# Abstracts

CASES Conference 2026

Gold sponsors:

CRANLEA HUMAN PERFORMANCE

Routledge Taylor & Francis Group

sportingedge

**Journal of Sports Sciences**
Volume 44 Number S1 May 2026

**CONTENTS**

**Special Issue: CASES Conference Programme 2026**

**Articles**



*(Continues on next page)*

*(Continues from previous page)*

23 D1.S2.8(4) A socioecological exploration of coaching neurodivergent athletes in elite youth football
*Laura Swettenham, Cheryl Grogan and Kristin McGinty-Minister*

24 D1.S5.1(1) "Their bodies were made to move and wriggle right from the word go": A qualitative exploration of family engagement with fundamental movement skills in early childhood
*Robert Flynn, Andy Pringle and Clare Roscoe*

25 D1.S5.1(4) The effects of walking football participation on physical functioning in middle-aged and older adults
*Egan Goodison, Ben Ives, Adam Field, Gladys L. Onambele-Pearson and Liam D. Harper*

26 D1.S5.2(1) Temporal and dose-dependent effects of conditioning stimuli on conditioned pain modulation
*Boyu Duan, Samuel A Smith and Alexis R Mauger*

27 D1.S5.2(2) The effects creatine has on cognitive function and physiological function when skiing at altitude
*Rebecca Vartan and John Kelly*

28 D1.S5.3(1) Cases Prof Edward Winter Early- to Mid-Career Researcher Project: Implementing a safeguarding education programme to address maltreatment in professional football: A pilot study
*James Newman*

29 D1.S5.3(2) Unmasking the exercise experience: Facial actions as indicators of affective responses during aerobic cycling
*Tony Ker, Chris Kirk, Ralf Brand, Lynne Spackman and Leighton Jones*

30 D1.S5.3(4) Coach perceptions of the coach–participant relationship in Scottish Football Club Charities and Community Programmes
*Teigan Wilson, Andy Hall and Michael Malone*

31 D1.S5.4(1) The CASES expert statement on measuring perfectionism in sport and exercise
*Sarah H. Mallinson-Howard, Andrew P. Hill, Michael C. Grugan, Daniel J. Madigan and John K. Gotwals*

33 D1.S5.4(2) Broad versus narrow attentional focus: Implications for quiet-eye behaviour and success in elite amateur golfers
*Zoe Wimshurst and Laura Carey*

34 D1.S5.4(3) Establishing research priorities for women's physical activity, exercise, and sport on the island of Ireland: Findings from the míde research collective
*Patricia C. Jackman, Jennifer Murphy, Maria Faulkner, Eimear Kelly, Aoife Lane, Emma Cowley, Angela Carlin, Maria O'Kane, Mary Margaret Meade, Elizabeth Deery, míde Research Collective and Denise Martin*

35 D1.S5.4(4) Examining event specialism on pre-competition psychological skills profile in Parkour Traceurs
*Ben Strafford and Joseph Stone*

36 D1.S5.5(1) Sharpening the coach's eye: Trainability of a gaze strategy for perceiving barbell velocity loss in resistance training
*Asaf Ben-ari, Scott Henry, Laura Carey, Israel Halperin and Antonio Dello Iacono*

37 D1.S5.5(2) Design of a sport science support system for international cricket
*Lauren Fletcher, Patrick Maughan and Katherine Burgess*

38 D1.S5.5(4) Understanding decision-making expertise in football VAR: Insights from elite video match officials
*James Clark, Samuel Wood, Liis Uiga, Matt Weston, Mark Williams, Robin Jackson, Steve McNally and Greg Wood*

39 D1.S5.5(5) Behind the sparkle: Psychological safety and the influence of negative coaching on the wellbeing of elite athletes in aesthetic sports
*Nia Palmer and Nicholas de Cruz*

40 D2.S1.1(1) Comparison of lower limb kinematics derived from female-specific smart leggings and optical motion capture
*Lucinda Abell, Thomas Balshaw and Stuart McErlain-Naylor*

41 D2.S1.1(3) Does hip abductor strength training change running biomechanics? A systematic review
*Gary Hall, Phil Hayes and Gill Barry*

42 D2.S1.1(4) An investigation into the physical determinants of maximal horizontal deceleration
*Aitor Martínez-González and Paul Jones*

43 D2.S1.2(1) Association of estimated cardiorespiratory fitness and cardiovascular mortality risk in people with multimorbidity: A population-based cohort study
*Qi Zhang, Bhautesh Jani, Frederick Ho and Carlos Celis-Morales*

44 D2.S1.2(2) Can CIED-derived physical activity provide as a biomarker to predict all-cause-mortality? External validation of previous predictive modelling approaches
*Greig Cowie, Andy Hall, Paul Swinton and Steven Leslie*

45 D2.S1.2(3) Evaluating the impact of a new active travel bridge on walking and cycling volumes: A natural experiment
*Frederick Alexander Walker and Holly Davidson*

46 D2.S1.2(4) Evaluating the impact of exercise snacking on cardiometabolic health and cognitive function: A systematic review and meta-analysis
*Hsu Myat, Hannah Lithgow, Adele Dickson, Malwina Niechcial and David King*

47 D2.S1.2(5) The association between cardiorespiratory fitness, cardiovascular disease risk factors, and quality of life in perimenopausal and postmenopausal women: A cross-sectional study
*Amie Woodward, Amy Campbell and Sophie Carter*

*(Continues on next page)*

(Continues from previous page)

48 D2.S1.2(6) Comparison of single versus multi-item measurement of sedentary behaviour in individuals with Crohn's disease: A cross-sectional study
*Jason J. Wilson, Barry Lynch, Nathan Graham, Conor McClean and Mark A. Tully*

49 D2.S1.2(7) Evaluating exercise dose in a remote rehabilitation intervention following critical care discharge
*Darren Murphy, Brenda O'Neill, Judy M Bradley, Jill Costley, Annette Henderson, Mike Adams, Bronwnen Connolly, Danny McAuley and Jason J Wilson*

50 D2.S1.3(1) Prevalence of low energy availability and associated factors among male academy football players in England: A cross-sectional study
*Jamie Ashby, Thomas Mullen, Philip Smith, John Rogers, Jay Vadher, Eoin Schofield and Nick Dobbin*

51 D2.S1.3(2) Criterion validity and sensitivity of skinfold-derived estimates of fat-free mass and fat mass across training mesocycles in elite football
*Alex Dean, Sam Taylor, Sam Holt, Scott Gillham and John Iga*

52 D2.S1.3(3) Vigorous exercise habits can mitigate the risk of body mass index and body fat in high-risk genotypes associated with obesity in a healthy adult cohort
*Jenni Chambers, Corinna Chidley, Clare Roscoe and Aparna Duggirala*

53 D2.S1.4(1) Exploring how soccer coaches perceive and facilitate teamwork
*Samuel Gelsthorpe and Stephanie Tibbert*

54 D2.S1.4(2) Effects of asynchronous music during exhaustive cycle ergometry on cerebral oxygenation and psychophysical responses
*Ségolène M. R. Guérin, Costas I. Karageorghis, Marine R. Coeugnet, Marcello Bigliassi and Yvonne N. Delevoye-Turrell*

55 D2.S1.4(3) Camouflaging to compete: Masking in sport among autistic women and gender diverse people
*Kristin Mcginty-Minister*

56 D2.S1.4(4) Understanding the use of musical imagery in collegiate athletes: An exploratory study
*Ross Leach, Jasmin Hutchinson and Andrew Danso*

57 D2.S1.4(5) Five methodological and practical advances in the study of perfectionism in sport
*Andrew P. Hill*

58 D2.S1.4(6) Exploring the perspectives and experiences of men living with prostate cancer from minority ethnic backgrounds in undertaking physical activity: A qualitative analysis
*Jack Carr, David Broom, Mark Faghy, Clare Roscoe, Kevin Williams and Ruth Ashton*

59 D2.S1.5(2) Pupillary light responses in males and females following competitive rugby matches
*Christopher Kirk, Daisy Monk Edwards, Jak Mercer, Ben Bowden, David Binney and Andrew Barnes*

60 D2.S1.5(5) Neuromuscular performance variability across menstrual cycle phases in naturally menstruating female athletes
*Hannah Mcmanus*

61 D2.S1.5(6) Physiological and perceptual responses across menstrual cycle phases in female ultra-endurance athletes: A pilot study
*Irene Molina Gonzalez and Stuart Gray*

62 D2.S1.6(2) How does sports coaching pedagogy influence coaching practice? Learnings from a scoping review
*Ethem Cubuk, Vassil Girginov and Richard Blair*

63 D2.S1.6(3) Improving executive functions in students at risk through physical activity and machine learning
*Santolo Ciccarelli and Francesco Vincenzo Ferraro*

64 D2.S1.6(4) Demonstrating the impact volunteering: A case study of Denis Law legacy Trust
*Katherine Burgess and Hannah Clews*

65 D2.S1.6(5) Experiences of utilising authentic undergraduate assessment to develop the competencies of future applied practitioners
*Alison Tincknell-Smith, Nicholas Willsmer and Christian Michelet*

66 D2.S1.6(6) Creating a safe space for personal and professional growth
*Andy Hooton and Charlotte Chandler*

67 D2.S4.1(1) The ACTIVE-FAB physical activity and sedentary behaviour intervention for the rare genetic condition Fabry disease: Findings from a feasibility study
*Daniel Bailey, Sarah Gosling, Cherry Kilbride and Derralynn Hughes*

68 D2.S4.1(2) Physical activity and exercise for the management of polycystic ovary syndrome (PCOS)
*David Broom Hon, Brent Robbins, Ruth Ashton, Chris Kite, Amie Woodward, Ioannis Kyrou and Harpal Randeva*

70 D2.S4.1(3) A four-year cross-sectional exploration of outdoor sport participation, nature connectedness, and wellbeing
*Paul Sellars, Diane Crone, Tjerk Moll and Tabitha Dickson*

71 D2.S4.2(2) Long-term impacts of coaching maltreatment for former elite adult female athletes: A trauma-informed qualitative study
*Leanne Norman, Chloe Woodhead, Natacha Lazareff and Kate Seary*

72 D2.S4.3(2) A crossover study investigating the effects of blood flow restriction during aerobic exercise on neuromuscular recovery in elite male academy footballers
*Ryan Davies*

(Continues on next page)

*(Continues from previous page)*

73 D2.S4.3(3) Dose–response effects of flywheel training volume on strength, hypertrophy, and jump performance: A randomised controlled trial
*Ivan Jukic, Doğuş Bakici, Matthew Cross and Matt Brughelli*

74 D2.S4.4(3) The Chartered Association of Sport and Exercise Sciences (CASES) endorsed undergraduate sport and exercise science curricula in the UK: Current provision and future considerations
*Mykolas Kavaliauskas, Rhiannon Lord and Gavin Thomas*

75 D1.P2 Perceptual–motor influences on complex locomotor control: The roles of conscious control and environmental context
*Luke Hill, Rick Mills, Rich Masters, Nicola Middlebrook, Neil Reeves and Liis Uiga*

76 D1.P4 Machine Learning classification of Kellgren–Lawrence knee osteoarthritis using only radiographic images: New prospectives and challenges for sports therapists
*Mobina Manafi and Francesco Vincenzo Ferraro*

77 D1.P5 The effects of resistance training on brain-related biomarkers, neurocognitive function, and physical capacity in older adults
*Christine Caine, Mark Antrobus, Camilla Holland, Madison Klymyszyn, Maria Dimitriadi, Helen Foster and Jon Brazier*

78 D1.P6 School-based homework interventions for improving 24-hour movement behaviours in primary school children: A systematic review and meta-analysis
*April Forrest, Duncan S Buchan, Nicholas Sculthorpe, Lawrence Hayes and Samantha Robinson*

79 D1.P7 "Skating is living": Lifestyle sport in midlife – a thematic narrative analysis of skateboarders' experiences in the United Kingdom
*Jingfeng Li, Simon Cook and Kiara Lewis*

80 D1.P8 A comparative assessment of the initial and revised 12-week University of Chichester's Health, Awareness and Maintenance Programme (UCHAMP) for managing and improving cardiopulmonary conditions
*Kaia Pilbeam and Kasha Dickie*

81 D1.P10 Exploring psychological effects of menopause on female runners: Practical implications
*Helen Morton, Stephanie Tibbert and Alyx Taylor*

82 D1.P11 Nature-based early childhood education: Parent and practitioner perspectives on practice, space and outdoor learning
*Nicola Taylor, Andy Pringle and Clare Roscoe*

83 D1.P12 Can biofeedback support performance of the sit-to-stand test?
*Kanruethai Threesittidath, Kyra De Coninck, Claire Melanie Boucher and Alexis R Mauger*

84 D1.P13 Acute heating-induced flow-mediated dilation: Exploring sustained shear stress responses in the brachial and femoral arteries of healthy adults
*William Carey, Madeleine France-Ratcliffe, Ben Price, Tom Cullen and Amy Harwood*

85 D1.P14 The influence of nutritional risk factors to musculoskeletal risk factors in female contact sport athletes
*Felicity Lucas, Vasiliki Iatridi, Rianne Costello, Catherine Anna-Marie Graham and Anne Delextrat*

86 D1.P15 Prevalence, magnitude and methods of rapid weight loss in junior powerlifters of regional, national and international competitive standard
*Elena Wilson and Mitchell Finlay*

87 D1.P16 Non-invasive assessment of integrated cardiorespiratory network dynamics after sea-level training and an altitude training camp in elite university swimmers
*Faith Yuda and Shaun Phillips*

88 D1.P18 The effects of auditory and visual distraction on sprint performance, perceived exertion, and blood lactate responses during prolonged indoor cycling
*Zoe Bridges*

89 D1.P20 Sources of psychological pressure experienced by swimmers: A systematic review
*Lucy Hepworth, Laura Johnson, Emma Huntley and David Marchant*

90 D1.P21 Does playfulness predict high school students' motivation to participate in sports?
*Doris Holzhacker, Miles Cassidy-Rice and Alyx Taylor*

91 D1.P22 The emotional implications of a hypertrophic cardiomyopathy diagnosis in a retired athlete: An autoethnographic approach
*Ian Guyah Low, David Lavallee and Rhiannon Lord*

92 D1.P26 Coach-athlete relationship quality and psychological distress: Implications for wellbeing in university netball athletes
*Wumay Watson*

93 D1.P28 Does single-leg isometric squat strength relate to 505 change of direction performance in pathway netball athletes?
*Ben Andrews, Callum Blades and Louis Barnetto*

94 D1.P29 return-to-sport test outcomes and subsequent ACL re-injury risk in female athletes: A systematic review
*Mallorie Barteau and Jacqueline Mills*

95 D1.P31 Negotiating menstruation, disability, and athletic identity: A qualitative investigation of para-athletes and stakeholder perspectives
*Emily Divine*

96 D1.P35 Exploring the use of analgesic medicines within rugby union: A cross-sectional approach
*Patrick Mcclintock, Vasileios Georgopoulos and Matthew Attwood*

*(Continues on next page)*

*(Continues from previous page)*

97 D1.P36 Practical considerations for applied physiological performance assessment using a Concept2 SkiErg device
*Steven Morton, Laura Forrest, Chris Easton, Mykolas Kavaliauskas, Kurt Rumley, Andrew Sommerville, Susan Pinner, James Place, Greg Aspin, Carl Soulsby and Tom Macpherson*

98 D1.P37 Shaping smarter players: Academy coaches' views on game intelligence in English premiership rugby
*Dan Orwin, David Grecic, Andrew Morley and Pamela Richards*

99 D1.P38 Understanding performance determinants in race walkers through an integrated biomechanics and physiology approach
*Erika Pontarollo*

100 D1.P39 Athlete perceptions of readiness and fatigue monitoring in professional football: A qualitative exploration
*George Preston*

101 D2.P1 Field-based reliability of wearable IMU running gait metrics during repeated 5-km parkruns in recreational runners
*Gary Hall, Gill Barry and Phil Hayes*

102 D2.P2 Relationships between rapid force and peak force across different isometric plantar flexor assessments
*Vincent Maynard, Nicole Newburn, James Williams and Nicholas Ripley*

103 D2.P3 Squat stance, Grip Width and heel height effects on patellofemoral joint loading during the overhead squat
*Jake Evans, James Bodden, Tom Ryan, Michael Lawson and Robert A. Needham*

104 D2.P4 Small steps, big gains: Active play's influence on fitness and daily movement patterns
*Ruhina Binta A Ghani*

105 D2.P5 Project U: Evaluating free gym memberships for physical and mental health
*Chelsea Batty and Richard Lewis*

106 D2.P7 Predicting balance and fall risk from respiratory function using interpretable machine learning
*Francesco Vincenzo Ferraro*

107 D2.P8 Block start as determinants of motor function in elderly population: Applications and implications in master swimmers
*Letizia Leggiero, Sabrina Demarie and Francesco V Ferraro*

108 D2.P9 Physical activity interventions for women from ethnic minority backgrounds: A systematic review of cultural adaptations to identified barriers and enablers
*Kiara Lewis, Anwesa Chatterjee, Judith Dyson, Janelle Kolas and Sereena Raju*

109 D2.P10 Developing a professional network for women in physical activity, exercise and sport across the island of Ireland: Míde connect
*S Maria O'Kane, Elizabeth Deery, Angela Carlin, Denise Martin and Maria Faulkner*

110 D2.P11 Barriers to volunteering as a sighted guide runner
*Clare Strongman and Shahina Pardhan*

111 D2.P12 Associations of sedentary behaviour bouts with community-dwelling older adults' physical function
*Jason J. Wilson, Ilona McMullan, Nicole Blackburn, Mathias Skjødt, Paolo Caserotti, Maria Giné-Garriga, Ana Farche, Jochen Klenk, Dhayana Dallmeier, Manuela Deidda, Marta Roqué i Figuls and Mark A. Tully*

112 D2.P13 The colour of taste: Investigating flavour perception and preference in children aged 9-11
*Neil Clarke, Cain Clark and Micheal Duncan*

113 D2.P14 Effect of increasing between-point rest length on thermoregulation during tennis-specific treadmill exercise in hot humid conditions
*Matthew Debney, Alan Ruddock, Ciara O'Hagan and Alison Purvis*

114 D2.P15 Acute effects of different exercise modalities on early post-exercise cardiopulmonary recovery in chronic heart failure
*Panagiotis Ferentinos, Vasileios Spyropoulos, Alexandros Briasoulis, Costas Tsakirides, Serafeim Nanas, Ourania Papazachou and Eleftherios Karatzanos*

115 D2.P16 Prevalence of disordered eating and associated factors among university students in Islamabad, Pakistan
*Sehar Iqbal*

116 D2.P17 Physiological demands and peak running speed during a maximal treadmill test compared to the multistage fitness test
*Clare Marsh and Joseph Neild*

117 D2.P18 Dietary intake and performance in a mountain marathon: Evidence from the Olympus Mountain Marathon
*Christina Mastrochristou, Eleftherios Karatzanos, Eirini Manthou and Panagiotis Ferentinos*

118 D2.P19 Effects of tart cherry juice on physically active individuals following a single resistance training session: A pilot study
*Despoina Migkaki, Eleftherios Karatzanos, Eirini Manthou and Panagiotis Ferentinos*

119 D2.P22 Examining the effects of goal types on physical fitness task performance and psychological outcomes in children aged 4–11 years
*Rebecca M. Hawkins, Melissa Bargh, Robin Watson and Daniel Martin*

*(Continues on next page)*

*(Continues from previous page)*

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, i
https://doi.org/10.1080/02640414.2026.2677406

Routledge
Taylor & Francis Group



# Transparency Statement

These abstracts are part of the conference proceedings from CASES Conference 2026 which was organised by The Chartered Association of Sport and Exercise Sciences. Editorial decision-making and oversight of peer review was conducted by Sue Watson, CASES Head of Operations, and Dr Adam Grainger FCASES, Chair of the Conference Scientific Planning Group.

Peer review was conducted by a pool of peer reviewers from which Division experts were chosen to peer review the abstracts.

Taylor & Francis played no part in the choice of editors or peer reviewers for these proceedings.

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 1
https://doi.org/10.1080/02640414.2026.2668808

Routledge
Taylor & Francis Group



# D1.S2.1(1) Key Kinematic Performance Indicators in Prone and Supine Underwater Dolphin Kick

Victoria Jones[a], Oliver Logan[a] and Carl Payton[b]

[a]Aquatics GB, UK; [b]Manchester Metropolitan University, Manchester, UK

In freestyle, backstroke, and butterfly races, swimmers may travel up to 15 m underwater during the start and turns. The underwater dolphin kick (UDK), a cyclical movement comprising oscillations of the lower limb segments, is customarily used in this underwater phase. The majority of investigations into UDK kinematics have examined only prone kicking, using 2D methods, with a dearth of research investigating UDK over the entire underwater phase. Therefore, the aim of this study was to identify key performance indicators in skilled UDK, and determine how kinematics change over the underwater phase. With institutional ethics approval, 21 participants (means ± SDs: 25 ± 2 years; body mass: 72.7 ± 9.9 kg; height: 180.7 ± 9.9 cm), including nine Olympians, completed three trials of maximal effort UDK from a wall push-off. Movements were captured by an 8-camera underwater system to enable 3D analysis. A correlational analysis was undertaken between kinematic variables and the highest mean speed over four consecutive kick cycles (UDK performance). A percentage change metric from a kick-by-kick analysis was calculated to demonstrate how UDK metrics varied over the underwater phase. A significant, strong positive correlation was found for kick frequency in prone ($r = 0.67$, $P = 0.002$) and supine ($rs = 0.68$, $P = 0.004$) UDK. A significant, moderate positive correlation was found for hip extension velocity in prone ($r = 0.53$, $P = 0.02$) and supine ($r = 0.54$, $P = 0.03$) UDK. A significant, moderate negative correlation was found for knee flexion velocity in prone UDK only ($r = -0.47$, $P = 0.04$). A significant, strong negative correlation was found for hip flexion velocity ($r = -0.70$, $P = 0.003$), and significant, moderate positive correlation was found for ankle plantar-flexion velocity ($r = 0.53$, $P = 0.03$) in supine UDK only. Horizontal velocity generally declined over the underwater phase. However, faster kickers were better able to sustain velocity via maintenance of distance per kick, despite a reduction in frequency or amplitude. Results suggest that kick frequency, and velocities of hip extension, knee flexion, and ankle plantar-flexion are key indicators of UDK performance. Additionally, skilled kickers compensate for reduction in frequency or amplitude to maintain distance per kick.

**CONTACT** Victoria Jones victoria.jones@aquaticsgb.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 2
https://doi.org/10.1080/02640414.2026.2668827

Routledge
Taylor & Francis Group



# D1.S2.2 (1) Interventions to enhance physical activity and reduce sedentary behaviour in first-year university students: A systematic review

Farrukh Majeed[a], Lizzy Deery[a], Marie Murphy[a,b], Angela Carlin[a] and Jason Wilson[a]

[a]School of Sport and Exercise Science, Ulster University, Belfast, UK; [b]Physical Activity for Health Research Centre (PHARC), Institute for Sport, Physical Education and Health Sciences, Edinburgh, UK

The transition from high school to university is a critical period marked by substantial changes in students' routines, social environments and responsibilities, often leading to reduced physical activity (PA) and increased sedentary behaviour (SB). During the first year, students commonly establish unhealthy health habits, which can persist into later life. While numerous interventions aim to promote PA and reduce SB among university students, existing reviews predominantly address the general student population. This review specifically focuses on first-year students, evaluating interventions to identify effective strategies and guide the development of tailored approaches during this formative transitional stage. This systematic review was registered with PROSPERO (CRD42025629851) and conducted in accordance with PRISMA and the Cochrane Handbook. Peer-reviewed English-language studies were identified using a PICOS framework across six electronic databases searched up to December 2024. Four reviewers independently screened studies, extracted data, and resolved discrepancies. Risk of bias was evaluated using RoB 2.0 for randomised control trials (RCT) and ROBINS-I for non-randomised control studies (NRCT). A narrative synthesis, guided by the Cochrane Synthesis Without Meta-analysis (SWiM) guidelines, addressed heterogeneity in study designs, interventions, data collection points and outcome measures. Twenty-one studies were included. Interventions were conducted across eight countries, but predominantly in the USA (43%), mostly included Caucasians (57%) and had sample sizes between 12 and 255 students. Most studies involved RCTs (67%) evaluating in-person (43%), remote (28%), or hybrid (28%) interventions grounded mainly in social cognitive theory (57%), while most RCTs (57%) had high risk, most NRCTs (86%) demonstrated serious risk of bias. PA was assessed in all studies, whereas SB (9%) and muscle-strengthening (5%) outcomes were infrequently measured. Two-thirds reported significant PA improvements, though sometimes limited to one intervention arm. Evidence for reducing SB or improving muscle strength was minimal and inconsistent. Follow-up data suggested PA gains were generally maintained. However, methodological heterogeneity, reliance on self-reported outcomes, and high-to-serious risk of bias across many studies limited comparability and certainty of findings. Theory-based, multimodal interventions effectively increase PA in first-year university students, but evidence for reducing SB is limited, highlighting the need for high-quality, long-term studies to inform institutional policies and campus-wide health promotion strategies.

**CONTACT** Farrukh Majeed majeed-f@ulster.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 3
https://doi.org/10.1080/02640414.2026.2668832

Routledge
Taylor & Francis Group



# D1.S2.2(2) Advancing physical literacy measurement in early childhood: Validation of a novel assessment and profiling approach, and its relationship with physical activity

Natalie Weir[a], Richard Tyler[b], Andy Pringle[a] and Clare Roscoe[a]

[a]University of Derby, Derby, UK; [b]Edge Hill University, Ormskirk, UK

Physical literacy provides a compelling framework for understanding skills, attitudes, and behaviours in relation to physical activity, and assessment represents a crucial step for establishing conceptual and practical relevance. However, there is limited evidence to assess and understand how it manifests in 3–5-year-olds, constraining applied intervention. Therefore, the study aims were threefold: 1) to establish validity evidence for the Physical Literacy Early Years (PLEY) Wheel tool, an educator-completed observational assessment of physical literacy across physical, cognitive, social and affective domains; 2) to examine its associations with key variables, including objectively measured physical activity; and 3) to generate profile-based representations to support understanding and application in early childhood contexts. Following institutional ethics approval, 234 children and 17 educators from 15 early childhood education and care settings participated. Educators completed the PLEY Wheel by rating 12 components across the four domains. Physical activity was measured using triaxial accelerometers for 5 days whilst in the educational environment. Psychometric analyses, linear mixed models, and cluster analyses were used to examine psychometric properties, relationships with physical activity and create data-led profiles. The PLEY Wheel demonstrated strong validity, reliability and alignment with theoretical expectations. Findings also supported physical literacy as a multidimensional construct that increased with age. Girls scored higher in cognitive and social domains, and children with special education needs or disabilities demonstrated lower physical literacy and physical activity. Physical activity varied widely within and between settings and was associated with physical literacy. Five profiles, based on domain strengths and weaknesses, were sensitive to age, sex, and socioeconomic context, but did not strongly differentiate physical activity levels. These findings advance our understanding of physical activity and physical literacy in 3–5-year-old children and highlight the potential of a child-centred, data-led approach. The PLEY Wheel is recommended as a reliable, theoretically grounded, and practically applicable tool for assessing PL in 3–5-year-old children in England. Stakeholder feedback suggested potential applicability for use with older children and international contexts. Profiling offers a novel alternative to linear low-to-high approaches and presents a promising direction for assessment refinement, future resources, educator use, and the development of targeted, physical literacy informed interventions in early childhood.

**CONTACT** Natalie Weir n.weir@derby.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 4
https://doi.org/10.1080/02640414.2026.2668833

Routledge
Taylor & Francis Group



# D1.S2.2(3) Re-entering Time through movement – temporal narratives of community-based physical activity in severe mental illness

Sreedevi Laxman [a], Melissa Day[a], Chen-an Yu[a], Emily Hunt[b] and Ross Wadey[c]

[a]University of Chichester, Chichester, UK; [b]Brunel University London, Uxbridge, UK; [c]St Mary's University Twickenham London, Twickenham, London, UK

Severe mental illnesses (SMI), including schizophrenia, psychosis and bipolar disorder, disrupt everyday life, identity and well-being, contributing to disproportionate health inequalities and repeated psychiatric hospital admissions (Public Health England, 2018). While hospitalisation can provide short-term support, it often disrupts social networks and increases loneliness after discharge, making recovery in the community challenging (Quirk et al., 2020). Although physical activity (PA) is widely recommended for people with SMI, most research has focused on short-term outcomes, providing little understanding of how PA is maintained and embedded into the ongoing recovery process.

The aim of this study was to explore how individuals with SMI maintain engagement in community-based PA (CBPA) over time and how this participation shapes their recovery journeys. In collaboration with Sport in Mind, a mental health and sport charity, and after obtaining university ethics approval, timeline-drawing faciliated, in-depth interview were conducted with 15 adults with SMI who had participated in CBPA for more than 3 years. Data were analysed using reflexive thematic analysis (Braun and Clarke, 2019) with a temporal lens, examining how participants experienced movement, disruption and continuity across recovery journeys.

Three themes were identified. SMI as Disruption to Time captured periods experienced as 'frozen', externally dictated and 'cyclical', leading to social withdrawal. Role of CBPA in Finding Intersubjective Time and Social Rhythmsreflected how repeated CBPA attendance fostered bodily rhythm, routines and grounding, supporting embodied and affective regulation. Role of CBPA in finding Social and Intersubjective Time highlighted how shared PA participation helped rebuild friendships and social identity.

Findings demonstrate recovery as a temporal and relational process and PA participation as fluctuating and non-linear. PA can be considered as an adjunctive support embedded within broader care pathways and therefore, clinical practitioners should consider pacing and symptom fluctuation, while community providers should prioritise relational safety, autonomy and long-term continuity. As one participant described, PA functioned as 'the cherry on the cake' when layered onto appropriate clinical care and safe environments.

## ORCID

Sreedevi Laxman http://orcid.org/0009-0009-6630-1643

**CONTACT** Sreedevi Laxman slaxman1@stu.chi.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 5
https://doi.org/10.1080/02640414.2026.2668835

Routledge
Taylor & Francis Group



# D1.S2.3(1) Exploring the feasibility of a cluster pilot randomised control trial to improve children's 24-hour movement behaviours and dietary intake: Happy homework

Samantha Robinson[a], Duncan Buchan[a], Gillian McLellan[a], Ross Roberts[b] and Rosie Arthur[a]

[a]The University of the West of Scotland, Blantyre, UK; [b]Bangor University, Bangor, UK

Children's daily movement, sedentary behaviour (SB) and sleep, outlined in 24-hour movement guidelines, are crucial for health and obesity prevention. Most school-based interventions show limited success in improving physical activity (PA), SB and sleep, and whilst home environments and parental influences are key, purely home-based interventions are often impractical. Combining school-based teaching with structured, health-focused homework shows promise in promoting positive movement behaviours. Therefore, we aimed to explore the feasibility, acceptability, and potential efficacy of Happy Homework (HH); an 8-week home-focused intervention, with the purpose of encouraging children's positive dietary behaviours and engagement in positive PA and sleep behaviours. The intervention was mapped to the Scottish Curriculum for Excellence and theoretically underpinned by Self-Determination Theory. A convenience sample of four primary schools in Scotland was recruited following the receipt of ethical approval from the University of the West of Scotland Ethics Committee. We randomised four Scottish schools (n = 71 participants, 9–12 years; 5 classrooms) to either the HH intervention (n = 2) or usual curriculum control group (n = 2). HH consisted of movement and dietary-focused parent and child tasks provided by the classroom teacher on a weekly basis. Primary outcome measures were intervention feasibility, acceptability, and potential efficacy. Secondary outcomes were device-measured PA via ActiGraph GT3X+, SB and sleep duration via activPAL4™ accelerometers and dietary behaviours, fruit and vegetable consumption and screen-time via questionnaires. A recruitment rate of 45% and retention rate of 89% were observed. Participants reported HH to be enjoyable and motivating, which was implemented by all participating teachers. Adherence of HH activities reduced as the intervention progressed with some activities preferred over others. After controlling for pre-test levels, post intervention stepping time and sleep duration were significantly greater for the HH intervention group in comparison to the control group. Additionally, the HH intervention group reported eating more fruit and vegetables at post-test than the control group. These findings provide promising evidence that given a greater sample size, better retention and the prioritisation of health and wellbeing homework, HH could enhance children's health and wellbeing.

**CONTACT** Samantha Robinson samantha.robinson@uws.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 6
https://doi.org/10.1080/02640414.2026.2668836



# D1.S2.3(2) Children's participation in sport: How do community sports clubs support low-income families and/or families struggling financially?

S Maria O'Kane[a], Roisin McCafferty[a], Shane Collins[a], Marie H Murphy[a,b], Sinead Connolly[a], Alison M Gallagher[a] and Angela Carlin[a]

[a]Ulster University, Derry, Northern Ireland; [b]University of Edinburgh, Edinburgh, UK

Despite the importance of sport for children's physical activity, health, and wellbeing, longstanding socioeconomic inequalities persist in access to organised sport. Evidence shows that children from higher-income households are more likely to participate in sport than those from low- or middle-income households. These inequalities may be exacerbated in the current economic climate, as rising costs place increasing pressure on both families and community sports clubs. However, little is known about how clubs respond to these challenges. Therefore, this study aimed to explore how community sports clubs have been impacted by the cost-of-living crisis and how clubs support low-income families and/or families struggling financially to participate in organised sport.

With institutional ethical approval, an online questionnaire was administered to those in leadership positions within sports clubs across the island of Ireland from May to August 2025. To be eligible for inclusion, participants had to be aged ≥ 18 years and hold a leadership position within a sports club on the island of Ireland that had members aged ≤ 18 years. The questionnaire was piloted in advance and contained both closed and open-ended questions. Descriptive analyses were conducted on quantitative data, while qualitative responses were analysed thematically.

In total, n = 504 completed questionnaires were received (65.5% Ireland and 34.5% Northern Ireland), representing 55 different sports. Since the onset of the cost-of-living crisis in late 2021, 52.2% of the respondents said their club had increased membership fees; however, 36.7% said that volunteer levels within their club had increased. Almost half of respondents (42.3%) said their clubs had initiatives/strategies in place to support low-income families and/or families struggling financially but formalised income-based concessions were rare, with only 9.9% of the respondents stating that their clubs had reduced fees for families in receipt of means-tested benefits. The majority of participants were supportive of efforts to ensure socioeconomic inclusion, and felt that clubs have a responsibility to support participation regardless of socioeconomic status.

Taken together, these findings highlight a tension between inclusive values and practical capacity within community sports clubs. Without targeted funding, guidance, and knowledge-sharing, community sports clubs may struggle to prevent widening socioeconomic inequalities in children's participation in organised sport.

**CONTACT** S Maria O'Kane m.okane@ulster.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 7
https://doi.org/10.1080/02640414.2026.2668837

Routledge
Taylor & Francis Group



# D1.S2.3(3) What drives enjoyment in grassroots football for children?: A Write–Draw–Show–Tell approach

Michael Duncan [a], William Pattison[a,b], Rose Smith[a], Siv Gjesdal[c], Jason Tallis[a], Soyoung Kim[a] and Ricardo Martins[d]

[a]Coventry University, UK; [b]Hartpury University, UK; [c]Norwegian School of Sport Sciences, Norway; [d]University of Alberta, Canada

Enjoyment is a critical factor in children's motivation for participation in youth sports. Enjoyment is also a key component of physical literacy, with research demonstrating that enjoyment is the key driver for continued physical activity. The transition from non-competitive to competitive participation represents a key shift which may influence how children enjoy recreational sport. However, enjoyment of youth sport remains poorly explored, and no research has examined how children interpret enjoyment the across the transition from non-competitive to competitive formats of recreational sport. The present study used a Write – Draw – Show – Tell (WDST, Martins, 2024, Pediatric Exercise Science, 37(1), 81–91) approach to explore this issue in the context of grassroots football. Following institutional ethics approval, informed parental consent and child assent, 46 children, aged 9–15 years of age (24 boys, 22 girls), took part. Children were recruited from grassroots football clubs in England and participated in one of 11 sex and competitive stage specific WDST focus groups comprising 14–15-year-old boys, competitive (n = 12), 9–12-year-old boys, non-competitive (n = 12), 14–15-year-old girls, competitive (n = 8), 9–12-year-old girls, non-competitive (n = 14). Each group completed WDST activities involving short written prompts, drawing tasks, and guided discussion. Data were analysed using reflexive thematic analysis. Five themes captured children's psychological experiences: friendship and fun (n = 43), winning and improvement (n = 37), emotional highs and lows (n = 31), support systems (n = 34) and maturing within the game (n = 27). Gendered patterns were evident, with girls more frequently emphasising emotional support and social belonging, while boys described competitiveness, performance expectations, and outcome-focused pressure. This study suggests children's experiences of grassroots football evolve as they move from non-competitive to competitive formats. We identify a developmental shift in enjoyment, moving from a primarily playful and social activity to one perceived as more serious and emotionally complex. Gendered patterns suggest that boys and girls may interpret similar environments differently, with enjoyment for boys being anchored in competition, where, for girls, social aspects underpinned enjoyment, irrespective of whether they were within the non-competitive or competitive formats of the game.

**CONTACT** Michael Duncan Fcases aa8396@coventry.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 8–9
https://doi.org/10.1080/02640414.2026.2668818

Routledge
Taylor & Francis Group



# D1.S2.4(1) Beyond the phase: The CASES expert statement on a smarter management approach to hormone-related symptoms in active females

Eleri Sian Jones[a], Esther Goldsmith[b], Sophie Harrison[a] and Natalie Brown[c]

[a]Bangor University, UK; [b]Sport Wales, UK; [c]Swansea University, UK

The aim of this statement is to provide sport and exercise scientists with an overview of research on menstrual cycle symptoms in active females, and to offer practical recommendations to support health, wellbeing, and performance. Outlined below are proposed sub-headings and content.

## Introduction

- What is the scale of menstrual cycle symptoms amongst athletes? Up to 59.6% athletes experience premenstrual syndrome (Taim et al., 2023), with more having experienced symptoms of premenstrual symptoms at some point in their cycle (Bruinvels et al., 2021).
- What are athletes' perceptions about the influence of their symptoms on their training and performance? (Brown et al., 2021)
- There is a lack of support for menstrual cycle symptoms and athletes often feel pressure to push through their symptoms' (McCleery et al., 2024; van den Berg & Doyle-Baker, 2025)
- Menstrual cycle symptoms can prove a significant burden across a lifespan, affecting health and wellbeing and incurring economic costs.

## Background and evidence

- Currently, research does not support a phase-based approach to exercise training (Colenso-Semple et al., 2023; McNulty et al., 2020). Whilst phased-based training may provide a solution for those suffering with menstrual cycle symptoms, it works around the problem instead of focusing on and preventing the cause. For example, in lieu of timing an easy week pre-menstrually due to heavy legs and fatigue, could symptoms be managed by recovery and sleep interventions to better prepare and support consistent performance in females?
- Menstrual cycle symptoms may be one of the most influential factors on both subjective and objective performance for female athletes (Brown et al., 2021; Smith et al., 2025). Therefore, by better understanding individual experiences of the menstrual cycle we can better support active females
- Currently there is differing advice about pharmaceutical vs non-pharmaceutical management strategies for menstrual cycle symptoms (Brown et al., 2024; Meijen & Martin, 2024, NICE Guidelines 2025; Panay, 2011). More research is required to better understand how to manage menstrual cycle symptoms, particularly in high performance athletes.
- Menstrual cycle tracking could support symptom management; however, it is important to consider the practicalities, ethics, use, purpose and behaviours surrounding this (Carmichael et al., 2024; Casto, 2022; Roffler et al., 2024)

## Conclusions

- We will conclude by emphasising that menstrual cycle symptoms affect a large majority of female athletes. Whilst training in line with menstrual cycle phases has been suggested, this is unsupported by the evidence and may be a more avoidance strategy rather than intervening to mitigate against symptoms. However, there is little evidence to support specific symptom management interventions for female athletes. Lastly, it is important to remember that some symptoms may also be positive and these can be opportunities, providing a target or baseline of how athletes should aim to feel consistently.

## Recommendations

- Encourage menstrual cycle tracking
  - What should be tracked

CONTACT Eleri Sian Jones eleri.s.jones@bangor.ac.uk

    - How to track menstrual cycles and implement this with athletes
- Where prudent, nutrition, stress-management, sleep and exercise interventions may improve menstrual cycle symptoms experience.
- More research is needed to support interventions for the most common menstrual cycle symptoms.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Funding

The authors received funding from the Chartered Association of Sport and Exercise Scientist to complete the work featured in this article.

