

# ESAN

Expertise and Skill  
Acquisition Network

## 11th meeting of Expertise and Skill Acquisition Network

American Express Community Stadium, Brighton, UK.

Wednesday 10th and Thursday 11th September 2025

In association with:





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**University of Brighton**



## Programme

### Wednesday 10th September 2025

11:00-12:00: **Arrival and registration - Tea & Coffee and cookies**

12:00-12:05: **Introduction (Nick Smeeton, University of Brighton and Chair of ESAN)**

12:05-13:00: **Keynote speaker: Prof Christopher Ring (University of Birmingham, UK)**

*If mental fatigue is a problem in sport, what is the solution?*

It is well established that fatigue can impair sport and exercise performance. In both athletes and exercisers, fatigue - a transient psychobiological state characterized by diminished functioning - is caused various situational demands, such as prolonged cognitive activities. For instance, increased fatigue in athletes has been associated with the demands of competition, tournaments, technical briefing/debriefing, early morning and late evening training, travel and jet lag. A number of countermeasures have been evaluated and found to mitigate against the deleterious effects of mental fatigue. Behavioural mental fatigue countermeasures have been developed that operate in the short-term (e.g., priming) and long-term (e.g., training). In this talk, I will provide evidence to show that combining cognitive and physical tasks in priming and training contexts can both improve subsequent exercise (e.g., running, jumping) and sport (e.g., throwing and shooting balls) performance. Our research program findings provide the empirical evidence to encourage athletes and coaches to tweak their warmup and training protocols to better prepare players for the demands of competition.

13:00-13:15: **Break**

13:15-14:15: **Verbal Presentations 1 Neurocognitive assessment and traumatic brain injury in football and rugby**

Each presentation is 10 min + 3 min questions.

**TITLE: Neurocognitive assessment in professional football**

**AUTHORS:** Johanna Sieland<sup>1</sup>, Hendrik Both<sup>1</sup>, Christian Haser<sup>1</sup>, Winfried Banzer<sup>1,2</sup>

**AFFILIATIONS:** <sup>1</sup>Medical Department Eintracht Frankfurt Football AG, Frankfurt, Germany <sup>2</sup>Division of Preventive and Sports Medicine, Institute of Occupational, Social and Environmental Medicine, Goethe University Frankfurt, Frankfurt, Germany

In football, athletes operate in a highly dynamic and constantly changing environment. The ability to rapidly integrate cognitive and motor functions in response to stimuli is therefore an essential component of football performance. Depending on the game situation, the relative contributions of cognitive and motor demands can significantly vary. Motor-cognitive agility performance in football players seems to be primarily determined by cognitive functions. The integration of multiple object tracking into reactive agility testing appears to be an ecologically valid approach for performance diagnostics in football. The

diagnostic of neurocognitive agility can differentiate players based on their potential ratings and in-season playing time, highlighting its potential as a valuable tool for assessing performance particularly in youth football. Neurocognitive agility interventions result in notable enhancements in football-specific and agility tests, incorporating decision-making and multitasking components. To achieve a transfer to game-relevant performance, coaches should focus on integrating cognitive challenges into motor training. Neurocognitive agility has the potential, especially in youth football, to serve as a key element in talent identification programs and to become a valuable training component in the athletic development of promising young footballers.

**TITLE: The influence of sport expertise on response and cognitive inhibition**

**AUTHORS:** Dr Jack Brimmell<sup>1</sup>, Dr Naomi Lee<sup>1</sup>, Mr Matt Spokes<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>University of Worcester

