volunteering for Inclusion and Empowerment With Sports (VIEWS), Project number 101185128 — VIEWS, is a 36-month Erasmus+ partnership with eight partners across the EU. Its goal is to make inclusive volunteering in sport a norm rather than an exception by developing evidence-based frameworks, education, tools, and capacity-building programmes. The first phase aimed to define what constitutes good practice in disability-inclusive volunteering and to co-create shared standards guiding later education and mentoring phases.

Objectives: This study sought to identify and validate a stakeholder-driven definition of good practice, generate criteria for assessing inclusive sport-volunteering educational initiatives, and establish a shared reporting template for partner use across Europe.

Methodology: A mixed-method survey was conducted with stakeholders representing current or former volunteers (50%), aspiring volunteers (17.65%), programme supporters (35.29%), and researchers or experts (23.53%). Over 60% identified as disabled, ensuring lived experience was central to analysis. Quantitative data ranked predefined good-practice criteria, while qualitative responses were thematically analysed, retaining themes reported by at least 15% of participants. The process followed the VIEWS Research Guideline requiring input from a person with a disability, a practitioner, and a researcher. Findings were integrated into a Good Practice Framework and a standardised case-study template for all partners.

Key Results/Insights: Empowerment (97.06%) and accessibility (94.12%) achieved the highest consensus, alongside inclusivity (94.12%), sustainability (94.12%), and scalability (94.12%). Relevance of roles (94.11%) and leadership opportunities (91.18%) were also prioritised, while intersectionality received high though not universal agreement (85.29%).

Conclusion: Qualitative themes underscored barrier removal, active participation, equal contribution, tailored support, and a welcoming environment as enablers. Findings confirm that empowerment, accessibility, and co-design are central to effective inclusive volunteering, and that education, mentoring, collaboration, and long-term sustainability mechanisms must underpin practice.

Next Steps: These results guide subsequent VIEWS work packages focused on transnational education and training, mentoring systems, and dissemination to mainstream inclusive volunteering educations across European sport structures.

SMART CITIES, SMART CITIZENS: INTEGRATING SPORT AND EDUCATION FOR SUSTAINABLE URBAN MOBILITY

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Thematic Area

Smartization in sport and education

Keywords

Smart cities, sustainable urban mobility, sport and education, active lifestyle, smartization.

Abstract

The rapid advancement of digital technologies and smart systems has accelerated the process of “smartization” across multiple sectors, including sport and education. This transformation integrates data-driven decision-making, connectivity, and sustainability to enhance human performance, learning experiences, and urban living. In the context of sustainable urban mobility, smartization introduces innovative solutions that bridge physical activity, environmental awareness, and technological progress. Smart sports infrastructures—such as sensor-equipped facilities, wearable fitness trackers, and IoT-based monitoring systems—encourage active lifestyles while providing valuable data for urban health and mobility policies. At the same time, educational institutions are adopting immersive and interactive technologies that foster digital literacy, environmental responsibility, and community engagement.

To make smart cities more conducive to sports and active living, it is essential to integrate intelligent infrastructure, innovative technology, and urban regeneration policies. The aim is to promote well-being, social inclusion, and healthy lifestyles for all citizens. Multifunctional and modular sports areas, as well as equipped parks and trails built with sustainable materials and monitoring sensors, encourage outdoor activity and optimize public space use. Transforming underutilized zones into “Sports Islands”revitalizes urban areas while fostering inclusion and accessibility.

Integrating sustainable mobility systems—including e-bikes, e-scooters, and shared electric vehicles—further enhances accessibility to sports and educational facilities while reducing emissions and congestion. The creation of cyclable and green corridors linking parks, schools, and sports centers promotes safe, active, and environmentally friendly movement, contributing to cleaner air, urban cooling, and biodiversity.

Policies emphasizing inclusion and sustainability, such as the “15-Minute City” model and community participation in planning, reinforce these transformations. Ultimately, connecting sport, education, and sustainable mobility within smart urban ecosystems promotes healthier lifestyles, environmental stewardship, and the creation of greener, more resilient cities for the future.