## ORCID

Eleri Sian Jones http://orcid.org/0000-0003-4883-0516

## References

Brown, N., Knight, C. J., & Forrest, L. J. (2021). Elite female athletes' experiences and perceptions of the menstrual cycle on training and sport performance. *Scandinavian Journal of Medicine and Science in Sports*, *31*(1), 52–69. https://doi.org/10.1111/sms.13818

Brown, N., Martin, D., Waldron, M., Bruinvels, G., Farrant, L., & Fairchild, R. (2024). Nutritional practices to manage menstrual cycle related symptoms: A systematic review. *Nutrition Research Reviews*, *37*(2), 352–375. https://doi.org/10.1017/S0954422423000227

Bruinvels, G., Goldsmith, E., Blagrove, R., Simpkin, A., Lewis, N., Morton, K., Suppiah, A., Rogers, J. P., Ackerman, K. E., Newell, J., & Pedlar, C. (2021). Prevalence and frequency of menstrual cycle symptoms are associated with availability to train and compete: A study of 6812 exercising women recruited using the Strava exercise app. *British Journal of Sports Medicine*, *55*(8), 438–443. https://doi.org/10.1136/bjsports-2020-102792

Carmichael, M. A., Roberts, A. H., Donaldson, A., & Clarke, A. C. (2024). Implementing menstrual cycle tracking: A pilot concept mapping study investigating considerations of coaches, support staff, and female athletes. *Journal of Science & Medicine in Sport*, *27*(8), 557–564. https://doi.org/10.1016/j.jsams.2024.04.003

Casto, K. V. (2022). Tracking women's reproductive data in sport: Practical limitations, perils and pitfalls. *Sports Medicine*, *52*(8), 1723–1727. https://doi.org/10.1007/s40279-022-01671-6

Colenso-Semple, L. M., D'Souza, A. C., Elliott-Sale, K. J., & Phillips, S. M. (2023). Current evidence shows no influence of women's menstrual cycle phase on acute strength performance or adaptations to resistance exercise training. *Frontiers in Sports and Active Living*, *5*, 1054542. https://doi.org/10.3389/fsal.2023.1054542

McCleery, J., Diamond, E., Kelly, R., Li, L., Ackerman, K. E., Adams, W. M., & Kraus, E. (2024). Centering the female athlete voice in a sports science research agenda: A modified Delphi survey with team USA athletes. *British Journal of Sports Medicine*, *58*(19), 1107–1114. https://doi.org/10.1136/bjsports-2023-107886

McNulty, K. L., Elliott-Sale, K. J., Dolan, E., Swinton, P. A., Ansdell, P., Goodall, S., Hicks, K. M., & Hicks, K. M. (2020). The effects of menstrual cycle phase on exercise performance in eumenorrheic women: A systematic review and meta-analysis. *Sports Medicine*, *50*(10), 1813–1827. https://doi.org/10.1007/s40279-020-01319-3

Meijen, C., & Martin, E. A. (2024). 'I don't want to be seen as period prone': An exploration of psychological strategies used across the menstrual cycle. *International Journal of Sports Science and Coaching*, *19*(6), 2366–2375. https://doi.org/10.1177/17479541241269274

National Institute for Health and Care Excellence. (2025). *Contraception — combined hormonal methods*. Clinical knowledge summaries (CKS). Retrieved September 19, 2025, from https://cks.nice.org.uk/topics/contraception-combined-hormonal-methods/

Panay, N. (2011). Management of premenstrual syndrome: Evidence-based guidelines. *Obstetrics, Gynaecology & Reproductive Medicine*, *21*(8), 221–228. https://doi.org/10.1016/j.ogrm.2011.05.005

Roffler, A., Fleddermann, M. T., de Haan, H., Krüger, K., & Zentgraf, K. (2024). Menstrual cycle tracking in professional volleyball athletes. *Frontiers in Sports and Active Living*, *6*, 1408711. https://doi.org/10.3389/fspor.2024.1408711

Smith, E. S., McCormick, R., McKay, A. K., Ackerman, K. E., Elliott-Sale, K. J., Stellingwerff, T., Harris, R., & Burke, L. M. (2025). Perceived negative menstrual cycle symptoms, but not changes in estrogen or progesterone, are associated with impaired cycling race performance. *Medicine & Science in Sports and Exercise*, *57*(3), 590–599. https://doi.org/10.1249/MSS.0000000000003587

Taim, B. C., Ó Catháin, C., Renard, M., Elliott-Sale, K. J., Madigan, S., & Ní Chéilleachair, N. (2023). The prevalence of menstrual cycle disorders and menstrual cycle-related symptoms in female athletes: A systematic literature review. *Sports Medicine*, *53*(10), 1963–1984. https://doi.org/10.1007/s40279-023-01871-8

van den Berg, C. A., & Doyle-Baker, P. K. (2025). Are we asking the right questions? Female athletes' perspectives on the menstrual cycle in sport. *Psychology of Sport & Exercise*, *76*, 102767. https://doi.org/10.1016/j.psychsport.2024.102767

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 10
https://doi.org/10.1080/02640414.2026.2668819



# D1.S2.4(2) Does the AMPD1 C34T polymorphism influence physical performance in elite distance runners?

Daniel Martin[a], Georgina Stebbings[a], Shane Heffernan[b], Rob Erskine[c], Alex Jackson[a], Sarah Lockey[d], Adam Herbert[e] and Alun Williams[a]

[a]Manchester Metropolitan Institute of Sport, Manchester, UK; [b]Swansea Univerity, Swansea, Wales; [c]Liverpool John Moores University, Liverpool, UK; [d]Anglia Ruskin University, Chelmsford, UK; [e]Birmingham City University, Birmingham, UK

Previous research has demonstrated the heritability of endurance-based phenotypes, yet few have investigated their effect on running times. Adenosine monophosphate (AMP) deaminase is a key regulator of skeletal muscle energy metabolism. The C34T (rs17602729) polymorphism brings about a C-to-T transition in the AMPD1 gene, converting a glutamine codon into a premature stop codon and reducing the AMP deaminase activity in skeletal muscle. As such, we aimed to identify whether the AMPD1 C34T (rs17602729) genotype was associated with distance running (DR) athlete status and performance data. The study consisted of 666 male and female DR athletes (1500 m, 5000 m, 10,000 m, half marathon and marathon), and 1029 male and female non-athletes, all European ancestry. Real-time PCR using TaqMan reagents was used to determine genotypes. Athlete run times were quantified as a percentage of the median of the top 10 best British times in their respective favoured event, allowing for the analysis of male and female athletes simultaneously. All athletes achieved personal best times within ~33.33% of the median of the top 10 best British times of their favoured event, with the top 50% achieving within ~17% and being classified as elite. P values for multiple comparisons were subject to Benjamini–Hochberg correction to control false discovery rate. There were no differences in genotype or allelic frequencies between athletes and non-athletes. There were no significant differences in DR athlete run times between genotypes. However, CT genotypes were up to 5% faster than CC and TT homozygotes in the elite and elite male runner groups. While the superior performance of the heterozygote athletes is interesting, it is unlikely that reduced enzymatic activity of AMP deaminase is advantageous to endurance performance. It is likely some form of compensatory mechanism allowing these athletes to perform despite AMP deaminase deficiency. In conclusion, ascension to the elite level is possible with any of the three possible C34T genotypes, as running performance seems largely unaffected.

**CONTACT** Daniel Martin daniel_martin32@aol.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 11
https://doi.org/10.1080/02640414.2026.2668820

Routledge
Taylor & Francis Group



# D1.S2.4(3) Determining the physiological and biomechanical demands of "Float to Live": A niche application of sport and exercise sciences to drowning prevention

Thomas Wild[a], Dannielle Davis[a], Heather Massey[b], Mark Russell[a] and Martin Barwood[a]

[a]Leeds Trinity University, Leeds, UK; [b]University of Portsmouth, Portsmouth, UK

Maintaining the respiratory airway above water is critical for preventing drowning when adopting the 'Float to Live' advice (Royal National Lifeboat Institution, https://rnli.org/safety/float, 2025); however, the demands of doing so whilst treading water in an upright position are influenced by body density (Von Döbeln and Holmér, 1974, Journal of Applied Physiology, 37, 55–59). Therefore, we aimed to determine (1) if this relationship applies to the supine floating position, and (2) whether body position and limb involvement modulate the demands of leaner individuals. With institutional ethics approval, two cohorts consented and underwent 5-minute stationary immersions in 29°C water whilst tethered to a Douglas bag system and video recorded in 2D. Primary outcomes: body density, oxygen uptake ($VO_2$), heart rate (HR), movement volume (qualitative index of limb activity), and trunk-to-water-surface angle. Cohort 1 (n = 24; 12 M, 12F; age 36.1 ± 8.2 years; height 1.73 ± 0.10 m; mass 75.4 ± 14.0 kg; body fat 20.9 ± 7.9%) underwent hydrostatic weighing followed by a single supine immersion. Cohort 2 (n = 15 males; age 36.3 ± 12.2 years; height 1.80 ± 0.05 m; mass 78.5 ± 8.5 kg; body fat 13.1 ± 2.6%) underwent four immersions, comparing body position (upright vs. supine) and limb involvement (arm-only vs. arm+leg). Data analysed via regressions and two-way ANOVAs ($\alpha = 0.05$). In Cohort 1, body density was associated with $VO_2$ ($ml \cdot kg^{-1} \cdot min^{-1}$, $R^2 = 0.642$, $P < 0.001$), HR ($beats \cdot min^{-1}$, $R^2 = 0.514$, $P < 0.001$), and movement volume (0–10 score, $R^2 = 0.560$, $P < 0.001$), but not trunk angle. In Cohort 2, remaining supine substantially reduced effort compared to upright (by $VO_2$ 14.4 $ml \cdot kg^{-1} \cdot min^{-1}$; HR 12.5 $beats \cdot min^{-1}$; movement volume 24%; all $P \leq 0.001$). Arm-only movement modestly reduced $VO_2$ (3.2 $ml \cdot kg^{-1} \cdot min^{-1}$, $P < 0.001$). Adding leg activity improved horizontal alignment (18.7°, $P < 0.001$) and modestly reduced cardiovascular strain (7.1 $beats \cdot min^{-1}$, $P = 0.009$) but increased movement volume (31.5%, $P < 0.001$). Therefore, demands when supine were associated with body density. Body position (supine optimal) and limb involvement modulated physiological and biomechanical demands. Integrating leg activity (Barwood et al., 2016, Physiology & Behavior, 154, 83–89) better enabled maintenance of a horizontal position but increased overall movement requirements.

**CONTACT** Thomas Wild 1500135@leedstrinity.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 12
https://doi.org/10.1080/02640414.2026.2668821

Routledge
Taylor & Francis Group



# D1.S2.5(1) Negative ageing mindsets and their association with fall-related concerns in community-dwelling older adults

Ellie Johnson[a], Toby Ellmers[b] and Mathew Hill[c]

[a]Coventry University, UK; [b]Imperial College London, UK; [c]University of Leicester, UK

Concerns about falling (CaF) are common among older adults and are associated with increased future falls. Emerging evidence suggests that ageing mindsets (i.e., how individuals perceive and internalise their own ageing process) may shape such concerns by influencing perceptions of control, vulnerability and physical decline. However, it remains unclear what unique influence ageing mindsets exert on CaF, beyond established predictors such as age, falls history and physical function. This study therefore examined whether negative ageing mindsets are independently associated with greater CaF and heightened perceptions of the consequences of a fall. With institutional ethics approval, a cross-sectional study was conducted with 622 older adults (age; 73.9 ± 6.96 years, gender; 73.5% female). CaF were assessed using the Short Falls Efficacy Scale International (Kempen et al., 2008, Age and Ageing, 37, 45–50), and perceived consequences of falling were measured using the Consequences of Falling Questionnaire (Yardley & Smith, 2002, The Gerontologist, 42, 17–23). Mindsets were assessed by determining participants' attitudes, self-perceptions and optimism around ageing. Hierarchical linear regression analyses were used to assess associations, controlling for demographic, health and psychological covariates. More positive mindsets about ageing were significantly associated with lower CaF ($b = -0.129$ to $-0.486$; $P < 0.003$), and fewer perceived negative consequences of falling ($b = -0.989$ to $0.226$; $P < 0.017$). These associations were significant even after controlling for established predictors of CaF, including age, health status and falls history. Older adults who held more positive mindsets of ageing reported lower CaF and fewer perceived negative consequences of a fall. Given that ageing mindsets are particularly amenable, interventions that promote more positive and adaptive mindsets about ageing could be a useful avenue for reducing these concerns.

**CONTACT** Ellie Johnson johnsone4@coventry.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 13
https://doi.org/10.1080/02640414.2026.2668823



# D1.S2.5(4) An ethnographic exploration of the injury experience of high-performance student athletes at a higher education institute

Scarlett Ayre, Francesca Cavallerio and Andrew Morrison

Anglia Ruskin University, Cambridge, UK

Injury is an inherent risk in high-performance sports and can have profound physical, psychological, and social consequences for student athletes balancing elite performance with academic demands. While injury management often prioritises physical recovery, less attention has been paid to the lived experiences of injured student athletes within higher education environments, especially in the context of UK university students. The aim of this research was to explore the current reality of injured high-performance student athletes, focussing on how injury is experienced, managed and understood within a higher education context. An ethnographic research design was employed over the course of the high-performance team sports season to capture the everyday realities of injury. Data was collected through prolonged field immersion, detailed field notes, and semi-structured interviews with student athletes and coaching staff. Interview transcripts and field notes were analysed using reflexive thematic analysis to identify recurring patterns and meanings within the data. Seven themes were found within the data: (1) The invisible burden of injury, (2) Navigating fragmented medial and rehabilitation pathways, (3) The role of social support in recovery, (4) Silence, distance and disrupted communication, (5) From athlete to outsider, (6) Knowledge gaps and external pressures shaping injury experiences, and (7) Competing demands beyond the injury. These findings highlight the complexity of navigating a sporting injury while continuing with everyday life, demonstrating that context and environment are paramount in shaping the injury experience. The data also point to gaps in injury education for both athletes and coaches and a need for enhanced psychological support to enable athletes to navigate the injury experience more holistically. This research concludes that injury for high-performance student athletes is a complex, socially embedded experience shaped by institutional, relational and cultural factors. To better support injured athletes, higher education sport programmes must move toward holistic injury management approaches that integrate physical, psychological, educational, and social dimensions of recovery.

**CONTACT** Scarlett Ayre scarlettayre@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 14
https://doi.org/10.1080/02640414.2026.2668809

Routledge
Taylor & Francis Group



# D1.S2.6(1) The relationship between perfectionism, excellencism, and performance in track and field athletes

Hyunsik Kim[a], Daniel Madigan[a], Andrew Hill[a], Daniel Fleming[b] and Luke Olsson[c]

[a]York St. John University, York, UK; [b]University of Hull, Hull, UK; [c]Liverpool John Moores University, Liverpool, UK

Perfectionistic strivings – self-oriented striving for perfection – has been found to be positively related to sports performance. However, researchers have argued that any performance benefits from perfectionistic strivings are unlikely when controlling for excellencism – striving for very high yet attainable standards. The aim of the present study, therefore, was to test if this was the case. After institutional ethics approval and preregistration, 275 track-and-field athletes completed measures of multidimensional perfectionism and excellencism and provided their personal best performance. To allow comparisons across athletes and events, performance scores were converted to IAAF points. Results showed that both perfectionistic strivings ($B = 59.46$, $p = .004$) and excellencism ($B = 50.05$, $p = .017$) were positively related to performance with perfectionistic strivings explaining an additional 3% of performance variance once controlling for excellencism. Finally, when comparing subtypes of within-person combinations of perfectionistic strivings and excellencism, those athletes with high levels of both constructs reported the highest levels of performance. Contrary to expectations, these findings suggest that perfectionistic strivings may play a unique role in predicting sport performance beyond excellencism.

**CONTACT** Hyunsik Kim hyunsik.kim@yorksj.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 15
https://doi.org/10.1080/02640414.2026.2668810

Routledge
Taylor & Francis Group



# D1.S2.6(2) Shaky statistics and problematic publishing: Questionable research practices in the sport and exercise sciences

Leighton Jones[a] and Nicholas Tiller[b]

[a]Liverpool John Moores University, UK; [b]The Lundquist Institute at Harbor-UCLA Medical Center, USA

As sport and exercise sciences continue to fight for relevance in the broader public health narrative, we must ensure that the science underpinning our work is of the highest quality. Other disciplines have reported issues with questionable research practices (QRPs), but, to date, sport and exercise sciences have not rolled over their stone and looked at what lies beneath. Questionable research practices are an exploitation of the grey area of acceptable practice (John et al, 2012, Psychological Science, 23, 524–532) but differ from misconduct. Examples of QRPs include p-hacking, HARKing, and withholding methodological detail. The aim of this work was to capture perceptions and practices in the exercise sciences, and to achieve this, we created a list of 21 items consolidated from existing surveys that represent the most consequential and widely recognized QRPs. Institutional ethical approval was granted and scholars from around the world completed the online survey. One hundred and forty-five eligible respondents were included and were predominantly male (N = 113), aged between 25 and 44 years (76%), held a doctorate or equivalent (74%), and 56% were assistant Profs or higher. Physiology (52%) and psychology (24%) were the primary disciplines included. The mean number of peer-reviewed published articles for the participants was 24. Responses revealed that 4% of participants admitted fabrication or falsification of data. Most respondents (89%) admitted to engaging in at least one QRP. The two most common QRPs were performing data/statistical analyses that were not pre-planned or stated in the study proposal (i.e., p-hacking, 50%), and inappropriately assigning or receiving authorship credit (45%). Regression analyses conducted to examine whether perceptions of malfeasance predicted QRP behaviour showed that prevalence estimates significantly predicted QRP confession rates ($p < .001$), explaining approximately 27% of the variance in self-reported QRPs. In practical terms, individuals who believed QRPs were more common tended to report engaging in more of them. The admission rate reported is higher than in other comparable studies for other disciplines. These preliminary data suggest that we need an open discussion on research practices in our discipline.

**CONTACT** Leighton Jones l.jones3@ljmu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 16
https://doi.org/10.1080/02640414.2026.2668811



# D1.S2.6(3) Supporting a first team level UK professional football player using existential psychology

Alan Tonge

UCFB, Manchester Campus, Manchester, UK

Despite the numerous psychological challenges encountered within elite-level football, first-team players often remain apprehensive about where to access appropriate psychological support when required (Tonge, 2021, Exploring Transitions, Critical Moments, Identity and Meaning within Professional Football, Doctoral thesis, Liverpool John Moores University). Applied research in these environments remains limited due to distrust, confidentiality concerns, and restricted access to first-team players (Nesti, 2010, Psychology in Football: Working with Elite and Professional Players, London: Taylor and Francis; Nesti, 2024, Applied Psychology Practice in Professional Sport: Meeting the Person, Knowing the Athlete, London: Routledge). Furthermore, psychological provision in elite football frequently reflects an over-reliance on performance-focused mental skills interventions at one end of the support spectrum (Weinberg and Gould, 2023, Foundations of Sport and Exercise Psychology, 8th ed., Champaign, IL: Human Kinetics) and referrals for mental illness at the other (Kvam, Kleppe, Nordhus and Hovland, 2016, Journal of Affective Disorders, 202, 67–86), leaving identity-related challenges insufficiently addressed. The aim of this presentation is to illustrate the applied use of existential psychology in supporting a first-team player in their early 20s. Applied sessions addressed non-selection which was a critical career moment that elicited anxiety and threatened personal and professional identity (Nesti, 2004, Existential Psychology and Sport: Theory and Application, London: Routledge). The sessions focused on exploring themes of freedom, responsibility, choice, meaning, and identity within the context of the player's sporting career and broader life. Outcomes were assessed through player self-report and practitioner questioning. Following the sessions, the player demonstrated increased clarity regarding personal values, enhanced emotional regulation, and constructive engagement with training and first team activities, representing a positive shift from what could otherwise have developed into a maladaptive response (Corlett, 1996, Journal of the Philosophy of Sport, 23, 45–57). Cultural and practical constraints within elite football, including limited time and a preference for rapid performance-focused interventions, present challenges to this approach. The engagement and outcome suggest that existential psychology may serve as a valuable complementary framework for practitioners supporting identity challenges in elite players, particularly during critical moments, and highlight the importance of recognising and addressing existential concerns alongside traditional performance-focused interventions.

**CONTACT** Alan Tonge a.tonge@ucfb.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 17
https://doi.org/10.1080/02640414.2026.2668812

Routledge
Taylor & Francis Group



# D1.S2.7(1) Effect of small-sided game format on field hockey players' physical and physiological responses

Matthew P. Stoner[a], Caroline D. Sunderland[a], John G. Morris[a], Rachel Malcolm[a], Elliot P. Lam[b] and Laura A. Barrett[c]

[a]Nottingham Trent University, Nottingham, UK; [b]Sportlight Technology Ltd., Oxford, UK; [c]Loughborough University, Loughborough, UK

Small-sided games (SSGs) are a popular and versatile training drill type used by most team sports with invasion-type characteristics. They have been shown to elicit similar, or even greater aerobic and physical improvements as high-intensity interval training (HIIT), with the added benefit of technical and tactical development (Wen et al., 2024, Journal of Sports Science & Medicine, 23, 445–454). Therefore, the aim of this observational study was to assess how changing player numbers between 3 v 3, 5 v 5, and 7 v 7 SSGs affected the responses of field hockey players. Following ethical approval, measurements of maximum heart rate (HRmax) and speed (speedmax) were taken during regular training sessions, using a global positioning system (GPS) (SPI HPU, GPSports, Canberra, Australia) and heart rate (HR) monitors (Polar T31, Polar Electro, Kempele, Finland). Thirty-four male players (mean age: 21.2 ± 2.4 years; height: 1.81 ± 0.05 m; body mass: 76.4 ± 8.3 kg) were tracked (average horizontal dilution of precision: 0.478; average satellite number 9.72) across two seasons and 56 training sessions (mean temperature: 10.3 ± 6.0°C; humidity: 80.1 ± 13.3%). A repeated measures ANOVA ($P < 0.05$) was used to analyse the differences between players median HRmax and speedmax values in the different SSG formats. Post-hoc comparisons were made using a Bonferroni adjustment. HRmax was higher for 5 v 5 (179 ± 26 bpm) than 3 v 3 (177 ± 26 bpm; $P = 0.046$), but not significantly higher than 7 v 7 (178 ± 26 bpm; $P = 1.000$). Speedmax was lower for 5 v 5 (22.3 ± 3.37 kph) than 3 v 3 (24.6 ± 3.75 kph; $P < 0.001$) and 7 v 7 (23.7 ± 3.11 kph; $P = 0.008$). While the maximal heart rate elicited in the 5 v 5 format was higher than the 3 v 3, increasing player number thereafter did not seem to impact the maximal heart rate response. Perhaps unexpectedly, there did not seem to be a positive linear association between speedmax and increasing the number of players involved in the SSG. Further research should investigate the impact of other SSGs format considerations, such as pitch size and bout duration.

**CONTACT** Matthew P. Stoner matt.stoner@ntu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 18
https://doi.org/10.1080/02640414.2026.2668813



# D1.S2.7(2) Understanding the 4-min-mile: Modelling the physiological determinants of maximal 4-min running performance

Rebekah Osborne[a], Jimmy Wangdi[a], Brett Kirby[a,b], Matthew Black[a], Anni Vanhatalo[a] and Andrew Jones[a]

[a]University of Exeter, Exeter, UK; [b]Nike Sport Research Lab, Beaverton, USA

In middle-distance (MD) track events, there has been no achievement more celebrated than the first sub-4 min-mile run by Sir Roger Banister in 1954. Despite this, relatively little is known about the physiological underpinnings of MD running performance. Therefore, the aim of this study was to investigate the key physiological variables which relate to successful performance in a 4 min time trial (4MTT) and subsequently develop a model to enable performance prediction. With institutional ethics approval, 21 ($n = 11$ male, 1500 m personal best: $243.2 \pm 6.1$ s; $n = 10$ female, 1500 m personal best: $266.2 \pm 9.3$ s) MD athletes, completed one laboratory-based and six field-based physiological assessments. During the laboratory visit, the athletes completed an incremental step test to determine maximal oxygen uptake ($VO_{2max}$), speed at $VO_{2max}$, running economy, lactate threshold and lactate turnpoint. The field-based performance tests included: a 10 m maximal sprint test; a 20 s maximal rate of lactate accumulation (VLaMax) sprint test; and 2, 4, 6 and 12-min time trials for estimation of critical speed (CS) and the finite capacity to perform work above CS (D′), which broadly reflect aerobic and anaerobic capacity, respectively. The distance covered in m during the 4MTT was the performance criterion. Pearson's product moment correlation coefficients were used to assess the relationship between the physiological and performance variables with 4MTT, and stepwise multiple linear regression was used to create a predictive model. CS had the strongest correlation with 4MTT ($r = 0.84$, $P < 0.001$). The fitted regression model was: $4MTT = 247.8(CS) + 4.1(D'/CS) - 26.7$. The model explained 87% of the variance in 4MTT ($F(2,20) = 67.78$, $P < 0.001$). Both CS and D′/CS were significant predictors in the model (CS: $t = 11.53$, $P < 0.001$, $\beta = 1.14$; D′/CS: $t = 5.32$, $P < 0.001$, $\beta = 0.52$). Our results indicate that successful 4MTT performance requires both high aerobic and anaerobic capabilities as reflected in the model by CS and the 'endurance parameter ratio', D′/CS, respectively. This model provides a predictive tool for athletes aspiring to run a sub-4 min-mile.

**CONTACT** Rebekah Osborne rjo212@exeter.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 19
https://doi.org/10.1080/02640414.2026.2668814



# D1.S2.7(3) Athletes with a difference of sex development (DSD) perform like women and not like men in track athletics events

Niall Fife[a], Sasha Gollish[b], Roger Pielke Jr[c], Georgina Stebbings[d], Alun Williams[d,e] and Shane Heffernan[a]

[a]Swansea University, Swansea, UK; [b]University of Toronto, Toronto, Canada; [c]University of Colorado Boulder, Boulder, CO, USA; [d]Manchester Metropolitan University, Manchester, UK; [e]University College London, London, UK

World Athletics (WA) currently excludes athletes with a Difference of Sex Development (DSD) from the women's category under the presumption that these athletes have an unfair advantage over other competitors eligible for the women's category (World Athletics, 2023, Eligibility Regulations for the Female Classification; 2025, Regulations for the Application and Implementation of Eligibility Rule 3.5). This study aimed to compare the performance times of DSD athletes with those of ranked women and men competing in WA track events ranging from 100 m to 10,000 m. All data were publicly available from the WA database and included performance times up to 21 October 2025. Performance times were all available from ranked men and women athletes and publicly declared DSD athletes' performances (n = 9). Pairwise Mann–Whitney U tests were conducted (men vs. women, men vs. DSD, women vs. DSD) and a power-law regression model was used to estimate the men's rank at which times equalled or exceeded the women's world record and the fastest DSD athlete. The results showed that men were significantly faster than women (9.8%–13.1%; $P < 0.001$) and DSD athletes (12.7%–25.5%; $P < 0.05$) at all distances. Women had a performance advantage over DSD athletes in five events (2.7%–11.4%; $P < 0.05$) but did not reach statistical significance in the 800 m (4.7%; $P = 0.07$) and 5000 m (3.5%; $P = 0.52$). The point at which the women's world record intersected with the men's ranked performance time ranged from 4,706th to 216,860th, depending on the event. The estimated ranking at which a man's performance time intersected the fastest DSD athlete in each event ranged from 44,875th to 1,068,769th, which is also not consistent with suggestions that DSD athletes perform like men. These findings challenge perceptions that DSD athletes inherently possess a performance advantage over women (Bermon & Garnier, 2021, British Journal of Sports Medicine, 55(17)) and suggest that if excluded from the women's category, as seen in recent policies (World Athletics, 2023, 2025), DSD athletes will not be competitive in the men's category.

**CONTACT** Niall Fife 976289@swansea.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 20
https://doi.org/10.1080/02640414.2026.2668815



# D1.S2.7(4) The impact of threshold determination methods on training intensity distribution across a UK cycling season

Phillip Smith, Jonathan Taylor and Nicolas Berger

Teesside University, Middlesbrough, UK

Training intensity distribution (TID) describes how training is allocated across intensity zones delineated by physiological landmarks, such as the first and second lactate threshold (LT). However, the criteria used to determine LT can vary (Jamnick et al. 2020, Sports Medicine, 50, 1729–1756), limiting comparisons between studies. Furthermore, research has examined the TID and training load of elite cyclists, but little is known about the practices of trained and highly trained cyclists throughout the season. This study aimed to determine differences in TID between LT determination methods and examine seasonal changes in TID from off-season (OS) to in-season (IS). Following institutional ethical approval, 15 trained to highly trained participants (n = 3 female) completed a submaximal step test to determine power and heart rate (HR) corresponding to visual identification of points in the lactate curve (LT1/LT2visual) and the power/HR corresponding to fixed values of 2.0/4.0 mmol·L – 1 (2.0/4.0fixed). For 4 weeks in the OS and IS, participants recorded their training, including power and HR, and allocated each session a rating of perceived exertion (sRPE). The results showed that when comparing LT determination methods, 2.0fixed resulted in significantly higher values than LT1visual (OS: $P = 0.001$, $d = 1.07$; IS: $P < 0.001$, $d = 1.68$) and HR (OS: $P = 0.001$, $d = 1.02$; IS: $P < 0.001$, $d = 1.70$). Similarly, 4.0fixed resulted in significantly higher values than LT2visual (OS: $P = 0.004$, $d = 0.89$; IS: $P = 0.019$, $r = 0.61$) and HR (OS: $P = 0.001$, $d = 1.09$; IS: $P = 0.021$, $d = 0.67$). In turn, there was a significant difference in time-in-zone (%) between low and high intensity HR in the OS ($P < 0.027$) and low, moderate, and high HR IS ($P < 0.033$) and low and high intensity power in the OS ($P < 0.027$) and low, moderate, and high power IS ($P < 0.033$). In all comparisons of the same type (power or HR) and period, the overall TID model remained constant (polarised or pyramidal), while the time-in-zone percentages could shift due to large volumes of training being performed close to thresholds.

**CONTACT** Phillip Smith phillip.smith@tees.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 21
https://doi.org/10.1080/02640414.2026.2668816



# D1.S2.8(1) The effect of age on athletic world best times in athletes with and without solid organ transplant

Mike Price

Coventry University, UK

The effect of age on world best performances has been evaluated (Rittweger et al., 2009, Proceedings. Biological Sciences, 276, 683–689). However, although athletes with solid organ transplants (SOTR) compete within age categories, the effect of age on performance in this population is unknown. This study examined world best performances in track events for SOTR and non-SOTR competitors in relation to age. Following ethical approval (P191790), world best times for female and male athletics events (100 m to 1500 m) were accessed from the World Transplant Games Federation (https://wtgf.org/wp-content/uploads/2023/07/Records-Athletics-updated-July-2023-1.pdf) and World Athletics websites (https://worldathletics.org/records/by-category/world-records). Performance times (sec) for 18–29, 30–39, 40–49, 50–59, 60–69, 70–79 and 80+ years age categories were converted to running velocity (m.s-1). Differences in velocity between groups were expressed relative to non-SOTR performance (%). Decade-to-decade changes in velocity across all events for each age category were calculated. Small decreases in running velocity were observed between 18–29 and 30–39 years for male SOTR and non-SOTR (3.0 ± 5.4%, 3.3 ± 0.8%, respectively). Consistent decreases in velocity per decade (~7.5%) were then observed until 60–69 years for non-SOTR compared to increasingly greater reductions in velocity between 30–40, 40–50 and 50–60 decades for the SOTR (3.3 ± 3.4%, 5.2 ± 4.3%,10.1 ± 4.6%, respectively). Subsequent decreases in velocity were greater between 60–69 years and 70–79 years for both non-SOTR (10.3 ± 1.3%, 15.1 ± 2.9%, respectively) and SOTR (21.1 ± 5.4%, 32.1 ± 4.5%, respectively). Similar changes were observed for non-SOTR male and female events, although greater changes were observed at 60–69 years for non-SOTR males compared to 50–59 years for all other groups. Decreases in running velocity for SOTR from 60 to 69 years were double those for non-Tx suggesting that age-related changes in performance are accelerated in SOTR, likely due to the well-known reduced exercise capacity and immunosuppression (Williams and McKenna, 2012, Comprehensive Physiology, 2, 1937–1979). Future research should consider integrating specific performance components (i.e., aerobic capacity, lactate threshold, running economy and muscle strength) and running performance in trained SOTRs to evaluate the effect of age on performance in greater detail. The results of the current study demonstrate the importance of maintaining functional capacity with age in SOTR.

**CONTACT** Mike Price Hon mike.price@coventry.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 22
https://doi.org/10.1080/02640414.2026.2668825



# D1.S2.8(3) Breaking through the blue line: How talent advances toward elite status in ice hockey

Adam Gledhill[a,b], Tommy Lundberg[a,c], John Lind[a] and Andreas Ivarsson[a,d]

[a]Swedish Ice Hockey Association, Stockholm, Sweden; [b]Loughborough University, Loughborough, UK; [c]Karolinska Institutet, Stockholm, Sweden; [d]Halmstad University, Halmstad, Sweden

Talent identification and development (TID) in ice hockey increasingly recognises the limitations of single-domain metrics and the importance of social and developmental contexts. To inform practice and policy, this review aimed to synthesise evidence across physical, psychological, perceptual-cognitive, and environmental domains to examine factors linked to selection outcomes, developmental pathways, and elite career attainment in ice hockey. Following structured searches by Google Scholar, ProQuest, PsychArticles, PsychINFO, PubMed, Scopus, SPORTDiscus and Web of Science between September – November 2025, this narrative review drew on 49 ice hockey-specific peer-reviewed studies spanning seven countries. Studies were included regardless of design or publication date. Results revealed several recurring patterns. Relative Age Effect (RAE) remains prominent across minor, junior, and professional male pathways, with early year births consistently over-represented. Among athletes who reach elite levels, however, late-born players often match or surpass their earlier-born peers, indicating RAE reversal and systemic under-selection of later-born talent. Maturation also strongly shapes youth selection, favouring early developers despite evidence that later maturing athletes have higher probabilities of long-term success; bio banding offers a promising tool for reducing these biases. Birthplace and place of development influence opportunity, with players from small and medium-sized communities demonstrating higher retention and career progression than those from large cities. Physical and physiological tests show that skating speed and some off-ice strength or speed metrics relate to on-ice performance in youth, yet combine-style fitness assessments have limited value for predicting draft position, early NHL performance, or career longevity. Psychological and perceptual cognitive attributes, including intrinsic motivation, work ethic, character, and multiple object tracking, add predictive value beyond scout assessments and may help surface under-recognised talent. Environmental and sex-based findings indicate that supportive development systems enhance progression to an elite level, with girls and boys often experiencing different developmental conditions and discriminant value of testing batteries. Collectively, evidence supports multidimensional, developmentally informed TID approaches that mitigate RAE and maturation biases, prioritise skating and game-relevant tasks, incorporate psychological and perceptual cognitive profiling, and consider community context and retention risk. Future research should incorporate prospective designs and address the underrepresentation of female players.

**CONTACT** Adam Gledhill A.Gledhill@lboro.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 23
https://doi.org/10.1080/02640414.2026.2668826



# D1.S2.8(4) A socioecological exploration of coaching neurodivergent athletes in elite youth football

Laura Swettenham[a], Cheryl Grogan[a] and Kristin McGinty-Minister[b]

[a]Liverpool John Moores University, Liverpool, UK; [b]Manchester Metropolitan University, Manchester, UK

Coaches play a central role in shaping the environments that neurodivergent athletes must navigate, yet our understanding of how coaches conceptualise and support neurodivergence remains limited. In sporting environments, psychological distress caused by misunderstanding and masking demands can be significant, with neurodivergent burnout, stigma, and mental ill health documented as risks of poorly managed environments (Hoare et al., 2025). In this study, we present a socioecological exploration of Category 1 academy football coaches' experiences of coaching neurodivergent players within boys' academies in the UK. Nine coaches (mean age = 46.4 years; mean years coaching = 25.2 years) took part in semi-structured interviews. Our aims were to (a) explore coaches' perspectives on neurodiversity and how they work with neurodivergent youth footballers and (b) consider practical implications for promoting neuroinclusive football academy environments. We took a neuroaffirmative stance throughout, conceptualising neurodivergence as a natural variation in cognition rather than deficit or disorder. All members of the research team are neurodivergent, and we drew on our lived experiences within our reflexive analytic process.

We analysed data using reflexive thematic analysis, organised through a socioecological framework, meaning our analysis led to the development of four themes across the socioecological levels (i.e., individual, interpersonal, organisational, and socio-cultural). At the individual level subthemes included coach beliefs and stereotypes about neurodivergence and coach discomfort and shame. At the interpersonal level, subthemes included responding and connecting to neurodivergent players and facilitating neurodivergent strengths through relationships. At the organisational level subthemes included absence of training provision and policy and environmental fit and misfit. At the socio-cultural level, subthemes included cultural narratives leading to misunderstanding and deficit framings, and the mismatch between football culture and a neurodiversity paradigm. We discuss implications for coach education, environmental design, and organisational responsibility for inclusion, arguing that neuroaffirmative practice in elite youth football requires systemic change across multiple levels of the system, rather than adaptations focused solely at the individual level. Ethical approval was granted by Liverpool's John Moores Ethics Committee (Ref: 25/SPS/027).

**CONTACT** Laura Swettenham l.d.swettenham@ljmu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 24
https://doi.org/10.1080/02640414.2026.2668828



# D1.S5.1(1) "Their bodies were made to move and wriggle right from the word go": A qualitative exploration of family engagement with fundamental movement skills in early childhood

Robert Flynn, Andy Pringle and Clare Roscoe

University of Derby, Derby, UK

Fundamental movement skills (FMS) are basic movement patterns in children that underpin lifelong physical activity, health, and wellbeing (Bolger et al., 2021, Journal of sports sciences, 39(7), 717–753). However, many children in the UK (UK) are failing to reach age-appropriate standards of competency (Duncan et al., 2022, Journal of Motor Learning and Development, 10(1), 7–26). Caregivers are central figures in children's lives and are instrumental in their FMS development (Stevenson, Wainwright, and Williams, 2023, Education 3–13, 51(6),1003-1016). Yet little is known about what helps or hinders family involvement. Therefore, the aim of this study was to explore the determinants of family engagement with FMS during early childhood in the UK. Following institutional ethical approval (ETH2425-0144), semi-structured interviews were conducted with 15 caregivers and 8 educators, with grandparents and family hub practitioners contributing original insights. A total of 11 children aged 3–5 years also participated via a draw-and-tell task. Methodological adjustments facilitated the inclusion of rarely represented 3-year-old children. Data were analysed using thematic analysis. The emergent themes included messaging, parenting practices, rules and contextual restrictions, lived environments and life circumstances, and relationships. Adult participant awareness of FMS and the official UK physical activity guidance for children was low, even among educators, potentially impeding the communication of key messages to families. Grandparents may support skills practice meaningfully, but primarily through facilitation and motivation rather than direct participation. Screen time displaced children's active play. Nonetheless, participants highlighted the potential educational and movement-related benefits of home-based digital FMS resources and activities. Family and outdoor spaces played a key role in children's movement opportunities, although these were influenced by competing demands, socio-economic challenges, and disparities in local provision and infrastructure. Findings suggest that to enhance family understanding, value, and participation in FMS, UK policy and guidance must evolve to become more publicly visible and relatable, and to better support diverse family needs.

**CONTACT** Robert Flynn r.flynn@derby.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 25
https://doi.org/10.1080/02640414.2026.2668831



# D1.S5.1(4) The effects of walking football participation on physical functioning in middle-aged and older adults

Egan Goodison, Ben Ives, Adam Field, Gladys L. Onambele-Pearson and Liam D. Harper

Manchester Metropolitan University, UK

Walking football is an adapted form of association football designed to promote inclusive physical activity among middle-aged and older adults by reducing physical demands and contact while retaining key social elements of the game (Goodison et al., 2025). Regular physical activity is associated with improvements in muscular strength and functional capacity, which are critical for independence and healthy ageing (Bangsbo et al., 2019). However, evidence examining the effects of walking football on physical strength and functional outcomes remains limited. The purpose of this study was to investigate the effects of habitual walking football participation on lower-limb strength and functional capacity over an 8-week period in adults aged ≥ 50 years who already engaged in walking football, compared with an age-matched non-participating control group maintaining their usual physical activity. A secondary aim was to examine the dose – response relationship of walking football participation, with the control group representing a zero-exposure condition. Following institutional ethics approval, participants attended laboratory testing sessions at weeks 0 and 8. Participants arrived following an overnight fast (8–12 h) and refrained from vigorous physical activity for 48 h prior. Demographic characteristics, including age, ethnicity, preferred gender, and self-reported walking football involvement, were collected via a questionnaire. Lower-limb strength was then assessed on the dominant leg using concentric – concentric knee flexion and extension at $60°{\cdot}s^{-1}$ on an isokinetic dynamometer, while functional capacity was assessed using the 6-min walk test. Participants in the walking football group completed session diaries throughout the 8-week period to record session duration, step count, and perceived exertion. Data will be analysed using a mixed-model analysis of variance and multiple linear regression, or their non-parametric equivalents, to determine between-group differences, within-group changes, and dose – response relationships between walking football participation and physical functioning outcomes. This study will provide novel evidence on the effectiveness of walking football for improving lower-limb strength and functional capacity in older adults. Findings will inform applied practice and support the development of walking football as an accessible, evidence-based intervention to promote physical function and healthy ageing.

**CONTACT** Egan Goodison 24769681@stu.mmu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 26
https://doi.org/10.1080/02640414.2026.2668892



# D1.S5.2(1) Temporal and dose-dependent effects of conditioning stimuli on conditioned pain modulation

Boyu Duan, Samuel A Smith and Alexis R Mauger

University of Kent, Canterbury, UK

Pain perception is governed by a complex endogenous modulatory system, where the subjective experience of pain is shaped by nociceptive signals and by facilitating or inhibiting the psychological, biological and cognitive factors (Wiech & Tracey, 2009, NeuroImage, 47, 987–994). The efficiency of this system is examined through a dynamic experimental approach named 'conditioned pain modulation (CPM)' by comparing a pain test stimulus (TS) before and immediately after a painful conditioning stimulus (CS) (Yarnitsky, Granot & Granovsky, 2014, Pain, 155, 663–665). However, the influence of CS intensity/size and its temporal properties on CPM, particularly in lower-body paradigms, remains unclear. This study tested the dose–response relationship and temporal dynamics of the CS on the CPM inhibition effect. Following ethical approval and obtaining informed consent, 34 healthy individuals (23 males and 11 females, mean age: 27.79±7.26 years; height: 1.75 ±0.1 m; body mass: 72.59±14.32 kg) completed a familiarization visit followed by six randomized, counterbalanced test visits (three per body site, separated by ≥3 h) of the TS-CS-TS sequential protocol. Pain pressure threshold (defined by the initial onset of perceived pain from pressure; PPT) on the right index finger (ARMPPT) and mid-thigh (LEGPPT) served as the TS, with ischemic pain via cuff occlusion as the CS. This pilot dataset was analysed with repeated measures correlation to assess relationships between cumulative pain experience during CS (sum of pain intensity scores across the CS; PAINTotal), and both the relative (percentage difference between TS pre and post CS; CPMRelative) and absolute (raw difference between TS pre and post CS; CPMAbsolute) CPM effect. The $PAIN_{total}$ of both body sites were not significantly correlated with $CPM_{absolute}$ across all three visits (ARMPPT: $P$=0.497; $LEG_{PPT}$: $P$=0.197). Likewise, when relative metrics were applied, no significant correlations were observed between the $PAIN_{total}$ and CPM% at either body site ($ARM_{PPT}$: $P$=0.986; $LEG_{PPT}$: $P$=0.667). Collectively, these findings suggest that the total pain experienced during the conditioning stimulus (CS) does not directly influence CPM responses in a dose-dependent manner, these results indicate that the total pain experienced during the leg CS influences CPM effects in a dose-dependent manner when assessed relative to baseline, providing important methodological implications for evaluation of exercise pain modulation strategies.