Research suggests that sporting experts show better response inhibition. Less is known about how expert athletes use cognitive inhibition to 'forget' previous errors (termed expertise-induced-amnesia). Moreover, whether the relevance of sporting expertise is greater at high-pressure, compared to low-pressure is also unclear. The aim of the present study was to examine if sporting expertise predicted response inhibition (effectiveness and efficiency) and cognitive inhibition (error awareness) and the impact of pressure levels on these relationships. Forty-five participants completed a measure of sporting expertise and a modified Stop Signal Task under two pressure conditions (i.e., high- and low-pressure). Regression results suggested that expertise only significantly predicted response inhibition effectiveness and efficiency at high-pressure. Interestingly, error awareness at high- and low-pressure were independent of sporting expertise. Finally, change scores across pressure conditions were small and near zero for all participants, not just experts, suggesting that all individuals performed similarly across low- and high-pressure conditions. Sporting expertise appears to facilitate response inhibition at high-pressure but the exact methods in which experts 'forget' errors and maintain performance remains unknown (i.e., might not be cognitive inhibition).

**TITLE: Anticipation of deceptive and non-deceptive movements by in club rugby players with a history of mild traumatic brain injury**

**AUTHORS:** Amanpreet Sidhu<sup>1</sup>, Liis Uiga<sup>2</sup>, Rich Masters<sup>3</sup>

**AFFILIATIONS:** <sup>1</sup>University of the Fraser Valley <sup>2</sup>Manchester Metropolitan University <sup>3</sup>University of Waikato

Expert rugby players tend to use a global processing strategy when anticipating an opponent's movements. Sidhu et al. (2024) suggested that global processing bias is reduced following mild traumatic brain injury (mTBI). We sought to investigate the potential impact of mTBI on the ability to anticipate both deceptive and non-deceptive movements. Club rugby players with a history of mTBI (N=16) and without a history of mTBI (N=16) viewed video clips of an opponent running towards them with ball in hand who faked to change direction (deceptive) or did not change direction (non-deceptive). The clips were occluded at the final step before change of direction (0ms) or at 100ms. Players were asked to anticipate the final running direction of the opponent. Our results showed that, overall, responses were less accurate for deceptive compared to non-deceptive trials. Players with a history of mTBI took significantly longer to indicate final running direction

compared to players without history of mTBI and were significantly more accurate when anticipating both deceptive and non-deceptive movements.

**TITLE: Short-term cognitive and neural effects of soccer heading: Insights from experimental studies**

**AUTHORS:** Greg Wood<sup>1</sup>, Johnny Parr<sup>1</sup>, Ben Marshall<sup>1</sup>, Tiago Peçanha<sup>1</sup>, Liis Uiga<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>Department of Sport and Exercise Sciences, Manchester Metropolitan University

While repetitive soccer heading has been epidemiologically linked to long-term neurodegenerative risk, less is known about its immediate neurological effects. This presentation synthesises findings from a series of studies examining acute changes in cognitive, visual, and neural function following controlled heading exposure. In each study, soccer players completed either 15 rotational headers with a regulation ball or a matched virtual reality (VR) heading task as a non-impact control. We assessed oculomotor function (e.g., fixational eye movements), cortical control of balance (EEG), cognitive performance, and structural and functional MRI, measured before and after heading (including 24-hour post-assessment for imaging). Across studies, even a single session of heading resulted in significant disruptions to oculomotor control and cognitive function. These effects were not observed in the VR condition. Early neuroimaging findings revealed acute changes in activity patterns within sensorimotor and visual processing regions. These results offer converging evidence that short-term exposure to heading alters brain function and behaviour, highlighting the potential for even limited impact exposure to have measurable consequences. As heading remains a common feature of soccer at all levels, this research contributes important evidence to support risk mitigation strategies and inform safe practice guidelines.

14:15-14:30: **Break - Tea & Coffee and tray bake**

14:30-15:00: **Lightning Talks 1 (see end of programme)**

Each talk is 3 min and one slide.