EFFECTS OF A 12-WEEK PHYSICAL EXERCISE PROGRAM ON ANTHROPOMETRY, BODY COMPOSITION, CARDIOVASCULAR RESPONSE AND CARDIORESPIRATORY FITNESS IN YOUTHS AND ADULTS WITH AUTISM SPECTRUM DISORDER

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Thematic Area

Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords

Autism Spectrum Disorder; Exercise Program; Resistance Training; Strength Training; Health Indicators

Abstract

Introduction: The prevalence of overweight and obesity has increased in recent decades, including in individuals with autism spectrum disorder (ASD). In this context, the therapeutic approach often focuses on prescribing medication, which entails increased costs for the health system, to the detriment of promoting active lifestyles. This issue is concerning, as low levels of physical fitness are associated with reduced functionality and an increased risk of developing chronic diseases. **Objective:** The aim of this study was to investigate the effects of a physical exercise program on institutionalized individuals with ASD. **Methods:** Eighteen participants (19.22±8.20 years) were recruited using convenience sampling and divided into two groups: (i) young training group (YTG; n=9) and (ii) adult training group (ATG; n=9). Both groups performed 90 minutes of training per session, twice a week, for 12 weeks, combining aerobic endurance and resistance strength exercises. Assessments were conducted at the beginning of the study (baseline) and at three months (week 12). The impact of the program was assessed based on the variables of anthropometry, body composition, cardiovascular response and cardiorespiratory fitness. **Results:** Statistically significant differences ($p \leq .05$) were found between groups (YTG–ATG) in waist circumference, weight, muscle mass, fat mass, and six-minute walk test (6MWT). Statistically significant differences ($p \leq .05$) were found between assessments (Baseline–Week 12) in waist circumference, muscle mass, resting heart rate, systolic blood pressure, diastolic blood pressure, 6MWT and chester step test (CST). **Conclusions:** Although these were tests with different loads and stimuli, regular cardiorespiratory performance was observed in the CST compared to the 6MWT. CST, commonly used in rehabilitation settings, has demonstrated potential for application in individuals with ASD, providing information for risk stratification and exercise prescription. ATG showed more significant improvements in the different assessments compared to YTG, possibly due to greater functionality and adherence to training sessions. A low-cost intervention appears to be effective in reducing waist circumference, increasing muscle mass and regulating blood pressure, helping to overcome barriers faced by individuals with ASD, such as the lack of adapted exercise program and the high financial costs associated.

NAVIGATING THE IMPLEMENTATION OF PHYSICAL ACTIVITY INTERVENTIONS FOR BREAST CANCER SURVIVORS: INSIGHTS FROM THE PAC-WOMAN TRIAL

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Thematic Area

Education, Health, and Physical Literacy: Exercise, Health, and Quality of Life

Keywords

Exercise; brief counseling; cancer survivors; process evaluation; barriers and facilitators

Abstract

Introduction: Despite the well-documented benefits of physical activity (PA), breast cancer survivors (BCS) report significant engagement barriers, and interventions often lack comprehensive solutions to address them. Understanding the contextual factors that influence intervention implementation, particularly barriers and facilitators, is crucial for enhancing the success and sustainability of these interventions.

Objectives: The PAC-WOMAN trial is a pragmatic randomized controlled trial designed to promote long-term PA and improve quality of life among BCS. This process evaluation study examines the barriers and facilitating factors experienced during the implementation of the trial interventions, lasting four months - an 8-session brief counseling behaviour change intervention for PA and a bi-weekly structured exercise group.

Methods: Implementation fidelity and feasibility data were collected through monitoring logbooks, which reported on attendance and dropout rates, adverse events, and changes to the protocol. Qualitative data were gathered via focus groups with participants and semi-structured interviews with oncology doctors involved in recruitment, intervention implementers, and key stakeholders. An adapted version of the Tailored Implementation for Chronic Diseases (TICD) framework was used to analyse data and identify implementation determinants.