**CONTACT** Boyu Duan bd335@kent.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 27
https://doi.org/10.1080/02640414.2026.2668910



# D1.S5.2(2) The effects creatine has on cognitive function and physiological function when skiing at altitude

Rebecca Vartan and John Kelly

University of Chichester, UK

Creatine is commonly used within sport to reduce muscle recovery time, cramping, and delay muscular fatigue. However, physiological and cognitive impact within skiing is under-researched. Creatine facilitates resynthesis of adenosine triphosphate, buffering altitude related physiological and cognitive declination. The aim of this study was to assess the effect of creatine on cognitive function (CF) and physiological function at altitude. Ethics was obtained from the University of Chichester for a 3-visit (baseline, creatine, placebo) repeated measures cross-over design with 15 volunteer participants (age: 28 ± 10 years; stature: 1.78 ± 0.1 m; mass: 78.9 ± 16.7 kg) who all signed informed consent. Testing occurred in a normobaric chamber recreating 3000 m altitude. Heart rate (HR) and oxygen saturation (OS) wearables were fitted, with resting values collected during seated 10-min outside the chamber. CF was assessed by Stroop colour and letter/number tests. Participants entered the chamber and underwent a 10-min acclimation period. HR, OS, rating of perceived exertion (RPE) were recorded throughout protocol. Testing consisted of five 3-min bouts on a ski simulator set by a 92 bpm metronome with 3-min rest periods. Douglas bag collections ($\dot{V}O_2$) were completed during minutes 2–3 of each bout. Start, midpoint, and endpoint CF tests were performed. Participants undertook a five-day loading phase of 20 g/d of creatine or placebo prior to second and third testing sessions, with a 3-week washout between conditions. Analysis showed a significant positive effect of test ($p = .021$, $\omega 2 = .052$), condition ($p = .001$, $\omega 2 = .289$), but not interaction ($p = .052$) for Stroop tests. Letter/number test showed no significance of test ($p = .207$), condition ($p = .579$) or interaction ($p = .318$). OS showed a significant lower effect of condition ($p = .008$, $\omega 2 = .120$), but not time ($p = .723$, $\omega 2 = .000$) or interaction ($p = .970$, $\omega 2 = .000$). $\dot{V}O_2$ increased significantly for ski bout ($p = <.001$, $\omega 2 = .068$) but not condition ($p = .504$) or interaction ($p = .287$). HR significantly increased with time ($p = <.001$, $\omega 2 = .589$) but not condition ($p = .514$) or interaction ($p = .200$). RPE significantly reduced for time ($p = <.001$, $\omega 2 = .817$), condition ($p = .005$, $\omega 2 = .056$) and interaction ($p = .020$, $\omega 2 = .031$). Suggesting creatine supplementation has limited cognitive and physiological effects during intermittent skiing at 3000 m. A longer exposure time and/or higher altitude is required to better understand the effects.

**CONTACT** Rebecca Vartan boovartan@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 28
https://doi.org/10.1080/02640414.2026.2668913

Routledge
Taylor & Francis Group



# D1.S5.3(1) Cases Prof Edward Winter Early- to Mid-Career Researcher Project: Implementing a safeguarding education programme to address maltreatment in professional football: A pilot study

James Newman

Sheffield Hallam University, UK

The proposed project will successfully implement a trial of a co-designed safeguarding education programme for adults in professional football. This is a direct follow-up of my successfully awarded and completed FIFA Research Scholarship 'The co-design of an adult safeguarding education programme in football', which was delivered on time in February 2023, where a host of recommendations for a safeguarding education programme have been developed with experts in professional football. Through the intervention proposed in this project, we will improve the understanding/awareness of the common components of maltreatment, such as abuse and bullying. Importantly, we will also highlight football-specific issues, such as the commodification of individuals (e.g., the loans system) and how the culture of the sport can promote false views of terms such as resilience (Newman & Rumbold, 2024). The project will also draw on recommendations for implementing a safeguarding education programme in professional football at the individual, contextual (e.g., the club being piloted) and systemic level (Newman & Rumbold, 2023). This is to improve individual well-being/welfare in football as well as broader systemic issues (e.g., improving reporting systems and creating safe climates to raise welfare concerns). In the proposed project, I will work with a professional football club who have already indicated a willingness to take part in this work, and I will use my contacts at the English Football League (EFL) and Premier League to disseminate the findings and improve safeguarding education across professional football.

For background, the proposed project is necessary to address the ongoing issues around maltreatment, abuse and bullying in professional football (BBC, 2019, 2021, 2022). Although there have been positive advances in the area of safeguarding and welfare in professional football, research evidence shows education and training programmes in this area are often seen as ineffective (e.g., Newman et al., 2022). This reinforces the need for an impactful safeguarding education programme to be delivered to key personnel in professional football such as players, coaches and sport science staff. To assess the success of the safeguarding education programme pilot, a series of measurements will be taken connected to the signs and symptoms of maltreatment which professional football's personnel have identified (see Newman & Rumbold, 2024) as well as other measures (e.g., connected to mental health, wellbeing and performance). These measurements will be taken before, during and after the completion of the project.

## ORCID

James Newman http://orcid.org/0000-0002-4957-836X

**CONTACT** James Newman j.newman@shu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 29
https://doi.org/10.1080/02640414.2026.2668917



# D1.S5.3(2) Unmasking the exercise experience: Facial actions as indicators of affective responses during aerobic cycling

Tony Ker[a], Chris Kirk[a], Ralf Brand[b], Lynne Spackman[a] and Leighton Jones[c]

[a]Sheffield Hallam University, UK; [b]Universität Potsdam, Germany; [c]Liverpool John Moores University, UK

Feelings of pleasure and displeasure (affective responses [AR]) experienced during aerobic exercise are key predictors of future exercise behaviour (Rhodes & Kates, 2015, Annals of Behavioral Medicine, 49, 715–731), and music is known to ameliorate negative effects during exercise (Ballmann et al., 2021, Journal of Functional Morphology and Kinesiology, 6, 33). However, the assessment of AR during exercise typically relies on self-report methods (e.g., the Feeling Scale; Hardy & Rejeski, 1989, Journal of Sport and Exercise Psychology, 11, 304–317), which are susceptible to bias, including social desirability. The use of non-cognitive indicators, such as facial actions, may address some of these limitations. The aim of this study was to test whether spontaneous facial actions captured during aerobic exercise differ between music and no-music conditions. Following institutional ethical approval, 34 participants (13 females, 21 males; mean age = 40.2 ± 11.6 years) completed both conditions in a within-subject, counterbalanced design. Participants performed two 10-min cycling bouts on an ergometer at an individualised intensity (40% between their VT1 and $VO_2$ max, determined from a prior maximal test), with and without self-selected music. Facial action data, comprising 20 distinct facial action codes, were recorded continuously throughout the exercise, organised into ten 1-min segments per condition, and analysed using linear mixed-effects models accounting for repeated measures nested within participants. Across conditions, eight facial actions differed significantly between music and no-music bouts ($P < .05$). Cheek raise, dimpler, and smile were elevated during music, whereas brow furrow, lip press, lip pucker, lip stretch, and upper lip raise were attenuated. Specifically, cheek raise showed higher activation in the music condition (standardised $\beta = -0.14$, $P < .001$), while brow furrow showed lower activation in the same condition (standardised $\beta = 0.08$, $P = .027$), consistent with the hypothesised directional changes across music and no-music exercise conditions. These findings provide preliminary evidence that facial actions are sensitive to condition-related differences in AR, indicating a more pleasant experience during aerobic exercise with music relative to no music. This may provide an alternative to self-report, with the potential to support more pleasant exercise experiences linked to sustained exercise behaviour.

**CONTACT** Tony Ker t.ker@shu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 30
https://doi.org/10.1080/02640414.2026.2668920

Routledge
Taylor & Francis Group



# D1.S5.3(4) Coach perceptions of the coach–participant relationship in Scottish Football Club Charities and Community Programmes

Teigan Wilson, Andy Hall and Michael Malone

Robert Gordon University, Aberdeen, UK

Scottish Football Club Charities and Community Programmes aim to improve the lives of those in their local community, often working in partnership with the government and local organisations. To address key societal issues and create personal and social developmental opportunities, programmes are delivered across health and wellbeing, education, parasport and football. The coach–participant relationship performs a critical role within these organisations to support and develop participants, with effective relationships increasing participant wellbeing, engagement and retention. The current research aimed to investigate coach perceptions of the coach–participant relationship within Football Club Charities and Community Programmes. With university ethical approval (S375), 13 Football Club Charity and Community Programme coaches (mean age 29.33 ± 5.33 years; involved in football club charity/community programme 4 months – 13.83 years) from 5 Scottish regions completed an online semi-structured interview. Interviews covered participant's coaching background, their role within the football club charity/community programme and the coach–participant relationship. Interviews were recorded and transcribed through Microsoft Teams. Following member checking; data analysis was performed via Reflexive Thematic Analysis by multiple researchers. Three overarching main themes were generated on the factors influencing the coach–participant relationship: the coach, the participant and the Football Club Charity or Community Programme Themes which stem from 'the coach' include practical experience and education to enhance the quality of the coach-driven relationship. Themes which originate from 'the participant' include participant's personal circumstances and the relationship's wider impact on their lives. Themes derived from 'Football Club Charity or Community Programme' include club partnership and organisation to highlight club branding providing initial engagement, with retention being centred on the relationship. The findings underline distinct differences between the coach–participant relationship and the performance orientated coach–athlete relationship. Key components of the coach–participant relationship are identified which coaches can utilise to enhance participant relationships and experiences. Football Club Charities and Community Programmes may use these findings to inform educational and CPD opportunities for coaches, ensuring relevant coach development. Increased participant engagement and retention may lead to improved health and wellbeing outcomes for participants, with longer-term contributions to alleviating pressure on publicly funded services.

**CONTACT** Teigan Wilson t.wilson10@rgu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 31–32
https://doi.org/10.1080/02640414.2026.2668923

Routledge
Taylor & Francis Group



# D1.S5.4(1) The CASES expert statement on measuring perfectionism in sport and exercise

Sarah H. Mallinson-Howard[a], Andrew P. Hill[a], Michael C. Grugan[b], Daniel J. Madigan[a] and John K. Gotwals[c]

[a]York St John University, UK; [b]Northumbria University, UK; [c]Lakehead University, Canada

Introduction: Perfectionism is a multidimensional personality trait defined as a combination of excessively high standards and overly critical self-evaluations (Frost et al., 1990). Among athletes and exercisers, perfectionism can be energising, particularly for performance (Mallinson-Howard et al., 2020). However, more consistently and concerningly, perfectionism is a significant source of stress and ill-being (Jowett et al., 2023). Therefore, understanding perfectionism and how best to manage it has become essential for sport and exercise scientists, researchers, and practitioners alike.

To study perfectionism, and provide appropriate support and guidance where needed, valid and reliable measures are required. Currently, a plethora of measures are available and used to quantify perfectionism in sport and exercise. While this diversity underscores the vibrancy of research and practice in this area, it also poses a significant barrier for researchers and practitioners unfamiliar with the landscape (Madigan, 2023). Our expert statement aims to remove this barrier by offering clear recommendations on how best to measure perfectionism in sport and exercise.

Background and Evidence: First, we define and provide an overview of trait perfectionism, laying the conceptual foundations and psychometric basis for our measurement recommendations. This includes the two-factor model of perfectionism, which is a major development in the study of perfectionism and delineates two broad higher-order dimensions of perfectionism – perfectionistic strivings and perfectionistic concerns (Hill et al., 2024; Gotwals et al., 2012).

Next, we present and critique the most common, valid, and reliable proxy measures of perfectionistic strivings and perfectionistic concerns. We pay particular attention to the key features of these measures, including domain-specificity, their psychometric evidence, and the common practices used to maximise their utility.

Finally, we show how these measures can be used to determine the independent, combined, and interactive effects of perfectionism.

Conclusions and Recommendations

Grounded in the preceding discussion, we conclude with proposing the following recommendations for measuring and understanding perfectionism in sport and exercise:

(1) Use the best available proxies to capture both perfectionistic strivings and perfectionistic concerns within the domain/context of interest.
(2) Proxies (e.g., personal standards) can be used individually, for brevity, or combined with others (e.g., self-oriented performance perfectionism) to improve confidence in capturing perfectionistic strivings and perfectionistic concerns.
(3) To better understand perfectionism in sport and exercise, examine the independent, combined, and interactive effects of perfectionistic strivings and perfectionistic concerns.

While measurement continues to evolve, these recommendations provide an evidence-based/practical foundation for advancing perfectionism research and establishing when and where interventions may be needed.

## References

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, *14*(5), 449–468.

Gotwals, J. K., Stoeber, J., Dunn, J. G., & Stoll, O. (2012). Are perfectionistic strivings in sport adaptive? A systematic review of confirmatory, contradictory, and mixed evidence. *Canadian Psychology / Psychologie Canadienne*, *53*(4), 263–279.

**CONTACT** Sarah H. Mallinson-Howard s.mallinson-howard@yorksj.ac.uk

Hill, A. P., Madigan, D. J., Curran, T., Jowett, G. E., & Rumbold, J. L. (2024). Exploring and evaluating the two-factor Model of perfectionism in sport. *Journal of Psychoeducational Assessment*, *42*(6), 612–634. https://doi.org/10.1177/07342829241231149

Jowett, G. E., Mallinson-Howard, S. H., Hill, A. P., & Madigan, D. J. (2023). An update and extension of the independent effects approach to perfectionism in sport, dance, and exercise. In A. P. Hill (Ed.), *The psychology of perfectionism in sport, dance, and exercise* (pp. 75–161). Routledge.

Madigan, D. J. (2023). Advances in the measurement of perfectionism in sport, dance, and exercise. In A. P. Hill (Ed.), *The psychology of perfectionism in sport, dance, and exercise* (pp. 26–50). Routledge.

Mallinson-Howard, S. H., Madigan, D. J., & Jowett, G. E. (2020). A three-sample study of perfectionism and field test performance in athletes. *European Journal of Sport Science*, *21*(7), 1045–1053.

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 33
https://doi.org/10.1080/02640414.2026.2668924



# D1.S5.4(2) Broad versus narrow attentional focus: Implications for quiet-eye behaviour and success in elite amateur golfers

Zoe Wimshurst[a] and Laura Carey[b]

[a]Health Sciences University, Bournemouth, UK; [b]University of the West of Scotland, UK

Quiet Eye (QE) is a gaze strategy associated with superior performance in visually guided aiming tasks such as golf putting. QE involves a period of sustained visual attention in which the eyes stay relatively still on a critical location, prior to starting a movement. Although QE is measured objectively through eye-tracking technology, the attentional focus adopted during this final fixation period remains unclear. Nideffer (1976) conceptualised attention along two dimensions: internal – external and broad – narrow. While research has contrasted internal and external foci of attention (e.g., Marchant et al. 2019, and Reinhoff et al. 2015), limited work has examined differences within external focus – specifically, broad versus narrow attentional strategies. This study investigated whether experimentally manipulating attentional focus influences QE duration and putting performance. Following ethical approval, seven elite amateur golfers completed a within-participant design study wearing Tobii Pro 3 eye-tracking glasses on an indoor putting greenstage. Following a baseline condition (straight and breaking putts performed using typical pre-performance routines), participants completed two counterbalanced attentional conditions on straight putts. In the narrow focus condition, golfers were instructed to direct their attention during the final fixation to a single dimple on the ball. In the broad focus condition, they were asked to attended to the anticipated ball path and hole while maintaining gaze on the ball. Both attentional manipulations significantly increased QE duration relative to baseline. However, no significant differences in putting success were observed, and QE duration was not associated with performance outcomes in this sample. Notably, individual response patterns varied: some golfers performed better under a narrow focus, others under a broad focus. Applied implications emerge from these findings. First, QE duration may be trainable through attentional instruction, offering coaches and sport psychologists a practical method for influencing gaze stability without explicitly instructing athletes to 'hold longer'. Second, the absence of a uniform performance effect highlights the importance of individualised attentional strategies rather than prescriptive QE rules. Practitioners may benefit from experimentally testing broad versus narrow external cues with athletes to determine optimal attentional fit. Further research with larger samples and varied skill levels is warranted.

**CONTACT** Zoe Wimshurst zoe.wimshurst@hsu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 34
https://doi.org/10.1080/02640414.2026.2668925

Routledge
Taylor & Francis Group



# D1.S5.4(3) Establishing research priorities for women's physical activity, exercise, and sport on the island of Ireland: Findings from the míde research collective

Patricia C. Jackman[a], Jennifer Murphy[b], Maria Faulkner[b], Eimear Kelly[b], Aoife Lane[c], Emma Cowley[c], Angela Carlin[d], Maria O'Kane[d], Mary Margaret Meade[d], Elizabeth Deery[d], míde Research Collective and Denise Martin[b]

[a]University of Lincoln, UK; [b]Atlantic Technological University, Ireland; [c]Technological University of the Shannon, Ireland; [d]Ulster University, UK

The past decade has witnessed growing attention to the inequities shaping women's participation in sport, exercise, and physical activity. Despite this progress, research about women and girls remains fragmented, underfunded, and insufficiently integrated into policy and practice. In response, the míde consortium – an all-island, cross-institution research network on the island of Ireland – established the míde research collective, a co-production initiative designed to identify research priorities and strengthen knowledge translation for women's physical activity, exercise, and sport across the island of Ireland. Following ethical approval, this study employed a multi-step co-production process involving 17 Research Collective members representing academia, coaching, sport governing bodies, athletes, practitioners, and marginalised groups. Together with a multidisciplinary Research Design Team, the group codesigned a comprehensive survey exploring research priorities, research engagement, and experiences of accessing and using research. A total of 582 respondents completed the survey. Quantitative and qualitative analyses identified 39 research priorities, with the top-10 priorities comprising retention and dropout, participation opportunities, menstruation, effects and facilitators of exercise, injury risk and recovery, lifespan support, tailored supports for active women and girls, barriers to participation, menopause, and media/PR exposure. Findings highlight that research priorities are multidimensional and interconnected, shaped by biological, psychological, social, cultural, and structural factors across the lifespan. Participants reported significant challenges in accessing and understanding research, with social media emerging as the most common – but least trusted – information source. While academic research is highly trusted, it is often inaccessible, thus demonstrating a clear research – practice gap. The co-production approach added value but required substantial time, relationship-building, and resourcing, particularly to engage marginalised communities. This project provides the first all-island, evidence-informed framework of research priorities for women in sport, exercise, and physical activity, offering a foundation for a strategic research roadmap and enhanced knowledge translation to support inclusive, evidence-informed practice.

**CONTACT** Patricia C. Jackman pjackman@lincoln.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 35
https://doi.org/10.1080/02640414.2026.2668926



# D1.S5.4(4) Examining event specialism on pre-competition psychological skills profile in Parkour Traceurs

Ben Strafford and Joseph Stone

Sheffield Hallam University, UK

Parkour is a donor sport for athlete learning and development (Strafford et al., 2021, European Journal of Sport Science, 22(6), 765–773). In competitive Parkour, speed-run and freestyle are the two main event specialisms, which both have distinct characteristics that dictate how the performer explores and navigates the environment. Speed-runs require Parkour Traceurs to get from a start point to an endpoint of a set route in the quickest way possible. During freestyle runs, Parkour Traceurs are subjectively scored by experts on how they express creativity, efficiency and the flow of movement within an allocated time period. This study examines the effects of event specialism on the pre-competition psychological skills profile of Parkour Traceurs. Data was collected at an indoor Parkour competition in the UK. Following ethical approval from Sheffield Hallam University, 16 experienced Parkour Traceurs volunteered. The study procedures were explained in detail to the Parkour Traceurs, who subsequently provided written informed consent. Eight participants completed the freestyle event (age: 22.50 ± 4.37 years, body mass: 71.96 ± 13.20 kg, experience: 8.06 ± 6.43 years; stature: 177.38 ± 7.98 cm). Eight participants completed the speed-run event (age: 25.00 ± 5.90 years, body mass: 74.15 ± 10.21 kg, experience: 11.68 ± 5.57 years; stature: 179.20 ± 10.81 cm). Parkour Traceurs completed a psychological skills testing battery before competition in their selected Parkour event. The instruments included the Parkour Self-Efficacy Scale, Competitive State Anxiety Inventory–2, Brief Sensation Seeking Scale and BIS/BAS Scale. Data analysis was completed in JASP. Independent t-tests were employed to examine potential differences in event specialism for pre-competition scores from the psychological testing battery. Cohen's d was employed as a measure of effect size. The alpha level was set at $p < 0.05$. There was no significant difference between event specialism and mean pre-competition scores for psychological skills in the testing battery ($p > 0.05$). Results suggest that Parkour Traceurs of different specialisms share a similar pre-competition psychological skill profile. Future research is required to examine the differences in the psychological profile of Parkour Traceurs and other lifestyle sports to explore the efficacy of the donor sport concept for psychological skill development.

**CONTACT** Ben Strafford b.strafford@shu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 36
https://doi.org/10.1080/02640414.2026.2668928



# D1.S5.5(1) Sharpening the coach's eye: Trainability of a gaze strategy for perceiving barbell velocity loss in resistance training

Asaf Ben-ari[a], Scott Henry[a], Laura Carey[a], Israel Halperin[b] and Antonio Dello Iacono[a]

[a]University of the West of Scotland, Glasgow, UK; [b]Tel-Aviv University, Tel-Aviv, Israel

Velocity-based training (VBT) personalises resistance training (RT) by using movement velocity as a real-time indicator of effort and fatigue. For example, coaches can determine a set endpoint when repetition velocity drops below specific velocity loss (VL) threshold, adjusting the number of repetitions to match trainees' capabilities (Weakley et al., 2021, Strength and Conditioning Journal, 43, 31). However, this approach requires velocity-tracking technology. In a previous study, we found that RT coaches can visually detect VL thresholds and are more accurate when spontaneously focusing their gaze on the barbell ('bar strategy') rather than elsewhere (Dello Iacono et al., 2025, Sports Medicine – Open, 11, 83). This study aimed to examine whether coaches can be trained to apply the bar strategy intentionally and whether its use enhances accuracy in detecting 20% and 40% VL thresholds. With institutional ethics approval, 23 certified RT coaches (mean age 29.3 ± 7.2) completed two experimental sessions. In the first session, they watched videos of trainees performing bench-press and back-squat at different loads and were asked to identify VL thresholds. In the second session, they first completed gaze-training protocol on the bar strategy, comprising an instructional video and practice with gaze feedback. Then they repeated the VL-detection task. We measured accuracy, defined as the absolute difference between perceived and actual VL-threshold repetitions, and mental fatigue, rated on a 0–100 scale. Compared to the first session, bar-strategy use increased from 48.1% to 77.8% of trials (OR: 8.46; $P < 0.01$), while mean absolute error decreased from 2.6 (SD = 3.4) to 1.5 (SD = 2.3) repetitions. Accuracy improved when detecting 40% versus 20% VL (−1.67 repetitions; $P < 0.01$), observing heavier loads (65% vs 45%: −0.79; $P < 0.01$; 85% vs 45%: −2.32; $P < 0.01$), and applying the bar strategy (−0.71; $P < 0.01$). Mental fatigue increased following gaze training but was not associated with accuracy ($P = 0.114$). These findings demonstrate that coaches can be trained to use a gaze strategy to enhance VL perception, offering a potential practical alternative to velocity-tracking devices and presenting opportunities for future research on long-term retention and real-world implementation.

**CONTACT** Asaf Ben-Ari benariasaf1@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 37
https://doi.org/10.1080/02640414.2026.2668929



# D1.S5.5(2) Design of a sport science support system for international cricket

Lauren Fletcher, Patrick Maughan and Katherine Burgess

Robert Gordon University, Aberdeen, UK

Sport Science Support Systems are commonplace within high-performance sport, supporting athlete performance, training and competition exposure management, and injury risk reduction. However, provision varies widely across organisations, particularly within programmes operating with limited resources. This study aimed to design a stakeholder-informed Sport Science Support System for international cricket by identifying and prioritising support requirements within Cricket Scotland's men's national team and exploring delivery preferences to inform a practical, context-specific framework.

Ethical approval was granted by Robert Gordon University (S391). A sequential mixed-methods design was used. A three-round Delphi study was conducted over six weeks with stakeholders affiliated with Cricket Scotland's men's national team (players n = 18; coaches n = 2; support staff n = 3). Round One generated priority areas through content analysis, while Rounds Two and Three established consensus using a 10-point Likert scale and a ≥ 70% agreement threshold. Semi-structured interviews were then conducted with a sub-sample of stakeholders (players n = 9; staff n = 2), with data analysed using reflexive thematic analysis.

Delphi findings demonstrated strong perceived value of sport science provision, with stakeholders rating a Sport Science Support System as very (22%) or extremely valuable (74%). High-priority needs included facility access (agreement = 90.5%), strength and conditioning (agreement = 85.7%), performance analysis (agreement = 76.2%) and psychological support (agreement = 71%). Interviews reinforced that structured, cricket-specific physical preparation and consistent access to facilities were foundational requirements. Performance analysis, particularly MEMS global positioning system-based monitoring, was viewed as essential for understanding match demands and informing training prescription. Psychological support was considered most beneficial when delivered flexibly and independently, with trust and athlete-led engagement highlighted as key conditions for uptake. Stakeholders also emphasised the value of routine testing and screening when framed as development focused.

These findings will inform a tailored Sport Science Support System framework for Cricket Scotland and produce a transferable model for national governing bodies and performance programmes of similar scale and resource capacity. Importantly, the study provides a replicable methodological framework for capturing and integrating stakeholder feedback when designing or evaluating Sport Science Support Systems, strengthening evidence-informed decision-making and long-term provision impact.

**CONTACT** Lauren Fletcher l.fletcher4@rgu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 38
https://doi.org/10.1080/02640414.2026.2668931



# D1.S5.5(4) Understanding decision-making expertise in football VAR: Insights from elite video match officials

James Clark[a], Samuel Wood[a], Liis Uiga[a], Matt Weston[a,b], Mark Williams[c,d], Robin Jackson[c], Steve McNally[e] and Greg Wood[a]

[a]Manchester Metropolitan University, Manchester, UK; [b]University of Edinburgh, Edinburgh, UK; [c]Loughborough University, Loughborough, UK; [d]South China Normal University, Guangzhou, China; [e]Professional Game Match Officials, UK

The introduction of video assistant referees (VARs) has placed unprecedented demands on football officials to deliver accurate decisions under intense scrutiny while minimising disruption to play. Despite VAR's widespread implementation since 2018, little is known about what constitutes expertise in this technology-mediated officiating context. This study aimed to explore how elite VARs understand and experience expertise, with particular focus on their cognitive and emotional experiences during in-game decision-making, informed by the expert performance framework (Ericsson, 2006). Semi-structured interviews were conducted with 10 elite VARs operating at Premier League level (mean VAR experience = 6 years). Interviews explored the VAR process across preparation, in-game decision-making, and post-match reflection. Ethical approval was granted by the Manchester Metropolitan University Ethics Committee, and all participants provided informed consent prior to participation. Data were analysed using reflexive thematic analysis (Braun & Clarke, 2006), where transcripts were systematically coded and collated to generate themes reflecting shared meanings of expertise in the VAR role. Four interrelated themes were identified. Emotional regulation and resilience captured the psychological skills required to manage stress, accountability, and public scrutiny. Contextual and collaborative decision-making reflected the integration of contextual cues, identification of clear and obvious errors, and effective communication within the officiating team. Reflexive practice and growth highlighted deliberate preparation, humility, and structured reflection as central to sustaining expert performance. Finally, technical and procedural proficiency described skilled engagement with video technology, including replay speed, camera angles, and decision protocols, to support accurate judgements. This study provides the first qualitative insight into expert performance in VAR officiating. Findings extend expertise research into technology-assisted decision-making environments by informing an applied, evidence-based framework for video refereeing, with practical implications for psychologically informed training and development programmes for elite video officials.

**CONTACT** James Clark 24857018@stu.mmu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 39
https://doi.org/10.1080/02640414.2026.2668932



# D1.S5.5(5) Behind the sparkle: Psychological safety and the influence of negative coaching on the wellbeing of elite athletes in aesthetic sports

Nia Palmer and Nicholas de Cruz

University of Surrey, Guildford, UK

Efforts to safeguard athletes have increased, yet abuse remains systemic. While research shows psychological safety's (PS) importance for athletes and coaching behaviours' impact on performance, little research examines PS in aesthetic sports. This study explored how PS and negative coaching influence elite athlete wellbeing in aesthetic sports. Upon university ethics committee approval, semi-structured interviews were conducted with 20 athletes from figure skating, dance, and gymnastics, analysed through inductive thematic analysis using a socio-ecological lens. Results generated four themes: The Spectrum of Coaching Relationships, Wellbeing and Performance Outcomes, Support Systems and (Un) Safety, and Immediate and Long-term Consequences. Results reveal aesthetic sport athletes face intersecting risks across multiple levels; inappropriate coaching, absent support systems, performance-driven funding models, and cultural normalisation of harmful practices, increasing vulnerability compared to other sporting contexts. Results were represented using creative non-fiction. This research makes theoretical contributions positioning PS as developmental necessity, extends understanding of how risk factors compound athlete vulnerability, and demonstrates lasting impacts beyond sporting careers. Practically, findings highlight the gap between negative coaching and criminality, behaviours causing harm yet falling outside legal frameworks. This research provides understanding for athletes, coaches, parents, organisations and researchers regarding PS impacts, with recommendations for interventions including coach education, reporting mechanisms, and athlete-centred support systems.

**CONTACT** Nia Palmer niapalmer317@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 40
https://doi.org/10.1080/02640414.2026.2668933



# D2.S1.1(1) Comparison of lower limb kinematics derived from female-specific smart leggings and optical motion capture

Lucinda Abell, Thomas Balshaw and Stuart McErlain-Naylor

Loughborough University, Loughborough, UK

Anterior cruciate ligament (ACL) injuries represent a major concern in women's sport, with women ~five times more likely than men to sustain non-contact ACL injuries (Myklebust et al., 1998, Scandinavian Journal of Medicine & Science in Sports, 8, 149–153). Despite this risk, the underlying biomechanical mechanisms remain poorly understood, partly due to limitations in measuring movement in real-world environments. Laboratory-based optical motion capture is precise but time-consuming, disrupts training, and removes athletes from naturalistic sporting settings. Advances in wearable technology, including smart garments with inertial measurement units (IMUs), offer a practical alternative, provided their measurement properties are established. These systems may support large-scale injury risk screening and longitudinal monitoring. Therefore, this study aims to evaluate the agreement and reliability of lower limb kinematics from female-specific smart leggings, incorporating seven miniaturised nine-axis IMUs (50 Hz), against a marker-based Vicon motion capture system (200 Hz). With ethical approval, 16 tier-three female football players (mean ± SD age: 20.3 ± 2.9 years; body mass: 63.9 ± 5.9 kg; stature: 167.5 ± 6.0 cm) participated in a laboratory validation battery, including controlled bilateral and unilateral movements, linear sprinting, and high-speed change-of-direction tasks. Hip, knee, and ankle joint kinematics were recorded across sagittal, frontal, and transverse planes. Data synchronisation used pre-trial static standing and threshold-based movement onset detection in both systems, with dynamic tasks verified using initial contact events identified from foot-mounted IMU signals and corresponding Vicon criteria. To address sampling differences, Vicon kinematics were low-pass filtered and resampled to 50 Hz for agreement analysis. Sampling-frequency effects will be examined by comparing Vicon 200 Hz and resampled 50 Hz outputs. Outcome variables include peak and event-specific joint angles across planes (e.g., flexion at initial contact and toe-off), temporal measures, and continuous waveforms. Results will be quantified using root mean square error, intraclass correlation coefficients, and Bland – Altman limits of agreement. Data analysis is ongoing, and validation outcomes will be presented at the conference. Findings will inform the deployment of embedded IMU garments for applied movement monitoring in women's football and similar sports, defining the capabilities and limitations of 50 Hz wearable systems relative to laboratory motion capture.

**CONTACT** Lucinda Abell L.abell@lboro.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 41
https://doi.org/10.1080/02640414.2026.2668935

Routledge
Taylor & Francis Group



# D2.S1.1(3) Does hip abductor strength training change running biomechanics? A systematic review

Gary Hall[a,b], Phil Hayes[a] and Gill Barry[a]

[a]Northumbria University, Newcastle Upon Tyne, UK; [b]Newcastle College University Centre, Newcastle Upon Tyne, UK

Running-related overuse injuries (RROIs) are often associated with decreased hip abductor strength, prompting the use of strengthening interventions in runners; however, it remains unclear whether improvements in hip abductor strength result in meaningful changes in running biomechanics. This systematic review investigated whether strength training aimed at the hip abductors induces changes in running kinematics and related gait parameters. A systematic search of four databases (Sports Discuss, Web of Science, Scopus, and PubMed) identified studies up to October 2024 that involved adult runners performing hip abductor strength training with pre- and post-intervention gait assessments. Five studies met the inclusion criteria, involving a total of 144 participants aged 18–65 years and intervention durations ranging from 3 to 10 weeks. In four studies, strength training led to significant gains in hip abductor strength, with moderate-to-large effect sizes, regardless of injury status or programme design. However, evidence for corresponding changes in running biomechanics was limited and inconsistent. Only two studies reported reductions in knee abduction or genu valgum following strength training, while three studies found no change in running gait variables despite notable strength improvements. Improvements were more consistently seen in controlled clinical tasks (e.g., single-leg squat) than during actual running, indicating that increased strength may not automatically transfer to dynamic gait changes. One study of older runners found no improvement in hip strength or gait, suggesting that factors such as age and training load may influence outcomes. Overall, current evidence indicates that while hip abductor strengthening reliably enhances strength, these gains alone do not consistently induce changes in running biomechanics related to RROIs. Strength training may therefore need to be combined with other strategies – such as gait retraining, neuromuscular control exercises, or higher-load conditioning-to effectively influence running mechanics. The limited number of studies and methodological differences highlight the need for further high-quality research to determine whether, and under what conditions, improvements in hip abductor strength led to biomechanical changes that could prevent injuries and enhance performance.

**CONTACT** Gary Hall gary3.hall@northumbria.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 42
https://doi.org/10.1080/02640414.2026.2668936



# D2.S1.1(4) An investigation into the physical determinants of maximal horizontal deceleration

Aitor Martínez-González and Paul Jones

University of Salford, Manchester, UK

Maximal horizontal deceleration (MHD) requires athletes to rapidly reduce momentum and plays an essential role in change of direction manoeuvres in multidirectional sports (Dos'Santos et al., 2017, Journal of Strength and Conditioning Research, 31, 2748–2757). The association of muscle strength qualities to MHD ability remains unclear, forming the aim of this study. With institutional ethical approval, 13 physically active men from various sports (age 24.9 ± 12.2 years; height 176.9 ± 2.4 cm; body mass 76.6 ± 13.8 kg) completed a 10 m acceleration–deceleration ability (ADA) test, isokinetic concentric and eccentric knee extensor strength testing at 60°·s$^{-1}$, an isometric mid-thigh pull (IMTP), countermovement jump (CMJ) and a drop jump (DJ) from 40 cm in a single testing session. Deceleration variables were derived from LAVEG-based distance–time data, including time to stop (TTS), distance to stop (DTS), average deceleration, horizontal braking impulse [determined by the subject's momentum (body mass × velocity) at the start of deceleration] and force (change in momentum/TTS based on the impulse momentum relationship). Relationships were explored using Pearson or Spearman correlations with significance Bonferroni-corrected ($P \leq 0.00625$) for multiple correlations. TTS, DTS and average deceleration showed non-significant ($P > 0.05$) and directionally inconsistent relationships with strength and jump measures. In contrast, horizontal braking impulse demonstrated very large, significant negative correlations with IMTP net peak force ($R = -0.720$, $P = 0.005$), and non-significant large correlations with eccentric and concentric isokinetic knee extensor peak torque ($R = -0.635$, $P = 0.020$; $R = -0.682$, $P = 0.010$) and CMJ height ($R = -0.592$, $P = 0.033$). A median split based on horizontal braking impulse showed that high performers exhibited consistently greater isokinetic and isometric strength, with very large between-group differences for these variables ($d = -2.104$, $P = 0.001$; $d = -2.467$, $P = 0.004$). These findings highlight the importance of maximal strength for MHD performance, and that MHD ability may be better reflected by estimated horizontal braking impulse and force, whereby individual differences in approach momentum are considered. Common ADA metrics, such as TTS, DTS and average deceleration, may be biased towards slower and lighter athletes where braking demands are less.

**CONTACT** Aitor Martínez-González martinezgonzalezaitor@hotmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 43
https://doi.org/10.1080/02640414.2026.2668937



# D2.S1.2(1) Association of estimated cardiorespiratory fitness and cardiovascular mortality risk in people with multimorbidity: A population-based cohort study

Qi Zhang, Bhautesh Jani, Frederick Ho and Carlos Celis-Morales

University of Glasgow, Glasgow, UK

Multimorbidity, commonly defined as the coexistence of two or more chronic conditions, is increasingly prevalent and represents a major contributor to premature death. Estimated cardiorespiratory fitness (eCRF) has been reported to be associated with cardiovascular (CVD) mortality. However, its prognostic value among patients with multimorbidity remains unclear. Therefore, the aim of this study was to assess the association between non-exercise estimated cardiorespiratory fitness and cardiovascular mortality risk in patients with multimorbidity. We excluded participants from UK Biobank without valid baseline information on characteristics, multimorbidity status and variables to derive eCRF. eCRF was calculated using a validated non-exercise prediction equation incorporating age, sex, body mass index, ethnicity, TV viewing, walking pace, resting heart rate and physical activity and was converted to metabolic equivalents-METs (1 MET corresponding to a VO2 of 3.5 mL/kg/min). Multivariable restricted cubic spline models were applied to explore a potential nonlinear dose–response relationship between eCRF and CVD mortality risk. The hazard ratio (HR) with 95% CI was estimated for the associations of interest. Population preventable fractions (PPFs) were further calculated to show the clinical impact under several intervention scenarios. Among 337,675 individuals followed for mean 12.5 (±1.1) years, estimated cardiorespiratory fitness demonstrated a non-linear, inverse association with cardiovascular mortality risk, with a plateau at near 8 METs. Despite this protective association, individuals with multimorbidity retained consistently higher absolute risk at all fitness levels. PPF analyses indicated that a 1-MET improvement in fitness level in the population could prevent 9.9% (95% CI, 7.2–12.6%) for the multimorbidity group and 25.3% (95% CI, 19.1–31.1%) for the healthy group of cardiovascular deaths. Much greater gains (34.3% (95% CI, 24.8–42.5%) and 68.9% (95% CI, 57.2–77.4%), respectively) could be achieved by raising low-fitness individuals at 4 METs to the 8 METs threshold. This study has identified that non-exercise estimated cardiorespiratory fitness is a robust, pragmatic indicator of cardiovascular mortality risk. The results support prioritizing public health and clinical interventions to improve fitness, especially in low-fitness populations, to achieve significant mortality reduction. For the growing population with multimorbidity, fitness level enhancement is necessary and should be integrated with comprehensive risk factor management.

**CONTACT** Qi Zhang 2669769z@student.gla.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 44
https://doi.org/10.1080/02640414.2026.2668938



# D2.S1.2(2) Can CIED-derived physical activity provide as a biomarker to predict all-cause-mortality? External validation of previous predictive modelling approaches

Greig Cowie[a], Andy Hall[a], Paul Swinton[a] and Steven Leslie[b]

[a]Robert Gordon University, UK; [b]University of Highlands and Islands, Inverness, UK

Physical activity is a well-established determinant of cardiovascular health outcomes; however, the clinical utility of cardiac implantable electronic device (CIED) – derived physical activity data for monitoring deterioration in patient health and predicting mortality remains insufficiently externally validated. The primary aim of this study was to investigate the association between CIED-derived physical activity and all-cause mortality in a contemporary cardiac population. The secondary aim was to replicate and externally validate existing predictive models that incorporate physical activity, assessing their discrimination and calibration performance in predicting mortality. A retrospective longitudinal analysis was conducted using remotely monitored CIED-derived physical activity data from 513 cardiac patients. Baseline physical activity was quantified during the early post-implant period and patients were stratified according to physical activity levels. Survival outcomes were assessed using Kaplan – Meier survival analysis and Cox proportional hazards regression, with adjustment for relevant demographic and clinical covariates. External validation was performed by replicating eight previously published predictive modelling approaches that included physical activity as a key predictor. Model performance was evaluated using discrimination metrics (concordance index) and calibration measures, including calibration slope. The results demonstrated that CIED-derived physical activity was an independent predictor of all-cause mortality. Patients with low baseline physical activity exhibited a significantly higher risk of mortality and lower survival probability compared with more active patients in both univariate and multivariate analyses ($p < 0.001$). In predictive modelling analyses, univariate models incorporating physical activity demonstrated modest discrimination (C-index = 0.65). Multivariable Cox regression models showed good to excellent discrimination (C-index ranging from 0.71 to 0.84), with consistently excellent calibration across all replicated models (calibration slope = 1.00). Overall, baseline CIED-derived physical activity, when stratified post-implant, provides robust prognostic value for predicting all-cause mortality. Furthermore, replication and external validation of predictive models incorporating physical activity demonstrated modest to excellent discrimination and strong calibration, supporting their potential clinical applicability. These findings reinforce the role of remotely monitored physical activity as a valuable risk stratification tool in cardiac patients and highlight the importance of external validation when translating predictive models into clinical practice.