15:00-16:00: **Verbal Presentations 2 Expertise and Skill Acquisition Research**

**TITLE: Young, gritty and (game) smart: Psychological mechanisms for the relative age reversal in football**

**AUTHORS:** Dr David Hendry<sup>1</sup>, Dr Paul Larkin<sup>2</sup>, Dr Donna O'Connor<sup>3</sup>, Dr A. Mark Williams<sup>4</sup>, Dr Merim Bilalic<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>Northumbria University <sup>2</sup>Victoria University <sup>3</sup>University of Sydney <sup>4</sup>University of Utah

Relative age effects (RAEs) are well-documented in youth sport, typically favouring early born athletes. However, an emerging body of research indicates these effects can diminish or reverse at adult and professional levels. Despite several theoretical propositions, few studies have provided empirically supported psychological explanations for this reversal. This study tracked 427 skilled male Australian youth soccer players (M age = 13.8, SD = 0.8), who

completed a practice history questionnaire, soccer-specific perceptual-cognitive tests, and the Short-Grit Scale. Players were categorised into relative age quartiles (Q1–Q4) and followed up 10 years later, classified as professional, semi-professional, or drop-out. Relatively younger players (Q4) were proportionately more likely to reach professional status and drop out from football compared to Q1 players. Q4 players accumulated more practice hours ( $p = .04$ ) and scored higher on grit ( $p = .001$ ), including consistency of interest ( $p = .05$ ). Findings offer novel psychological insights into relative age reversal and highlight the importance of cognitive and conative development in talent pathways.

**TITLE: The Impact of Expertise and Cognitive Load on Decision Making in Snooker**

**AUTHORS:** Kirsty Brown<sup>1</sup>, Nicholas Smeeton<sup>1</sup>, Natasha Sigala<sup>2</sup>, Bill Filby<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>School of Education, Sport and Health, University of Brighton, UK <sup>2</sup>Brighton and Sussex Medical School, UK

Accurate and rapid decision-making under cognitive load is a fundamental component of high-level performance in dynamic, open-skill sports. However, current understanding of how expertise and cognitive load interact to affect these processes remains limited. The present study examined how increased cognitive load affects decision-making in an immersive soccer task. Twelve skilled and thirteen unskilled players viewed counterattacking scenarios from a first-person perspective and predicted the intended outcome (dribble or pass) under high (with a concurrent mental addition task) and low (no additional task) cognitive load. Primary dependent measures were anticipation efficiency, response awareness, and signal detection measures of sensitivity and response bias. Results revealed significant effects of both expertise and cognitive load. Skilled players demonstrated more efficient anticipation than unskilled players, and anticipation performance decreased under high cognitive load. However, the load-induced impairment was only significant for unskilled participants, while skilled players maintained decision-making performance despite increased cognitive demands. Both groups exhibited reduced response awareness under high cognitive load. These findings suggest that, in line with the Cognitive Control Hypothesis and the Expertise Reversal Effect, skill-related adaptations help mitigate the negative effects of cognitive load on decision-making in fast-paced, time-constrained sports. Future research should examine whether similar patterns occur in closed-skill sport contexts.

**TITLE: Reassessing inhibitory control advantages in athletes: A comparison of football players, endurance athletes, and sedentary individuals using the stop-signal task**

**AUTHORS:** Marie Simonet<sup>1</sup>, Darren Nolan<sup>2</sup>, Chris Pocock<sup>3</sup>, Viktor Gredin<sup>4</sup>, Oliver Runswick<sup>5</sup>

**AFFILIATIONS:** <sup>1</sup>ETH Zürich, Switzerland, <sup>2</sup>University of Hertfordshire, UK <sup>3</sup>University of Chichester, UK <sup>4</sup>Halmstad University, Sweden <sup>5</sup>King's College London, UK