Results: 24 trial participants, three oncology doctors, three implementers, and three key stakeholders were interviewed. Analysis identified 49 categories of implementation determinants using the TICD framework. The main barriers reported by participants included session schedules and personal health limitations. Oncology doctors cited insufficient consultation time for making referrals, while implementers identified participant non-adherence as a primary challenge, and stakeholders noted the lack of financial incentives. Key facilitating factors included the group-based sessions and sense of safety during exercise for participants, motivation for implementation among doctors and implementers, and a strong collaborative relationship with the research team among stakeholders.

Conclusions: Implementation of the PAC-WOMAN interventions was influenced by a diverse range of determinants. While barriers were predominantly logistical in nature, facilitators centered on motivational and relational factors. These findings provide actionable insights for optimizing the design, implementation, and scalability of future PA interventions for BCS, like PAC-WOMAN.

CO-CREATING INTERVENTIONS WITH ADOLESCENTS FOR MOVEMENT BEHAVIOURS AND WELLBEING: A REALIST-INFORMED EVALUATION OF EARLY BARRIERS AND FACILITATORS IN THE MULTI-COUNTRY YOPA PROJECT

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Thematic Area

Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords

Co-creation, health inequities, process evaluation, adolescents, movement behaviours

Abstract

Introduction

Promoting movement behaviours and wellbeing among adolescents is key to reducing non-communicable diseases (NCDs) and health inequities. While interventions targeting young people are increasing, processes and outcomes often differ between high- and low-income countries, particularly in participatory approaches.
The Youth-centred Participatory Action (YoPA, https://www.yopa-project.eu/) project co-designs and implements context-specific interventions in four diverse sites across Europe and Africa. Using Participatory Action Research (PAR), adolescents and stakeholders collaborate to create sustainable, community-embedded initiatives to improve movement behaviours and wellbeing.
Evidence on how contextual barriers and facilitators shape implementation, especially in global, multi-site settings, remains scarce and calls for further research.

Objectives

This qualitative study provides a realist-informed process evaluation of Phase 1 of YoPA, focused on setting up local YoPA communities. It aims to identify challenges and facilitators during early implementation and to examine cross-site similarities and differences in initiating co-creation within varied socio-cultural and institutional contexts.

Method
Semi-structured interviews were conducted with 22 adult participants, among consortium members and institutional stakeholders across all countries. Data sources included interview transcripts, facilitator logbooks, session plans, and local protocols. A qualitative deductive thematic analysis was conducted using the novel PROSECO framework for coding barriers and facilitators. Findings were interpreted using the ICAMO (Intervention–Context–Actors–Mechanisms–Outcomes) realist framework.

Results
While barriers and facilitators varied strongly across contexts, some commonalities emerged. A key finding was the crucial role of the actors in implementation. Elements of the intervention, such as applying theoretical frameworks with youth and adapting content to local contexts, proved especially challenging. Other communication barriers, particularly in engaging adolescents meaningfully, were noted. Some mechanisms, like giving voice to youth and sharing power, were central. Facilitators included strong ties with local host institutions or agents (e.g., teachers, youth coordinators) and integrating action team sessions into existing activity curricula. Ultimately, despite a shared intervention approach, local context significantly shaped intervention characteristics.

Conclusions
This study offers comparative insights on implementing co-creation in multi-country projects to promote youth wellbeing and movement, helping researchers and practitioners design more effective, locally relevant interventions.

MODERATE EXERCISE AND HYPOXIA AS A SUSTAINABLE STRATEGY TO IMPROVE IMMUNE BALANCE AND QUALITY OF LIFE IN POST-COVID-19 RECOVERY

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Thematic Area
Education, Health and Physical Literacy: Exercise, Health, and Quality of Life

Keywords
Moderate exercise; hypoxia; immune regulation; HLA-G; quality of life

Abstract
Background: COVID-19 severity has been associated with hypoxia and the upregulation of the immune checkpoint molecule HLA-G, which suppresses immune function. Understanding how exercise modulates HLA-G expression may reveal sustainable strategies for enhancing recovery and improving long-term quality of life in patients recovering from COVID-19.