**CONTACT** Greig Cowie greigcowie76@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 45
https://doi.org/10.1080/02640414.2026.2668939



# D2.S1.2(3) Evaluating the impact of a new active travel bridge on walking and cycling volumes: A natural experiment

Frederick Alexander Walker and Holly Davidson

The University of Glasgow, Glasgow, UK

Active travel has been cited as the easiest way to incorporate physical activity into daily life; thus has the potential to provide substantial health benefits and co-benefits beyond physical activity. Research finds infrastructure to be a powerful enabler of active travel, but the literature is limited. The opening of Glasgow's Govan-Partick Bridge (GPB) provided an opportunity for an evaluation of the impact of infrastructure on walking and cycling behaviour across the River Clyde. Openly available daily data, routinely collected by Glasgow City Council using automated piezoelectric cycling and pedestrian counters, was used for analysis. Four years of data before, and 1 year of data after the GPB opened, were provided. The treatment group included all motorised vehicle-free river crossings, within a 1.5 km range of (nearby crossings), and including the new bridge, while the control group included all outside a 5 km range. We tested for significant change using differences in difference models with seasonal adjustments to compare before and after changes in the treatment group relative to the control. After the GBP opened, both cycling and pedestrian volumes demonstrated significant increases across the treatment area ($p < 0.001$); the annual cycling and pedestrian volumes increased by 201,984 (93%) and 1,852,990 (+224%), respectively, relative to the pre-GPB mean. For cyclists, relative to the control, significant weekly displacement (–1,611, $p < 0.001$) was observed from all nearby crossings, with significant net growth observed across the treatment area (3,574, $p < 0.001$). For pedestrian weekly volumes, relative to the control, significant growth on nearby crossings (11,685 $p<0.001$), and significant net growth across the treatment area (33,095, $p < 0.001$) was observed, concurrent with localised displacement from the Clyde Tunnel alone (-3923 $p<0.001$). The opening of the GPB was associated with a significant increase in active travel in the area and some displacement, primarily for cycling. High-quality, accessible infrastructure that increases connectivity and removes physical barriers presents a key method of increasing population-level physical activity and could justify further investments into active travel infrastructure. Further research should triangulate counter data with qualitative findings to provide a broader understanding of travel choice.

**CONTACT** Frederick Alexander Walker freddywalker0105@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 46
https://doi.org/10.1080/02640414.2026.2668940

Routledge
Taylor & Francis Group



# D2.S1.2(4) Evaluating the impact of exercise snacking on cardiometabolic health and cognitive function: A systematic review and meta-analysis

Hsu Myat[a], Hannah Lithgow[a], Adele Dickson[b], Malwina Niechcial[b] and David King[a]

[a]Institute of Life & Earth Science, Heriot-Watt University, Edinburgh, UK; [b]School of Social Sciences, Heriot-Watt University, Edinburgh, UK

Exercise snacking (ES), defined as a brief bout of physical activity accumulated across the day, has been proposed as an alternative approach to increasing physical activity by integrating short, repeated movements into daily routines. This study aimed to synthesise evidence from randomised controlled trials (RCTs) and examine the effects of ES on cardiometabolic and cognitive outcomes in adults aged 18–85 years. PubMed, Scopus, Web of Science and the Cochrane Library were searched from inception to July 2025. Eligible studies were parallel or randomised crossover RCTs prescribing ES with clearly defined frequency, intensity, time, and type (FITT), and reporting at least one cardiometabolic outcome (systolic blood pressure (SBP), diastolic blood pressure (DBP), glycaemia, lipid profile, or body composition) or cognitive outcome (working memory, executive function, attention span). Random-effects meta-analyses were conducted for outcomes with sufficient methodological and clinical comparability. Ten RCTs (n = 1,142 participants) were included. Compared with control groups, ES significantly reduced SBP (five RCTs; mean difference −4.67 mmHg, 95% CI − 7.88 to −1.46; $I^2 = 26.6\%$; p = .004). No significant pooled effect was observed for DBP (four RCTs; −1.03 mmHg, 95% CI − 5.89 to 3.83; $I^2 = 82.1\%$; p = .68), and meta-analyses showed no consistent effects on lipid outcomes (HDL, LDL or triglycerides). Meta-analytic findings indicated that ES and CE produced comparable blood pressure outcomes, while narrative synthesis suggested similar effects on glycaemic and other cardiometabolic outcomes. No included RCTs assessed cognitive outcomes, indicating a clear evidence gap. In conclusion, ES is associated with modest reductions in SBP compared with control and appears comparable to CE when total exercise volume is matched. Future trials should standardise FITT reporting and use objective measures (e.g., wearable monitoring devices) to verify exercise intensity and adherence. Longer follow-up periods are needed to assess the sustainability of cardiometabolic effects beyond short-term interventions and to evaluate dose-response relationships. Importantly, trials should incorporate validated cognitive outcomes to determine the benefits of ES to brain health in addition to cardiometabolic risk reduction. PROSPERO registration: CRD420250639279.

**CONTACT** Hsu Myat hm4011@hw.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 47
https://doi.org/10.1080/02640414.2026.2668941

Routledge
Taylor & Francis Group



# D2.S1.2(5) The association between cardiorespiratory fitness, cardiovascular disease risk factors, and quality of life in perimenopausal and postmenopausal women: A cross-sectional study

Amie Woodward[a], Amy Campbell[b] and Sophie Carter[b]

[a]Institute of Health and Care Improvement; [b]School of Science, Technology and Health, York St John University, York, UK

Cardiovascular disease (CVD) risk increases for women during the menopause transition, and CVD is the leading cause of death among women. Cardiorespiratory fitness (CRF), an indicator of cardiovascular system function and a proxy for habitual physical activity, has been linked to lower CVD risk factors in menopausal populations. Accordingly, CRF may serve as a clinically useful tool for stratifying CVD risk during this period. Prior research also suggests that CRF may have a relationship with quality of life (QoL) in this population. Currently, predictive relationships between CRF and cardiovascular health and QoL during menopause are unclear. Therefore, the aims of this single-visit, cross-sectional study were to: 1) examine associations between CRF and cardiovascular health measures, including vascular function, in perimenopausal and postmenopausal women, while accounting for age and physical activity, and 2) assess whether CRF predicts menopause-specific and general QoL. With institutional ethical approval, 58 perimenopausal and postmenopausal women (mean age $54.5 \pm 6.5$ years) underwent a maximal graded exercise test on a cycle ergometer to assess CRF, alongside measurements of vascular function (flow-mediated dilation, carotid intima media thickness, and carotid β-Stiffness Index), blood lipids, blood pressure, and anthropometrics. Questionnaires evaluated self-reported physical activity (IPAQ), QoL (menopause-specific [MENQOL] and general health [EQ-5D]). After adjusting for age and physical activity, regression models indicated that CRF was significantly associated with high-density lipoprotein cholesterol (adjusted $R^2 = 0.12$, $P = 0.02$), waist-to-hip ratio (adjusted $R^2 = 0.16$, $P < 0.01$), and triglycerides (adjusted $R^2 = 0.14$, $P < 0.01$). Higher CRF was also linked to a lower burden of self-reported menopause-related symptoms in the MENQOL physical domain ($\chi^2 = 9.29$, $P = 0.03$, odds ratio = 0.91 per unit increase in CRF). However, no significant associations were found between CRF and vascular function measures or blood pressure. These findings suggest that higher CRF may independently contribute to a more favourable cardiometabolic risk profile and mitigate physical menopause-related symptoms in midlife women. The lack of association with vascular function indicates that other factors might play a more prominent role in vascular health during the menopausal transition.

**CONTACT** Amie Woodward a.woodward1@yorksj.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 48
https://doi.org/10.1080/02640414.2026.2668942

Routledge
Taylor & Francis Group



# D2.S1.2(6) Comparison of single versus multi-item measurement of sedentary behaviour in individuals with Crohn's disease: A cross-sectional study

Jason J. Wilson[a], Barry Lynch[a], Nathan Graham[a], Conor McClean[b] and Mark A. Tully[c]

[a]School of Sport and Exercise Science, Ulster University, Derry / Londonderry, UK; [b]School of Sport and Exercise Science, Ulster University, Belfast, UK; [c]School of Medicine, Ulster University, Derry / Londonderry, UK

Excessive sedentary behaviour has been linked with negative health consequences such as hypertension, dementia and certain cancers. Specifically in those with Crohn's disease, it has been shown that sedentary behaviour could be linked to inflammatory markers and metabolic disease biomarkers which have an important role in Crohn's disease progression. Therefore, being able to correctly measure sedentary behaviour in this population group is an important research area. Device-based tools improve accuracy but are costly and offer limited contextual detail, so self-reported measures remain common. Multi-item questionnaires may better capture sedentary contexts but can be time-consuming, prompting interest in single-item alternatives. Therefore, this study aimed to evaluate the validity of a single-item question compared to a multi-item questionnaire related to sedentary behaviour in individuals with Crohn's disease. With approval from the Ulster University School of Sport and Exercise Science Filter Committee (reference number: MG08-23), adults with Crohn's disease (18–65 years) in the UK and Ireland completed a cross-sectional survey. Single-item weekday sitting was collected using the relevant International Physical Activity Questionnaire – Short Form question while multi-item weekday sitting was taken from the Sedentary Behaviour Questionnaire. Convergent validity was tested using Spearman's rank correlation coefficient, criterion validity was assessed using the Wilcoxon signed-rank test, while Bland-Altman plots assessed agreement between the two measures. Single and multivariate linear regression models were used to compare correlates for each instrument. Ninety-nine participants (median age: 40.0 (31.0–47.0) years; females: 74.7%; median length of Crohn's disease diagnosis: 11.0 (5.0–18.0) years) provided usable data for both instruments. Single and multi-item sedentary times were not significantly correlated ($p = 0.182$). Single-item sitting time (median time: 8.0 (6.0–10.0) hours/day) was significantly lower ($p < 0.001$) than multi-item sitting time (median time: 9.8 (7.5–12.0) hours/day). Bland – Altman analysis also showed systematic under-reporting by the single-item measure (mean difference: -1.62 h/day overall; 95% limits of agreement: -11.29 to 8.06 hours/day), with no evidence of proportional bias. Correlate patterns also differed between instruments. These findings indicate that single-item sitting time substantially underestimates sedentary behaviour, with implications for epidemiological surveillance, and the future design and evaluation of sedentary behaviour reducing interventions in Crohn's disease.

**CONTACT** Jason J. Wilson jj.wilson@ulster.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 49
https://doi.org/10.1080/02640414.2026.2668943

Routledge
Taylor & Francis Group



# D2.S1.2(7) Evaluating exercise dose in a remote rehabilitation intervention following critical care discharge

Darren Murphy[a], Brenda O'Neill[a], Judy M Bradley[b], Jill Costley[a], Annette Henderson[c], Mike Adams[a], Bronwnen Connolly[b,d], Danny McAuley[b] and Jason J Wilson[c]

[a]Ulster University, Belfast, Northern Ireland; [b]Queen's University, Belfast, Northern Ireland; [c]Ulster University, Derry/LondonDerry, Northern Ireland; [d]The University of Melbourne, Melbourne, Australia

Tailored guidance is essential to support effective exercise delivery in rehabilitation interventions for survivors of critical illness following discharge home. The specific type, dose and progression of exercises are often poorly reported in ICU rehabilitation trials, making evaluation of intervention effectiveness difficult and limiting reproducibility across settings. The iRehab, post-ICU intervention (trial reg. ISRCTN11266403) delivered a six-week, multicomponent, remote rehabilitation including weekly supervised exercise and guidance on increasing physical activity (e.g., walking). We aimed to describe the exercises used, quantify exercise dose and physical activity, determine if progression was achieved, and explore relationships between exercise dose and participant characteristics. Ethical approval was from London Central Research Ethics Committee. Data analysis included descriptive statistics and non-parametric testing, Spearman's and Mann-Whitney U. A bespoke formula was developed to quantitatively assess the exercise dose delivered to participants as no existing method adequately captured dose across varied exercises. Two-hundred and five participants (male: 60.5%; median age: 56 (IQR 46–68) years and median mechanical ventilation duration: 6.95 (IQR 3.4–13.0) days) initiated the intervention. Fourteen exercise options were available across arm, core, and leg regions, with the most prescribed being lateral arm raise, lateral side bend, and calf raises. Results showed that exercise selection changed over the intervention period, with more difficult exercises (per formula) utilised towards the end of the intervention. There was a significant increase in exercise dose from the start to the end of the intervention ($Z = -7.288$, $p < 0.001$). Males achieved significantly higher exercise doses at both the start: Week 2 ($Z = -2.241$, $p = 0.025$) and end of the intervention: Week 6 ($Z = -2.569$, $p = 0.010$) compared to females. No significant associations were observed between either age or mechanical ventilation duration and exercise dose. The study provides evidence of exercise utilisation and progression across the intervention, regardless of age, sex, or mechanical ventilation duration, although males started at higher exercise dose. These findings can inform future replication and implementation of similar interventions. Guidelines (e.g., CERT, TIDieR) require detailed reporting of exercise dose and progression, which future rehabilitation trials should adopt to facilitate intervention replication.

**CONTACT** Darren Murphy murphy-d76@ulster.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 50
https://doi.org/10.1080/02640414.2026.2668944

Routledge
Taylor & Francis Group



# D2.S1.3(1) Prevalence of low energy availability and associated factors among male academy football players in England: A cross-sectional study

Jamie Ashby[a], Thomas Mullen[a], Philip Smith[a], John Rogers[a,b], Jay Vadher[a], Eoin Schofield[a] and Nick Dobbin[a]

[a]Manchester Metropolitan University, Manchester, UK; [b]The OrthTeam Centre, Manchester, UK

The aim of this study was to estimate the prevalence of low energy availability (LEA) and identify any association with physiological and psychological factors among academy football players in England. Using a cross-sectional design with institutional ethics approval, 309 participants from 12 professional football academies were recruited to complete the Training Distress Scale, Low Energy Availability in Males, Athlete Burnout and Brief Eating Disorder in Athletes questionnaires, followed by a 24-h food and activity diary. A sub-sample ($n = 103$) completed a 3-day food and activity diary, provided a venous blood sample for total testosterone and free triiodothyronine, and had resting metabolic rate measured. LEA was defined as <30 kcal·kg·eLBM$^{-1}$·day$^{-1}$ for the prevalence estimates and binary logistic regression analyses. To adjust for potential underestimation of energy intake a 22% increase was applied, previously observed as the mean discrepancy between energy intake and body mass change in female football players. The prevalence of LEA was 44.6%, of which 15.2% ($n = 43$), 65.2% ($n = 185$) and 11.2% ($n = 32$) were at risk of burnout, training distress and an eating disorder, respectively. A low sex drive was observed in 17.6% ($n = 50$) of players. In the sub-group, 8.1% ($n = 8$) had an RMR ratio <0.9, 1.3% ($n = 1$) and 11.3% ($n = 9$) were clinically (<8 nmol·L$^{-1}$) sub-clinically (8–12 nmol·L$^{-1}$) deficient of testosterone. Whilst 23.8% ($n = 19$) were below a standard reference range (3.8 pmol·L$^{-1}$) for free triiodothyronine. The regression analyses indicated a low sex drive (odds ratio; OR = 2.25), reduced sense of accomplishment (OR = 1.75) and eating disorder risk (OR = 1.08) was associated with higher odds of LEA. Fat intake showed a greater reduction in odds (OR = 0.10) compared to carbohydrate (OR = 0.50) and protein (OR = 0.53). LEA is increasingly recognised as critical for athlete health, wellbeing and performance, yet research has mostly focused on female and endurance athletes. This study is the first at scale to show a high prevalence in male academy footballers and identifies physiological and psychological factors that may guide practice and future research.

**CONTACT** Jamie Ashby jamie.ashby@stu.mmu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 51
https://doi.org/10.1080/02640414.2026.2668945

Routledge
Taylor & Francis Group



# D2.S1.3(2) Criterion validity and sensitivity of skinfold-derived estimates of fat-free mass and fat mass across training mesocycles in elite football

Alex Dean[a], Sam Taylor[a,b], Sam Holt[b], Scott Gillham[a] and John Iga[a]

[a]Liverpool John Moores University, Liverpool, UK; [b]Stockport County Football Club, Stockport, UK

Anthropometry provides a viable tool for assessing body composition in field conditions. While the sum of skinfolds is often used as an indicator of adiposity, estimates of percent body fat (%BF), with subsequent calculations of fat-free mass (FFM) and fat mass (FM), are sometimes preferred for monitoring training or dietary interventions. Reilly et al. (2009; International Journal of Sports Medicine, 30, 607–613) proposed a population-specific equation for estimating %BF; however, its validity for tracking changes in body composition across football mesocycles remains uninvestigated. Therefore, this study aimed to examine the criterion validity and sensitivity of skinfold-derived (SF) estimates of FFM and FM. With ethical approval, 24 male football players (mean ± SD; age: 24.1 ± 3.9 years; stature: 1.82 ± 0.07 m; body mass: 79.9 ± 7.7 kg) competing in the third division of the English professional football leagues participated. DXA scans (Hologic QDR Series Discovery A, Bedford, MA) and anthropometric assessments were conducted at commencement of pre-season training. Further anthropometric measurements were made at six-week intervals throughout the playing season. Significant systematic bias was observed for both FFM ($t23 = -12.377$; $p < 0.001$; [DXA: 69.9 ± 6.4 kg; SF: 72.6 ± 6.5 kg]) and FM ($t23 = 14.04$; $p < 0.001$ [DXA: 10.8 ± 1.9 kg; SF: 7.9 ± 1.4 kg]). Limits of agreement (LoA) for FFM were 2.6 ± 2.0 kg (ratio: 1.04 x/÷ 1.03) and 2.8 ± 1.9 kg (ratio: 0.73 x/÷ 1.20) for FM. Linear mixed models (LMM) indicated that FFM increased over the season (71.3 ± 1.2 kg vs. 74.1 ± 1.1 kg; $\Delta = 2.8$ kg, $p < 0.001$), while FM was unchanged (7.2 ± 0.2 kg vs. 7.5 ± 0.2 kg; $\Delta = 0.4$ kg, $p > 0.05$). The systematic differences between DXA and skinfold-derived estimates of FFM and FM indicate that absolute values from these methods are not directly interchangeable and should be interpreted with caution. However, the LoA and LMM data suggest that the skinfold-based method is suitable for tracking relative changes in FFM across football mesocycles. For such changes to be considered meaningful, they should exceed margins of 2.0 kg. Practitioners can therefore rely on SF-derived estimates of FFM to monitor trends over time rather than for precise absolute assessment.

**CONTACT** Alex Dean spsjiga@ljmu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 52
https://doi.org/10.1080/02640414.2026.2668946



# D2.S1.3(3) Vigorous exercise habits can mitigate the risk of body mass index and body fat in high-risk genotypes associated with obesity in a healthy adult cohort

Jenni Chambers, Corinna Chidley, Clare Roscoe and Aparna Duggirala

University of Derby, Derby, UK

Physical activity (PA) is an important lifestyle intervention to combat obesity, although results vary between individuals. This cohort study examined whether risk genotypes from genes and pathways associated with obesity are correlated with PA and body composition (BC). The aim was to correlate single-nucleotide polymorphisms (SNPs) in FTO, MC4R, APOE, and JAZF1 genes with body mass index (BMI) and body fat percentage (BFP) to help understand the relationship between SNPs, PA levels and BC. Fifty-six participants aged 18–65 years old with no underlying medical conditions were recruited with institutional ethics approval. The International PA Questionnaire (IPAQ) was used to classify participants into sedentary/light PA (SLPA), moderate PA (MPA), and vigorous PA (VPA) levels. Anthropometric measures including BMI and BFP were recorded, and venous blood samples collected during a clinic appointment. DNA was extracted from leukocytes and genotyped for SNPs in FTO, MC4R, APOE, and JAZF1 genes using Taqman® RT qPCR and Genotyper® software. Results were statistically analysed using odds ratios and correlation analysis to identify associations between genotypes, BC and PA. For genotype distribution, participants were grouped for FTO risk allele A (AA/AT, n = 42) or wildtype (TT, n = 13), MC4R risk allele C (CC/CT, n = 25) or wildtype (TT n = 31), APOE risk allele C (CT/CC, *n*=12) or wildtype (TT, *n*=43), and JAZF1 risk allele C (CT/CC, *n*=38) or wildtype (TT, *n*=17). No significant differences in odds ratios for effect sizes were observed. Correlation analysis revealed that the FTO SNP rs9939609 'A' risk allele had a significant negative association with BFP in the VPA group (P = 0.0457); MC4R SNP rs17782313 'C' risk allele had a significant positive association with BMI in the VPA group (P = 0.0466). We concluded that SNPs associated with obesity identified in FTO rs9939609 and MC4R rs17782313 could help to predict molecular effects of PA. As there is a high frequency of risk variants in the cohort for the FTO SNP rs9939609, we conclude that VPA could be helping to mitigate these risks.

**CONTACT** Jenni Chambers j.chambers1@derby.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 53
https://doi.org/10.1080/02640414.2026.2668950



# D2.S1.4(1) Exploring how soccer coaches perceive and facilitate teamwork

Samuel Gelsthorpe and Stephanie Tibbert

Health Sciences University, UK

Teamwork is widely recognised as fundamental to team effectiveness and performance outcomes in sport; however, the implementation of teamwork processes and leadership dynamics may vary according to the unique structural and cultural demands of each sport. Although research exploring how coaches perceive and facilitate teamwork in soccer remains limited, the existing research by Crawford et al. ([2024]. Journal of Applied Sport Psychology, 36, 697–721) across team sports identify coach leadership and teamwork as key contributors to positive developmental experiences. These findings reinforce the rationale for investigating coach leadership in relation to teamwork processes and outcomes, yet few studies have explored how coaches understand and regulate the ongoing psychological and behavioural processes that sustain teamwork. This study therefore aimed to gain insight into how soccer coaches perceive the concept of teamwork and how their behaviour within their role can cultivate adaptive and high-functioning teams. Following the university's ethical approval, the views and experiences of teamwork within soccer were explored. Guided by a critical realist philosophy, a qualitative design was adopted. Eleven soccer coaches were recruited using stratified purposeful and snowball sampling techniques. Semi-structured interviews were conducted to explore coaches' subjective experiences of teamwork within their teams. Reflexive thematic analysis was used for analysis, generating three overarching themes: (1) strategic coaching for teamwork enhancement, (2) creating an optimal environment for team success, and (3) recognising teamwork in action. Coaches described fostering teamwork through adaptable leadership behaviours, such as open communication, player empowerment, and self-reflective practice. Coaches perceived these strategies to cultivate a psychologically safe and cohesive environment whereby team members have 'bought into' the coach's desired idea, highlighting the link between coach behaviours and team cohesion. Such 'buy in' included a sense of unity, accountability, and shared purpose. Observable indicators of teamwork, such as effective tactical execution and collaborative problem-solving during competition, were reported by participants. The findings offer conceptual insight into how football coaches can actively shape the social and psychological processes underpinning teamwork, utilising deliberate strategies such as player empowerment and team bonding activities to enhance open-communication, team buy-in, and culture within soccer coaching practice.

**CONTACT** Samuel Gelsthorpe sgelsthorpe@aecc.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 54
https://doi.org/10.1080/02640414.2026.2668951



# D2.S1.4(2) Effects of asynchronous music during exhaustive cycle ergometry on cerebral oxygenation and psychophysical responses

Ségolène M. R. Guérin [a], Costas I. Karageorghis [b], Marine R. Coeugnet [c], Marcello Bigliassi [d] and Yvonne N. Delevoye-Turrell [c†]

[a]University of the Littoral Opal Coast, Dunkerque, France; [b]Brunel University of London, Uxbridge, UK; [c]University of Lille, Lille, France; [d]Florida International University, Miami, USA

Asynchronous music has been widely used to moderate perceived exertion and render the exercise experience more pleasant (Kuan et al., 2026, In Y.-K. Chang & A. Quartiroli (Eds.) *Physical activity, exercise, and mental health* (pp. 196–218). London: Routledge). Research has shown that in-task asynchronous music can reallocate an individual's attentional focus to task-unrelated signals and promote an elevated incidence of dissociative thoughts (Jones et al., 2024, *Psychology of Sport and Exercise*, *74*, e102644). Nonetheless, the brain mechanisms that underlie the purported benefits of music during exercise remain largely unknown due to motion-related restrictions associated with popular neuroimaging methods (Karageorghis et al., 2018, *Progress in Brain Research*, *240*, 109–125). Functional near-infrared spectroscopy (*f*NIRS) is a non-invasive imaging method that is particularly well suited to exercise-related protocols, given its high tolerance of motion artifacts. The purpose of this registered report (see https://doi.org/10.5281/zenodo.6261358) was to determine the point of onset of cerebral oxygenation decline during exercise and how this is influenced by the presence of asynchronous motivational music. The main hypothesis was that the decrease in prefrontal oxygenation would be observed earlier under conditions in which participants exercised in silence, or with an audiobook, when compared to asynchronous music. With institutional ethics approval (ref. D2021-001), a continuous-wave *f*NIRS system was used to record the prefrontal, motor and parietal haemodynamic responses of 36 participants (mean age: 23.1 + 3.3 years) who performed a cycle ergometry exercise protocol, starting at 5% above the first ventilatory threshold (VT1), and ending with volitional exhaustion. Results indicated that asynchronous music did not engender any significant changes ($P > 0.02$) in cerebral haemodynamics, exercise endurance or subjective measures (e.g., RPE and core affect), when compared to silence and audiobook control conditions. A study limitation was the heterogenous nature of participants in terms of fitness, which led to relatively high between-subject error across several dependent variables. The present findings highlight the complexities associated with the influence of music on cerebral activity during exercise. Further research employing more homogenous samples and alternative exercise protocols is warranted to increase understanding of the neurophysiological mechanisms that underlie the effects of asynchronous music.

## ORCID

Ségolène M. R. Guérin http://orcid.org/0000-0003-0990-9408
Costas I. Karageorghis http://orcid.org/0000-0002-9368-0759
Marine R. Coeugnet http://orcid.org/0000-0001-9363-3947
Marcello Bigliassi http://orcid.org/0000-0001-6940-9849
Yvonne N. Delevoye-Turrell http://orcid.org/0000-0003-4034-3684

**CONTACT** Costas I. Karageorghis costas.karageorghis@brunel.ac.uk
†Deceased

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 55
https://doi.org/10.1080/02640414.2026.2668952



# D2.S1.4(3) Camouflaging to compete: Masking in sport among autistic women and gender diverse people

Kristin Mcginty-Minister

Manchester Metropolitan University, Manchester, UK

Autistic women and gender diverse people remain underrepresented in sport research, particularly in relation to the psychosocial demands of sport environments and the strategies required to navigate them. One such strategy is masking, whereby autistic individuals suppress, modify or compensate for autistic traits in response to normative social expectations; this is a strategy more heavily utilised by autistic women and gender diverse individuals. While masking has been associated with adverse mental health outcomes in autistic populations more broadly, little is known about how masking is experienced or reinforced within sport contexts, where conformity and performative professionalism are often valorised.

This study explores the masking experiences of women and gender diverse autistic people in sport using a mixed-methods design. Athletes and stakeholders across a range of sports and competitive levels completed a validated measure (CAT-Q) of autistic masking, followed by semi-structured interviews further exploring their experiences. Examined topics are perceived functions and short-term benefits, longer term psychosocial and well-being related costs, and the role of sport cultures and power hierarchies in influencing masking practices. Interview data are analysed using reflexive thematic analysis.

Findings for this ongoing study indicate that for autistic women and gender diverse individuals, masking in sport is highly context-dependent and frequently intensified by selection processes, feedback practices, team norms and gendered expectations surrounding professionalism and social expectations. Participants describe masking as facilitating continued participation, perceived credibility and, importantly, safety within sport environments, while simultaneously contributing to exhaustion, identity confusion, reduced help-seeking and, for some, withdrawal from sport. Questionnaire data demonstrate elevated levels of camouflaging within the sample and provide insight into variability across roles and contexts.

The study advances a sport-specific understanding of masking that foregrounds organisational, cultural, and 'traditionally' gendered demands (rather than individual deficit). Implications are discussed for research, policy and applied practice, emphasizing the need to reduce masking pressures through changes to sport environments and norms to support autistic individuals' well-being and sustained participation.

**CONTACT** Kristin Mcginty-Minister K.McGinty-Minister@mmu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 56
https://doi.org/10.1080/02640414.2026.2668953

Routledge
Taylor & Francis Group



# D2.S1.4(4) Understanding the use of musical imagery in collegiate athletes: An exploratory study

Ross Leach[a], Jasmin Hutchinson[a] and Andrew Danso[b]

[a]Springfield College, Springfield, USA; [b]University of Jyväskylä, Jyväskylä, Finland

Musical imagery, the experience of internally hearing music in the absence of an external auditory stimulus, has been well-documented in everyday life and among musicians, yet its occurrence and function in sport contexts remain largely unexplored. The purpose of this exploratory study was to investigate whether collegiate athletes experience musical imagery during sport participation and, if so, to examine what form it takes, and where, when, why, and how it is used. A secondary aim was to examine whether musical value and musical imagery ability (vividness and controllability) predict the frequency of musical imagery use. A total of 155 NCAA Division I – III collegiate athletes in the United States (M age = 20.22 years, SD = 1.61) completed an online survey assessing musical imagery experiences in sport, musical value, and imagery vividness and controllability. Results indicated that musical imagery was highly prevalent, with 91% of athletes reporting experiencing internally generated music during sport participation. Musical imagery occurred most frequently during warm-ups and practices, and was most often unintentional. The most common experience was hearing a familiar song or piece of music, and the most prevalent components of music within musical imagery were lyrics, melody, and beat. Athletes who reported using musical imagery intentionally (n = 61) identified multiple reasons for use, including arousal regulation, distraction, enjoyment, and facilitating flow-like states. Overall, athletes reported fairly vivid musical imagery (M = 4.40; SD = 1.20) and moderate controllability (M = 4.06; SD = 1.47) which reflects being able to change the sound with effort. Participants also demonstrated moderate composite musical value scores (M = 5.46; SD = 1.26). Multiple linear regression revealed that imagery vividness significantly predicted musical imagery frequency ($\beta = 0.42$, $p < .001$), whereas musical value and controllability did not. No differences in musical imagery frequency were observed across gender or sport type (team vs. individual). Collectively, these findings suggest that musical imagery is a common phenomenon in collegiate sport and may represent a viable, yet underexplored, psychological self-regulation strategy.

**CONTACT** Jasmin Hutchinson jhutchinson@springfieldcollege.edu

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 57
https://doi.org/10.1080/02640414.2026.2668954

Routledge
Taylor & Francis Group



# D2.S1.4(5) Five methodological and practical advances in the study of perfectionism in sport

Andrew P. Hill[a,b]

[a]York St John University, UK; [b]University of Toronto, Canada

The study of perfectionism in sport has been hampered by a range of conceptual, measurement, and statistical issues. In addition, until recently, little was known about what interventions might be effective for athletes in reducing perfectionism given that they are in a domain where perfect or near perfect performance might be necessary for success. This presentation will summarise five key recent advances that address each of these issues. The five key advances include (i) evidence to support a higher-order model of multidimensional perfectionism in sport, multiple methods to quantify the (ii) overall effects and (iii) interactive effects of perfectionism, (iv) new tools to measure perfectionism at a 'climate' level and perfectonism 'literacy', and (v) findings from studies that show some interventions may be more effective than others for athletes. As a consequence of these advances, research in sports psychology is now better positioned to determine and explain the effects of perfectionism, particularly whether we can expect it to help or hinder athletes, and how we might protect athletes from its negative consequences.

**CONTACT** Andrew P. Hill a.hill@yorksj.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 58
https://doi.org/10.1080/02640414.2026.2668955

Routledge
Taylor & Francis Group



# D2.S1.4(6) Exploring the perspectives and experiences of men living with prostate cancer from minority ethnic backgrounds in undertaking physical activity: A qualitative analysis

Jack Carr[a], David Broom[a], Mark Faghy[b,c], Clare Roscoe[b], Kevin Williams[d] and Ruth Ashton[a]

[a]Coventry University, UK; [b]University of Derby, UK; [c]Loughborough University, UK; [d]University Hospitals Coventry and Warwickshire, UK

**Objective**: Men from minority ethnic backgrounds experience disproportionate burdens of prostate cancer yet remain significantly underrepresented in clinical and exercise-based research. This qualitative study explored how men from diverse ethnic backgrounds understand and experience exercise following prostate cancer, and how psychological, cultural, and structural factors shape their willingness to engage in research. The aim was to generate insight that can support more integrated, culturally attuned approaches within psycho-oncology and cancer services.

**Methods**: Semi-structured interviews were conducted with ten men from African, Caribbean, Asian, and Middle Eastern backgrounds living with prostate cancer. Data were analysed using Braun and Clarke's reflexive thematic analysis. A patient-informed topic guide and culturally reflexive approach were used to ensure psychological safety and contextual sensitivity. NHS ethical approval (IRAS: 345,005) was granted by the London-Camberwell St. Giles REC. Institutional ethical approval by Coventry University's Research Ethics Committee [P178645].

**Results**: Six interconnected themes were identified: (1) Exercise as Mental Renewal, Identity, and Connection; (2) Cancer-Related Disruption and Fragmented Exercise Support; (3) Barriers to Participation in Exercise and Research; (4) Trust, Representation, and Inclusive Research Practices; (5) Cultural Stigma, Silence, and Shifting Perspectives; and (6) Altruism, Legacy, and Motivation to Engage. Across themes, participants emphasised the psychological significance of exercise for coping and identity reconstruction; the emotional consequences of inconsistent guidance; and the central role of trust, cultural understanding, and relational communication in research engagement. Findings informed a Culturally Sensitive Recruitment Framework designed to support integrated psycho-oncology care and improve equitable participation.

**Conclusions**: Psychological, cultural, and structural factors jointly shape exercise engagement and research participation among minority ethnic men with prostate cancer. Implementing culturally sensitive, relationship-centred, and psychologically informed recruitment and support strategies may strengthen integrated care and improve equity in psycho-oncology research and practice.

**CONTACT** Jack Carr carrj10@uni.coventry.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 59
https://doi.org/10.1080/02640414.2026.2668957

Routledge
Taylor & Francis Group



# D2.S1.5(2) Pupillary light responses in males and females following competitive rugby matches

Christopher Kirk, Daisy Monk Edwards, Jak Mercer, Ben Bowden, David Binney and Andrew Barnes

Sheffield Hallam University, Sheffield, UK

Rugby performance features repeated head impacts in both training and competition. Such head impacts are related to brain disease and cognitive deficits with females being potentially more at risk than males (Allan et al., 2024, BMJ Open 10). There is no currently accepted field-based method of monitoring effects of potential brain injuries in the absence of diagnosable concussion. Automated measurement of the pupillary light reflex (PLR) has been proposed as a solution to this issue (Kirk & Childs, 2023, Vision 7:2) but data are lacking for rugby performance. An adult mixed sex cohort (male n = 44; female n = 68) participated in this study following institutional ethical approval. PLR of both eyes was measured in ambient indoor light (270–-330 Lux, PEL, Diss, UK) pre- and post-competitive rugby matches using Neuroptics NPi-200 automated pupillometer (Irvine, USA). Variables measured were min and max pupil diameter (mm), peak constriction velocity (CV, $mm{\cdot}s^{-1}$), mean CV (MCV, $mm{\cdot}s^{-1}$), dilation velocity (DV, $mm{\cdot}s^{-1}$), amplitude (%), latency (s) and 'NPi' (AU) – a proprietary variable representing overall pupil response. Two-way repeated measures ANOVAs were calculated for all variables using Bayes factors ($BF_{10}$) ≥3 as inference and post hoc analyses with Cohen's d effect size (JASP 0.95.3). NPi displayed decisive pre-post reductions ($BF_{10} = 5.407^{+12}$) with females reducing more ($BF_{10} = 8.7$, d = .84). Max diameter ($BF_{10} = 1.206^{+6}$, d = .36 increase), min diameter ($BF_{10} = 4.799^{+10}$, d = .59 increase), amplitude ($BF_{10} = 1.059^{+7}$, d = .55 decrease) and DV ($BF_{10} = 5{,}529$, d = .39 decrease) all showed decisive pre-post changes but no differences between sexes. Females displayed differences in both CV ($BF_{10} = 4.2$, d = .37 decrease) and MCV ($BF_{10} = 15.8$, d = .44 decrease) compared to males, but only MCV had pre-post differences ($BF_{10} = 34.3$, d = .21). Latency had very strong pre-post increases ($BF_{10} = 99$, d = .35 increase), without differences between sexes. Both sexes showed increased pupil diameter following rugby performance, possibly related to arousal. Pupils in both sexes were slower to respond and responded less to stimulus post-performance, which may be related to head impacts. Changes in CV only occurred in females, suggesting females may be more affected by head impacts during rugby performance than males. These data support the potential use of PLR in monitoring brain function in competitive sports environments.

**CONTACT** Christopher Kirk c.kirk@shu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 60
https://doi.org/10.1080/02640414.2026.2668960



# D2.S1.5(5) Neuromuscular performance variability across menstrual cycle phases in naturally menstruating female athletes

Hannah Mcmanus

Manchester Metropolitan University, Manchester, UK

The menstrual cycle (MC) is characterised by fluctuations in oestrogen and progesterone that may influence neuromuscular function in women. Evidence for phase-related effects on performance remains inconsistent, often due to limitations in phase verification and outcome selection. This study investigated whether neuromuscular performance varied across 3 MC phases (early follicular [P1], late follicular [P2], and mid-luteal [P4]) in naturally menstruating cisgender female athletes. With university ethical approval, 17 participants (age 27.9 ± 5.3 years; height 1.66 ± 0.06 m; body mass 69.8 ± 17.5 kg) completed 3 testing sessions aligned with designated phases, verified using urinary luteinising hormone (LH) kits and calendar tracking. Performance was assessed via countermovement jump (CMJ), drop jump (DJ), and isometric mid-thigh pull (IMTP) on dual force plates. Primary outcomes were CMJ jump height (JH), DJ reactive strength index (RSI), and IMTP net peak force (NPF), with additional force–time variables also analysed. All variables showed acceptable reliability (intraclass correlation coefficient (ICC) >0.70) and coefficients of variation percentage (CV %) <15%. No significant differences were found across phases ($p > 0.05$), with effect sizes ranging from $\eta^2 = 0.017$ to 0.103 and $W = 0.014$ to 0.591. Despite these null findings at group level, meaningful inter-individual variability was observed: for instance, 5 participants achieved their highest CMJ JH in P1, 6 recorded their best DJ RSI in P4, and 5 produced their greatest IMTP NPF across different phases. These findings indicate that the MC phase did not systematically alter neuromuscular performance at the group level. However, consistent individual variability highlights the applied importance of personalised monitoring and supports the need for longitudinal, multi-cycle research to determine whether phase-related variability influences training responsiveness, fatigue tolerance, or injury risk.

**CONTACT** Hannah Mcmanus hannahmcmanus18@hotmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 61
https://doi.org/10.1080/02640414.2026.2668961



# D2.S1.5(6) Physiological and perceptual responses across menstrual cycle phases in female ultra-endurance athletes: A pilot study

Irene Molina Gonzalez and Stuart Gray

School of Cardiovascular and Metabolic Health, University of Glasgow, Glasgow, UK

Women remain underrepresented in sport and exercise science research, with only ~5.6% of studies considering the menstrual cycle (MC) as a study variable (Ose et al., 2025). Hormonal fluctuations across the MC may influence metabolism, thermoregulation, recovery, and cardiorespiratory responses to exercise (Benton et al., 2020; Fort-Vanmeerhaeghe et al., 2025; Janse et al., 2012; Rael et al., 2021). Despite increasing female participation in ultramarathon events, the influence of MC phases on physiological responses in ultra-endurance athletes remains poorly understood.

Seven runners ($VO_2$max: $51.4 \pm 5.7$ mL·kg$^{-1}$ ·min$^{-1}$; ultramarathon experience: $2.6 \pm 1.1$ years) completed a questionnaire assessing MC-related performance perception. Six participants completed physiological testing during the early follicular (EFP), late follicular (LFP), and mid-luteal phases (MLP), identified using calendar tracking and urinary luteinising hormone testing. Assessments included resting metabolic rate (RMR), heart rate variability (HRV), and an incremental treadmill test. Ethical approval was obtained from the University of Glasgow College of Medical, Veterinary and Life Sciences Research Ethics Committee (Ref: 200,240,251).

Four participants (57.1%) reported perceived performance reductions before or during menstruation, associated with fatigue, sleep disturbance, and mood changes. However, no statistically significant differences were observed across MC phases for submaximal outcomes including heart rate, running economy, or perceived exertion. Maximal variables – $VO_2$peak, peak treadmill velocity, time to exhaustion, and peak heart rate – also remained unchanged. Respiratory frequency at the first lactate threshold showed a main effect of MC phase ($p = 0.045$), with the largest difference between LFP ($39.6 \pm 9.2$ breaths·min$^{-1}$) and MLP ($43.2 \pm 6.4$ breaths·min$^{-1}$), although pairwise comparisons were not significant. HRV and RMR were unchanged across phases.

Physiological performance appeared stable across MC phases in trained ultra-endurance athletes despite frequent perceived disruption. These findings support combining physiological monitoring with symptom tracking in female athletes. Larger studies with hormonal verification are required to clarify potential MC influences on ultra-endurance performance.

## Funding

The author(s) reported there is no funding associated with the work featured in this article.