Inhibitory control (IC) involves suppressing unwanted actions and is crucial for adaptive behaviours. Recent interest in IC training across various domains, including sports, education, and rehabilitation, has demonstrated its potential for enhancing performance. This study aims to investigate the influence of football experience on IC expertise and whether extensive football practice leads to specific learning advantages in IC tasks compared to endurance athletes and sedentary people. We also explored the relationship

between IC proficiency and different independent variables such as sporting expertise, hours of practice, sex or age. Nineteen football players, fourteen endurance athletes, and seventeen sedentary participants completed a 30-minute stop-signal task online. Preliminary results showed no significant differences in stop-signal reaction times between groups, nor significant associations between IC proficiency and the independent variables. These findings challenge the widely held assumption that open-skill sports inherently lead to superior IC abilities as measured by standard laboratory-based tasks. They contribute to the growing body of evidence suggesting the need for methodological refinements in the stop-signal task (SST), such as sport-specific adaptations of the SST to provide more accurate insights into response inhibition performance within athletic contexts.

**TITLE: 3P-CDM: Observing and interrogating coaching expertise in practice**

**AUTHORS:** Jamie Taylor<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>School of Health and Human Performance, Faculty of Science and Health, Dublin City University, Glasnevin, Dublin, Ireland

Over the last fifty years, a wide range of literature has sought to observe sport coaches to inform practice. Behavioural observation tools have advanced our understanding of the relationship between coaches' priors and their actions, often revealing a disjuncture between observed behaviour and underlying intention. Despite these insights, observational methods remain underutilised in coaching research. Similarly, human factors methodologies such as Cognitive Task Analysis, used to understand reasoning and tacit knowledge, have been largely overlooked, leaving a persistent gap between coaching as imagined and coaching as enacted. The adaptive skill model of expertise suggests the need to understand the intentions of an individual, how they modify action in response to circumstance; or alternatively how they change intention based on evolving context. This presents challenges for behavioural observation, which captures action but not intention. Building on Taylor et al.'s (2023) '3Ps' model of coach observation, this presentation outlines an integrated method combining observation with the Critical Decision Method (3P-CDM). The 3Ps framework supports the coding of episodes to identify enacted or adapted intentions and key decision points, which then guide CDM interviews. Stimulated recall further enhancing the CDM, offering insight into the cognitive and situational demands of coaching.

16:00-16:15: **Break**

16:15-17.15: **Keynote speaker: Prof Geir Jordet (Norwegian School of Sport Sciences, Norway)**

*Psychology in football: What can we learn from observing behaviours on the pitch?*

17:15-17:30: **Break/general discussion**

17:30-18:30: **"Posters and a pint" (see end of programme)**

Posters even numbers stand next to posters 17:30-18:00, odd numbers 18:00-18:30

19:00 + **Social** onsite social at the Dug Out

**Thursday 11th Sept 2025**

09:30-10:00: **Arrival**

10:00-10:05: **Introduction: Nick Smeeton (University of Brighton and Chair of ESAN)**

10:05-11:00: **Keynote speaker: Daniel Niedzkowski (Assistant Coach, Mens First Team, Brighton and Hove Albion F.C.)**

*Coach development in Germany - key competencies in the professional game*

In recent years, a remarkable number of young coaches have made their way into head coaches' positions in Germany's top football leagues. Since 2008, more than 100 coaches have made their debuts as head coaches in the Bundesliga, 2nd Bundesliga and Women's Bundesliga alone. Interestingly, more than 50% of these coaches have not had a professional playing career in any of the leagues mentioned above. While the circumstances of and reasons for their rise vary individually, the early exposure of high numbers of coaches to the professional game has been a systemic challenge for coach development processes within the German Football Association (DFB). This presentation aims to provide an experience-based account of specific challenges within professional football and their consequences in terms of essential competencies required for head coaches active at this level. Defining key characteristics and situations within the head coaching role in the professional game, the aim is to highlight tasks that are most likely to be exclusively performed by the head coach. To illustrate the DFB's approach in terms of preparing coaches to succeed in the professional environment, select ideas and concepts within coach development in Germany will be presented.

11:00-11:15: **Break: Tea and coffee**

11:15-12:15: **Symposium: Applying Skill Acquisition in Elite Sport**

Each presentation is 15 mins + 5 min

questions.