Regular moderate exercise helps regulate the immune system, strengthen defense mechanisms, and reduce inflammation. During COVID-19, hypoxia (low oxygen levels) and immune imbalance were linked to worse outcomes and higher levels of the immunosuppressive molecule HLA-G. Exercise under controlled hypoxia can trigger beneficial immune adaptations. Understanding how these responses interact may reveal how physical activity supports immune recovery and quality of life after COVID-19.

Objectives: To evaluate the relationship between disease severity and soluble HLA-G (sHLA-G) levels during acute COVID-19, and to determine how an eight-week moderate exercise program, under normoxic or hypoxic conditions, modulates sHLA-G levels in convalescent patients.

Methods: Plasma sHLA-G levels were quantified by enzyme-linked immunosorbent assay (ELISA) in two cohorts: (1) an acute infection cohort including COVID-19 patients (n=189) compared with healthy controls (n=73); and (2) an intervention cohort of post-COVID-19 patients (~30 days post-COVID-19 infection) randomized into a three-arm eight-week moderate-intensity cycle-ergometer training groups: normoxia (N), hypoxia (FiO_2 ≈ 14.5%, ~3000 m) into two conditions: during training (H), or hypoxia during recovery (HR). Blood samples were collected pre-training (T1), immediately after (T2), and four weeks post-intervention (T3).

Results: (1) Severe and critical patients (n = 94) had higher sHLA-G levels than non-severe (n=95; p = 0.0293) and healthy individuals (p<0.0001). (2) In the intervention study, moderate exercise significantly reduced plasma sHLA-G levels after eight weeks (p = 0.0099), regardless of oxygen condition. After four weeks of detraining, sHLA-G levels increased again (p = 0.0002), returning to baseline.

Conclusions: Acute COVID-19 increases immunosuppressive HLA-G levels in proportion to disease severity. In convalescent patients, sustained moderate-intensity exercise (whether under normoxia or hypoxia) transiently reduces sHLA-G, supporting immune rebalancing and quality of life. Exercise discontinuation reverses these benefits, underscoring the importance of ongoing physical activity as a non-pharmacological and sustainable immunomodulatory rehabilitation strategy for post-COVID populations.

VARIATIONS IN NEUROMUSCULAR PERFORMANCE DURING COMPETITIVE SEASON MOMENTS IN ADOLESCENT RHYTHMIC GYMNASTICS ATHLETES

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Thematic Area

Technologies and Innovation in Sports Training

Keywords

Rhythmic gymnastics; neuromuscular performance; tensiomyography; isokinetic evaluation; maturation; competitive macrocycle

Abstract

Introduction: Rhythmic gymnastics (RG) requires high technical, physical, and artistic abilities under intense training, which heightens the risk of fatigue and injury (Cabrejas et al., 2023). Assessing explosive strength and neuromuscular performance helps track functional adaptations. This study examined strength and neuromuscular performance at two competitive periods separated by a 4-month training macrocycle in adolescent female RG.

Methods: Eighteen female gymnasts (14.94±0.87 years) were assessed with 4-months interval, before the 1st National Championship (T0) and the 2nd National Championship (T1) of the season. Evaluations included: (i) neuromuscular function determined by delay time (Td) and contraction time (Tc); (ii) explosive strength evaluated through the Squat, Countermovement, Abalakov, and Split Leap Jumps; (iii) isokinetic performance of the knee extensors and flexors evaluated at 60°·s−1 and 180°·s−1 (Peak Torque, PT; Average Power, AP; Total Work, TW, and

Peak Power); (iv) upper-limb power using the Seated Medicine Ball Throw (SMBT) and right-hand grip strength; and (v) biological maturation, estimated from peak height velocity and maturity offset (MO) equations. Repeated-measures ANCOVA, with MO as a covariate and statistical significance set at $p<0.05$ was applied.