## References

Benton, M. J., Hutchins, A. M., & Dawes, J. J. (2020). Effect of menstrual cycle on resting metabolism: A systematic review and meta-analysis. *PLOS ONE*, *15*(7), e0236025. https://doi.org/10.1371/journal.pone.0236025

Fort-Vanmeerhaeghe, A., Pujol-Marzo, M., Milà, R., Campos, B., Nevot-Casas, O., Casadevall-Sayeras, P., & Peña, J. (2025). Injury risk and overall well-being during the menstrual cycle in elite adolescent team sports athletes. *Healthcare*, *13*(10), 1154. https://doi.org/10.3390/healthcare13101154

Janse, D. A., Thompson, M. W., Chuter, V. H., Silk, L. N. & Thom, J. M. (2012). Exercise performance over the menstrual cycle in temperate and hot, humid conditions. *Medicine & Science in Sports and Exercise*, *44*(11), 2190–2198. https://doi.org/10.1249/MSS.0b013e3182656f13

Ose, B. M., Eisenhauer, J., Roepe, I., Herda, A. A., Vopat, B. G., & Vopat, L. M. (2025). Where are all the female participants in sports and exercise medicine research? A decade later. *The American Journal of Sports Medicine*, *53*(8), 2022–2028. https://doi.org/10.1177/03635465241278350

Rael, B., Alfaro-Magallanes, V., Romero-Parra, N., Castro, E., Cupeiro, R., Janse de Jonge, X., Wehrwein, E., & Peinado, A. (2021). Menstrual cycle phases influence on cardiorespiratory response to exercise in endurance-trained females. *International Journal of Environmental Research and Public Health*, *18*(3), 860. https://doi.org/10.3390/ijerph18030860

**CONTACT** Irene Molina Gonzalez train4bodymind@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 62
https://doi.org/10.1080/02640414.2026.2668964



# D2.S1.6(2) How does sports coaching pedagogy influence coaching practice? Learnings from a scoping review

Ethem Cubuk[a], Vassil Girginov[a] and Dr Richard Blair[b]

[a]Brunel University of London, UK; [b]University of Gloucestershire, UK

Coaches contribute significantly to the development of athletes. Coaching is an intentional process, in which coaches` underlying philosophies inform their decisions. Pedagogy is more than observable methods, incorporating the philosophical and theoretical foundations that inform practice. There has been an increase in academic attention to coaching pedagogy (CP), reflecting efforts to understand coaching beyond technical instruction. Despite recognition of this complexity, there remains a need for an in-depth understanding of the CP. Scoping reviews (SR) are conducted for several reasons and represent an increasingly popular approach to reviewing coaching research evidence. Following the PRISMA-ScR guidelines (Tricco et al., 2018. Annals of Internal Medicine, 169(7), 467–473), the objectives of this SR were twofold: to clarify the concepts of the CP and to identify key assumptions shaping the relationship between key concepts. Three main learning points emerge from the SR, which included 46 studies. A key learning from the SR was that, as CP is grounded in philosophical and theoretical foundations, the assumptions guiding coaches' practice extend beyond athlete learning to include broader considerations of sport's purpose and its ethical, systemic and social dimensions. Second, while the properties of CP (philosophy, theory, method) relate sequentially, the relationship between CP and practice is mutually constitutive. The SR enabled the identification of these relationships. Finally, the SR informed the overall design of the PhD project, using the three key properties it identified to conceptualise CP as an interplay between the three interrelated elements of CoP theory: domain, community, and practice (Wenger, E., WcDermott R, A., & Snyder, W., 2002, Cultivating Communities of Practice: A guide to managing knowledge, Harvard Business). CP represents the domain element, the shared area of interest that community members collectively seek to develop. The community comprises members engaged in CP development, with the SR highlighting that coaches learn socially through interactions with coach developers, athletes, and peers. Practice refers to the shared activities and resources through which the community develops CP, with collaborative learning emerging as a key feature. Across the project, the properties of CP serve as a guiding framework for data collection on the community and practice elements.

**CONTACT** Ethem Cubuk etcubuk@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 63
https://doi.org/10.1080/02640414.2026.2668965



# D2.S1.6(3) Improving executive functions in students at risk through physical activity and machine learning

Santolo Ciccarelli[a] and Francesco Vincenzo Ferraro[b]

[a]Università Giustino Fortunato, Benevento, Italy; [b]Italian University Line, Florence, Italy

Socioeconomic inequalities negatively affect adolescents' executive functions and, consequently, their academic performance (Cen et al., 2024). This conditioning can hinder integration, especially in areas already marginalized by strong social fragmentation, such as those found in Latin America (Bancalari et al., 2024). To support integration and enhance executive functions, the following project, named TRIP a-Bike, uses a device that combines exercise bikes with gamified smartphones (Ciccarelli et al., 2024). The device was conceived to allow students to navigate a virtual environment through physical exercise while engaging in adaptive educational activities supported by Machine Learning (ML) algorithms. The research team aims to determine whether introducing this device in Marginalized contexts can promote the development of executive functions and academic performance. This research project will be carried out in the city of Cartagena de Indias (Colombia). The planned research design involves the adoption of a mixed method. Specifically, it involves a sample of 100 secondary school students equally divided into an experimental group and a control group. The intervention will last for two semesters and will be administered biweekly. Outcomes include the Teenage Executive Functioning Inventory (TEXI), the Behaviour Rating Inventory of Executive Functions (BRIEF-SR), and the Physical Exercise Self-Efficacy Scale. Each test will be administered monthly for a total of 10 times. Preliminary data will be presented at the conference. The research hypothesis suggests that combining embodied-based learning with ML support can significantly improve executive functions. In conclusion, the TRIP a-Bike project proposes a scalable model to address educational inequalities. Its experimentation can yield insights into the effectiveness of integrating sports, pedagogy and new technology in vulnerable contexts.

## Funding

The author(s) reported there is no funding associated with the work featured in this article.

## References

Bancalari, A., Berlinski, S., Buitrago, G., García, M. F., de la Mata, D., & Vera-Hernández, M. (2024). *Research insights: How does social and economic inequality in Latin America and the Caribbean relate to health outcomes?* Inter-American Development Bank.

Cen, H., Wang, S., & Gu, X. (2024). The mediating role of executive function between socioeconomic status and academic achievement: A meta-analytic structural equation model. *Learn Individ Differ*.

Ciccarelli, S., Ferraro, F. V., & Tafuri, M. G. (2024). Trip a-bike: A new system for teaching languages between body and artificial intelligence. *Form@re*, *24*(2): Articolo 2;310–321. https://doi.org/10.36253/form-15980

**CONTACT** Santolo Ciccarelli s.ciccarelli@unifortunato.eu

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 64
https://doi.org/10.1080/02640414.2026.2670120

Routledge
Taylor & Francis Group



# D2.S1.6(4) Demonstrating the impact volunteering: A case study of Denis Law legacy Trust

Katherine Burgess[a] and Hannah Clews[b]

[a]Robert Gordon University, Aberdeen, UK; [b]Denis Law Legacy Trust, Aberdeen, UK

Denis Law legacy Trust (DLLT) is a registered charity that operates and delivers free-to-access programmes and positive destination activities for young people. The charity is dependent on volunteers to run its programmes including its flagship programme Streetsport which delivers daily sports sessions for young people 50-weeks of the year. DLLT's mission is to support and empower young people to be confident, capable, independent and responsible citizens within their own communities. This is not just about the individuals who access their programmes but also their volunteers. This study aimed to identify the impact of volunteering on the volunteers themselves. A sequential mixed-methods design was used with all registered volunteers (n = 72) invited to complete an online survey on which the final question asked the volunteers if they would be happy to be involved further. Those who respond positively were invited to attend focus groups whereby the responses to the survey were explored further. The online survey included demographic questions and 5-point Likert scale response questions concerning the impact of volunteering on skill development and wellbeing. The study was approved by the local ethics committee. Survey data was analysed using a combination of descriptive statistics and content analysis with focus group transcripts analysed using reflective thematic analysis. The online survey was completed by 36 volunteers, with 39% of respondents identifying as male and 61% female. Forty-two percent of the sample were aged 11–15 years, 17% 16–17 years, 22% 18–24 years, 8% 25–34 years, 8% 35–44 years and 3% 55–64 years. Nighty-four percent of participants indicated volunteering has had a positive impact on their life, with 94% indicating volunteering makes them happy, 78% that it has improved their physical health and 64% that is has improved their mental health. Eighty- six percent agreed that they have been able to use and develop their skills when volunteering, with over 80% of respondents reporting volunteering has enhanced their communication, teamworking and leadership skills alongside their adaptability. These findings can help support the future work of DLLT by evidencing their work not only positively impacts its participants but also its volunteers.

**CONTACT** Katherine Burgess k.burgess@rgu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 65
https://doi.org/10.1080/02640414.2026.2670121



# D2.S1.6(5) Experiences of utilising authentic undergraduate assessment to develop the competencies of future applied practitioners

Alison Tincknell-Smith, Nicholas Willsmer and Christian Michelet

University of Bath, Bath, UK

The ability to 'contribute effectively to work undertaken as part of multi-disciplinary team' exists as an area of competence within CASES Accreditation (BASES, 2021) and reflects the prevalence of multidisciplinary working across applied sport environments. Whilst the ability to integrate knowledge from diverse disciplines positions future practitioners well, to contribute effectively to such teams they must also possess the personal attributes and interpersonal skills required to collaborate, communicate, and achieve shared decision-making in cross-disciplinary environments (e.g., Stewart et al., 2023, Sport Management Review, 27, 300–321). However, Bartlett and Drust (2021, European Journal of Sport Science, 21, 1579–1587) propose that less consideration has been given in sport science training programmes to interpersonal skill development. In the broader context of Higher Education, reflecting a sector shift towards the prioritisation of graduate skills and competencies, authentic assessment methods have been promoted as an effective strategy for evaluating both the application of knowledge and the demonstration of attributes and skills (e.g., Sokhanvar et al., 2021, Studies in Educational Evaluation, 70, 101,030). Authentic assessments engage students in tasks which simulate real-world scenarios, and necessitate the same knowledge, competencies, and skills required in professional settings. Weaving together the preceding elements, we aimed to develop an authentic assessment which integrates the attributes and skills required to contribute effectively to multidisciplinary teams. Specifically, we evolved a Level 6 undergraduate assessment to include a simulated multidisciplinary case conference reflective of group discussion in applied practice. The assessment concludes a compulsory module of study currently being undertaken by 28 students simultaneously undertaking optional modules in physiology, psychology, coaching, and sports development. Students have been provided with 7 hypothetical athlete cases, and each has selected a practitioner role to adopt for a case conference. For the final submission students must propose an intervention from the perspective of their adopted practitioner role and informed by their engagement in the case conference. The aim of the presentation is to share our experience of designing and undertaking the assessment and will incorporate student and staff feedback to identify key learnings and reflections on using authentic assessments to develop the competencies of future practitioners.

**CONTACT** Alison Tincknell-Smith a.l.smith@bath.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 66
https://doi.org/10.1080/02640414.2026.2670122

Routledge
Taylor & Francis Group



# D2.S1.6(6) Creating a safe space for personal and professional growth

Andy Hooton and Charlotte Chandler

University of Derby, Derby, UK

Many educational environments within higher education predominantly focus upon acquisition of content knowledge, and this then forms a marker for student development. On the face of it, this approach sounds reasonable and is likely to align to other educational experiences. However, questions must be asked as to whether this maximises student potential and indeed enables them for their career beyond education. Developing students' personal and professional attributes will have a positive impact upon interview outcomes and indeed career success, yet in many cases, there remains an imbalance within degree programmes in favour of theoretical knowledge and a lack of focus on the person behind the professional. This presentation will offer a reflection on educational practice and explore how we as authors have sought to develop a safe space within a postgraduate module to enhance engagement and facilitate personal and professional development. A safe space is one that both welcomes and challenges students, allowing them to share their authentic selves and make mistakes without fear of consequence (Gayle et al., 2013, International Journal for the Scholarship of Teaching & Learning, 7(2), 1–8). The approaches used to achieve this involve setting clear expectations, reducing impression management, confronting fears and concerns, providing a platform for positive challenge, and facilitating a community of practice through discussion-based teaching. These have yielded powerful results as evidenced within module evaluation questionnaires, attaining an average of 1.4 (over 3 years) for overall module satisfaction on a Likert scale of 1–5, where 1 = 'definitely agree' and 5 = 'definitely disagree'. The results were underpinned by qualitative comments pertaining to feelings of belonging, peer-to-peer support and interaction, personal and professional growth, and collective belief, in addition to facilitating excellent educational outcomes. Moreover, certain individuals communicated that the module had a profound impact on progressing their ability to move forward from prior challenges and embrace future opportunities. To best prepare students for their future careers, whether that be CASES supervised experience, applied practice, and/or alternative routes, we must value the importance of personal and professional development during their time in higher education and adopt teaching practices that support this.

**CONTACT** Andy Hooton a.hooton@derby.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 67
https://doi.org/10.1080/02640414.2026.2670123



# D2.S4.1(1) The ACTIVE-FAB physical activity and sedentary behaviour intervention for the rare genetic condition Fabry disease: Findings from a feasibility study

Daniel Bailey[a], Sarah Gosling[a], Cherry Kilbride[a,b] and Derralynn Hughes[b]

[a]Brunel University of London, UK; [b]Royal Free London NHS Foundation Trust, UK

Fabry disease is an inherited metabolic disorder affecting the breakdown of glycolipids in cell lysosomes. A build-up of globotriaosylceramide results in multi-organ disease, particularly the brain, heart and kidneys. Along with other debilitating symptoms, the condition has a profound impact on mental health and quality of life. The aim of this study was to explore the feasibility, acceptability and safety of delivering and evaluating a physical activity and sedentary behaviour intervention in adults with Fabry disease. A randomised controlled feasibility design was employed. After baseline measures, participants were randomised on a 2:1 ratio to the ACTIVE-FAB (increAsing physiCal acTIVity and limiting sEdentary behaviour in FABry disease) intervention or control (usual care) for 3 months. ACTIVE-FAB comprised: (1) three consultation sessions with a physiotherapist to discuss physical activity/sedentary behaviour, set and review goals, (2) a tailored website to provide education, ideas for increasing daily physical activity and examples of adaptable exercises, (3) a wearable activity tracker, and (4) online peer support. Acceptability was explored using focus groups. Measures were taken at baseline and 3 months: physical activity and sedentary behaviour (activPAL4 device), mental health (Hospital Anxiety and Depression Scale) and quality of life (EuroQol five-dimension questionnaire). Forty-five participants (54 ± 15 years) were recruited. Retention rate was 96% and completion rates for study measures ranged form 87–100%. Acceptability findings (N = 13) showed that the intervention was acceptable overall. Consultation sessions were highly acceptable with participants explaining that developing and reviewing goals was a key factor in behavioural changes. The website was seen as useful for 'getting going with the intervention' and easy to use, but most participants rarely used it after the start phase. The step count feature of the wearable tracker was viewed as instrumental in increasing physical activity and the standing prompts were useful for breaking up sitting in most participants. Peer support had low engagement. The trial was safe with <1 adverse event or unplanned healthcare appointment during the study. This study demonstrates the feasibility, acceptability and safety of delivering and evaluating the ACTIVE-FAB intervention in Fabry disease, supporting evaluation in a definitive randomised controlled trial.

**CONTACT** Daniel Bailey daniel.bailey@brunel.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 68
https://doi.org/10.1080/02640414.2026.2670124

Routledge
Taylor & Francis Group



# D2.S4.1(2) Physical activity and exercise for the management of polycystic ovary syndrome (PCOS)

David Broom Hon[a,b], Brent Robbins[a], Ruth Ashton[a], Chris Kite[b,c,d], Amie Woodward[e], Ioannis Kyrou[a,b] and Harpal Randeva[b]

[a]Coventry University, UK; [b]University Hospitals Coventry and Warwickshire, UK; [c]University of Wolverhampton, UK; [d]University of Chester, UK; [e]York St. John University, UK

The CASES Expert Statement Advisory Group approved the compilation of 'Physical activity and exercise for the management of Polycystic Ovary Syndrome (PCOS)'. PCOS is a common endocrine condition affecting 10–15% of reproductive aged women with a diagnosis made when presenting with at least two of the following: 1) hyperandrogenism, 2) ovulatory dysfunction and/or 3) polycystic ovarian morphology (PCOM). PCOS is associated with increased accumulation of adipose tissue (particularly visceral) and insulin resistance, increasing the risk of reproductive and cardiometabolic complications. Excess weight is prevalent in 60% of women living with PCOS further elevating cardiovascular disease risk. PCOS is also linked to negative mental health due to fertility problems, androgenetic alopecia, weight-based stigma and concerns about long-term health risks. A group of experts including CASES professional members and Fellows worked remotely as well as convened on Microsoft Teams to discuss and reach consensus on the following key questions relating to PCOS i) what is the role of sport and/or exercise science within this topic? ii) why is this topic important? iii) what are the issues and what evidence is available? iv) what are the implications for applied practice? v) what conclusions can be drawn? Whilst there is no single definitive treatment, exercise has a positive impact on women with PCOS, with aerobic focused programmes improving their blood lipid profile, insulin sensitivity, ovulation rates and aiding weight loss. There is also burgeoning evidence that resistance exercise can influence these outcomes and is essential for improving functional fitness, strength and body image. International evidence-based guidelines for PCOS highlight a lack of evidence supporting an optimum exercise prescription (i.e., frequency, intensity, time, or type) for the management of key PCOS-related outcomes. Continued efforts are needed by the research community to address this gap so the expert group's recommendation is that women living with PCOS should follow the general population physical activity guidelines published by the UK Chief Medical Officers in 2019. To encourage weight loss, promote weight maintenance and prevent weight regain they should be exceeded.

**CONTACT** David Broom Hon profdrbroom@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 69
https://doi.org/10.1080/02640414.2026.2670125



# D2.S4.1(3) A four-year cross-sectional exploration of outdoor sport participation, nature connectedness, and wellbeing

Paul Sellars, Diane Crone, Tjerk Moll and Tabitha Dickson

Cardiff Metropolitan University, Cardiff, UK

In Northern Ireland, participation in outdoor physical activity increased during the COVID-19 lockdown. Such activity offers numerous physical, mental, and societal benefits. However, current low levels of physical activity continue to be a concern for public health. Therefore, to support public health, this study aimed to better understand the relationship between outdoor sport participation, nature connectedness, and wellbeing. Following institutional ethical approval, data were collected via an annual online survey between 2021 and 2024. The survey questions included demographic details (e.g., age, gender, nationality, and disability), outdoor sport type, participation time, reasons for participation, access to outdoor sport, nature connection (Nature Connectedness Index; Richardson et al., 2019, Sustainability, 11, 1–16) and wellbeing (WHO-5 Well-Being Index; see Topp et al. 2015, Psychotherapy and Psychosomatics, 84, 167–176). A total of 1556 survey responses were collected. Descriptive statistics showed that participants were aged between 18 and 90 years (*M* age: 49.98 ± 13.34 years), and the majority identified as male 60.4%. The most frequently cited main outdoor sports were: cycling, hiking, and angling, with a mean time spent participating per week of 346.33 minutes, at a moderate level of intensity. Results showed that approximately 40% of participants (n = 387) had experienced an issue when accessing the natural environment for sport participation. Reasons for outdoor sport participation were multiple and included combinations of mental, physical, and social health benefits, and nature-based reasons. Regarding connectedness to nature, the mean score aligned with previous research (58.39, ±23.33), while females scored significantly higher than males. For wellbeing, significant differences were found between age categories, and disability. Subsequent regression analysis found that the nature connection score positively predicted participants score on the WHO-5; however, this only accounted for approximately 1%. Overall, outdoor physical activity and sport are a lifelong pursuit with multifaceted reasons for participation and positive outcomes supporting individuals to reach and exceed recommended physical activity levels. Thus, outdoor sport promotion, which focuses upon physical activity in natural environments, may be particularly beneficial for public health, while individual differences, access, and types of activity require consideration.

**CONTACT** Paul Sellars psellars@cardiffmet.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 70
https://doi.org/10.1080/02640414.2026.2670126



# D2.S4.2(1) Navigating the grey: Sport psychologists' experiences with sexual attraction and professional boundaries

Stephanie Tibbert and Miles Cassidy-Rice

Health Sciences University, Bournemouth, UK

Sport and exercise psychologists work in complex and high-pressure environments that differ markedly from traditional clinical or counselling settings. These applied environments can involve sustained relationships that can challenge how professional boundaries are understood and negotiated. Professional ethical codes emphasise maintaining boundaries, seeking supervision, and upholding professionalism, but to date, there is little empirical understanding of how practitioners in the UK experience these issues in practice, or learn how to manage them. The aim of this study was to explore practitioners' experiences of sexual attraction and boundary crossing in applied settings. Following institutional ethical approval, an adapted UK version of the Survey of Applied Sport Psychologists (Palmateer & Petrie. 2001, Journal of Applied Sport Psychology, 12, 541–554) was distributed via social media to trainee and experienced practitioners registered with statutory and professional bodies. The survey included optional open-ended questions to capture contextual and experiential detail. Responses from 76 trainee and experienced practitioners indicated that fewer than 10% had received formal training or continuing professional development focused on managing sexual attraction and boundary crossing in applied practice. Almost a third of participants reported experiencing sexual attraction towards an athlete or coach with whom they had worked, with a similar proportion reporting that clients had expressed or demonstrated sexual attraction through verbal comments, messages, or physical contact towards the practitioner. Among participants who experienced sexual attraction, discussions with supervisors or colleagues were rare (less than 10%), limiting opportunities for reflection and learning. Participants described feelings of shame, embarrassment, and fear of negative judgement as key barriers to disclosure. Uncertainty about how to manage sexual attraction and unwanted boundary crossings were also highlighted, alongside tensions between maintaining professional boundaries and sustaining effective working relationships within long-term or team-based roles. These findings suggest that sexual attraction can be a feature of applied sport and exercise psychology practice, but that limited discussion within supervision restrict opportunities for practitioners to develop confidence and competence in managing these feelings. Creating safe, explicit spaces for reflective dialogue within training and supervision may therefore be critical for supporting ethical boundary management.

## ORCID

Stephanie Tibbert http://orcid.org/0000-0001-8623-3304

**CONTACT** Stephanie Tibbert stephanie.tibbert@hsu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 71
https://doi.org/10.1080/02640414.2026.2670127



# D2.S4.2(2) Long-term impacts of coaching maltreatment for former elite adult female athletes: A trauma-informed qualitative study

Leanne Norman[a], Chloe Woodhead[a], Natacha Lazareff[b] and Kate Seary[b]

[a]Leeds Beckett University, Leeds, UK; [b]Kyniska Advocacy, UK

Sport participation is often promoted as inherently beneficial, associated with health, and positive developmental outcomes (Bailey et al., 2013, Journey of Physical Activity and Health, 10(3), 289–308). However, for some athletes, particularly within elite sport, participation occurs in environments where maltreatment may be normalised and perpetuated through harmful coaching practices and the prioritisation of performance outcomes over wellbeing. Elite athletes, and especially women, appear to be at heightened risk of such maltreatment, with evidence suggesting long-term negative consequences extending beyond retirement from sport (Mountjoy et al., 2016, British Journal of Sports Medicine, 50(17), 1019–1029). The purpose of this study was to explore, through a gendered lens, how historical coaching maltreatment has impacted former elite adult female athletes in the long term and how survivors believe they can be more effectively supported. With institutional ethics approval from Leeds Beckett University, eleven former elite female athletes (mean age 32.12 ± 3.31 years) from a range of sports participated in trauma-informed, semi-structured interviews (mean duration 68 min). Interviews were participant-led and explored experiences of maltreatment, perceived long-term impacts, mechanisms that enabled harm, and recommendations for change. All interviews were transcribed verbatim and analysed using reflexive thematic analysis, following established six-phase procedures. Five interrelated themes were identified relating to the long-term impacts of maltreatment: (1) effects on mental and physical health; (2) influence on relationships; (3) distancing from sport; (4) financial and time costs; and (5) the development of resilience. Participants described enduring mental health difficulties, including anxiety, depression, post-traumatic stress, and disordered eating, alongside lasting impacts on trust, identity, and engagement with sport. While some athletes reported withdrawing entirely from sport, others described reclaiming agency through advocacy and meaning-making. Collaboration with a survivor- and athlete-led safe sport organisation with direct access to policy and sport governance stakeholders strengthens the potential for these findings to inform decision-making and system-level change. These findings indicate that the impacts of coaching maltreatment are profound and enduring, further highlighting the need for sport organisations to move beyond procedural safeguarding towards survivor-centred, trauma-informed cultures of accountability and long-term support.

**CONTACT** Natacha Lazareff natachalazareff@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 72
https://doi.org/10.1080/02640414.2026.2670129



# D2.S4.3(2) A crossover study investigating the effects of blood flow restriction during aerobic exercise on neuromuscular recovery in elite male academy footballers

Ryan Davies

St. Mary's University, Twickenham, UK

Blood flow restriction (BFR) is used for enhancing recovery post-football match as increased blood flow has been shown to augment metabolic waste product removal. However, research investigating the effects of an active BFR recovery protocol is limited. This study aimed to explore the effects of BFR with aerobic exercise on the recovery of isometric mid-thigh pull (IMTP), countermovement jump (CMJ) and perceived wellness performance in elite youth footballers. Twenty-nine participants (17.3 ± 1.4 years) were randomly assigned into BFR or control conditions that lasted for four weeks each. Recovery sessions occurred 48 hours post-match. Recovery was assessed 48 hours post-match prior to the recovery session and 24 hours post-recovery using an IMTP, CMJ and wellness questionnaire. Prior to the study, ethical approval was granted by the St. Mary's GUniversity ethics committee and all participants provided written formal consent with parental consent provided for participants under 18. A repeated measures ANOVA determined within-group differences. An ANCOVA tested for between-group differences 72 hours post-match. The Bonferroni correction method was applied for post-hoc pairwise comparisons. Both conditions showed significant improvements in perceived fatigue (CON:10.2%, BFR:25.4%, $P < 0.001$), readiness to train (CON:8.6%, BFR:38.7%, $P < 0.001$) and IMTP peak force (CON:1.7%, BFR:5.7%, $P < 0.05$) from 48 hours to 72 hours post-match. Results demonstrated greater relative improvements ($P < 0.001$) in the BFR condition at 72 hours in perceived readiness to train (13.6%), CMJ time to take-off (7.4%) and IMTP peak force (6.0%). No differences at 72 hours were found for perceived fatigue, CMJ relative peak power, concentric impulse at 100 ms or jump height. These findings highlight the potential benefits of BFR application during aerobic exercise to enhance neuromuscular recovery and perceived fatigue in elite youth footballers.

**KEYWORDS:** Strength; power; wellness

**CONTACT** Ryan Davies ryandavies13@outlook.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 73
https://doi.org/10.1080/02640414.2026.2670130



# D2.S4.3(3) Dose–response effects of flywheel training volume on strength, hypertrophy, and jump performance: A randomised controlled trial

Ivan Jukic[a,b], Doğuş Bakici[b], Matthew Cross[b] and Matt Brughelli[b]

[a]Department of Health, Sport & Wellbeing, Faculty of Social and Applied Sciences, Abertay University, United Kingdom; [b]Sport Performance Research Institute New Zealand (SPRINZ), Auckland University of Technology, Auckland, New Zealand

Flywheel resistance training (FRT) is widely used to enhance athletic performance and induce morphological adaptations. However, to date, no randomised controlled trials have examined the dose–response effects of FRT on traditional strength, flywheel-specific strength, muscle hypertrophy, and jump performance. Twenty recreationally trained participants (males: n = 13; females: n = 7) completed a 4-week half-squat FRT intervention comprising 10 training sessions. Participants were randomly allocated to either a high-volume (6 sets × 10 repetitions) or low-volume (3 sets × 10 repetitions) group. Training inertia was individualised using the inertial profiling method with mean concentric velocity thresholds of 0.62–0.66 $m \cdot s^{-1}$. Pre- and post-intervention assessments included countermovement jump (CMJ) and squat jump (SJ) performance, isometric mid-thigh pull (IMTP) relative peak force ($N \cdot kg^{-1}$), vastus lateralis muscle thickness (at 50% femur length), and flywheel-specific strength assessed via an inertia profiling test using six inertial loads (0.025–0.15 $kg \cdot m^2$). Linear mixed-effects models were utilised for analysis. Relative peak force obtained from the IMTP showed no significant differences between the high- and low-volume groups ($p > 0.05$). Similarly, flywheel-specific strength assessed at low and high inertial loads (0.025, 0.05, and 0.15 $kg \cdot m^2$) revealed no significant between-group differences in either concentric or eccentric phases ($p > 0.05$). In contrast, moderate inertial loads (0.075, 0.10, and 0.125 $kg \cdot m^2$) showed statistically significant differences in both phases, favouring the high-volume group ($p < 0.01$). Moreover, statistically significant differences in vastus lateralis muscle thickness, CMJ, and SJ were observed in favour of the high-volume group ($p < 0.01$). These findings suggest that FRT volume does not significantly influence traditional maximal strength (IMTP) over a short-term intervention. However, higher training volumes appear to elicit superior adaptations in flywheel-specific strength at moderate inertial loads, alongside improvements in jump performance and muscle hypertrophy. Collectively, these results indicate a volume-dependent response to FRT, highlighting the importance of prescribing adequate volume to target specific performance outcomes.

## ORCID

Ivan Jukic http://orcid.org/0000-0002-0900-9410

**CONTACT** Ivan Jukic i.jukic@abertay.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 74
https://doi.org/10.1080/02640414.2026.2670133

Routledge
Taylor & Francis Group



# D2.S4.4(3) The Chartered Association of Sport and Exercise Sciences (CASES) endorsed undergraduate sport and exercise science curricula in the UK: Current provision and future considerations

Mykolas Kavaliauskas[a], Rhiannon Lord[b] and Gavin Thomas[c]

[a]University of the West of Scotland, Glasgow, UK; [b]Abertay University, Dundee, UK; [c]University of Worcester, Worcester, UK

This presentation is based on a published paper providing an overview of current provision of the Chartered Association of Sport and Exercise Sciences (CASES) endorsed undergraduate sport and exercise science (SES) curricula in the UK (UK) (Kavaliauskas, Lord and Thomas, 2026, Journal of Hospitality, Leisure, Sport & Tourism Education, 38, 100,596). The overview offers a starting point for discussing and considering what the future of SES might look like. Publicly available curricula data from the academic year 2024–2025 were collected from 53 UK universities. A total of 1328 modules were analysed by type (either 'core' or 'optional') and categorised into one of fifteen domains. Analysis looked at curricula structure and content, demonstrating both the strengths of the current provision, such as flexibility and multi-disciplinarity, and areas requiring further attention, including the better integration of research methods, entrepreneurial skills, and sociocultural perspectives. As higher education in the UK continues to face financial and structural pressures, it is vital that SES curricula evolve in ways that balance disciplinary depth, interdisciplinary breadth, and student choice. The challenge for CASES and its stakeholders extends beyond safeguarding existing standards; it also requires actively guiding how curricula adapt to the demands of a rapidly changing sport and exercise landscape. By opening dialogue across stakeholders, embedding work-integrated learning, strengthening underrepresented domains, and committing to transparent sharing of graduate outcomes, the SES community can ensure that graduates are employable and fully prepared to critically engage with the future of sport and exercise in society.

**CONTACT** Mykolas Kavaliauskas Mykolas.Kavaliauskas@uws.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 75
https://doi.org/10.1080/02640414.2026.2670096

Routledge
Taylor & Francis Group



# D1.P2 Perceptual–motor influences on complex locomotor control: The roles of conscious control and environmental context

Luke Hill[a], Rick Mills[a], Rich Masters[b], Nicola Middlebrook[a], Neil Reeves[c] and Liis Uiga[a]

[a]Manchester Metropolitan University, UK; [b]The University of Waikato, New Zealand; [c]Lancaster University, UK

Stair negotiation places high demands on movement control, requiring precise foot placement, balance regulation and effective perception-action coupling. One psychological factor that may influence stair-walking behaviour is conscious movement processing (CMP), the tendency to consciously monitor and control movement execution. Higher CMP has been associated with more cautious gait patterns during level ground walking, reflecting a shift away from automatic control. Its role during stair negotiation and its relationship with perceptual judgements of stair steepness, remains unclear. This study examined associations between CMP, perceived stair steepness and stair-walking behaviour in young, healthy adults. The study currently includes data from 12 participants (5 males, 7 females; mean age = 22 years), with a target sample size of 40 participants upon completion of data collection. With university ethical approval, participants completed the Movement-Specific Reinvestment Scale to quantify propensity for CMP and estimated stair steepness from both the top and bottom of a laboratory staircase using a handheld device that required them to visually match the slope on the device to the (perceived) slope of the stairs. Participants completed five stair-ascent and stair-descent trials while spatiotemporal gait parameters (e.g., stance times, foot placement) and ground reaction forces, were recorded using motion-capture and step-embedded force plates, respectively. As data collection is ongoing, analyses are exploratory. Preliminary results indicate higher CMP was related to longer stair-descent times ($r = 0.5$) and shorter initial step lengths when approaching the staircase ($r = -0.27$), consistent with a more cautious, control-oriented movement strategy. In contrast, greater perceived stair steepness was associated with larger initial step length during stair ascent ($r = 0.63$), consistent with perceptual–motor scaling of movement amplitude in response to anticipated task demands. These preliminary findings suggest dissociable influence of conscious control and perceptual appraisal on movement organisation during complex locomotor tasks. Establishing how CMP and perceptual factors influence stair-walking behaviour provides important insight into the psychological mechanisms underpinning movement organisation, with implications for performance, skill acquisition and injury risk in applied movement contexts.

**CONTACT** Luke Hill 23666161@stu.mmu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 76
https://doi.org/10.1080/02640414.2026.2670098



# D1.P4 Machine Learning classification of Kellgren–Lawrence knee osteoarthritis using only radiographic images: New prospectives and challenges for sports therapists

Mobina Manafi[a] and Francesco Vincenzo Ferraro[b]

[a]University of Derby, Derby, UK; [b]Italian University Line, Florence, Italy

Knee Osteoarthritis is one of the most common degenerative joint diseases, typically diagnosed using clinical assessments and radiographic grading tools such as the Kellgren – Lawrence (KL) scale (Schiphof et al., 2008). However, these traditional methods rely heavily on subjective interpretation, which requires substantial experience and time, and often identify the disease only after significant structural damage to the joint has occurred. In this regard, Machine Learning Models MLM can improve diagnostic accuracy and consistency by identifying subtle patterns in medical images (Joseph et al., 2022). However, there is limited evidence on whether MLMs, trained solely on knee radiographic images, can accurately classify osteoarthritis severity. Hence, this study evaluates an MLM trained on radiographic images and compares it with the standard KL grading. The research hypothesis is that the MLM will achieve a high (95%) level of accuracy in classifying the severity of knee osteoarthritis. After data integration and cleaning, a total of 13.555 knee radiographs were used to train and evaluate the MLM. The results showed that the MLM classified osteoarthritis severity by producing a score for each KL grade with minimal error (<10%). This ongoing project suggests that AI-based tools can complement traditional diagnostic methods by enhancing the objectivity and consistency of knee osteoarthritis diagnoses. This study contributes to the growing body of evidence on the use of artificial intelligence and Machine Learning Technologies in musculoskeletal imaging, highlighting the need for sports scientists and therapists to be acknowledged in their daily work with these novel technologies.

## Funding

The author(s) reported there is no funding associated with the work featured in this article.

## References

Joseph, G. B., Mcculloch, C. E., Nevitt, M. C., Link, T. M., & Sohn, J. H. (2022). Machine learning to predict incident radiographic knee osteoarthritis over 8 years using combined MR imaging features, demographics, and clinical factors: Data from the osteoarthritis initiative. *Osteoarthritis and Cartilage*, *30*, 270–279. https://doi.org/10.1016/j.joca.2021.11.007

Schiphof, D., Boers, M., & Bierma-Zeinstra, S. M. (2008). Differences in descriptions of Kellgren and Lawrence grades of knee osteoarthritis. *Annals of the Rheumatic Diseases*, *67*, 1034–1036. https://doi.org/10.1136/ard.2007.079020

**CONTACT** Mobina Manafi mobinamanafiuk@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 77
https://doi.org/10.1080/02640414.2026.2670099



# D1.P5 The effects of resistance training on brain-related biomarkers, neurocognitive function, and physical capacity in older adults

Christine Caine[a], Mark Antrobus[b], Camilla Holland[a], Madison Klymyszyn[a], Maria Dimitriadi[a], Helen Foster[a] and Jon Brazier[a]

[a]University of Hertfordshire, Hatfield, UK; [b]Open University, Milton Keynes, UK

A degree of neurodegenerative decline is a typical feature of the ageing brain; however, the extent of this decline can present significant health challenges. Currently, there are no effective preventative or curative treatments for many neurodegenerative diseases, resulting in a substantial burden on health-care systems. Evidence suggests that resistance-based exercise may be beneficial in delaying the onset of neurodegenerative disease and slowing disease progression (Akalp et al., 2025, *Archives of Gerontology and Geriatrics*, 126:105541). The aim of this study is to examine the effects of resistance training on brain-related biomarkers, neurocognitive function, and physical capacity in older adults. With institutional ethical approval, participants aged 50–80 years were recruited (currently $n = 16$, 63 ± 11 years, stature 1.68 ± 0.1 m, mass 74 ± 27 kg) and randomly assigned to either a resistance training group (RTG) or a control group (CG). The RTG are completing a 6-week resistance training intervention performed twice weekly, consisting of free-weight multi-joint exercises. The CG only perform their usual daily activities. All participants complete pre- and post-intervention assessments 6 weeks apart, including a battery of assessments comprising bioelectrical impedance analysis; blood plasma analysis using a nucleic acid–linked immune sandwich assay (NULISAseq) for central nervous system disease; cognitive function tests (Montreal Cognitive Assessment [MoCA], Stroop Test, and Go/No-Go task) and physical assessments (handgrip strength, isometric squat strength and balance). Results will be analysed using linear mixed effects modelling to examine group, time and interaction effects. Protein concentrations from the NULISAseq assay will be $\log_2$-transformed and analysed using the same approach. Preliminary findings demonstrate a trend of increased performance in the RTG for strength (isometric squat baseline = 17.6 ± 4.1 $N \cdot kg^{-1}$; post = 19.6 ± 4.85 $N \cdot kg^{-1}$; hand grip baseline = 285 ± 163 N; post = 307 ± 167 N) balance (total excursion baseline 717 ± 333; post = 693 ± 82 mm) and global cognitive function (MoCA baseline = 27.3 ± 1.5; post 28.3 ± 0.5). Findings will help evaluate if resistance training can modulate brain-related biomarkers, neurocognitive function and physical capacity, critical factors for maintaining independence in older adults.

**CONTACT** Christine Caine c.caine2@herts.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 78
https://doi.org/10.1080/02640414.2026.2670100



# D1.P6 School-based homework interventions for improving 24-hour movement behaviours in primary school children: A systematic review and meta-analysis

April Forrest[a], Duncan S Buchan[a], Nicholas Sculthorpe[a], Lawrence Hayes[b] and Samantha Robinson[a]

[a]University of the West of Scotland, Blantyre, UK; [b]Lancaster University, Lancaster, UK

School-based interventions aimed at improving physical activity (PA), sedentary behaviour (SB) and sleep (i.e., 24-hour movement behaviours) are prevalent. However, the potential use of homework as an intervention method has been largely unexamined. Our objective was to assess the effectiveness of school-based health interventions which implement homework to improve 24-hour movement behaviours in primary school-aged children, whilst examining the moderating effects of study characteristics on intervention effectiveness. We searched CINAHL, PubMed, Scopus, SPORTDiscus, The Cochrane Library and Web of Science on 4 March 2024 using the following eligibility criteria: (1) participants were aged 5–12 years old; (2) school-based interventions that implemented homework specifically designed to improve one or more 24-hour movement behaviours; (3) randomised- (RCT), or non-randomised controlled trials, or mixed methods studies where quantitative components included experimental or quasi-experimental data that could be clearly extracted; (4) device-based measured changes in individual or combined 24-hour movement behaviours, or their compositions, were reported. Data were extracted independently by two reviewers with study quality rated using the National blood, heart and lung institute (NIH) quality assessment tool. Random-effects meta-analyses were processed to compute standardised mean difference (Hedges' g), with subgroup analyses, and meta-regressions also conducted. From 2,281 studies, 19 studies involving 13,160 participants were included for data extraction. Meta-analyses revealed significant favourable association for school-based interventions which implemented homework for sleep outcomes ($g = 1.06$, $p < .0001$) and SB ($g = -0.20$, $p = 0.0034$). No significant effects of the interventions compared to controls were found for PA. Meta-regressions revealed that longer intervention durations significantly improved PA (counts per minute; $\beta = 0.14$, $p = 0.0241$), with no significant effects found for sleep or SB. Subgroup analyses showed significant effects of intervention on SB in RCT's in both theory-based and non-theory-based studies, though differences between subgroups were not statistically significant. Effects varied between pre- and post-implementations of 24-hour movement guidelines on SB, but these differences were also not statistically significant. These results highlight a significant gap in school-based interventions implementing homework targeting all 24-hour movement behaviours, emphasising the need for future interventions to focus on reducing SB and improving sleep for more beneficial outcomes.

**CONTACT** April Forrest april.forrest@uws.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 79
https://doi.org/10.1080/02640414.2026.2670101



# D1.P7 "Skating is living": Lifestyle sport in midlife – a thematic narrative analysis of skateboarders' experiences in the United Kingdom

Jingfeng Li, Simon Cook and Kiara Lewis

Birmingham City University, Birmingham, UK

Midlife is a critical turning point where maintaining health significantly influences active ageing and long-term well-being. Lifestyle sports emphasise identity, creativity and connection over competition, offering meaningful alternatives to conventional exercise. Skateboarding provides a vital lens for understanding lifestyle sports engagement during midlife transitions. Therefore, this study aims to explore the significance of skateboarding as a lifestyle sport for middle-aged individuals. With the university's ethical approval, 10 semi-structured interviews were conducted with UK-based skateboarders aged 40 or older to explore their experiences in midlife. The sample included an equal gender balance and a mix of experience levels: five participants began skateboarding in youth and returned in midlife, while five started in midlife. Convenience and snowball sampling were used to recruit participants. During interviews, participants' self-portraits served as photo-elicitation to enrich data. Interview data, including discussions of the self-portraits, were analysed using Thematic Narrative Analysis (Sparkes & Smith, 2013, *Qualitative Research Methods in Sport, Exercise and Health*. Abingdon: Routledge). Preliminary themes from the interviews include (1) skateboarding is a lifestyle choice: middle-aged skateboarders challenge age-related stereotypes, embrace lifelong learning, and push their limits; (2) positive experiences: through consistent practice, participants develop greater body awareness, improved physical abilities, emotional satisfaction and a sense of accomplishment; (3) skateboarding is a healthy subculture: one that emphasises sharing, support and encouragement, celebrates individuality, values every small achievement and highlights peer learning; (4) skateboarding is a central life focus: It plays a vital role in daily life, shaping behaviour patterns and transforming perspectives. Skateboarders also use practical strategies to sustain motivation and avoid injury. Furthermore, participants' self-portraits featured diverse images that show how they shape skateboarders' identity and highlight social connections. For example, Alan included a plug and socket in his portrait because, like a computer powered through a socket, skateboarding connects him to the community and energises him: 'I feel the energy flowing through me when I'm doing this and afterwards'. This study expands the age range in lifestyle sport research, fosters an age-inclusive skateboarding culture, and provides evidence to support public health policies that promote healthy ageing and urban quality of life.