**Presentation 1: Oliver Runswick (Kings College London, UK)**

*What is skill acquisition and what does a specialist do?: Perspectives from 22 world leading experts in the field.*

Skill acquisition is a rapidly evolving field in sport, but its definitions, roles and professional practices remain inconsistently articulated. Despite growing recognition of its importance, there is a lack of consensus regarding the core competencies and responsibilities of skill acquisition specialists. The aim of this study was to consult with experts to establish a consensus definition of the field of skill acquisition, clarify the roles of its specialists, and understand the needs and requirements of effective applied practice. A panel of 22 international experts in skill acquisition took part in a Delphi study using online surveys. The panel reached consensus that skill acquisition specialists represent a unique role within multidisciplinary support teams and defined the field as an applied science addressing the performance, learning, and refinement of perceptual, cognitive, and motor skills across the spectrum from novice to expert performers. Key responsibilities of a skill acquisition specialist included practice design, individualised skill development, and education at the organisational level. Furthermore, the panel reached consensus on the essential knowledge

and professional skills required to fulfil this role effectively. Findings present an important step towards establishing a framework for professional development, accreditation, and high-quality, evidence-based skill acquisition practice.

**Presentation 2: Malcolm Fairweather (Head of Performance Solutions, SportScotland Institute of Sport, UK)**

*From Theory to Practice: Delivering Skill Acquisition Support That Impacts Performance*

**Presentation 3: Phil Kearney (University of Limerick, Ireland)**

*A guide to skill acquisition within Gaelic Games: Applications for high performance teams*

Within a recent reorganisation of sport science provision in Gaelic Games, Skill Acquisition has received recognition alongside more established disciplines. As part of this reorganisation, a Guide to Skill Acquisition for the Gaelic Games community was developed, addressing: (1) What is Skill Acquisition and how can it add value to your coaching? (2) How can you apply Skill Acquisition principles to enhance your practice? (3) How can a Skill Acquisition Specialist or Coach Developer with a focus on Skill Acquisition help you to enhance your practice? (4) How can you identify a Skill Acquisition Specialist to support your club, your coaches, and your players? (5) How can applied scientists from other domains apply Skill Acquisition techniques? (6) Where can you learn more about Skill Acquisition? This presentation will provide an overview of the Gaelic Games context and describe how Skill Acquisition was defined and organised for coaches, coach developers, Skill Acquisition Specialists and other sport scientists. Subsequently, brief case studies from high performance Gaelic Games will be presented in relation to: Developing practice intelligence; Supportive coaching team structures; Empowering peer coaching; and Maximising individual practice time.

**12:15-12:45: Lightning Talks 2 (see end of programme)**

Each talk is 3 min and one slide.

**12:45-13:45: Lunch, Posters, and Networking (see end of programme)**

Posters even numbers stand next to posters

12:45-13:15, odd numbers 13:15-13:45

**13:45-14:45: Verbal Presentations 3 Using Immersive Technologies to train DM in Football**

**TITLE: Interpersonal interactions for the representative testing of embodied decision-making in sports**

**AUTHORS: David Mann<sup>1</sup>, Daniel Müller<sup>1</sup>, Oliver Höner<sup>2</sup>**

**AFFILIATIONS:** <sup>1</sup>Vrije Universiteit Amsterdam, The Netherlands <sup>2</sup>Eberhard Karls University Tübingen, Germany

Decision-making is a crucial skill in team sports yet is challenging to measure in controlled settings. It has proven particularly difficult to allow interpersonal interactions where the attacker and defender interact and adjust their behaviour in real-time as they would in the natural setting. Instead, video-based and VR testing has until now involved opponents with pre-determined movements that neglect those potential interactions. The aim of this study was to examine the influence of interpersonal interactions on embodied decision-making behaviour. To this end, we introduce a new 'VR interactive' method where a VR opponent reacts - in real-time - based on the movements of the participant. We compared decision-making behaviour across four conditions (In situ, VR interactive, VR non-interactive, and VR no opponent). Results strongly support the idea that adding interactions makes the task more representative of natural behaviour. Specifically, key measures of behaviour (e.g., trial duration and number of touches) and the interactive strategies adopted in the VR interactive condition were much more representative of in-situ behaviour. The method that we introduce illustrates that interpersonal interactions are a key component of embodied decision-making skill and offers promise as a novel method for assessing anticipatory and decision-making skill in sports.