Results: At T1, higher values were observed in SMBT (+0.01 m, p=0.022), right leg Tc of the biceps femoris muscle (+3.48 ms, p=0.037), and relaxation time ratio (+42.77%, p=0.012). Also, for the left leg, in knee flexion PT (60°·s-1, +3.93 N/m; p=0.012), flexion AP (+1.34 W; p=0.010), flexion TW (+20.50 J; p=0.004); and flexion PP (+3.70 W; p=0.025). Conversely, lower values were observed in the maximum displacement of the rectus femoris muscle in the right leg (-0.85 mm, p = 0.047), and in the Td ratio (-43.79%, p<0.001).

Discussion: The competitive macrocycle produced selective, asymmetrical neuromuscular adaptations in adolescent RG. Right-limb contractile behaviour and left-leg knee flexion performance improved, particularly at lower velocities, while knee extension and high-speed measures showed minimal change. Upper-limb power increased slightly, indicating specific, muscle- and velocity-dependent adaptations driven by sport-specific loading patterns. These findings highlight the importance of systematic monitoring to manage accumulated fatigue over prolonged training macrocycles, especially in competitive moments.

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GAIT PARAMETERS AS A PREDICTOR OF FALL RISK IN ACTIVE OLDER ADULTS

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Abstract

Background: Falls are the leading causes of disability and reduced independence in older adults. Standard screening tools, such as the Timed Up and Go (TUG) or Five-Times-Sit-to-Stand (5-TSTS), are widely used due to simplicity but may fail to capture subtle instability. Emerging evidence highlights gait variability parameters, such as variability in step length, cadence, and gait speed, as sensitive indicators of impaired motor control and promising predictors of falls.

Objective: This study aimed to compare the predictive value of gait parameters against traditional functional tests in identifying fallers among active, community-dwelling older adults.

Methods: A cross-sectional analysis was conducted with 152 active older adults. Participants were categorized as fallers (≥1 fall in the previous 12-months) or non-fallers. Independent variables were: (1) traditional functional tests (TUG, 5-TSTS, Functional Assessment of Balance [FAB], handgrip strength) and (2) gait variability parameters (gait-speed-variability [GS], cadence variability [CAD], gait-speed-ratio variability [GSR], steps number). Statistical analyses included independent t-tests for group comparisons, Spearman's correlations, and binary logistic regression with ROC curve analyses.

Results: A total of 152 older adults (mean age=72.4 ± 5.0 years; 74% women) were assessed. Twenty participants (13.2%) were classified as fallers. Independent t-tests revealed no significant group differences between fallers and non-fallers in traditional functional tests or gait variability measures (all $p>0.05$). Correlations showed moderate associations between gait variability parameters and functional performance (GS with TUG, $r=0.59$, $p<0.001$; steps number with FAB score, r=N–0.42, $p<0.001$), but no significant correlations with fall risk classification. Logistic regression models including sex, age, BMI, TUG, FAB, handgrip strength, and gait parameters did not significantly predict fall risk (Omnibus χ^2=7.48–8.69, p=0.466–0.587; Nagelkerke R^2=0.097–0.112). ROC curve analyses confirmed poor discriminative ability for all predictors. AUC values ranged from 0.44 to 0.56, with non-significant results for gait parameters (GS AUC=0.45, 95%CI:0.31–0.58, p=0.43); steps number (AUC=0.46, 95%CI:0.34–0.58, p=0.53) and TUG (AUC=0.49, 95%CI:0.38–0.60, p=0.87).

Conclusion: In this cohort of active older adults, neither traditional functional tests nor gait variability parameters demonstrated predictive value for fall risk. These findings indicate that, within highly active and relatively healthy populations, conventional markers may offer limited discriminative capacity.

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