**CONTACT** Jingfeng Li jingfeng.li@mail.bcu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 80
https://doi.org/10.1080/02640414.2026.2670102



# D1.P8 A comparative assessment of the initial and revised 12-week University of Chichester's Health, Awareness and Maintenance Programme (UCHAMP) for managing and improving cardiopulmonary conditions

Kaia Pilbeam and Kasha Dickie

University of Chichester, Chichester, UK

Pulmonary rehabilitation is an established, effective intervention for chronic respiratory conditions, particularly COPD. However, limited research has been conducted investigating session frequency to determine optimum number of sessions per week, while maintaining the effective application of intervention. This concept is in conjunction with maintaining cost, time and resource efficient structure with strong patient outcomes. The aim of this study was to help inform best practice for COPD rehabilitation programmes and to support the development and validation of the UCHAMP model. This retrospective and prospective study compared 40 individuals from the Initial (twice per week) and Revised (once per week) UCHAMP including cohorts from 2022 to 2025. Ethical approval was granted by the University of Chichester Research Team prior to data collection. Both the psychological and physiological impacts pre and post the 12-week respective interventions were assessed. This study used measurement techniques including the Incremental Shuttle Walk Test (ISWT), the Six Minute Walk Test (6MWT) and the Chronic Respiratory Questionnaire (CRQ). Repeated measures ANOVAs were used to determine statistical significance between variables with a significance boundary of $\leq 0.05$. Both the Initial and Revised groups demonstrated a clinically meaningful improvement in all reported measures, while showing no statistical differences between these outcomes. There was a statistically significant change in CRQ total from pre-to-post intervention ($p < 0.001$). UCHAMP was identified as an effective rehabilitation programme with two interventions suggesting that one session per week can yield the same results as two, providing a more economically viable option within the UCHAMP and wider rehabilitation programmes. This also supports the idea that flexible rehabilitation is a viable option for maintaining patient adherence and outcome benefits within all sectors of rehabilitation.

**CONTACT** Kaia Pilbeam kaiaps@icloud.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 81
https://doi.org/10.1080/02640414.2026.2670104

Routledge
Taylor & Francis Group



# D1.P10 Exploring psychological effects of menopause on female runners: Practical implications

Helen Morton, Stephanie Tibbert and Alyx Taylor

Health Sciences University, UK

The psychological benefits of physical activity for women's health and mental well-being are well established, with consistent evidence highlighting positive effects on mood, self-esteem, and quality of life (Hulteen et al., 2023, International journal of sports medicine, 44, 389–396; Javadivala et al., 2020, Health promotion perspectives, 10, 383–392). However, comparatively little is known about how these psychological benefits change during the menopause transition. Given that menopause represents a significant period of physiological and psychological adjustment, understanding how women experience and interpret changes in physical activity during this transition is particularly important, especially for those who strongly identify with exercise as part of their sense of self. The aim of the study was to explore how female runners experience and make sense of the psychological effects of menopause on their running routines, motivation, confidence, and identity. Adopting a qualitative design informed by an interpretive phenomenological perspective, semi-structured interviews were conducted with 12 women aged 40–56 who identified as committed runners and either perimenopausal or postmenopausal. Interviews were transcribed verbatim and analysed using reflexive thematic analysis. Findings indicated that menopause disrupted women's running primarily through interrelated physical and psychological changes. Symptoms such as fatigue, sleep disruption, and joint discomfort reduced confidence in physical capability and challenged established identities as runners. Fluctuating motivation and confidence impacted engagement with training routines and prompted participants to re-evaluation performance expectations. Despite these challenges, the participants demonstrated resilience and adaptability by redefining personal success, modifying goals, and adopting flexible training practices. Identity continuity emerged as a key protective mechanism, with running continuing to serve as a stable anchor for self-concept, emotional regulation, and well-being. Self-compassion and social support were critical resources that helped women negotiate perceived performance losses, normalise bodily changes, and sustain participation. Overall, the findings highlight how menopause represents a psychologically meaningful transition for women runners, involving not only bodily change but ongoing renegotiation of motivation, confidence, and identity. Practically, the study underscores the importance of menopause-sensitive coaching, peer support, and health communication that validate changing capacities while reinforcing identity continuity, self-compassion, and long-term engagement in physical activity.

**CONTACT** Alyx Taylor alyx.taylor@hsu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 82
https://doi.org/10.1080/02640414.2026.2670105



# D1.P11 Nature-based early childhood education: Parent and practitioner perspectives on practice, space and outdoor learning

Nicola Taylor, Andy Pringle and Clare Roscoe

University of Derby, Derby, UK

Growing concern surrounding declining outdoor play, physical activity and children's engagement with natural environments has led to increased interest in nature-based early childhood education (ECE). Within these settings, outdoor spaces are positioned as central to learning, supporting embodied exploration and authentic interaction with the natural world. Despite growth in provision, limited research has examined how parents and practitioners conceptualise the value of nature-based ECE, or how their perspectives interact across ecological contexts. This qualitative study explored the perspectives of parents and practitioners in nature-based ECE settings in the North of England. The aims were to examine their attitudes, values and their experiences of nature-based practices. Following university ethical approval, 16 participants were recruited, including seven parents of children aged 3–5 years attending nature-based ECE and nine practitioners. Semi-structured interviews were conducted and analysed using reflexive thematic analysis. The socio-ecological model provided a conceptual lens, enabling examination of influences operating across individual, interpersonal, organisational and societal levels. Analysis is ongoing; however, six preliminary themes have been identified: Protecting Childhood; Embodied Learning; Spaces of Physicality; Facilitators of Nature Play; Future Fears; and Communities of Practice. ECE outdoor environments that enabled exploration, physical challenge and managed risk were viewed as integral to childhood but increasingly absent elsewhere. Across both groups, concern was expressed regarding future schooling systems, particularly prolonged sitting and reduced physical engagement. Practitioners articulated a dual pedagogical role, supporting children's learning and wellbeing while also shaping parental understanding of play, risk and outdoor learning. Nature was often described as 'the other teacher', offering responsive, unpredictable and developmentally rich opportunities for play that extend beyond adult-led instruction. This study offers an original contribution by foregrounding shared socio-ecological values across families and practitioners within nature-based ECE. The findings highlight the need for greater policy recognition of outdoor pedagogy, improved continuity between early years provision and formal schooling and professional development that supports advocacy for movement, play and nature-based learning across the early childhood system.

**CONTACT** Nicola Taylor n.taylor3@derby.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 83
https://doi.org/10.1080/02640414.2026.2670106



# D1.P12 Can biofeedback support performance of the sit-to-stand test?

Kanruethai Threesittidath, Kyra De Coninck, Claire Melanie Boucher and Alexis R Mauger

Sport, Exercise, and Rehabilitation Sciences, University of Kent, Canterbury, UK

Sit-to-stand (STS) transfer is a fundamental biomechanical task that can be negatively affected by pain. This study investigated whether visual biofeedback can mitigate the impact of acute musculoskeletal pain on ground reaction force (GRF) during STS performance. In a within-subjects design, 21 healthy adults (mean age 29.7 ± 8.4 years) completed a STS task, with and without biofeedback of their left and right leg weight distribution during the STS test. Participants repeated this STS assessment 36–48 hours later, following the induction of acute musculoskeletal pain via a delayed onset muscle soreness (DOMS) protocol. Symmetry of weight distribution was the primary dependent variable. Ethical approval was obtained. There was a significant main effect for feedback condition ($F_{1,20} = 9.911$, $p = 0.005$), main effect of time ($F_{1,20} = 5.488$, $p = 0.005$) and interaction effect for condition × pain ($F_{1,20} = 4.537$, $p = 0.046$) on the difference in GRF between right and left legs. Bonferroni tests identified a significant difference in %GRF of left/right leg between pain and no pain conditions without visual feedback ($p = 0.013$), and between visual and no visual feedback in the pain condition ($p < 0.001$). Visual biofeedback improved weight distribution symmetry during STS and mitigated the impact of musculoskeletal pain. Error correction from real-time visual feedback provides a reliable external reference, allowing the brain to recalibrate movement based on task goals to adjust symmetry rather than pain signals. Biofeedback may be a valuable rehabilitation tool to reduce maladaptive movement and reduce compensatory asymmetries in functional tasks.

**CONTACT** Kanruethai Threesittidath kt452@kent.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 84
https://doi.org/10.1080/02640414.2026.2670107

Routledge
Taylor & Francis Group



# D1.P13 Acute heating-induced flow-mediated dilation: Exploring sustained shear stress responses in the brachial and femoral arteries of healthy adults

William Carey[a], Madeleine France-Ratcliffe[a], Ben Price[a], Tom Cullen[b] and Amy Harwood[a]

[a]Manchester Metropolitan University, Manchester, UK; [b]University of Coventry, Coventry, UK

Flow-mediated dilation (FMD) is widely used as a non-invasive marker of endothelial function and vascular health (Green et al., 2017). Conventional FMD uses reactive hyperaemia following cuff-induced ischaemia (RH-FMD), which produces a brief shear stress stimulus. However, this transient stimulus may not fully capture endothelial responses to sustained physiological haemodynamic stress (Flammer et al., 2012). Acute heating may provide alternative stimulus by inducing prolonged elevations in shear stress, potentially providing a more ecologically valid assessment of endothelial function (Tremblay & Pyke, 2017). However, the reliability of heating-induced sustained shear stress FMD (SS-FMD) remains insufficiently described.

This study evaluated the test – retest reliability of brachial and femoral SS-FMD, compared SS-FMD with RH-FMD, and characterised the temporal profile of SS-FMD following acute heating. The study received institutional ethical approval (MMU Ethos: 78,720). Eight participants completed three laboratory visits separated by ≥48 hours in a repeated-measures design. Each visit involved full-body hot-water immersion (40°C, 20 min). RH-FMD and brachial and femoral artery diameter and blood flow were assessed by ultrasound before, immediately after, and 30 min after heating. Reliability was assessed using intraclass correlation coefficients (ICC), and physiological responses were quantified using heart rate (HR) and diastolic blood pressure (DBP).

Heating elicited haemodynamic responses (ΔHR 39 ± 9 bpm; ΔDBP −18 ± 4 mmHg). SS-FMD immediately post-heating demonstrated good reliability (ICC = 0.733, 95% CI 0.371–0.932), whereas SS-FMD at 30 min showed poor reliability (ICC = 0.044, 95% CI – 0.311–0.599). Baseline RH-FMD responses were moderately reliable (ICC = 0.568, 95% CI 0.118–0.880). SS-FMD was greatest immediately post-heating (22.6 ± 8.9%) and declined by 30 min (7.1 ± 3.7%; $p < 0.001$, $d = 2.04$). SS-FMD immediately post-heating was significantly greater than baseline RH-FMD (7.9 ± 2.5%; $p < 0.001$, $d = 1.97$). Participants with RH-FMD responses tended to exhibit larger SS-FMD responses ($r = 0.658$, $p = 0.076$).

These preliminary findings suggest acute heating elicits large and reproducible endothelial responses immediately post-stimulus, supporting its potential as a novel method for assessing sustained shear stress – mediated endothelial function. Ongoing recruitment and femoral analyses will further clarify the physiological relevance of SS-FMD.

## Reference

Flammer, A. J., Anderson, T., Celermajer, D. S., Creager, M. A., Deanfield, J., Ganz, P., Hamburg, N. M., Lüscher, T. F., Shechter, M., Taddei, S., Vita, J. A., & Lerman, A. (2012). The assessment of endothelial function: From research into clinical practice. *Circulation*, *126*(6), 753–767. https://doi.org/10.1161/CIRCULATIONAHA.112.093245

Green, D. J., Hopman, M. T. E., Padilla, J., Laughlin, M. H., & Thijssen, D. H. J. (2017). Vascular adaptation to exercise in humans: Role of hemodynamic stimuli. *Physiological Reviews*, *97*(2), 495–528. https://doi.org/10.1152/physrev.00014.2016

Tremblay, J. C., & Pyke, K. E. (2017). Flow-mediated dilation stimulated by sustained increases in shear stress: A useful tool for assessing endothelial function in humans? *American Journal of Physiology-Heart and Circulatory Physiology*, H508–H520. https://doi.org/10.1152/ajpheart.00534.2017

**CONTACT** William Carey 22502706@stu.mmu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 85
https://doi.org/10.1080/02640414.2026.2670108



# D1.P14 The influence of nutritional risk factors to musculoskeletal risk factors in female contact sport athletes

Felicity Lucas[a,b,c], Vasiliki Iatridi[a,b], Rianne Costello[d], Catherine Anna-Marie Graham[e] and Anne Delextrat[a]

[a]School of Sport, Nutrition and Allied Health Professionals, Oxford Brookes University, Oxford, UK; [b]Oxford Brookes Centre for Nutrition and Health, Oxford Brookes University, Oxford, UK; [c]Centre for Movement, Occupational and Rehabilitation Sciences (MOReS), OxINMAHR, Oxford Brookes University, Oxford, UK; [d]Invictus Performance Nutrition, Swindon, UK; [e]Cereneo Foundation, Center for Interdisciplinary Research (CEFIR), Vitznau, Switzerland

Physiological differences between males and females result in differing substrate utilisation rates, thermoregulation, fatigability, soreness and recovery (Wohlgemuth et al., 2021, Journal of the International Society of Sports Nutrition, 18, article 27). Female contact sports players may exhibit different responses to nutritional interventions when examining musculoskeletal injury (MSKI) outcomes. This cross-sectional study aimed to assess nutritional-related risk factors contributing to MSKI among female contact sport participants. With institutional ethics approval, 14 participants were recruited. Ten completed the study due to retirement, long-term injury, and pregnancy (Age: 22 (21–28) years, Weight: 56.3 ± 7.8 kg, Height: 153.5 ± 4.7 cm, Bone Mineral Density (BMD): 120.1 ± 18.6 dB/MHz). All participants signed a consent form and were free to withdraw at any point. Three visits were made: baseline, and 24 hours after a training and match session. Muscle soreness scores, using a -10 Likert Scale, and venous blood samples (measuring Creatine Kinase (CK) levels), were collected. Three-day food diaries were recorded (training and match days) using the Libro application (Nutritics, Dublin, Ireland). BMD measurements were recorded via broadband ultrasonic attenuation (Sonost 3000, Osteosys, Korea). For statistical tests, continuous variables are provided (mean ± standard deviation (SD) or Median (Range)) with significance set at $p < 0.05$. Correlation coefficients and paired-sample t-tests established associations among BMD, nutritional status, training load, muscle damage, and injury incidence. Muscle soreness was significantly lower after training than post-match (1.1 ± 1.3 vs 2.9 ± 1.9, $p = 0.027$ respectively). Significant positive correlations were noted between creatine kinase post-match (CKMatch) and the number of MSKIs ($r_s = 0.658$, $p = 0.039$). Intake of total energy ($r_s = 0.584$, $p = 0.045$), carbohydrate ($r_s = 0.839$, $p < 0.001$), protein ($rs = 0.644$, $p = 0.010$), vitamin D ($r^2 = 0.770$, $p = 0.0025$), and chloride ($rs = 0.847$, $p = 0.008$) were associated with BMD. Intakes of polyunsaturated fat ($r_s = -0.748$, $p = 0.033$) and omega-6 fat ($r_s = -0.738$, $p = 0.037$) were associated with muscle soreness. Intake of chloride was associated with MSKI ($r^2 = 0.711$, $p = 0.048$). Vitamin B12 intake was negatively associated with CKMatch ($r_s = -0.738$, $p = 0.037$). These findings suggest that a range of nutrients is associated with established risk factors for MSKI, including BMD and muscle soreness, in female contact sports players.

**CONTACT** Felicity Lucas 18001133@brookes.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 86
https://doi.org/10.1080/02640414.2026.2670109

Routledge
Taylor & Francis Group



# D1.P15 Prevalence, magnitude and methods of rapid weight loss in junior powerlifters of regional, national and international competitive standard

Elena Wilson[a] and Mitchell Finlay[b]

[a]Manchester Metropolitan University, Manchester, UK; [b]University Academy 92, Manchester, UK

Powerlifting is a weight-category sport where athletes aim to lift the most weight in squat, bench-press and deadlift (Ferland & Comtois, 2019). To gain advantage, athletes compete in classes lower than their habitual body mass (BM) and utilise both chronic (>15 days · gradual dieting$^{-1}$) and acute (<15 days · rapid weight loss (RWL)$^{-1}$) strategies to make weight (Nolan et al., 2022).

Although research on RWL in combat sports is extensive (van den Hoek et al., 2024), to date few studies have focused on powerlifting, and no studies on junior powerlifters, despite their heightened vulnerability to RWL practices (Lakicevic et al., 2022).

This study investigates the RWL practices of junior powerlifters competing at regional, national and international standards under the International Powerlifting Federation (IPF). Participants ($n = 79$; male = 37; female = 42) completed an online questionnaire utilising a scoring system to grade 'aggressiveness' of RWL practices.

An additional open-ended question probed thoughts and feelings. Approval was granted by the university ethics board alongside informed consent from participants.

Prevalence of RWL was 75%, with average BM losses of 3.1 ± 2.5%, and RWL scores of 22.1 ± 7.9. Neither gender nor competitive standard was noteworthy.

However, male juniors were found to allocate significantly less time to RWL than their female counterparts. Highest reported method of BM loss was 'gradual dieting' (83.3%), and, for RWL, 'Restricting fluids ingestion' (66.7%) and 'increased exercise' (65%). Greatest influencers for the RWL in juniors were powerlifting coaches (70%), internet sources (63.3%) and fellow powerlifters (55%). Negative perceptions of RWL were commonly reported and consistent across competitive standards, with frequent references to 'low mood', 'hunger', 'fatigue' and 'disordered eating'.

The prevalence of RWL (75%), albeit below values within open lifters (88.9%), remains high for the junior category (Nolan et al., 2022). The magnitude of RWL analysed by competitive standard was on a par with values reported for open lifters, with similar RWL methods across age categories and competitive standards. These findings, alongside the strong negative perceptions of RWL within the junior category, raise concerns, particularly regarding regional lifters who lack access to high-level coaching staff.

Guidelines for RWL should reflect these factors.

## References

Ferland, P.-M., & Comtois, A. S. (2019). Classic powerlifting performance: A systematic review. *The Journal of Strength and Conditioning Research*, *33*(1), S194–S201. https://doi.org/10.1519/JSC.0000000000003099

Lakicevic, N., Matthews, J. J., Artioli, G. G., Paoli, A., Roklicer, R., Trivic, T., Bianco, A., & Drid, P. (2022). Patterns of weight cycling in youth Olympic combat sports: A systematic review. *Journal of Eating Disorders*, *10*, 75. https://doi.org/10.1186/s40337-022-00595-w

Nolan, D., Lynch, A. E., & Egan, B. (2022). Self-reported prevalence, magnitude, and methods of rapid weight loss in male and female competitive powerlifters. *The Journal of Strength and Conditioning Research*, *36*(2), 405–410. https://doi.org/10.1519/JSC.0000000000003488

van den Hoek, D. J., Mallard, A., Garrett, J. M., Beaumont, P. L., Howells, R. J., Spathis, J. G., Pearson, J., & Latella, C. (2024). Powerlifting participation and engagement across all ages: A retrospective, longitudinal, population analysis with comparison to community strength norms. *International Journal of Sports Science and Coaching*, *19*(5), 2199–2209. https://doi.org/10.1177/17479541241244481

**CONTACT** Elena Wilson elenamarianwilson@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 87
https://doi.org/10.1080/02640414.2026.2670110

Routledge
Taylor & Francis Group



# D1.P16 Non-invasive assessment of integrated cardiorespiratory network dynamics after sea-level training and an altitude training camp in elite university swimmers

Faith Yuda[a] and Shaun Phillips[b]

[a]The University of Edinburgh, Edinburgh, UK; [b]Human Environmental Resilience Research Network, University of Edinburgh, UK

Physiological adaptations to interventions in sport have traditionally been evaluated by measuring systemic response in isolation, which is not representative of true in vivo physiological function. Network physiology is a novel approach that quantifies the time-directed flow of information between physiological variables, identifying the most important senders and receivers of information within complex systems (Morandotti et al., 2025, *The Journal of Physiology*, 1–16). Previous studies using this approach within sport have explored the impact of acute stressors like hypoxia on network-level information transfer, with no data examining the impact of chronic hypoxic exposure on integrated physiological responses. Therefore, the aim of this study was to investigate the effect of a three-week altitude training camp on the integrated physiological response of elite university swimmers. With institutional ethics approval and written informed consent from each athlete, nine swimmers (age: 22.1 ± 3.1 years; height: 1.88 ± 0.10 m; weight: 75.6 ± 13.1 kg) (mean ± SD)) participated in two sea-level testing sessions separated by a three-week training block at sea-level (n = 3), or at altitude adopting a 'live high, train high' format (n = 6) (2,400 m). Data consisted of 10-minutes of resting data followed by the last 10-minutes of a 20-minute cycle at 70% maximum heart rate to ensure a steady-state physiological response. The following data was collected in breath-by-breath format: heart rate (HR), respiratory rate (RR), tidal volume ($V_T$), minute ventilation ($V_e$), capillary oxygen saturation ($S_{pO2}$), end-tidal oxygen ($P_{ETO2}$) and end-tidal carbon dioxide ($P_{ETCO2}$). Transfer entropy (TE) showing the time-directed flow of information between variables was calculated between all pairs of variables under each condition (Morandotti et al., 2025). Median TE values were collated into adjacency matrices to form network graphs. Exercise was the only stressor to significantly increase total indegree TE regardless of group or time point ($P = 0.004$). Chronic altitude exposure presented $S_{pO2}$ as central to communication within exercise network graphs, exhibiting the strongest connection with HR suggestive of a greater reliance on oxygen saturation as a signal driving cardiac regulation. This study provides insight into systemic coordination and adaptation to stressors after chronic altitude exposure.

**CONTACT** Faith Yuda faithdionneyuda@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 88
https://doi.org/10.1080/02640414.2026.2670112



# D1.P18 The effects of auditory and visual distraction on sprint performance, perceived exertion, and blood lactate responses during prolonged indoor cycling

Zoe Bridges

Hartpury, UK

Indoor cycling constitutes a substantial proportion of training load for cyclists, particularly in winter when environmental conditions restrict outdoor riding. This training is often perceived as mentally demanding and monotonous. Perceptual burden may constrain an athlete's capacity to sustain effort or repeatedly produce maximal outputs during sessions of substantial work. Increasingly, performance under such conditions is understood to reflect not only physiological strain but also attentional focus and tolerance of discomfort (Brick et al., 2014).

Music has been shown to reduce perceived exertion and enhance performance relative to control conditions (Lin et al., 2013). Improvements in power output may occur without meaningful changes in blood lactate concentration (Poon et al., 2024). Music is proposed to exert these effects through combined attentional dissociationand altered perception of effort (Karageorghis & Priest, 2012; Terry et al., 2020). Reducing the perceptual demands of indoor training may therefore enable cyclists to train harder across winter, enhancing physiological preparation for competition.

This study will examine the effects of auditory and visual distraction on sprint power output, perceived exertion, and blood lactate responses during an indoor cycling task performed at a fixed intensity. Trained cyclists aged 18–45 years ($\geq$10 h·wk$^{-1}$) will complete three randomised crossover trials: music, Netflix viewing with audio, and a no-distraction control. Following a standardised FTP assessment, participants will complete one hour of cycling at a prescribed workload relative to FTP, interspersed with repeated maximal sprints at standardised intervals. Peak sprint power will then be measured. Capillary blood lactate will be sampled at baseline, during steady-state exercise, and following selected sprints, alongside continuous heart-rate monitoring and ratings of perceived exertion. Stimuli will be selected based on high individual likeability ($\geq$7/10).

It is hypothesized that distraction condition will not meaningfully alter blood lactate responses, but auditory distraction will facilitate higher sprint power outputs and lower perceived exertion, reflecting enhanced tolerance of discomfort rather than reduced physiological demand. This aligns with evidence (Emeka & Meijen, 2023). By distinguishing physiological limitation from psychological regulation of effort, this study may inform the design of indoor training environments that maximise training quality and performance readiness.

## References

Brick, N., MacIntyre, T., & Campbell, M. (2014). Attentional focus in endurance activity: New paradigms and future directions. *International Review of Sport & Exercise Psychology*, *7*(1), 106–134. https://doi.org/10.1080/1750984X.2014.885554

Emeka, L., & Meijen, C. (2023). "Pushing through the pain cave": Lived experiences of pain tolerance in male ultra-marathon runners. *Sport & Exercise Psychology Review*.

Karageorghis, C. I., & Priest, D.-L. (2012). Music in the exercise domain: A review and synthesis (part I). *International Review of Sport & Exercise Psychology*, *5*(1), 44–66. https://doi.org/10.1080/1750984X.2011.631026

Lin, J.-H., & Lu, F. J.-H. (2013). Interactive effects of visual and auditory intervention on physical performance and perceived effort. *Journal of Sports Science & Medicine*, *12*, 388–393. http://www.jssm.org/volume12/iss3/cap/jssm-12-388.pdf

Poon, E. T.-C., Kwan, W. L., Chow, C. C., & Chan, D. K. C. (2024). Music timing differentiates fatigue perception and performance during isometric strength exercises: A crossover randomised trial. *Journal of Sports Science & Medicine*, *23*, 258–264. https://doi.org/10.52082/jssm.2024.258

Terry, P. C., Karageorghis, C. I., Curran, M. L., Martin, O. V., & Parsons-Smith, R. L. (2020). Effects of music in exercise and sport: A meta-analytic review. *Psychological Bulletin*, *146*(2), 91–117. https://doi.org/10.1037/bul0000216

**CONTACT** Zoe Bridges zoe.bridges@hartpury.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 89
https://doi.org/10.1080/02640414.2026.2670114



# D1.P20 Sources of psychological pressure experienced by swimmers: A systematic review

Lucy Hepworth, Laura Johnson, Emma Huntley and David Marchant

Edge Hill University, Ormskirk, UK

Within swimming environments, experiences of pressure and other related emotions are common due to the unique nature of high training volumes and the close involvement of significant others (Hayward, Knight and Mellalieu, 2017, Psychology of Sport and Exercise, 29, 56–68). With the growing openness surrounding mental health in swimming, it now appears timely to reflect upon what the current literature illustrates regarding pressure in swimming. The aim of the review was to collate all the currently published findings in relation to the sources of pressure experienced by swimmers (e.g., competitive, grassroots, masters) and to examine prevalence and changes over time. Predefined search terms were inputted across two databases (Science Direct; ESBCO host: SportDiscus) and two additional sources (Google Scholar; ResearchRabbit) in order to identify relevant peer-reviewed journals. The full texts of 94 journals were screened using a SPIDER (Sample, Phenomenon of Interest, Design, Evaluation, Research Type) based criteria, with journals later being equally divided and cross-referenced by three additional reviewers. Thirty-eight reports were included in the final selection, ranging between 1987 and 2024. The most significantly discussed sources of pressure stemmed from 'significant others' (n = 36), with such pressures largely deriving from the immediate swimming environment (i.e., coaches, managers, and other swimmers). Findings were also explored in relation to Bronfenbrenner's PPCT model as a means of acknowledging the intertwining factors of the systems involved in human development. In the current review, Microsystems and Exosystems appear to possess the most influence among swimmers, with Microsystems less so. However, a lack of prevalence in this case should not be mistaken for Microsystems having no influence at all. Recommendations for future research should encompass exploring the experiences of swimmers and their significant others in greater depth, particularly among grassroots swimmers who are lesser researched.

**CONTACT** Lucy Hepworth 24157481@edgehill.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 90
https://doi.org/10.1080/02640414.2026.2670115

Routledge
Taylor & Francis Group



# D1.P21 Does playfulness predict high school students' motivation to participate in sports?

Doris Holzhacker, Miles Cassidy-Rice and Alyx Taylor

Health Sciences University, Bournemouth, UK

Sustained motivation to participate in physical activity (PA) can help adolescents to stay active during the critical transition between school and university, where a decline in PA typically occurs. This study examined the relationship between playfulness and sport motivation in a sample of international high-school students. Playfulness is defined as an individual difference variable that allows individuals to approach activities with curiosity, engagement, spontaneity, openness, and enjoyment (Mareš and Ryall, 2021, Journal of the Philosophy of Sport, 48, 293–306; Proyer, 2017, Personality and Individual Differences, 108, 113–122) and may therefore be linked to more autonomous forms of motivation. The cross-sectional correlational study used the Short Measure of Adult Playfulness (SMAP) to assess levels of playfulness and the revised Sport Motivation Scale (SMS-II) to assess motivation for a specified sport. Ethical approval was submitted prior to the conduction of the survey and granted by the School of Health and Rehabilitation Sciences. Participants (N = 274) were high-school students in their last two years of schooling and attended an international school in Vienna, Austria. Due to a non-normal distribution for the SMAP as well as the SMS-II subscales (all $p < .05$), Spearman's rho correlation was conducted and revealed a small, positive, and statistically significant relationship of $r_s(205) = .181$, $p = .009$, indicating that higher levels of playfulness were modestly associated with higher sport motivation. Regression analysis found that playfulness was also a small but significant predictor of sport motivation but did not significantly relate to time spent active. Despite limitations in generalisability due to the measurement instruments and use of convenience sampling, these findings suggest playfulness is related to adolescent motivation. Professionals working with adolescents, such as physical educators, should consider interventions like playful sport design or playfulness spotting to enhance autonomous motivation for PA. In conclusion and recognising the multifactorial nature of motivation, the study provides evidence that playfulness is related to how adolescents experience motivation.

**CONTACT** Doris Holzhacker dholzhacker@hotmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 91
https://doi.org/10.1080/02640414.2026.2670116

Routledge
Taylor & Francis Group



# D1.P22 The emotional implications of a hypertrophic cardiomyopathy diagnosis in a retired athlete: An autoethnographic approach

Ian Guyah Low, David Lavallee and Rhiannon Lord

Abertay University, Dundee, UK

The purpose of the research was to advance knowledge and understanding of the emotional implications retired athletes experienced when diagnosed with hypertrophic cardiomyopathy. An autoethnographic method was implemented to explore the consequences of living with this potentially life-threatening heart condition from a first-person narrative, connecting the personal with the cultural, using the account-making model of coping and loss as a framework to understand how people manage extremely stressful experiences. Ethical reflection with supervisors guided what, how, and who was represented through personal narratives, with anonymisation of others observed as closely as possible. The results illuminate the lived experience of someone diagnosed with hypertrophic cardiomyopathy and subsequent forced transition out of high-performance sport. The study extends our knowledge and insights by applying the account-making model as a framework for telling the autoethnographic account, raising awareness of non-normative transitions and the mechanisms required to adjust to and cope with them. Practitioners are provided with unique and important differences that exist with non-normative transitions, enabling tailored interventions to be considered to help retiring athletes better cope with the transition process when diagnosed with hypertrophic cardiomyopathy. We showcase the valuable contributions this methodology offers to scholars and practitioners by enabling the development of a substantial, well-informed scientific and applied knowledge base, thereby increasing the likelihood of optimal support preventing a prolonged transition.

**CONTACT** Ian Guyah Low i.low2000@abertay.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 92
https://doi.org/10.1080/02640414.2026.2670168



# D1.P26 Coach-athlete relationship quality and psychological distress: Implications for wellbeing in university netball athletes

Wumay Watson

Brunel University of London, Uxbridge, UK

Coach–athlete relationships are a central interpersonal process within sport, representing a key social context in which athletes' psychological experiences and wellbeing are shaped (Jowett, 2017, *Current Opinion in Psychology*, 16, 154–158). Conceptualised as a reciprocal interaction, the coach – athlete relationship reflects the extent to which coaches' and athletes' thoughts, feelings, and behaviours are mutually interconnected (Jowett & Shanmugam, 2016, In R. J. Schinke, K. R. McGannon, & B. Smith (Eds.), *Routledge International Handbook of Sport Psychology*, pp. 471–484). Within relational frameworks, high-quality relationships, characterised by closeness, commitment, and complementarity, are proposed to create supportive social environments that may buffer psychological distress and promote psychological wellbeing (Jowett & Nezlek, 2012, *Journal of Social and Personal Relationships*, 29, 287–301). The purpose of the present study is to examine the association between the quality of the coach–athlete relationship and general psychological wellbeing, with a specific focus on psychological distress as a wellbeing and performance outcome in competitive sport contexts. It is hypothesised that closeness will negatively predict psychological distress ($H_1$), given its emphasis on emotional connection, trust, and mutual respect. With institutional ethical approval granted (Ref: 51,436-MA-Jan/2026-54909-1), approximately 40 university netball players will be recruited to participate in a cross-sectional questionnaire-based study. Participants will complete the Coach – Athlete Relationship Questionnaire (CART-Q; Jowett & Ntoumanis, 2003, *Journal of Sports Sciences*, 21, 245–257) at the beginning of one training session, followed by the 12-item General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988, *A User's Guide to the General Health Questionnaire*) at the beginning of a subsequent training session later that week. A time gap between administrations will be implemented to reduce the risk of common method bias and minimise the influence of intervening variables. Data will be analysed using regression-based approaches to examine the associations between coach–athlete relationship quality and psychological distress. Data collection is in progress and will be presented at the conference.

**CONTACT** Wumay Watson 2551457@brunel.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 93
https://doi.org/10.1080/02640414.2026.2670170

Routledge
Taylor & Francis Group



# D1.P28 Does single-leg isometric squat strength relate to 505 change of direction performance in pathway netball athletes?

Ben Andrews[a,b], Callum Blades[b] and Louis Barnetto[a]

[a]University of Wolverhampton, Walsall, UK; [b]Birmingham Panthers, Walsall, UK

Change of direction (COD) is a critical determinant of match performance in netball, yet the physical qualities underpinning COD ability in pathway athletes remain unclear. While the 505 test is widely used to assess COD ability, limited research has examined whether single-leg isometric strength predicts 505 performance, particularly in netball populations. Given the substantial unilateral braking and propulsive force demands during directional changes, isometric strength capacity may represent an important physical correlate of COD ability. This study investigates the relationship between single-leg isometric squat strength and 505 test performance across three age groups in a national netball pathway programme. Female athletes competing in national pathway squads (n = 32), (Age = 16.69 ± 1.28) underwent physical performance testing. Single-leg isometric squat peak force was assessed unilaterally for each limb using dual-force plates and normalized to body mass (N/kg). The 505 COD test was performed on both left and right legs with approach velocity controlled using timing gates positioned at standardized distances: athletes started 10 m from the turning line, passed through a timing gate at 5 m, and performed a 180° turn at 0 m. This modified set-up was selected to better reflect the short-approach COD demands of netball, where a 10 m run-up is unlikely. Best trial times were recorded for each limb. There was a moderate, significant negative correlation between unilateral relative isometric strength and right-limb 505 time ($r = -0.44$, $p = 0.011$), while the left-limb relationship was small and non-significant ($r = -0.25$, $p = 0.163$; $N = 32$). For the right limb, unilateral strength explained approximately 19% of the variance in 505 time, suggesting that higher single-leg isometric strength may be associated with faster COD performance in pathway netball athletes.

**CONTACT** Ben Andrews B.andrews3@wlv.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 94
https://doi.org/10.1080/02640414.2026.2670171



# D1.P29 return-to-sport test outcomes and subsequent ACL re-injury risk in female athletes: A systematic review

Mallorie Barteau and Jacqueline Mills

Soka University of America, Aliso Viejo, CA, USA

Introduction: Female athletes experience higher rates of anterior cruciate ligament (ACL) injury than male athletes, yet evidence guiding return-to-sport (RTS) clearance after anterior cruciate ligament reconstruction (ACLR) largely derives from male or mixed-sex populations. Although RTS testing is widely used, few studies report female-specific outcomes or directly evaluate RTS decision making in female athletes. This gap persists despite higher reinjury risk and substantial performance and career consequences associated with unsafe or delayed RTS in women.

Methods: This systematic review followed PRISMA guidelines and was prospectively registered on PROSPERO (CRD420251253237). PubMed, MEDLINE, CINAHL, and Scopus were searched from inception to 2025. Eligible studies included female athletes or mixed-sex cohorts aged approximately 13 to 35 years who underwent primary ACLR, completed RTS testing at clearance, and had documented any subsequent ACL reinjury. Of 1,566 records screened, 21 studies met the criteria for full-text review, and 17 were available for analysis.

Results: Across studies, criteria-based RTS clearance was associated with lower early second ACL injury rates compared with non-criteria-based clearance, but it did not reliably identify female athletes who remained at risk after RTS. Athletes who failed RTS criteria consistently demonstrated higher reinjury risk, particularly within the first year after return to sport, while a substantial proportion of athletes who met RTS thresholds still sustained ipsilateral or contralateral ACL injuries. Quadriceps function emerged as the most consistently associated physical factor with reinjury risk, whereas hop test symmetry and limb symmetry indices showed poor discriminatory ability. Later RTS beyond 9 months post-ACLR, particularly when combined with RTS testing, was associated with lower early reinjury risk. No RTS test or battery was validated specifically for female athletes.

Clinical Relevance: Current RTS clearance strategies reduce, but do not eliminate, second ACL injury risk and do not adequately identify female athletes who remain vulnerable after clearance. These findings support the need for sex-specific RTS frameworks that integrate quadriceps recovery, biological healing timelines, and post-clearance sport exposure management to improve RTS decision making after ACLR.

**CONTACT** Mallorie Barteau jmills@soka.edu

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 95
https://doi.org/10.1080/02640414.2026.2670172

Routledge
Taylor & Francis Group



# D1.P31 Negotiating menstruation, disability, and athletic identity: A qualitative investigation of para-athletes and stakeholder perspectives

Emily Divine

University of the West of Scotland, Glasgow, UK

Menstrual health research within sport and exercise science has expanded in recent years; however, the experiences of athletes with physical disabilities remain largely overlooked. Existing literature has primarily focused on non-disabled athletes, resulting in a limited understanding of how menstruation intersects with disability and athletic identity. This absence of research restricts the development of inclusive, evidence-informed practice within para-sport. The aim of this research is therefore to explore how para-athletes with physical disabilities experience and negotiate their menstrual cycles in relation to daily life and sporting participation. An exploratory qualitative design is employed to capture the complexity of lived experiences from both athletes (study 1) and stakeholders (study 2). In study 1, participants engage in diary keeping to document reflections on menstruation, training, competition, and everyday life over 8 weeks, ensuring that at least one full cycle is included. Photo elicitation is incorporated to provide visual depth and support participants in communicating embodied, contextual, and often underrepresented experiences. Semi-structured interviews are then conducted, informed both by both diary entries and prompts designed to elicit reflections on notable experiences across athletes' sporting careers. Data are analysed using reflexive thematic analysis to identify patterns of meaning across the dataset. Findings from study 1 are expected to be available from July 2026. Study 2 aims to use focus groups to explore how stakeholders (coaches, governing body staff, medical staff, physios etc.) engage with para-athletes who menstruate and how they experience supporting these athletes and what educational materials would be useful for them in practice. Study 2, findings will arise from May 2026. Results from study 1 are anticipated to highlight how para-athletes navigate menstruation alongside impairment-related considerations, training demands, and performance expectations, with study 2 highlighting stakeholders' perspectives and what education is needed for them to further support the athletes they work with. Expected themes include barriers and facilitators to positive menstrual health, how menstruation interacts with athletic identity, and athletes' perceptions of support in current sporting environments. Participants' perspectives on what is currently working well, alongside areas requiring improvement, are also explored. This presentation will disseminate and present findings from the first phase of a wider research programme. By integrating athlete voice with stakeholder perspectives, this research aims to inform educational resources and policy development, contributing to more inclusive and menstruation-aware practice within para-sport.

**CONTACT** Emily Divine Emily.Divine@uws.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 96
https://doi.org/10.1080/02640414.2026.2670176



# D1.P35 Exploring the use of analgesic medicines within rugby union: A cross-sectional approach

Patrick Mcclintock, Vasileios Georgopoulos and Matthew Attwood

University of Nottingham, Nottingham, UK

Background: Analgesic medicine use is prevalent in rugby union and may be influenced by psychosocial, cultural, and behavioural factors. Despite increasing concern over non-medical use of painkillers in sport, limited research explores anticipatory use or differences between male and female players within the sport.

Aims: To investigate patterns in the frequency and type of analgesic use among male and female rugby union players in the UK and to explore the psychosocial factors influencing these behaviours, including the role of rugby culture and anticipatory use.

Methods: A cross-sectional, mixed-methods survey ($n = 177$) was distributed to active rugby union players. Quantitative data was analysed using descriptive statistics, bivariate correlations, and ordinal regression. Qualitative data was thematically analysed and interpreted using the COM-B behavioural model. Ethical approval was granted by the University of Nottingham Faculty of Medicine and Health Sciences Ethics Committee.

Results: Analgesic use was reported by 89% of respondents. Anticipatory use, that is medication taken in the absence of pain, was a strong predictor of both frequency ($p < 0.001$) and type ($p = 0.003$) of analgesic used. While female players were more likely to report stronger analgesic use ($p = 0.016$), sex and age were not significant predictors in the regression model for frequency. Eighty percent of female respondents reported increased use around their menstrual cycle. Psychosocial drivers, including cultural pressure, expectations of toughness, and external influences, were significantly correlated with more frequent and anticipatory use. These behavioural trends were supported by qualitative themes, including 'Cultural Expectations of Toughness', 'Pressure to Perform', and 'Normalisation of Analgesic Use', which mapped to COM-B domains of social opportunity and reflective motivation.

Discussion: This study highlights the normalisation of analgesic use in rugby union, particularly anticipatory use driven by cultural and psychosocial pressures. These behaviours may compromise player welfare and call for greater education, awareness, and regulation at community levels.