**TITLE: Evaluating Perceptual-Cognitive Skills in Football: Are CAVEs better than HMDs?**

**AUTHORS:** Steffen Barthel<sup>1,2</sup>, Stefan Altmann<sup>1,3</sup>, Jan Spielmann<sup>1</sup>, Lou Zhou<sup>4</sup>, Scott Powers<sup>4</sup>, David Mann<sup>2</sup>

**AFFILIATIONS:** <sup>1</sup>TSG Research Lab gGmbH, Zuzenhausen, Germany <sup>2</sup>Vrije Universiteit Amsterdam, Amsterdam, Netherlands <sup>3</sup>Karlsruhe Institute of Technology, Karlsruhe, Germany <sup>4</sup>Rice University, Houston, United States of America

**TITLE: Using 360-video to analyse visual exploratory activity in women's soccer**

**AUTHORS:** James Feist<sup>1</sup>, Naomi Datson<sup>2</sup>, Oliver R. Runswick<sup>3</sup>, Chris Pocock  
**AFFILIATIONS:** <sup>1</sup>School of Sport, Science and Engineering, Faculty of Health, Science and Engineering, University of Chichester, U.K. <sup>2</sup>Department of Sport and Exercise Sciences, Institute of Sport, Manchester Metropolitan University, U.K. <sup>3</sup>Department of Psychology, Institute of Psychiatry, Psychology & Neuroscience, King's College London, U.K.

Extended reality (XR) technologies present new opportunities to measure sports performance in immersive, controlled environments. We assessed the construct and face validity of a 360-video simulation for capturing visual exploratory activity (VEA) in women's soccer. Eleven sub-elite soccer players (22 ± 5 years) and eleven novices (20 ± 2 years) participated. VEA was measured as the number of 'scans' away from the ball before a teammate passed to the 360-video camera. Participants viewed 40 soccer videos in a head-mounted display. Construct and face validity were supported where soccer players (Mdn = 0.31 scans/s) displayed significantly higher median scan frequencies than novices (Mdn = 0.06 scans/s,  $p = 0.001$ ). We subsequently investigated the effect of pitch location and sided game on VEA in 360-video. Sixteen sub-elite players (21 ± 4 years) participated, with 32 videos analysed per player. A 2x2 repeated measures ANOVA showed a significant main effect of pitch location ( $p = 0.018$ ), with higher scan frequencies in defensive (0.31 ± 0.15 scans/s) than attacking midfield

(0.29 ± 0.16 scans/s), with no other significant effects. 360-video provides a valid tool for analysing VEA in women's soccer, supporting future research into testing and training VEA.

**TITLE: A Reality Check: Comparing Virtual Reality and Life-Sized Video Football Training**

**AUTHORS:** Ross Dowsett<sup>1</sup>, Ben Greenhough<sup>2</sup>, Thomas Day<sup>3</sup>, Luke Wilkins<sup>4</sup>, Robin Jackson<sup>5</sup>, Cleveland Barnett<sup>1</sup>, and Noel Kinrade<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>School of Science & Technology, Nottingham Trent University <sup>2</sup>Podium Analytics, London <sup>3</sup>Rezzil Inc, Manchester <sup>4</sup>Sport, Performance, and Nutrition (SPAN) Research Group, La Trobe University, Melbourne <sup>5</sup>School of Sport, Exercise and Health Sciences, Loughborough University