**CONTACT** Patrick Mcclintock Patrick.j.mcclintock@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 97
https://doi.org/10.1080/02640414.2026.2670177

Routledge
Taylor & Francis Group



# D1.P36 Practical considerations for applied physiological performance assessment using a Concept2 SkiErg device

Steven Morton[a], Laura Forrest[a], Chris Easton[b], Mykolas Kavaliauskas[a], Kurt Rumley[c], Andrew Sommerville[c], Susan Pinner[d], James Place[e], Greg Aspin[e], Carl Soulsby[e] and Tom Macpherson[e]

[a]Sport and Physical Activity Research Institute, School of Health and Life Sciences, University of the West of Scotland, Glasgow, UK; [b]Institute of Life and Earth Sciences, Heriot-Watt University, Edinburgh, UK; [c]sportscotland institute of sport, Stirling, UK; [d]Manchester Metropolitan University Institute of Sport, Manchester, UK; [e]Northumbria University, Newcastle, UK

Endurance snowsports involving Nordic skiing present practical challenges for applied physiological performance assessment (Holmberg, 2015, Scandinavian Journal of Medicine and Science in Sports, S4, 100–109). In the UK, additional constraints include, a suboptimal geoclimate, a small, dispersed athlete population, restricted funding and limited laboratory-based testing access. Consequently, skiing ergometer (SkiErg) protocols are becoming a common solution for athlete profiling, monitoring and talent identification. In addition to snowsport assessments, these devices form part of Hyrox and CrossFit events, expanding their potential user-base. Despite growing adoption, limited guidance exists regarding common measurement errors in applied SkiErg testing. This case study presents three examples of data errors experienced during performance assessments, providing corrective actions for practitioners considering SkiErg testing. Ethical approval for the studies from which these data are presented was granted by the University of the West of Scotland School of Health and Life Sciences Academic Integrity and Ethics Committee. Three Snowsport Scotland junior talent squad athletes (one female, two males; age 20 ± 3 years; mass 71.7 ± 8.0 kg; height 173 ± 8 cm) completed a 3-minute all-out test on a SkiErg, assessing maximal oxygen uptake (Burnley et al., 2006, Medicine and Science in Sports and Exercise, 38, 1995–2003) critical power (Vanhatalo et al., 2007, Medicine and Science in Sport and Exercise, 39, 548–555) and work prime. Participants pulled maximally throughout trials, with a valid trial characterised by exponential decline from peak-power output to a sustained plateau (final ~30s). Data were collected in applied laboratory settings. For each example, data quality issues were identified. Ergometer generated airflow, combined with large upper-body movements, introduced noise into respiratory data. Aggressive high-cadence starts produced flywheel errors, resulting in data loss (Kane et al., 2008, Journal of Sports Medicine, 29, 390–394). Finally, techniques, including jumping and altered balance, influenced power output traces and protocol validity. Such errors can be resolved through equipment considerations (i.e., mixing chambers and 'drag factor'), mathematical modelling and careful explanation of testing procedures. Whilst SkiErg protocols may be valid and practically accessible for applied practitioners, these observations highlight errors that can arise if protocols are not carefully considered and standardised.

**CONTACT** Steven Morton steven.morton@uws.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 98
https://doi.org/10.1080/02640414.2026.2670178



# D1.P37 Shaping smarter players: Academy coaches' views on game intelligence in English premiership rugby

Dan Orwin, David Grecic, Andrew Morley and Pamela Richards

University of Lancashire, Preston, UK

Game intelligence (GI) is a frequently used but ambiguously defined concept in rugby union (Harrison et al., 2023; Telfar, 2024). While physical attributes remain important, perceptual-cognitive skills are increasingly recognised as being equally, if not more important in player development (de Araújo et al., 2019; Klein et al., 1986, 2010; Raab and Araújo, 2019; Toner et al., 2015; Williams & Jackson, 2019). For age grade elite players seeking professional contracts, GI may therefore be a critical factor in their progression. Despite its prominence, GI remains a vague and inconsistently understood concept. Lennartsson et al. (2015) describeed GI in team sports as 'very incomprehensible', noting that although great players are praised for game reading abilities and skill execution, the specific characteristics that define strong GI are less clearly articulated.

Building on previous work by Orwin et al. (2025), which proposed a GI framework consisting of situational awareness, decision-making, knowledge and understanding and the ability to influence the game, the present study explored English Premiership academy coaches' interpretations of GI and how they believe it can be developed in age grade elite players. Nine academy coaches from nine Premiership clubs participated in online, individual interviews. Working within an interpretivist paradigm, reflexive thematic analysis (Braun & Clarke, 2019) was used to code and interpret the data.

Deductive analysis supported the conceptual framework proposed by Orwin et al. (2025), while subsequent inductive analysis generated two storybook themes. The first theme, 'They've got to drive their own car', emphasised the importance of 'self', highlighting player ownership, self awareness, and intrinsic motivation as central to GI. Coaches suggested that intrinsically driven players take greater responsibility for their development by asking questions, seeking feedback, and engaging in reflective practices and goal setting. This contributed to an evolved definition and conceptual model of GI.

The second theme, 'We need support to help them learn to drive', highlighted the crucial role of academy coaching, the developmental environment, and the pedagogical methods used to foster GI. The study concludes by outlining the implications for coach education and practice, offering guidance for supporting the development of GI in age-grade elite rugby players.

## References

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, *11* (4), 589–597.

de Araújo, S. A., de Barros, D. F., Jr., da Silva, E. M., & Cardoso, M. V. (2019). Applying computational intelligence techniques to improve the decision making of business game players: SA araújo et al. *Soft Computing*, *23*(18), 8753–8763.

Harrison, M., Kay, B., & Roberts, J. (2023). *Rugby world cup 2023 live: France v New Zealand* [TV Broadcast]. ITV. Retrieved August 29, 2023, from https://www.itv.com/watch/rugby-world-cup/2a4138/2a4138a0001

Klein, G., Calderwood, R., & Clinton-Cirocco, A. (1986). Rapid decision making on the fire ground. In *Proceedings of the Human Factors Society Annual Meeting* (Vol. 30, pp. 576–580).

Klein, G., Calderwood, R., & Clinton-Cirocco, A. (2010). Rapid decision making on the fire ground: Original study post-script. *Journal of Cognitive Engineering and Decision Making*, *4*(3), 186–209.

Lennartsson, J., Lidström, N., & Lindberg, C. (2015). Game intelligence in team sports. *PloS One*, *10*(5), e0125453.

Orwin, D., Grecic, D., Morley, A. M., & Richards, P. (2025). Game intelligence in Rugby Union: What do coaches think it is? An exploratory qualitative survey design. *Journal of Qualitative Research in Sport Studies*, *18*(1), 51–74.

Raab, M., & Araújo, D. (2019). Embodied cognition with and without mental representations: The case of embodied choices in sports. *Frontiers in Psychology*, *10*, 1825.

Telfar, A. (2024). *Smith's game IQ increasing all the time – Strawbridge*. BBC Sport. Retrieved January 26, 2026, from https://www.bbc.co.uk/sport/rugby-union/articles/cwy128ne54lo

Toner, J., Montero, B. G., & Moran, A. (2015). Considering the role of cognitive control in expert performance. *Phenomenology and the Cognitive Sciences*, *14*, 1127–1144.

Williams, A., & Jackson, R. (2019). *Anticipation and decision making in sport*. Routledge.

**CONTACT** Dan Orwin dorwin@lancashire.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 99
https://doi.org/10.1080/02640414.2026.2670179



# D1.P38 Understanding performance determinants in race walkers through an integrated biomechanics and physiology approach

Erika Pontarollo

Leeds Beckett University, Leeds, UK

Race walking is an Olympic event, requiring great endurance and technical abilities. Athletes are forced to develop characteristic and personal locomotor patterns, known as 'race walking style' (Pavei et al. [2014] European Journal of Sport Sciences, 14 (7),661-670), to adhere to the international rule that defines the event. Although the physiological demands of race walking and the associated gait and force patterns have been examined independently, there is still a very limited understanding of how the two areas interact and the extent to which changes in biomechanics influence physiological responses and vice versa. The aim of this study is therefore to understand the correlations between physiological markers of performance and the key gait patterns and force variables across progressively increasing speeds in highly competitive race walkers. With institutional ethical approval, 10 participants of both genders (mean age: 27.9 ± 6.5 years, stature: 171.7 ± 3.4 cm, body mass: 65.2 ± 6.9 kg), all competing at national and international level, performed 8–10 stages of 4 min race walking bouts on a motorised treadmill with integrated force plates. Speed was increased by 0.5 km.h-1 per stage, with a 1-min rest in between stages to allow for capillary blood lactate sampling. Physiological measurements were collected continuously using a metabolic analyser and force plate data, and 2-D video recordings were collected throughout the test. Three different qualified judges analysed the video footage to check for compliance with race walking regulations. Data suggests significant correlations ($P < 0.001$) between VO2 and several biomechanics characteristics, including flight time, contact time, cadence, impact peak force and push-off rate. Race walking economy was also correlated ($P = 0.02$) to cadence, flight times and step length at race pace, while no correlations were found at lower and higher speeds. Correlations appeared to be stronger in elite athletes compared to national-level walkers, suggesting that athletes that display closer links between physiology and biomechanics variables also achieve better performance outcomes. These findings extend the limited current knowledge by suggesting correlations between gait, force characteristics, physiological responses and performance. These insights help support practitioners develop a more integrated approach to performance optimisation in race walking.

**CONTACT** Erika Pontarollo e.pontarollo@leedsbeckett.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 100
https://doi.org/10.1080/02640414.2026.2670180



# D1.P39 Athlete perceptions of readiness and fatigue monitoring in professional football: A qualitative exploration

George Preston

NCG College, Kidderminster, UK

Professional footballers require a number of physiological components in order to be successful (Anderson et al., 2022). However, performance is often impacted by reduced physical capabilities due to neuromuscular fatigue (Brownstein et al., 2017). Fatigue has also been linked to increased injury risk (Zouhal et al., 2021). In response, sport scientists have sought to utilise monitoring strategies to understand the physical readiness of footballers. Despite the evidence for the use of monitoring in football, there remain barriers to the successful implementation of monitoring strategies. Whilst literature exists on the barriers faced when implementing a monitoring strategy, as well as to practitioner views on effective monitoring strategies, limited research exists which seeks to understand footballers perceptions around athlete monitoring. Therefore, the aim of this research is to ascertain footballer viewpoints of monitoring strategies. By exploring these views, the research will provide a valuable insight into the views of professional footballers regarding athlete monitoring, which can then provide sport scientists with a clearer understanding of how best to apply monitoring strategies based on athlete perceptions. The study employed a qualitative design, utilising semi-structured interviews. Male professional footballers (n = 6) currently competing for a Professional Football Club in English Non-League football took part in the study. Data analysis was conducted using Thematic Analysis (Braun & Clarke, 2006) to code and elucidate key recurring themes within responses. Ethical Approval was granted through a Newcastle College Group (NCG) Ethical Approval Panel. Thematic Analysis resulted in the following trends:

(1) Injury Prevention Messaging: valued by athletes as their key reason for adhering to monitoring strategies.
(2) Using Competition: In terms of how best to create 'buy-in' from athletes, using competition was cited as key methods which athletes would value.
(3) Psychosomatic concerns: players were concerned that some wearable technology or wellbeing data (especially sleep or recovery) might make them second guess their perception of their own physical state.
(4) Context: data should be used with an appreciation of the wider context of performance being communicated effectively.

These findings could be used by applied sport scientists to create athlete 'buy-in' and adherence to monitoring strategies in professional football.

**CONTACT** George Preston gpreston330@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 101
https://doi.org/10.1080/02640414.2026.2670184



# D2.P1 Field-based reliability of wearable IMU running gait metrics during repeated 5-km parkruns in recreational runners

Gary Hall, Gill Barry and Phil Hayes

Northumbria University, Newcastle Upon Tyne, UK

Objective: To determine the test–retest reliability and minimal detectable change (MDC95) of wearable inertial measurement unit (IMU)–derived running gait metrics collected during real-world 5-km parkruns.

Design: Repeated-measures field-based reliability study.

Methods: Nineteen recreational runners (13 males, 6 females; 47.7 ± 17.2 years) completed two 5-km parkruns separated by 7–21 days. All participants completed both trials on the same parkrun course, except one runner whose alternative course had comparable terrain and surface characteristics. Lower-limb-mounted IMUs (DorsaVi ViMove2) captured ground reaction force (GRF), ground contact time (GCT), and initial peak acceleration (IPA). Relative reliability was assessed using two-way mixed-effects intraclass correlation coefficients (single- and average-measure), and absolute reliability was quantified using SEM and MDC95. Paired t-tests examined differences in run performance between sessions. Institutional ethical approval was granted prior to data collection, and all participants provided written informed consent.

Results: Mean 5-km finish times did not differ significantly between trials (Run 1 vs Run 2: MD – 0.59 ± 1.75 min; $t(18) = -1.18$, $p = .25$), with strong test–retest correlation ($r = 0.86$, $p < .001$), indicating consistent pacing across sessions. GRF and GCT demonstrated excellent relative reliability (ICC = 0.91-–0.98) with low MDC values and fewer than 5% of participants exceeding MDC thresholds. In contrast, IPA showed poor-to-moderate reliability (ICC = 0.28–-0.42), with more than 60% of participants exceeding the MDC95 thresholds for IPA, indicating substantial measurement variability.

Conclusion: Wearable IMUs provide highly reliable field-based measures of GRF and GCT during overground 5-km running, within ranges reported in laboratory-based research. However, acceleration-derived IPA demonstrated low reliability and large MDC thresholds, limiting its sensitivity for detecting meaningful change in applied settings. Reliability of wearable technology in ecological environments is therefore variable-dependent: temporal and kinetic metrics (GRF, GCT) can be interpreted with confidence, whereas IPA should be used cautiously and not in isolation.

**Keywords**: Running biomechanics; Wearable technology; Reliability; IMU; Ecological validity

**CONTACT** Gary Hall gary3.hall@northumbria.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 102
https://doi.org/10.1080/02640414.2026.2670185



# D2.P2 Relationships between rapid force and peak force across different isometric plantar flexor assessments

Vincent Maynard, Nicole Newburn, James Williams and Nicholas Ripley

University of Salford, Salford, UK

Three isometric plantar flexor (PF) assessments are used within applied practise (Ripley et al., 2025). As the PFs are required to produce high forces under short time constraints (Dorn et al., 2012), it is important to consider rapid force production capabilities. The aim of the present study was to compare the relationships between rapid force and peak force across three isometric PF assessments. Eighteen participants (age: 22 ± 3.32 years; height: 1.76 ± 0.07 m; mass: 72.92 ± 10.05 kg) participated within the present study. In a randomised order, participants performed three unilateral isometric PF assessments. Three trials were performed at each position for each limb, with 60 s rest between repetitions and limbs and five min rest between positions. All positions were performed with 20° of plantar flexion; with 10° of knee flexion and full hip extension for the standing and >90° of knee flexion and 90° hip flexion for the kneeling and seated positions (Ripley et al., 2025). Assessments were performed using an isometric rig and force plates, sampling at 1000 Hz. Gross and net peak forces and forces at 50, 100, and 200 ms were calculated. System weight was obtained from the initial 1 s weighing period. Relationships between peak force and rapid force were determined using Rapid gross force possessed moderate-nearly perfect relationships (r = 0.454–-0.936) with gross peak force for all test positions, with stronger relationships observed within the kneeling and standing variants. Net force at 50 and 100 ms possessed moderate to very large relationships (r = 0.443–0.734) to net peak force, however, only trivial small relationships (r = 0.019–0.240) at 200 ms. Consistent with previous observations (Andersen et al., 2010; Ripley et al., 2023), rapid force production was positively associated with peak force. Notably, stronger associations were identified with gross force in comparison to net force. Indicating the relationship between rapid and peak force is sensitive to configuration and methodological approaches. Isometric PF assessments performed using different positions or different expressions of peak force should not be considered interchangeable. Practitioners should be aware of this when selecting and interpreting isometric PF assessments.

**CONTACT** Vincent Maynard v.c.maynard1@salford.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 103
https://doi.org/10.1080/02640414.2026.2670186

Routledge
Taylor & Francis Group



# D2.P3 Squat stance, Grip Width and heel height effects on patellofemoral joint loading during the overhead squat

Jake Evans[a], James Bodden[b], Tom Ryan[c], Michael Lawson[d] and Robert A. Needham[a]

[a]University of Staffordshire, UK; [b]Ramsay Health Care, UK; [c]Vancouver Whitecaps Football Club, Canada; [d]Middlesborough Football Club, UK

Squat technique and heel elevation influence knee joint loading and patellofemoral mechanics, with important implications for rehabilitation, movement screening and exercise prescription. However, no study has directly quantified these variables when comparing the Functional Movement Screen (FMS) overhead squat with an individual's preferred stance and grip (PS) across different heel height conditions. Therefore, this study aimed to examine the FMS overhead squat by comparing knee joint loading and patellofemoral mechanics with a preferred squat stance. Ethical approval was granted by the University Ethics committee. Ten recreationally active participants (age: 22.9 ± 2.7 years; height: 179.7 ± 6.8 cm; mass: 79.5 ± 10.8 kg) performed overhead squats using both the FMS and PS techniques under five heel height conditions: flat-footed (0 cm), 1 cm, 2 cm, 3 cm heel wedges, and the FMS box (4.3 cm). Three-dimensional motion capture and force plate data were used to calculate mean peak patellofemoral joint stress (PFJS) and patellofemoral joint force (PFJF). Across all conditions, squat depth was controlled at 90° knee flexion using real-time motion capture feedback. Two-way repeated measures ANOVAs examined the effects of heel height and movement technique on PFJS and PFJF. PFJS showed no main effect of technique ($F(1,9) = 0.82$, $p = .390$), but a significant effect of heel height ($F(1.72,15.46) = 29.53$, $p < .001$), with PFJS increasing progressively with heel elevation; the interaction was not significant ($p = .256$). PFJF demonstrated a similar pattern, with no effect of technique ($F(1,9) = 1.16$, $p = .309$) but a significant effect of heel height ($F(1.76,15.79) = 28.21$, $p < .001$) and no interaction ($p = .249$). Post hoc analyses indicated significantly greater PFJS and PFJF in all elevated heel conditions compared with flat-footed, with the highest values observed in the box condition. A between-technique difference occurred only in the flat-footed condition, where PS produced greater PFJF than FMS ($p = .022$). The relatively small sample size may limit generalisability. Overall, heel elevation substantially increased patellofemoral joint loading, suggesting heel height may be a useful variable for progressing or regressing PFJS and PFJF during rehabilitation for patellofemoral pain syndrome.

**CONTACT** Robert A. Needham r.needham@staffs.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 104
https://doi.org/10.1080/02640414.2026.2670187



# D2.P4 Small steps, big gains: Active play's influence on fitness and daily movement patterns

Ruhina Binta A Ghani

Hong Kong Baptist University, Hong Kong

The current obesogenic environment, characterised by inadequate physical activity and increased sedentary behaviour, is linked to major health risks, including obesity and Type 2 diabetes. Active play, defined as a form of energetic, gross motor movement in which children engage in enjoyable, self-directed, and unstructured activities, serves as a valuable means of enhancing physical activity, improving sleep, and reducing sedentary behaviour, especially given the significant declines in children's physical activity due to recent conflicts, extreme weather, and socio-economic crises. This systematic review aims to identify the relationship between active play, adherence to 24-h movement guidelines, and physical fitness among children aged 6–12 years. Following PRISMA standards, a systematic search of six databases (PubMed, EBSCOhost, MEDLINE (Ovid), ProQuest, ERIC, and Web of Science) identified 631 articles. After applying predefined eligibility criteria, 31 studies were included, comprising randomised controlled trials, quasi-experimental studies, and cross-sectional designs evaluating Active Play interventions in school and home settings. The review was prospectively registered on PROSPERO (CRD42024565487) in July 2024. Guided Active Play was found to enhance adherence to movement guidelines and improve physical fitness, particularly cardiovascular and musculoskeletal outcomes, with effects varying by age and gender. Boys were more engaged in active play than girls, excelling in skills like kicking and higher physical activity levels, though they also spent more time on screens.

In contrast, girls performed better in balancing skills, showing different physical strengths. The FITTVP framework – Frequency, Intensity, Time, Type, Volume, and Progression – emerges as a useful guide for designing future interventions. Evidence supports promoting daily Active Play opportunities, integrating physical activity breaks during school hours, and ensuring at least 60 min of moderate-to-vigorous physical activity per day. A variety of Active play, including free outdoor activities and structured sports, should be promoted through programmes. It is essential to track physical activity levels, and interventions should evolve to sustain participation. This review highlights the critical role of Active Play in supporting children's health. It endorses the FITTVP framework as a strategic approach to counter rising Sedentary Behaviour and foster healthier movement behaviours.

**CONTACT** Ruhina Binta A Ghani 23481048@life.hkbu.edu.hk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 105
https://doi.org/10.1080/02640414.2026.2670188

Routledge
Taylor & Francis Group



# D2.P5 Project U: Evaluating free gym memberships for physical and mental health

Chelsea Batty and Richard Lewis

Wrexham University, Wrexham, UK

Physical inactivity is a significant public health issue with around 20 million UK adults failing to achieve recommended physical activity levels (PA). The benefits of PA are well documented: Improved physical and mental health, reduced mortality and disease prevention. Access to PA is key with common barriers including: financial resources, socio-economic status (SES), mental health, motivation and time. Reducing financial barriers in particular may incentivize participation and improve mental well-being. Therefore, the aim of this study was to evaluate the use of no-cost gym memberships on attendance, PA and depression levels. Following ethical approval, 83 participants expressed interest. After applying the inclusion/exclusion criteria, 18 participants (11 females and 7 males) returned completed consent forms and were enrolled. The no-cost gym memberships were provided for a 3-month period. At baseline, and at the end of each month, participants attendance levels, PA levels via the International Physical Activity Questionnaire (IPAQ) long form and depression levels via the patient health questionnaire (PHQ-9) were assessed. Attendance at months 1, 2 and 3 was $3.2 \pm 3$, $1.8 \pm 2.2$, $1.6 \pm 3.4$ sessions, respectively ($P = 0.1$). Only 4 participants, however, returned completed questionnaires over the 3-month scheme. Time spent sitting at baseline and at the end of months 1, 2 and 3 was $1987.5 \pm 923.2$, $1982.5 \pm 1720.4$, $2050 \pm 1230.4$, $1267.5 \pm 315.9$ min, respectively ($P = 0.57$). Time spent performing moderate-vigorous PA (MVPA) at baseline and at the end of months 1, 2 and 3 was $60 \pm 69.3$, $300 \pm 171.5$, $345 \pm 247.9$, $218.8 \pm 170.6$ min, respectively ($P = 0.038$), with post-hoc comparisons being non-significant ($P > 0.05$). PHQ-9 levels at baseline and end of months 1, 2 and 3 were $18 \pm 5$, $8.3 \pm 4.9$, $9.3 \pm 5.9$, $7.3 \pm 3.8$, respectively ($P = 0.39$). Providing no-cost gym memberships showed a trend towards increased MVPA levels though attendance was low and questionnaire return was poor. This suggests that further support may be needed to encourage attendance which could promote higher PA levels. Alternative methods for determining PA and depression levels are also warranted given limited compliance with email-based questionnaires.

**CONTACT** Chelsea Batty chelsea.batty@wrexham.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 106
https://doi.org/10.1080/02640414.2026.2670189



# D2.P7 Predicting balance and fall risk from respiratory function using interpretable machine learning

Francesco Vincenzo Ferraro

Italian University Line, Florence, Italy

Falls represent a major public health challenge in ageing populations, yet current screening approaches rely predominantly on mobility-based tests and largely overlook physiological contributors beyond the musculoskeletal system. Growing evidence suggests a functional relationship between inspiratory muscle performance and postural control; however, this relationship has not yet been operationalised within predictive computational systems. This study presents an interpretable machine learning framework for predicting balance performance and fall risk in healthy older adults using respiratory function metrics. Secondary datasets from 500 community-dwelling older adults were harmonised and processed through a reproducible pipeline addressing missing data, scaling, and multicollinearity. Multiple supervised learning models, including regularised linear regression, support vector regression, gradient boosting, and random forest algorithms, were trained using an 80/20 train–test split with 10-fold cross-validation. Results demonstrated substantial predictive performance for estimating Mini-BESTest balance scores from respiratory and demographic variables. The best-performing interpretable models achieved $R^2$ ≈0.77 and RMSE ≈1.96 on Mini-BESTest points, substantially outperforming the baseline predictor ($R^2 \approx -0.003$; RMSE ≈4.08). Model interpretability analyses indicated that respiratory metrics, particularly maximal inspiratory pressure, ranked among the most influential predictors alongside age, confirming a measurable contribution of inspiratory muscle strength to balance performance. These findings suggest that respiratory function provides a meaningful and physiologically interpretable signal for predicting balance outcomes in older adults. The proposed system represents a novel decision-support artefact linking respiratory physiology with digital balance assessment and may support future multimodal screening tools for fall-risk identification. This study used secondary anonymised datasets derived from previously conducted research involving human participants, for which ethical approval and informed consent had been obtained.

**CONTACT** Francesco Vincenzo Ferraro f.ferraro@iuline.it

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 107
https://doi.org/10.1080/02640414.2026.2670190



# D2.P8 Block start as determinants of motor function in elderly population: Applications and implications in master swimmers

Letizia Leggiero[a], Sabrina Demarie[a] and Francesco V Ferraro[b]

[a]University of Rome Foro Italico, Rome, Italy; [b]Italian University Line, Florence, Florence, Italy

With ageing, there is a progressive decline in lower-limb muscle strength, balance, and neuromotor responses. All of which are directly associated with increased risk of falls, representing a major public health issue in older adults. Even among master swimmers, ageing affects explosive technical phases, such as the block start, which require high stimulus processing and rapid motor responses. Hence, the aim of this study was to analyse the influence of start time across different age groups to provide evidence to support the development of training strategies that will maintain quality of life and functional autonomy in swimmers aged 65 years and older. A total of 7.625 official results from the 2023 World Masters Championships were analysed, including 50-meter and 100-meter events across the four swimming strokes. Data were stratified by sex and five-year age groups, with 3.968 men and 3.297 women. Independent variables were age, sex, and stroke, while dependent variables were racing time and start time. In both the 50-meter and 100-meter events, race time and start time increased progressively with age in both sexes, with greater variability observed in older age groups (50–100 meters; M: $\rho = 0.433–0.463$, $N = 1164–2804$; W: $\rho = 0.409–0.474$, $N = 937–2360$; all $p < 0.001$). Start time was positively associated with both age and race time, with statistically significant correlations ($\rho < 0.001$) across sex, distance, and stroke. Significant differences in start time between age groups were observed in all sex-by-stroke combinations ($r = 0.576–0.553$; all $p < 0.001$; $N = 1548–2215$). Start reaction time increased with age and is significantly associated with performance, particularly in sprint races, while also showing substantial inter-individual variability ($r \approx 0.5$; $\rho \approx 0.40–0.47$; $SD \approx 0.13$ s; $p < 0.001$). These findings support the hypothesis that block start time may represent a sensitive and modifiable indicator of neuromotor function. These findings provide a foundation for integrating in-water training with holistic approaches and for revising current training guidelines by introducing health ageing and interventions for master swimmers oriented toward quality of life.

**CONTACT** Letizia Leggiero l.leggiero@studenti.uniroma4.it

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 108
https://doi.org/10.1080/02640414.2026.2670191



# D2.P9 Physical activity interventions for women from ethnic minority backgrounds: A systematic review of cultural adaptations to identified barriers and enablers

Kiara Lewis, Anwesa Chatterjee, Judith Dyson, Janelle Kolas and Sereena Raju

Birmingham City University, Birmingham, UK

Extant research has identified cultural expectations as a barrier to physical activity (PA) among women from ethnic minority groups and cultural sensitivities as a relevant factor in the effectiveness of PA interventions (Batalha et al., 2025, BMC Women's Health, 25, 330). Relatively little research has examined PA interventions for people of ethnic minority backgrounds in general, and what does exist is often limited, or there is a lack of explicit focus on women as participants, despite the frequent presence of majority female samples in the literature (El Masri et al., 2022, Ethnicity and Health, 27 (1) 40–60). Building on the call to explore cultural barriers, the present systematic review aimed to examine cultural adaptations to identified barriers and enablers for physical activity interventions for women from ethnic minority backgrounds. As this was a review of secondary data, no ethical approval was required. The review is reported according to PRISMA methodology with a narrative synthesis due to the heterogeneity of participants and methodologies. We searched six subject specific databases to identify relevant studies published from 2015 to 2025. The time frame was chosen to focus on recent cultural influences. Our search was comprehensive and included keywords and subject headings related to women, ethnic minority groups, interventions and physical activity. We included studies in the UK, US, Canada and Australia as they are high-income countries that feature in the top 30 countries for racial or religious diversity (www.worldpopulationreview.com). We excluded studies of women with health conditions other than diabetes, obesity and those that are cardiovascular due to the potential impact on their ability to undertake PA. The results found 49 studies incorporating a variety of techniques to support women, including counselling, access to mobile applications and group-based physical activity. The majority of interventions were informed by theories and ten described cultural and linguistic tailoring. The conclusions suggest goal setting, monitoring, individual feedback and tailored support to overcome barriers were effective, alongside cultural adaptations. The successful interventions were time and resource intensive, and further research is needed on the long-term effectiveness. Registered with PROSPERO 2026 CRD420251121469.

**CONTACT** Kiara Lewis kiara.lewis@bcu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 109
https://doi.org/10.1080/02640414.2026.2670192

Routledge
Taylor & Francis Group



# D2.P10 Developing a professional network for women in physical activity, exercise and sport across the island of Ireland: Míde connect

S Maria O'Kane[a], Elizabeth Deery[a], Angela Carlin[a], Denise Martin[b] and Maria Faulkner[c]

[a]Ulster University, Derry, Northern Ireland; [b]Atlantic Technological University, Galway, Ireland; [c]Atlantic Technological University, Letterkenny, Ireland

Many professional women working in physical activity, exercise and sport experience gendered inequalities, professional isolation and limited access to support. Professional networks may provide an opportunity to mitigate these challenges by facilitating connection, support and empowerment among women, particularly those within historically male-dominated disciplines. This research aimed to outline the iterative stages involved in creating a participant-led professional network, now known as míde connect, using a co-design and Participatory Action Learning and Action Research (PALAR) approach. Two cycles of collaborative planning, data collection and critical reflection were undertaken with stakeholders from higher education, national governing bodies and professional practice. Activities included the inaugural Network Leadership Team meeting, a Co-Design Workshop, an initial networking event and an online questionnaire. Data were gathered through reflective logs, evaluation surveys and critically reflexive dialogue informed by Trehan and Rigg's (2012) framework. Findings demonstrated a clear need for interdisciplinary spaces that enable women to share experiences, challenge inequitable structures and build collective agency. The majority (n = 50, 93%) of respondents identified a need for a network specifically to connect professional women in sport, exercise and physical activity and most women (n = 42, 78%) were not satisfied with the number of networking events they attended annually. In terms of the míde connect networking events, participants valued the warm, non-hierarchical environment of míde connect, while tensions relating to identity, power imbalance and workload emerged. PALAR facilitated iterative learning and responsive adaptation, helping refine the network's identity and communication structures. Findings highlighted significant unmet needs in terms of connection, mentorship and career progression, as well as the structural and cultural barriers that continue to shape women's professional experiences. Through a PALAR approach, the network was shaped by the voices and priorities of members, revealing key considerations for fostering psychological safety and inclusive engagement. While further evaluation is required, míde connect offers a promising foundation for strengthening support, visibility, connection and empowerment for women working in the sector. More broadly, this study demonstrates how co-design and PALAR can inform the development of inclusive professional networks and support collaborative change-making within a gendered, jurisdictionally complex professional landscape on the island of Ireland.

**CONTACT** S Maria O'Kane m.okane@ulster.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 110
https://doi.org/10.1080/02640414.2026.2670193

Routledge
Taylor & Francis Group



# D2.P11 Barriers to volunteering as a sighted guide runner

Clare Strongman and Shahina Pardhan

Vision and Eye Research Institute, Anglia Ruskin University, Cambridge, UK

In the UK, approximately 340,000 people are registered as having a visual impairment. On average, adults with visual impairment complete less physical activity than the general population, which was further impacted by the COVID-19 lockdowns, and this may have significant health-related outcomes for this population group. England Athletics promotes sighted guide runners as a method of increasing participation in running in people with visual impairment, and guide runners have been identified as having a profound impact on the experiences of people with visual impairment. Despite this, only 720 guide runners were registered in the UK at the end of 2018, which suggests that there may be barriers preventing people from volunteering as sighted guides. Research to date has focused on exploring the experiences of existing guide runners rather than identifying issues that prevent new guide runners from volunteering. Therefore, this research aims to explore barriers and facilitators to volunteering in running related contexts.

Following institutional ethical approval, data were collected via an online survey distributed via running networks, for example, parkrun. One hundred and twelve participants (41 M, 71 F) mean age 48.6 ± 12.8 years completed the survey. The survey contained demographic information and open-ended questions to explore motivations and barriers to volunteering in running related contexts, with specific questions relating to sighted guide running. Responses were analysed via thematic content analysis to identify key themes and ideas. Analysis of this data is in progress, but initial themes suggest that the main barriers are a lack of understanding of what may be involved, perceptions of unwanted increased responsibility, and the need to undertake specific training. This suggests that there is a lack of clear messaging from stakeholders when promoting sighted guide running, and improvements to this material could improve recruitment of volunteer guide runners.

**CONTACT** Clare Strongman clare.strongman@aru.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 111
https://doi.org/10.1080/02640414.2026.2670194



# D2.P12 Associations of sedentary behaviour bouts with community-dwelling older adults' physical function

Jason J. Wilson[a], Ilona McMullan[b], Nicole Blackburn[c], Mathias Skjødt[d], Paolo Caserotti[d], Maria Giné-Garriga[e,f], Ana Farche[e], Jochen Klenk[g], Dhayana Dallmeier[h,i], Manuela Deidda[j], Marta Roqué i Figuls[k] and Mark A. Tully[l]

[a]School of Sport and Exercise Science, Ulster University, Derry / Londonderry, UK; [b]School of Health Sciences, Ulster University, Belfast, UK; [c]School of Health Sciences, Ulster University, Derry / Londonderry, UK; [d]Department of Sports Science and Clinical Biomechanics, Center for Active and Healthy Ageing (CAHA), University of Southern Denmark, Odense, Denmark; [e]Department of Sport Sciences, Faculty of Psychology, Education and Sport Sciences, Blanquerna, Universitat Ramon Llull, Barcelona, Spain; [f]Department of Physical Therapy, Faculty of Health Sciences, Blanquerna, Universitat Ramon Llull, Spain; [g]Institute of Epidemiology and Medical Biometry, Ulm University, Ulm, Germany; [h]Agaplesion Bethesda Clinic, Geriatric Research Unit Ulm University and Geriatric Center Ulm Alb-Donau, Ulm, Germany; [i]Department of Epidemiology, Boston University School of Public Health, Boston, MA, USA; [j]Health Economics and Health Technology Assessment (HEHTA), Institute of Health and Wellbeing (IHW), University of Glasgow, Glasgow, UK; [k]Iberoamerican Cochrane Centre, Institute of Biomedical Research Sant Pau (IIB-Sant Pau), Barcelona, Spain; [l]School of Medicine, Ulster University, Derry / Londonderry, UK

Most national physical activity guidelines routinely recommend that older adults should not spend long periods in sedentary behaviour (SB). SB has been shown to be an independent risk factor of health, such as increasing the risk of developing various chronic diseases. Longer time spent in SB also appears to reduce physical function which makes everyday tasks such as getting out of a chair, negotiating uneven surfaces and walking around shops more difficult. Currently, there is ambiguity about whether changes in SB can have a clinically meaningful impact on physical function in older adults. Therefore, the aim of this study was to explore the associations between device-measured SB bouts and physical function in community-dwelling older adults. SB was measured in 1360 European older adults using an ActiGraph wGT3X + accelerometer for 7 consecutive days at the dominant hip and processed accordingly. Various SB bout lengths were assessed including 1- to 9-minutes; 10- to 29-minutes; 30- to 59-minutes; and ≥60-minutes, as well as maximum time spent in an SB bout. Total SB time was adjusted for within the SB bout variables used (percentage SB time in the SB bout length and number of SB bouts per total SB hour). Physical function was assessed using the 2-minute walk test (2MWT), 5-times sit-to-stand (chair stand) test and unipedal stance test (UST). Hierarchical linear regression models were utilised. Relevant covariates were controlled for. Ethical approvals were gained from each country's university and/or health authority. Lower percentage time spent in ≥60-minute SB bouts was significantly ($P < 0.05$) associated with longer 2MWT distance, while lower numbers of ≥60-minute SB bouts were associated with longer 2MWT distance, shorter chair stand time and longer UST time. There were mixed associations with physical function for 10- to 29-minute SB bouts. In a large cohort of European older adults, prolonged SB bouts lasting ≥ 60-minutes appear to be associated with reduced physical function after controlling for moderate-vigorous physical activity and numerous other important covariates. Besides reducing SB levels, these findings suggest that there is a need to regularly interrupt prolonged SB to improve physical function in older adults.

**CONTACT** Jason J. Wilson jj.wilson@ulster.ac.uk

Abstract originally published as part of the full article in Scandinavian Journal of Medicine & Science In Sports, 31: 153–162. DOI: 10.1111/sms.13827

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 112
https://doi.org/10.1080/02640414.2026.2670195

Routledge
Taylor & Francis Group



# D2.P13 The colour of taste: Investigating flavour perception and preference in children aged 9-11

Neil Clarke[a], Cain Clark[a] and Micheal Duncan[b]

[a]Birmingham City University, Birmingham, UK; [b]Coventry University, Coventry, UK

The relationship between visual and gustatory stimuli shapes our sensory experiences, impacting our perceptions of food and beverages and our interactions with the environment (Spence & Levitan, 2022, Journal of Perception and Imaging, 5, 145–158). Many studies have demonstrated the influence of colour on food preference, consumption behaviour, and sensory discrimination with young children seem to be more drawn to brightly coloured foods than are adults (Spence, 2015, Multisensory flavour perception. Cell, 161, 24–35.). The aim of the present study was to investigate the effect of the colour of a low-sugar beverage on flavour perception and preferences among 9- to 11-year-old children. With institutional ethics approval and informed consent, thirty-six children (20 boys and 16 girls, mean ± SD of age = 10 ± 1 years) were randomly presented with four identically flavoured but different coloured beverages; red, blue, brown, and clear and asked what flavour they thought the drink was and which drink they perceived to be the sweetest, and their favourite. The drinks were made by mixing 100 mL of tap water with 0.5 mL of food colouring. All solutions were flavoured with a 1 g of sucrose. All drinks were presented in 250 mL clear plastic cups and served at room temperature. Statistical analyses were performed using Fisher's Exact Test, the Likelihood Ratio Test, and Contingency Coefficient to identify the presence and magnitude of any association between these variables. Fisher's Exact Test highlighted a significant association between flavour and colour ($p < 0.001$), with the red beverage predominantly identified as cherry (83%), while the blue beverage was linked to raspberry (33%). Participants consistently associated colour with sensory attributes, identifying the red drink as the sweetest (92%). Regarding the association between favourite vs sweetest a strong deviation from the null hypothesis of independence was identified (G statistic: 56.8, 9(df), $p < 0.001$). The findings revealed significant associations between colour and perceived flavour, as well as between colour and subjective perceptions of sweetness. Consequently, beverage colour influences children's perceptions of taste and refreshment. Furthermore, altering the perceived sweetness by changing the colour could be utilised to help young consumers make healthier drink choices.

## ORCID

Neil Clarke http://orcid.org/0000-0002-1909-329X

**CONTACT** Neil Clarke neil.clarke@bcu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 113
https://doi.org/10.1080/02640414.2026.2670196

Routledge
Taylor & Francis Group



# D2.P14 Effect of increasing between-point rest length on thermoregulation during tennis-specific treadmill exercise in hot humid conditions

Matthew Debney[a], Alan Ruddock[a], Ciara O'Hagan[b] and Alison Purvis[a]

[a]Sheffield Hallam University, Sheffield, UK; [b]Institute of Technology, Carlow, Ireland

Wet-bulb-globe temperatures (WBGT) in environmental conditions ≥30°C increase physiological and thermoregulatory demands for tennis players, elevating risk of heat-related medical callouts (Smith et al. 2018, Journal of Science and Medicine in Sport, 21(5), 467–472). The aim of this study was to assess the physiological and perceptual response to increasing between-point rest length, comparing to a temperate environment, during simulated tennis match play in hot humid conditions. Following institutional ethics approval, nine healthy, male amateur tennis players (mean ± standard deviation: age 23 ± 6 years, stature 179 ± 79 cm, body mass 77.0 ± 12.1 kg; $\dot{V}O_2$ max 49 ± 4 ml·kg$^{-1}$·min$^{-1}$) completed the tennis-specific treadmill protocol (TSTP) (Debney et al. 2018, Journal of Sport Sciences, 36:sup1, 1–94) under three conditions: temperate (20.2 ± 0.2°C, 49.7 ± 1.8%, WBGT 15.5 ± 0.3°C) with 20 s between-point rest; hot, humid (36.1 ± 0.2°C, 49.9 ± 0.7%, WBGT 29.6 ± 0.3°C) with 20 s between-point rest; and hot, humid (36.0 ± 0.1°C, 50.0 ± 1.6%, WBGT 29.6 ± 0.3°C) with 30 s between-point rest (HOT30). After every odd game, participants ingested 150 ml of water. After games 3, 5, 7 and 9 in all three sets of the TSTP, rectal temperature ($T_c$), mean skin temperature ($\bar{T}_{sk}$), heart rate and perceptual variables were assessed. A three-way ANOVA (condition × time (set) × time (game)), with Bonferroni post hoc analysis, was used to assess statistically significant differences ($p < 0.05$) between conditions. Partial eta squared was used to assess effect size. There was a significant interaction effect for $T_c$ ($F(12, 96) = 3.481$, $p = .03$, $\eta_p^2 = 0.303$) with $T_c$ being higher than TEMP from the end of set 1 in HOT20 and from the middle of set 2 in HOT30. Mean skin temperature was higher in both hot humid conditions compared to TEMP ($F(2, 16) = 424.266$, $p < .001$, $\eta_p^2 = 0.981$), whilst no interaction effect was apparent ($F(12, 96) = 1.899$, $p = .163$, $\eta_p^2 = 0.192$). Extending between-point rest length might delay the increase in $T_c$; however, there is little impact on physiological and perceptual thermal strain.

**CONTACT** Matthew Debney m.debney@shu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 114
https://doi.org/10.1080/02640414.2026.2670197



# D2.P15 Acute effects of different exercise modalities on early post-exercise cardiopulmonary recovery in chronic heart failure

Panagiotis Ferentinos[a,b,c], Vasileios Spyropoulos[b], Alexandros Briasoulis[b], Costas Tsakirides[c], Serafeim Nanas[b], Ourania Papazachou[b] and Eleftherios Karatzanos[b]

[a]Metropolitan College, Athens, Greece; [b]National and Kapodistrian University, Athens, Greece; [c]Leeds Beckett University, Leeds, UK

Chronic heart failure (CHF) patients benefit from exercise training, but cardiopulmonary responses during early post-exercise recovery across different exercise modalities remain poorly understood. Abnormal oxygen kinetics and skeletal muscle dysfunction may delay recovery and contribute to exaggerated ventilatory responses (Nanas et al. [2001], European Journal of Heart Failure,3, 685–692). Understanding these responses may improve exercise prescription and safety in cardiac rehabilitation. This study compared early cardiopulmonary recovery following high-intensity interval training (HIIT) and continuous exercise at moderate and lower intensities in stable CHF patients. Following institutional ethical approval, 10 male CHF patients (55.1 ± 16.2 years; left ventricular ejection fraction <45%) receiving optimal medical therapy provided written informed consent. Participants completed three cycling protocols on separate days, matched for external work (Joules): (a) HIIT (4 × 4 min at 80% $VO_2$peak with 3 min recovery at 50% $VO_2$peak), (b) continuous exercise at 70% $VO_2$peak (CON70) and (c) continuous exercise at 50% $VO_2$peak (CON50). Cardiopulmonary variables were measured continuously, and responses during the first 5 min of recovery analysed. Statistical analysis was performed using repeated-measures ANOVA with post-hoc comparisons ($P < 0.05$) and partial $\eta^2$. During recovery, total oxygen uptake was higher after CON70 (31.4 ± 6.5 L) than HIIT (28.5 ± 6.2 L) and CON50 (25.5 ± 4.4 L; $P < 0.001$; $\eta^2$ $p = 0.700$). Percentage of $VO_2$peak was greater for CON70 (38.6 ± 5.0%) than HIIT (35.6 ± 5.8%) and CON50 (33.5 ± 5.7%; $P < 0.001$; $\eta^2$ $p = 0.877$). Minute ventilation was higher after CON70 (23.0 ± 4.2 L·min$^{-1}$) than HIIT (20.5 ± 3.6 L·min$^{-1}$) and CON50 (17.7 ± 2.5 L·min$^{-1}$; $P < 0.001$; $\eta^2$ $p = 0.751$). The ventilatory equivalent for carbon dioxide ($P = 0.289$; $\eta^2$ $p = 0.129$) and oxygen pulse ($P = 0.349$; $\eta^2$ $p = 0.129$) showed no significant differences. Main effects were observed for respiratory exchange ratio ($P = 0.020$; $\eta^2$ $p = 0.454$) and heart rate ($P = 0.036$; $\eta^2$ $p = 0.376$), but pairwise comparisons were not significant. Results indicate that early cardiopulmonary recovery in CHF is influenced by exercise intensity, with moderate-intensity continuous exercise eliciting greater metabolic and ventilatory responses than HIIT or lower intensity continuous exercise.

**CONTACT** Panagiotis Ferentinos pferentinos@mitropolitiko.edu.gr

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 115
https://doi.org/10.1080/02640414.2026.2670198



# D2.P16 Prevalence of disordered eating and associated factors among university students in Islamabad, Pakistan

Sehar Iqbal

Al Ain University, Abu Dhabi, UAE

Disordered eating is a complex condition that arises from a combination of long-standing behavioural, emotional, psychological, interpersonal, and social factors. These behaviours are more common in adolescents and young adults and appear to damage a person's physical and emotional health, self-esteem, sense of competence and control. Considering the high prevalence rates of disordered eating in low-middle income countries, our study was aimed to determine the prevalence and associated factors for disordered eating among university students of Pakistan. A cross-sectional study comprising 409 students (Male=36; Female=373) from 8 universities in Islamabad was conveniently sampled to assess the disordered eating among university students. For this purpose, a validated questionnaire of self-reporting Eating Attitude Test-26 (EAT-26) was used and distributed online to evaluate the risk of dietary patterns and associated factors contributing to disordered eating (doi:10.1017/S0033291700049163). Data was obtained for anthropometric measurements, body mass index (BMI), education, socio-demographic and economic status. Mean±SD were calculated for quantitative variables, while logistic regression analysis was conducted for odds ratio (OR) and confidence interval (CI). An ethical approval was taken from National University of Medical Sciences, Pakistan. The results showed that approximately 41% students were engaged in some form of disordered eating. Moreover, 17% of students were reported to have frequent binge eating, while 15% were reported to vomit often after eating. Approximately 14% were always pre-occupied with the thought of fat on their body, and 19% usually think about burning more calories after eating. Regarding the socio-demographic factors, we found that high family income increases the odds of disordered eating as compared to low-income group [OR=1.64 (95%CI, 1.02–2.66)]. Similarly, a high risk of disordered eating was observed for students following specific diets [OR=3.89 (95%CI, 1.58-9.59)] and those with high BMI [OR=2.50 (95%CI, 1.31-4.76)]. Our study showed a high prevalence of disordered eating in the university students of Pakistan. Moreover, family income, taking any prescribed diet and BMI were significantly associated with disordered eating among the university students of Pakistan. Nutritional awareness and psychological interventions at the university level can reduce the risks of disordered eating particularly in young female adults.

## ORCID

Sehar Iqbal http://orcid.org/0000-0003-2552-3927

**CONTACT** Sehar Iqbal sehar.iqbal@aau.ac.ae

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 116
https://doi.org/10.1080/02640414.2026.2670199



# D2.P17 Physiological demands and peak running speed during a maximal treadmill test compared to the multistage fitness test

Clare Marsh and Joseph Neild

University of Salford, Salford, UK

Aerobic fitness is often measured by performing a maximal treadmill test to determine maximal oxygen uptake ($VO_2$max) or estimated using the 20-m multistage fitness test (MSFT). The MSFT has been reported to, at times, under-estimate $VO_2$max (Stickland, Petersen and Bouffard, 2003, Canadian Journal of Applied Physiology, 28, 272–282). Whilst a maximal test, given some reports of under-estimation, the MSFT could be less demanding than a treadmill test. The study aim was to compare measured $VO_2$max, peak heart rate (HR-peak) and peak running speed (S-peak) between these two tests. With institutional ethics approval and informed consent provided, 10 male participants (mean age: 21.3 ± 1.1 years; height: 179.6 ± 6.2 cm; mass: 75.3 ± 8.6 kg) (mean ± s) completed two incremental maximal exercise tests in random order: a ramp zero gradient treadmill test (TT) and an indoor MSFT using a portable gas analyser (Cortex MetaMax 3B) to measure $VO_2$max, both using equal speed increments of 0.5 km.hr$^{-1}$. HR-peak and S-peak (TT: treadmill speed at peak $VO_2$; MSFT: speed conversion from final level) (Magee et al., 2021, Sports (Basel), 26, 9, 75) were also measured. $VO_2$max was not significantly different (mean ± s: TT 52.9 ± 5.3 vs MSFT 52.8 ± 5.1 ml.kg.min$^{-1}$; P = 0.878, Cohen's d 0.05) and never exceeded ±3 ml·kg·min$^{-1}$, with no preference over which test scored higher. However, HR-peak and S-peak were significantly different (HR-peak: TT 193 ± 10 vs MSFT 187 ± 10 b.min$^{-1}$; P = 0.016, Cohen's d 0.801); (S-peak: TT 15.1 ± 1.7 vs MSFT 12.8 ± 1.0 km.hr$^{-1}$; P < 0.001, Cohen's d 3.15), both showing large effect sizes. For TT, HR-peak was higher in 80% of participants and S-peak in 100%. The lower HR-peak and S-peak for MSFT might indicate it is less demanding, but the comparable $VO_2$max would suggest otherwise. Exercise protocol could explain differences in HR-peak and S-peak, e.g., the motorised treadmill may aid speed achieved, whilst deceleration when turning during MSFT slows participants and could explain lower HR. It may be that any underestimations reported for MSFT are related to the prediction equation used, not lesser effort.

CONTACT Clare Marsh c.marsh@salford.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 117
https://doi.org/10.1080/02640414.2026.2670200



# D2.P18 Dietary intake and performance in a mountain marathon: Evidence from the Olympus Mountain Marathon

Christina Mastrochristou[a], Eleftherios Karatzanos[a], Eirini Manthou[a] and Panagiotis Ferentinos[a,b]

[a]Metropolitan College, Maroussi, Athens, Greece; [b]Leeds Beckett University, Leeds, UK

Mountain marathons represent a highly demanding form of endurance exercise, characterised by substantial energy and hydration requirements that may impair performance if not adequately met (Nikolaidis et al., 2018, Nutrients, 10, 1995). Despite the recognised importance of nutrition in endurance sports, limited research has examined dietary practices specifically in mountain marathon runners. The aim of this study was to evaluate dietary intake among mountain runners during the three days preceding and on the day of the Olympus Mountain Marathon (44 km, 3,350 m elevation gain). Following institutional ethical approval and informed consent from all participants, fifty-two male participants of varying performance levels took part (mean age 41.5 ± 9.0 years; body mass 75.4 ± 6.6 kg; stature 1.78 ± 0.06 m). Dietary intake during the three days prior to the race was assessed using 3-day dietary recalls, while race-day intake was recorded via a customised electronic questionnaire focusing on macronutrient and fluid consumption. Finish times were recorded to examine associations with dietary practices. Quantitative data are presented as mean ± SD. Pearson correlations (r) assessed relationships between finishing time and carbohydrate intake, with small-to-moderate effect sizes, and significance set at $P < 0.05$. Mean finish time was 8.9 ± 1.5 h. Mean daily energy intake during the three days preceding the race was 2,322 ± 770 kcal, 2,410 ± 694 kcal and 2,411 ± 816 kcal, respectively. Mean carbohydrate intake during this period was 3.9 ± 3.7 $g \cdot kg^{-1}$, 4.0 ± 3.7 $g \cdot kg^{-1}$ and 4.4 ± 3.7 $g \cdot kg^{-1}$ body mass, while pre-race meal carbohydrate intake averaged 1.0 ± 0.6 $g \cdot kg^{-1}$. During the race, mean carbohydrate and fluid intakes were 50.1 ± 16.5 $g \cdot h^{-1}$ and 0.6 ± 0.2 $L \cdot h^{-1}$, respectively. A significant moderate correlation was observed between race-day carbohydrate intake and finish time ($r = -0.547$, $P < 0.001$), indicating that higher carbohydrate intake was associated with faster completion times. In conclusion, carbohydrate intake before and during mountain marathons appears insufficient according to current guidelines (60–90 $g \cdot h^{-1}$) and represents a key, modifiable determinant of performance. These findings highlight the need for discipline-specific fuelling strategies that prioritise adequate carbohydrate availability. Individualised nutrition planning and targeted gastrointestinal tolerance strategies may further support improved performance outcomes in mountain marathon runners.

**CONTACT** Christina Mastrochristou christinamastroo@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 118
https://doi.org/10.1080/02640414.2026.2670201



# D2.P19 Effects of tart cherry juice on physically active individuals following a single resistance training session: A pilot study

Despoina Migkaki[a], Eleftherios Karatzanos[a], Eirini Manthou[a] and Panagiotis Ferentinos[a,b]

[a]Metropolitan College, Athens, Greece; [b]Leeds Beckett University, Leeds, UK

Tart cherry juice is rich in antioxidants and polyphenolic compounds and has been suggested to reduce pain and accelerate recovery following exercise (Bell et al, 2016. Nutrients, 8,441). Beneficial effects have also been reported following strength and resistance exercise (McHugh, M.P., 2022. Scand J Med Sci Sports, 32, 940–950). However, evidence regarding powdered tart cherry supplementation remains limited, particularly in resistance-trained individuals. Moreover, flexibility has rarely been examined as a recovery marker. Therefore, this pilot study examined whether short-term supplementation with powdered tart cherry before and after a single bout of resistance exercise would influence muscle soreness and recovery, assessed through perceived soreness and flexibility. In a single-blind, placebo-controlled, crossover design, seven resistance-trained men (25.0 ± 5.6 years; 178.0 ± 3.5 cm; 82.9 ± 12.6 kg; 14.5 ± 6.7% body fat) completed two conditions: tart cherry supplementation and placebo. Participants consumed 480 mg·day$^{-1}$ concentrated tart cherry powder in capsules or a matched placebo (maltodextrin) once daily for 7 days, including exercise and the 48-h recovery period. Institutional ethics approval was obtained and participants provided written informed consent. Visit one included screening, anthropometric assessment, familiarisation, and determination of one-repetition maximum for back squat and bench press. Visit two included baseline flexibility (sit-and-reach) and countermovement jump height (CMJ), followed by five sets of 10 repetitions at 75% 1-RM for both exercises, with 2 min rest between sets and 7 min between exercises. Perceived muscle soreness was assessed immediately post-exercise using the McGill Pain Questionnaire and a Visual Analogue Scale (VAS). Outcomes were reassessed at 24 h and 48 h post-exercise. Differences were assessed by repeated-measures ANOVA with post-hoc tests ($\alpha = 0.05$, partial $\eta^2$). No significant differences were observed between conditions for muscle soreness [McGill Pain Questionnaire ($P = 0.867$, $\eta^2$ $p = 0.026$), VAS ($P = 0.979$, $\eta^2$ $p = 0.002$) or CMJ ($P = 0.227$, $\eta^2$ $p = 0.116$)]. Flexibility was maintained at 24 h and higher at 48 h post-exercise following tart cherry supplementation compared with placebo, although the difference was not statistically significant ($P = 0.084$, $\eta^2$ $p = 0.187$). Powdered tart cherry supplementation did not significantly affect muscle soreness or CMJ performance. Flexibility appeared better maintained, although not significant, providing preliminary evidence for future larger studies on exercise-related flexibility outcomes.

**CONTACT** Despoina Migkaki desmigaki@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 119
https://doi.org/10.1080/02640414.2026.2670204

Routledge
Taylor & Francis Group



# D2.P22 Examining the effects of goal types on physical fitness task performance and psychological outcomes in children aged 4–11 years

Rebecca M. Hawkins, Melissa Bargh, Robin Watson and Daniel Martin

University of Lincoln, UK

Undertaking adequate levels of physical activity throughout childhood is essential for the development of motor, cognitive, and social skills, alongside the maintenance of musculoskeletal, cardiovascular, and metabolic health. Evidence indicates that goal-setting interventions are beneficial for increasing physical activity in children (Horne et al., 2009). When setting goals, goal setting theory suggests that specific and challenging performance goals will result in higher levels of performance than non-specific goals, vaguely defined goals, or having no goal. However, recent evidence has indicated a range of benefits associated with non-specific goals (e.g., open goals) in adult populations but to date there has been no examination of open goals in children. Therefore, the aim of this study was to examine the effects of open and specific-challenging goals on physical fitness task performance and psychological outcomes in children aged 4–11 years. Ethical approval was provided by an ethics committee prior to data collection. The sample comprised 122 participants (56 females, 66 males, M age = 7.11 years, SD = 2.06). The study employed a $3 \times 3 \times 2$ mixed design, utilising 3 goal conditions (open, specific, control), across 2 physical fitness tasks (shuttle run/jumping), with 2 attempts for each task (first attempt served as a baseline and the second attempt served as the experimental condition where a goal instruction was assigned). Three psychological measures were employed following the completion of both attempts of the physical fitness tasks: affect, confidence, and enjoyment. Using Bayesian regressions, we find evidence that providing children with an open or specific-challenging goal resulted in a greater improvement in their performance in the shuttle task, but only weak evidence of this in the jump task. We also found evidence that age was negatively associated with performance improvement with an open goal across both tasks. These findings provide further evidence that open goals may offer equivalent performance benefits as specific-challenging goals. However, the findings also indicate that open goals may be less effective relative to performance as children age, which could have implications for current guidance in physical activity for children and the development of age-appropriate goal-setting interventions.

**CONTACT** Rebecca M. Hawkins rhawkins@lincoln.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 120
https://doi.org/10.1080/02640414.2026.2670205



# D2.P23 Psychosocial resources and gender gaps among Spanish elite athletes

Cristina Lopez De Subijana[a*], Irene Checa[b*], Maria Martín[a*], Diana Ruiz[a*], Miguel Angel Gómez[a*] and Nuria Garatachea[c*]

[a]Universidad Politécnica De Madrid, Madrid, Spain; [b]Universitat de Valencia, Valencia, Spain; [c]Universidad de Zaragoza, Huesca, Spain

Cristina Lopez De Subijana, Sports development occurs within dynamic environments where sporting, educational, and psychosocial demands interact. Contemporary models emphasise the importance of the broader developmental environment in shaping athlete outcomes, particularly through the availability of resources, support structures, and organisational culture (Stambulova, N., & Henriksen, K. (2025). Career transitions in sport: Bridging holistic developmental and ecological approaches. Psychology of Sport and Exercise, 102,900). Although success in women's elite sport in Spain has increased in recent years, structural inequalities continue to influence access to support and social recognition (Borrueco, M., Torregrossa, M., Pallarès, S., Vitali, F., & Ramis, Y., (2023). Women coaches at top level: Looking back through the maze. International Journal of Sports Science & Coaching, 18(2), 327–338). Dual Career pathways have been described as predominantly androcentric, shaping athletes' experiences of their development environments and psychosocial resources (García, M., Ramis, Y., Borrueco, M., & Torregrossa, M. (2023). Women's Dual Career: a scoping review. Apunts. Educación física y deportes, 4(154), 16–33). Examining these resources is therefore essential to understanding athlete development and well-being. This study, conducted within the WISE-PATH* project, aims to examine gender gaps in perceived available support, life skills developed through sport, athletic identity, psychological well-being, and sport career satisfaction among elite athletes. Ethical approval from the UPM has been obtained. Data collection is currently being conducted (March–May 2026) through an online questionnaire assessing perceived available support (PASS-Q), life skills developed through sport (LSS), athletic identity (AIMS), psychological well-being (GHQ-12), and sport career satisfaction in a sample of Spanish elite athletes (n = 400–900), representing the population of 5,781 elite athletes (95% CI; maximum error = 5%; power = .95; medium ES). Future results are expected to reveal systematic gender differences in psychosocial resources and associated outcomes. Women are expected to report lowerlevels of perceived available support and sport career satisfaction than men, alongside distinct profiles of life skills development, athletic identity, and psychological well-being. This study may inform the design of more equitable DC support structures and development environments, contributing to the promotion of gender equality and fairness within elite sport.

*Project funded by the Women's Institute of Spain (27-01-ID25).

## ORCID

Cristina Lopez De Subijana http://orcid.org/0000-0002-2968-9572

**CONTACT** Cristina Lopez De Subijana c.lopezdesubijana@upm.es

*Women's Integrated Sport & Education: Promoting Access, Tearing Hindrances (WISE PATH) Project, Funded: Women's Institute of Spain (27–01-ID25).

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 121
https://doi.org/10.1080/02640414.2026.2670206



# D2.P24 Beyond the whistle: Exploring the barriers and opportunities for female referees in football

Yasmin Williams and Stephanie Tibbert

Health Sciences University, Bournemouth, UK

Female player participation in English football has increased significantly; however, this growth has not been matched by comparable increases in women's representation in officiating, with approximately 15 times more male than female referees currently registered (Grubb et al., 2023, In W. Roberts, S. Whigham, A. Culvin, & D. Parnell (Eds.), Critical issues in football: A sociological analysis of the beautiful game (1st ed., pp. 111–123). Routledge). Existing research highlights how female referees in football have been discouraged by gendered discourses which depict them as incapable or weak, yet much of this work has focused primarily on individual-level experiences. Therefore, the aim of this study was to apply the socio-ecological model to explore how multi-level influences shape the experiences of female football referees, and to identify the barriers and opportunities relevant to recruitment, retention, and progression. Following institutional ethical approval, eight female football referees from various English counties, officiating across both male and female matches, participated in online semi-structured interviews. Data were analysed using reflexive thematic analysis to organise inductive and deductive themes at the social, organisational, interpersonal, and intrapersonal levels. The developed themes informed the narrative of three composite vignettes, applying creative non-fiction to acknowledge interactions between socio-ecological influences. The findings indicated that female referees experienced significant psychological stressors, including a pervasive culture of disrespect in which gendered stereotyping and abuse were normalised, particularly for younger referees. These experiences contributed to heightened anxiety, hypervigilance, and diminished professional legitimacy. At an intrapersonal level, coping strategies typically involved emotional suppression and the internalisation of hegemonic masculine norms, to avoid being perceived as 'fragile'. Organisationally, the decentralised structure of the Football Association resulted in inconsistent support across counties, exacerbating feelings of isolation and vulnerability. This study highlights opportunities for organisational-led interventions including extending the inclusive environment within women's football, strengthening the role of female mentors and role models, recognising the value of male allyship, and fostering belonging through structured female referee support networks. Together, these findings advance understanding of the conditions shaping female referees' experiences and offer practical insights to support more sustainable and equitable officiating pathways.

**CONTACT** Yasmin Williams 230464@aecc.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 122
https://doi.org/10.1080/02640414.2026.2670208

Routledge
Taylor & Francis Group



# D2.P26 Completion of a strength training-based planned overreach: Perceptions and experiences from the perspective of the highly trained individual

Lee Bell, Jordan Boriel and David Rogerson

Sheffield Hallam University, Sheffield, UK

Planned overreaching (POR) is a short-term training strategy employed by well-trained strength athletes to induce physiological adaptations in preparation for competition. Due to its challenging nature, it is common for athletes to experience psychophysiological fatigue both during and in the days/weeks following POR. For coaches, this is an accepted part of the training process, and an increase in fatigue is not considered to be problematic. However, little is known about POR from the perspective of the athlete. Therefore, this study aimed to explore the experiences of highly trained individuals participating in POR. With ethical approval, 8 highly trained male participants (7.0 ± 3.2 years of resistance exercise training experience and relative (to body mass) parallel barbell back squat of 1.9 ± 0.4 kg/body mass) completed a 5-day POR consisting of high-volume, high-intensity back squats. A detailed explanation of the POR protocol has been published elsewhere (Bell et al., 2025, Journal of Functional Morphology and Kinesiology, 10, 2). Upon completion of the protocol, participants completed a semi-structured interview to explore their experiences. Reflexive thematic analysis resulted in the identification of five higher-order themes: expectations, concerns, support, performance, and impact. Additional subthemes were created to facilitate organisation and presentation of data, and to aid both the cohesiveness of reporting and the publicising of results. Before POR, some participants experienced feelings of anxiety and apprehension. Many perceived POR as an opportunity to test their physical and psychological resolve and were motivated by the opportunity to increase their strength performance. During (and in the days following) POR, athletes experienced increased feelings of muscle soreness, fatigue and exhaustion, as well as decrements in wellbeing and strength performance. At times, this impacted aspects of daily life; blunted energy and concentration levels, reduced productivity, loss of appetite, and negative alterations in sleep quality. Coaches and sports scientists can utilise information obtained from this study to refine the training process, inform monitoring and readiness systems, and to better understand athlete experiences during and after POR.

## ORCID

Lee Bell http://orcid.org/0000-0003-0583-3522

**CONTACT** Lee Bell lee.bell@shu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 123
https://doi.org/10.1080/02640414.2026.2670210

Routledge
Taylor & Francis Group



# D2.P28 Using vignette to analyse perceptions and interpretation of language and terminology in tennis game styles, movement and physical characteristic

Jonny Fraser, Alan Ruddock, Ben Strafford and David Rogerson

Sheffield Hallam University, UK

Tennis performance depends on the integration of technical, tactical, physical, and psychological capacities. For instance, player movement appears to emerge from interactions between perceptual-cognitive processes and physical characteristics that can influence technical execution (Giles, Peeling, Dawson and Reid, 2019, Journal of Sport Sciences, 37,7, 726–734). Yet, despite the dynamic nature of sport, research often remains reductionist (Mclean, Robertson, Salmon, 2025, Journal of Sport Sciences, 43,1,1-5). In contrast, applied practice highlights the importance of cross-disciplinary collaboration, effective communication, and shared language across coaching and athlete support roles (Hydes, Strafford, Rothwell, Stone, Davids, Otte, 2026, International Journal of Sports Science & Coaching, 0,0).This study adopts an ecological dynamics framework and critical realist lens to examine how tennis coaches, strength and conditioning coaches, and players describe game styles, movement styles, and the influence of physical characteristics on performance. Following ethical approval, a two-phase qualitative design will be used. During the first phase to add rigour, cross-disciplinary tennis experts will complete an open-ended online survey via Qualtrics to inform the development of a novel video elicitation procedure. This phase will refine the duration and number of videos, player and performance characteristics contextual features of play such as surface and environment, and the clarity of participant questions. Video clips will be sourced from ATP, WTA, and ITF YouTube channels, and survey data will be analysed using inductive content analysis. Preliminary findings from this expert consultation phase will be presented to demonstrate how expert feedback informed the design of the video elicitation procedure. In phase two tennis coaches, strength and conditioning coaches, and tennis players will complete an online video elicitation task in Qualtrics, viewing high-performance tennis points and providing audio-recorded interpretations. This data will be analysed using six-stage reflexive thematic analysis to explore patterns within and across participant groups. Findings are expected to inform the initial development of a framework to support shared language and cross-disciplinary collaboration in tennis.

**CONTACT** Jonny Fraser j.fraser2@shu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 124
https://doi.org/10.1080/02640414.2026.2670211



# D2.P29 Sport injury-related growth in Indian athletes: Exploring psychological recovery and growth outcomes post-injury

Dia Khatri[a,b] and Angela Ann Joseph[b]

[a]The Performance Doctor, India; [b]O. P. Jindal Global University, India

Sports injuries can be physically and psychologically distressing for athletes, which may impact their identity, overall wellbeing, and long-term aspirations within the sport. However, research in the field over the years has increasingly recognised the potential for a positive transformation following injuries, known as Sports Injury-Related Growth (SIRG) (Roy-Davis et al., 2017, Sport, Exercise, and Performance Psychology, 6(1), 35–52). Although SIRG has been widely studied in Western countries, very little is known about how Indian collegiate athletes experience psychological and personal growth after sports injuries, taking into consideration the socioeconomic, cultural, and infrastructural differences. Understanding SIRG in the Indian context is important considering limitations in access to sport-specific healthcare, student-athlete role conflicts, and limited integration of psychological support into rehabilitation, which can influence recovery and growth processes. This paper aims to fill this gap by exploring how Indian athletes perceive and achieve SIRG, and how it influences their athletic identity and broader areas in life. Primary data was collected through in-depth interviews based on semi-structured sociodemographic data sheet, involving 11 Indian athletes, between the age of 18–25 years and competing professionally. The interview guide was centred around the Sport Injury-Related Growth Inventory (SIRGI-24) (Santi et al., 2023, International Journal of Sport and Exercise Psychology, 22(7), 1698–1723), and data was analysed using the grounded theory method. Ethical approval was given by the institutional ethics committee of O. P. Jindal Global University prior to data collection. The analysis revealed five core categories: (i) Initial Disruption to Identity and Wellbeing, (ii) Approaching Injury Recovery, (iii) Implementing Coping Strategies and Fostering Growth Outcomes, (iv) Shifting Identity and Reconstructing Perspectives, and (v) Manifestation of Sports Injury-Related Growth in Indian Athletes. The study's findings revealed that despite undergoing severe initial disruption, athletes utilised a variety of coping mechanisms and engaged in meaning-making processes that helped in reconstructing their identities and perspectives. This research contributes to the field of sports psychology by presenting novel, culturally relevant insights to support the development of athletes' mental health and rehabilitation interventions tailored to the Indian sporting context.

**CONTACT** Dia Khatri 22jslh-dkhatri@jgu.edu.in

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 125
https://doi.org/10.1080/02640414.2026.2670212



# D2.P30 Major League Soccer homegrown goalkeepers' perspectives on their developmental experiences whilst navigating multiple within-career transitions: A mixed-methods approach

Patrick Mannix[a,b], Martin Littlewood[b], Kevin Enright[b] and Simon Roberts[b]

[a]U.S. Soccer Federation, Atlanta, GA, USA; [b]Liverpool John Moores University, Liverpool, UK

The goalkeeper (GK) position is a unique role that has been largely underexamined by researchers interested in the holistic development of soccer players (Otte et al., 2022, Int J Sports Sci Coach, 10, 1–9). While navigating the youth-to-senior transition, adolescent professional goalkeepers in Major League Soccer (MLS) can also experience other within-career transitions. For example, the loan transition can occur frequently for a homegrown player, who must shift back-and-forth between their club's first team (FT) and reserve team (RT), which compete in first and third division domestic leagues, respectively (Mannix et al. 2025, Int J Sports Sci Coach, 0, 1–14). Also, the club-to-international transition entails a player being selected by an age-restricted youth national team (NT) programme to participate in international competition (McKay et al., 2022, J Appl Sport Psych, 34, 1272–1294). When changing environments, players must adapt to different performance priorities and demands, which may shape and augment their development. Therefore, the aim of this study was to explore MLS homegrown goalkeepers' perceptions of their development-oriented experiences whilst navigating these within-career transitions. A variant of the explanatory sequential mixed-methods design was employed, beginning with a quantitative analysis of match event data from 140 professional and youth international games, followed by qualitative semi-structured interviews with two homegrown goalkeepers (Jonathan and William). Jonathan recorded match exposure with three teams (FT = 1 appearances, 90 min played; RT = 12 appearances, 1080 min played; NT = 9 appearances, 778 min played), while William recorded match exposure with two teams (RT = 16 appearances, 1440 min played; NT = 4 appearances, 302 min played). These quantitative findings contextualised the goalkeepers' career transition patterns, while an interpretative depth was generated through hierarchical content analysis, which generated two higher-order categories: development in youth international soccer (e.g., facing top international opposition, growing confidence from NT performances, and training with high-level teammates) and development within a professional club (e.g., building a working relationship with the GK coach, gaining more consistent playing time with the RT, and waiting in the wings). Together, these integrated findings demonstrate key developmental features within disparate training environments that MLS goalkeepers can experience when navigating multiple within-career transitions.

**CONTACT** Patrick Mannix patrick.mannix@gmail.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 126
https://doi.org/10.1080/02640414.2026.2670213



# D2.P31 The effect of maturity status on physical match performance in elite youth academy players

Kai McAlister

Everton Fc, Liverpool, UK

The current study was approved by the ethics committee of Liverpool John Moores University and complied with the Declaration of Helsinki.

The purpose of this study was to examine the effects of growth and maturation on match running performance in football and how this affects talent identification.

Understanding how biological development influences physical outputs during competition is essential for talent identification and long-term athlete development (Ford et al., 2020). And may give more context as to why we see selection bias to earlier maturers (Hill et al., 2019) in academy football.

A cohort of youth football players (n = 159) across multiple age groups (U12-U21) were monitored over a competitive season. Match running performance was assessed using global positioning system (GPS) technology, with variables including total distance, high-speed running, sprint distance, and acceleration profiles.

Athletes standing height was measured using a fixed stadiometer, whilst seated height of the athlete was measured using a fixed sitting table in which the athletes sat on and then height was taken using the stadiometer. Leg length was measured using by subtracting seated height from standing height.

Pubertal timing was estimated using the Mirwald equation (Mirwald et al., 2002). We then calculated athletes' biological maturity age using the calculation estimated age at peak height velocity – chronological at time of testing.

Athletes were split into 4 groups; pre-PHV (<−1 year), circa-PHV (-0.5 to 0.5), post-PHV (>1 year) and Adult (3.5+ years).

The effect of maturity status (Pre, Circa and Post PHV) on match running performance was analysed using a one-way analysis of variances (ANOVA). All statistical analyses were completed using SPSS version 27.

One hundred and sixteen players were included in the data analyses (Pre PHV: n = 21; Circa PHV: n = 39; Post PHV: n = 41; Adult: n = 18).

Maturity status had a significant main effect on total distance ($F_{3,2389} = 173.7$, $P < 0.001$), sprint distance ($F_{3,2388} = 87.2$, $P < 0.001$), high-speed running distance ($F_{2,2345} = 271.306$, $P < 0.001$) and high-intensity acceleration and deceleration count ($F_{3,2389} = 380.7$, $P < 0.001$) during match play. The findings of this study should be taken into consideration when desinging appropriate programmes for youth athletes, with a consideration of maturity status and how this may affect the individual athlete's performance. This is also relevant for talent identification, and the maturity status of athletes should be at the forefront of discussions when analysing performance as a multi-disciplinary team.

**CONTACT** Kai McAlister kai.mcalister@evertonfc.com

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 127
https://doi.org/10.1080/02640414.2026.2670214



# D2.P32 An exploratory study of palm cooling to reduce fatigue in clinical populations

Darren Murphy, Katy Pedlow, Brenda O'Neill and Rory Bradley

Ulster University, Belfast, Northern Ireland

Research indicates that palm cooling is useful in delaying fatigue and increasing work capacity in athletes, but this has not been explored in clinical populations. This study aimed to explore the acceptability and usability of palm cooling from the perspectives of both clinical populations and clinicians. A pre-post intervention design and questionnaires was used. Participants were patients with a clinical condition and health professionals. Patients completed three 30 s Sit to Stand tests (STS) and a fatigue scale; this was repeated using a palm cooling device. All participants completed a SUS questionnaire to explore the acceptability and usability of the palm cooling device. Ethics approval: Ulster University Research Ethics Committee [REC/25/0027]. Patients ($n$ = 15) mean age was 50.66 years (SD 17.32, M:F 6:9) with brain injury, stroke, or mixed diagnosis. The mean number of STSs at baseline was 12 (SD 5.22). Fatigue scores were feasible to collect, allowing potential for comparisons within participants across exercise performance with/without palm cooling. Fatigue scores appeared to decrease slightly with palm cooling (Mean difference = 0.73, 95% CI [-0.40, 1.86]), but a paired sample t-test indicated this was not significant ($p = 0.186$). This decrease occurred even though patients completed progressively more exercise (i.e., more STS tests). Patients' mean SUS score was 86.66/100 (SD 7.88), indicating excellent usability. They identified four themes relating to the use and acceptability of the palm cooling device: perceived benefits, limitations and discomfort, suggestions for design and usability improvements and information and evidence needs. They noted that it was easy to use and had a calming or relaxing effect. Healthcare professionals ($n = 5$) were all physiotherapists (M:F 2:3), with 8–30 years of clinical experience. Their mean SUS score was 79.00/100 (SD 10.83), indicating good usability, and feedback highlighted the importance of understanding the mechanism of action and evidence of clinical impact before adopting the device in practice. Overall, the device demonstrated high usability, positive acceptability, and a potential role in moderating subjective fatigue, though effects on functional performance should be explored in a larger study. Further evidence of effectiveness in clinical populations, as well as usage protocols, is needed to enhance adoption.

**CONTACT** Darren Murphy murphy-d76@ulster.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 128
https://doi.org/10.1080/02640414.2026.2670215

Routledge
Taylor & Francis Group



# D2.P34 Examining throw-in strategy in the English women's super league during the 2024/2025 season

Joseph Stone[a], Megan Scott[a], Ben Strafford[a] and Alliance Kubayi[b]

[a]Sheffield Hallam University, Sheffield, UK; [b]Tshwane University of Technology, South Africa

Performance analysis research in professional women's football has interested leading to new knowledge in areas such as the physical demands of the game, the technical performance of teams and set-play analysis such as corner kicks. Despite this increase in research, women's professional football continues to be less comprehensively studied compared to the men's game. There has also been a rise in the attention of Throw-ins in the men's game, which had previously been an under-researched area in football. However, there is currently limited investigation into throw-ins in professional women's football. Hence, the aim of this study was to analyse throw-in strategy in the English Women's Super League. Ethical approval was granted by Sheffield Hallam University (ER48306649). Raw data was sourced, with their permission, from StatsBomb (www.statsbomb.com). Throw-ins were analysed from 12 teams across 132 matches during the Women's Super League 2024/2025 season. This resulted in 5,977 phases of play that started from a throw-in. RStudio software with bespoke code was used to examine how variables such as throw-in length, direction, and pitch location affected first contact success, possession metrics and shot creation. After excluding throw-ins following an injury clearance (i.e., possession freely given back to the opposition following the ball being kicked out of play due to an injury), a total of 5960 throw-ins were included in the sample. Statistical analysis is on-going, with initial results demonstrating an average of $45 \pm 10$ throw-ins were completed per match. Throwing the ball backwards (99.4%) or laterally (92.9%) increased first contact success compared to throwing the ball forwards (71.7%) ($P < 0.05$, $\eta p2 = 0.935$). Retaining possession from the throw-in was highest when going backwards (82.6%), compared to laterally (54.8%) and forwards (37.0%) ($P < 0.05$, $\eta p2 = 0.961$). Further results of interest such as game-state, pre-throw time, pitch-location, throw length and shot creation will be presented during the conference presentation. This study contributes to extending knowledge on the importance of throw-in strategy on match play performance indicators in women's professional football with the aim of guiding coaching practice and tactical preparation.

## ORCID

Joseph Stone http://orcid.org/0000-0002-9861-4443

**CONTACT** Joseph Stone joseph.stone@shu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 129
https://doi.org/10.1080/02640414.2026.2670217

Routledge
Taylor & Francis Group



# D2.P36 Developing pedagogical confidence to support pupils with attention-deficit/hyperactivity disorder (ADHD) in primary school physical education (PE)

Michelle Bird, Stephanie J. Tibbert and Alyx Taylor

Health Sciences University, Bournemouth, UK

Inclusive practice in primary school physical education (PE) relies on teachers' knowledge and confidence in adapting their pedagogy to meet pupils' diverse learning needs. Empirical evidence indicates that the sensory and social demands of PE can be particularly challenging for pupils with attention-deficit/hyperactivity disorder (ADHD). However, there is a paucity of research exploring how PE teachers develop pedagogical confidence as they adapt their practice to support pupils with ADHD. Grounded in an interpretivist paradigm and informed by social constructivism and self-efficacy theory, this qualitative study explored how nine UK primary school PE teachers developed pedagogical confidence and how structural and contextual factors supported or constrained this process. Semi-structured interviews were conducted and analysed using inductive reflexive thematic analysis. Teachers' pedagogical confidence was built through experience, reflection, adaptation, and opportunities to learn about ADHD in practice, while structural and contextual conditions, including staffing, class size and access to training, influenced this process. Teachers also reported that professional training often focused on classroom contexts rather than the practical realities of PE. These findings highlight the importance of context-specific support, mentoring, collaboration, and PE-specific professional training in supporting inclusive pedagogy for pupils with ADHD in primary school PE.

**CONTACT** Michelle Bird 230131@hsu.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 130
https://doi.org/10.1080/02640414.2026.2670219

Routledge
Taylor & Francis Group



# D2.P39 Attendance and engagement as predictors of academic performance in an undergraduate sport and exercise science course

Stephen Leckey, Michael Duncan, Ole Kemi and Victoria Penpraze

The University of Glasgow, Glasgow, UK

In undergraduate (UG) sport and exercise science (SES) programmes, different course components are taught by various methods. Attendance in those sessions is thought to correlate well with academic achievement and overall course performance (Doggrell, 2020. Journal of Innovation in Science and Mathematics Education, 28,1). However, these analyses are typically conducted at the programme level rather than within individual course components. Furthermore, engagement with study material, rather than just attendance, may be a better parameter to indicate learning (Meng and Zhang, 2023. Sustainability, 15(7), 5767). The aim of this study was to assess the relationship between the performance in a component of the course with attendance and engagement. With ethical approval, end-of-course test performance in an UG SES component course in muscle and biomechanics ($n = 45$ students) was captured. Material was delivered by lectures ($n = 9$), workshops ($n = 3$), labs ($n = 2$) and Kuracloud online lessons ($n = 2$). Lectures, workshops and labs were linearly timetabled. Attendance was measured by electronic sign-in. Kuracloud sessions were provided online throughout the course with students accessing them via their university credentials, and engagement was measured by in-session task completion. Data were normalised and analysed using Pearson's correlation coefficients to evaluate the strength of associations between course grade and measures of attendance and engagement in different components. Multiple linear regression (MLR), with stepwise elimination of non-significant predictors and principal component analysis (PCA), were used to evaluate how attendance and engagement explained variance in course grades, both collectively and in terms of the relative contribution of individual variables. Correlation analysis showed that no single independent variable stood out with a significantly stronger association to course performance than others. MLR analysis found independent variables explained 29% of the variance ($R2 = 0.289$ (SE 3.74), $p = 0.023$, $F = 3.00$, unstandardised coefficient b ranging 1.37–5.09) and Kuracloud engagement constituted the single most predictive individual variable for course performance (13%, $R2 = 0.128$ (SE 3.93), $p = 0.019$, $F = 5.99$, unstandardised coefficient $b = 3.49$). PCA could not identify individual variables as principal components to explain variance in course performance. However, it explained the variance by 48% (Eigenvalue = 2.4) when both attendance and engagement variables are included, suggesting that both student attendance and engagement predict academic performance in SES UG courses.

**CONTACT** Stephen Leckey stephen.leckey@glasgow.ac.uk

JOURNAL OF SPORTS SCIENCES
2026, VOL. 44, NO. S1, 131
https://doi.org/10.1080/02640414.2026.2670220

Routledge
Taylor & Francis Group



# D2.P40 What is CASES? Reflecting on the co-creation of a 3D animated sport and exercise science outreach resource

Emma Mosley[a], James Wright[b], John Dickinson[c] and Reza Yousefzadeh[a]

[a]Bournemouth University, Bournemouth, UK; [b]Southampton Solent University, Southampton, UK; [c]University of Kent, Canterbury, UK

The use of video-based technology is growing within sport and exercise science pedagogy, offering engaging opportunities and promoting authentic learning experiences (Kittel et al., 2023, Frontiers in Sports and Active Living, 5, 1–6). To capture the imagination of future students and the broader public, it is crucial to provide a clear and meaningful message of what CASES is via video mediums. Therefore, this reflective case study aimed to evaluate a collaborative 3D animation project developed to enhance awareness and understanding of CASES, as part of its outreach agenda. No ethical approval was required due to the nature of personal reflection. Members of the CASES outreach panel identified a clear need for a concise and accessible resource that could quickly communicate the purpose, activities and values of the organisation. To address this gap, the idea was pitched to second-year animation students as an industry-based project. The animation students produced a range of preliminary concept artworks and thumbnails, which they presented back to the outreach team for the feedback. In the storyboard development phase, substantial reference gathering took place to reflect the contexts in which CASES operates. Examples included filming an elite football player to capture accurate movement patterns, interviewing a paralympic athlete to understand lived experience within inclusive sport and watching a VO2max test to understand key scientific processes. The outreach panel also worked closely with the CASES board to refine messaging, develop straplines and ensure marketing strategy was adhered to. This collaborative approach offered valuable insights into interdisciplinary co-creation, highlighting both the strengths and challenges of working across different academic courses. Reflections were gathered across team meetings and were facilitated using the Gibbs reflective cycle (Gibbs, 1988, Learning by doing: A guide to teaching and learning methods. Oxford: Oxford Centre for Staff Learning and Development). Current key reflections include navigating limited funding, managing expectations within a real-world production timeline and recognising the importance of clear, easily digestible information for communicating CASES mission to a broad audience. It is anticipated that the completed animation will be used across multiple outreach platforms, including university open days, school engagement events and social media.

**CONTACT** Emma Mosley mosleye@bournemouth.ac.uk