Recent advancements in virtual reality (VR) have led researchers to question whether VR could offer a superior medium for perceptual-cognitive training in sport, above and beyond traditional representative task training such as video simulations. To address this question, 30 amateur and semi-professional footballers completed 96 trials of a 1-vs-1 drill, in both VR and life-size video projector conditions. The drill involved intercepting an oncoming attacker, whereby there were four possible outcomes: true right, true left, fake right, fake left. Participants responded significantly quicker and reported greater presence, face validity, enjoyment, and desire to repeat the training in the VR condition compared to the life-size video projector condition. There was no significant difference in response accuracy or susceptibility to deception between conditions. The footage was reviewed by a UEFA B-licence coach in a "think aloud" methodology to assess behavioural responses, with qualitative analysis highlighting that the VR condition encouraged higher biomechanical fidelity and intensity, whilst the life-size video projector condition may have allowed participants to better detect cues in the opponent and respond in a more controlled manner. These results demonstrate the positive role that VR may offer in perceptual-cognitive training, but research must continue to take place as VR technology develops at a rapid pace.

14:45-15:00: **Break tea & coffee**

15:00-16:00: **Keynote speaker: Danny Newcombe (Senior Coach Developer, The Premier League, UK)**

*Developing skill and expertise in professional football coaches*

16:00-16:15: **Conference closing statement and awards**

## LIGHTNING TALKS 1/POSTERS

1 - TITLE: **Optimising practice structure and variability in dart throwing imagery interventions. How far does functional equivalence go?**

**AUTHORS:** Maxime Ansell<sup>1</sup>, Dr. Robin Owen<sup>1</sup>, Dr. Liam Owens<sup>1</sup>, Dr. James Roberts<sup>2</sup>, Prof. Caroline Wakefield<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>Liverpool Hope University <sup>2</sup>Liverpool John Moore University

Functional equivalence proposes that imagined movements involve similar neural pathways as their physical counterparts. This suggests that theories of motor learning that optimise physical practice interventions, should also optimise imagery interventions. The first experiment (N=63) involved a between groups, pre-test and post-test design with a transfer condition aimed at improving dart throwing accuracy. A high contextual interference group, low contextual interference group and a control group completed a three-day supervised imagery intervention. An RMANOVA revealed the main effect for time  $F(1.87, 111.95) = 1.17$ ,  $p = 0.31$ ,  $\eta^2 = 0.02$ , group;  $F(2, 60) = 0.97$ ,  $p = 0.38$ ,  $\eta^2 = 0.03$ , and interaction  $F(3.73, 111.95) = 1.87$ ,  $p = 0.13$ ,  $\eta^2 = 0.06$  was not significant. The second experiment (N=44, incomplete) involved the same design and tasks but instead compared a variable practice group, constant practice group and a control group. Preliminary RMANOVA, revealed the main effect for time ( $p = 0.1$ ,  $\eta^2 = 0.02$ , group;  $F(2, 60) = 0.97$ ,  $p = 0.38$ ,  $\eta^2 = 0.03$ , and interaction  $F(3.73, 111.95) = 1.87$ ,  $p = 0.13$ ,  $\eta^2 = 0.06$  was not significant. The findings from both these experiments do not support the presence of the contextual interference effect in motor imagery practice. Future research could use different tasks, experienced performers and longer interventions to help optimise imagery interventions through contextual interference.

6 - TITLE: **Brain Endurance Training enhances muscular strength and endurance**

**AUTHORS:** Alexandru Rautu<sup>1</sup>, Jesús Díaz-García<sup>2</sup>, Christopher Ring<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>School of Sport, Exercise & Rehabilitation Sciences, University of Birmingham, Birmingham, UK <sup>2</sup>Faculty of Sport Sciences, University of Extremadura, Cáceres, Spain

Background: Brain Endurance Training (BET), a form of combined cognitive and exercise training, can improve endurance exercise performance. Evidence confirms that BET enhances submaximal muscular endurance, however, its effects on maximal muscular strength have yet to be demonstrated. Accordingly, the present study tested the effects of BET on muscular strength (one repetition maximum, 1RM) and endurance (as many repetitions as possible, AMRAP). Methods: Seven resistance-trained adults (5 males, 2 females) completed 10 sessions (4 testing, 6 training) over 4 weeks. In each testing session, participants were assessed for bench press 1RM and then completed AMRAP at 50% of initial 1RM (to first failure and then total failure). In each training session, participants performed five sets of bench press (5 repetitions at 80% current 1RM), with each set followed by a hard 5-min cognitive task (Time-Load Dual-Back and Color Multi-Source Interference Tasks). At the end of each session, participants completed a 90-s Psychomotor Fatigue Threshold Test and provided a rating of mental fatigue. Results: ANOVAs (4 Testing Sessions) found that BET increased 1RM ( $p < .001$ ;  $M = 11\%$ ), initial AMRAP ( $p < .007$ ;  $M = 22\%$ ), and total AMRAP ( $p <$

.04; M = 18%). Moreover, BET decreased mental fatigue ratings ( $p < .001$ ; M = -48%) but did not affect Psychomotor Fatigue Threshold Test reaction times ( $p = .89$ ; M = 3%). Conclusion: A 4-week training program using combined high intensity cognitive and resistance exercise tasks improved maximal and submaximal resistance exercise performance. BET also reduced subjective mental fatigue. These findings provide preliminary novel evidence that muscular strength and endurance are enhanced by high intensity intermixed BET.

**36 - TITLE: Structuring Fair Competition: An Evidence-Based Classification Framework for Visually Impaired Footballers**

**AUTHORS:** Harrison K. Leivers<sup>1,2</sup>, Matthew A. Timmis<sup>1</sup>, Peter M. Allen<sup>2</sup>, Oliver R. Runswick<sup>3</sup>

**AFFILIATIONS:** <sup>1</sup>Cambridge Centre for Sport and Exercise Sciences (CCSES), Anglia Ruskin University, Cambridge, United Kingdom <sup>2</sup>Vision and Hearing Sciences Research Centre, Anglia Ruskin University, Cambridge, United Kingdom <sup>3</sup>Department of Psychology, Institute of Psychiatry, Psychology and Neuroscience, King's College, London

The current blind and partially-sighted football classification system is based on the World Health Organisation's definition of vision impairments (VI). However, governing bodies require sport-specific and evidence-based systems. To identify the optimal class structure and implement an evidence-based sport-specific system, an analysis of the relationship between impairment and performance in the specific sport is required. Here, forty-five footballers with a VI completed a technical performance test. Visual function was measured using tests for visual acuity (VA), contrast sensitivity (CS), and visual field (VF). Normalised performance was significantly related to VA and CS, whereas there was no relationship with VF. A single split in the data of 2.40logMAR VA offered the best classification. CS and VF could not accurately classify performance, and these tests may not be appropriate when classifying footballers with a VI. This model would lead to increasing the eligibility criteria for blind football whilst reducing the maximum impairment eligible for partially-sighted football.

**7 - TITLE: Determinants of Mental Fatigue: The Roles of Cognitive Control and Dynamic Difficulty Adjustments**

**AUTHORS:** Thipkanlaya Jaiaue<sup>1</sup>, Andrew Cooke<sup>1</sup>, and Germano Gallicchio<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>School of Psychology and Sport Science, Bangor University

Introduction: Mental fatigue due to sustained engagement in cognitively demanding tasks can impair performance, yet understanding of its contributing factors remains limited. We developed computer-based protocols manipulating (a) cognitive-control load and (b) dynamic difficulty adjustments to examine their effects on fatigue development and task performance. Methods: A between-subject multi-task experimental design ( $n = 72$ ) compared (a) lower versus higher cognitive-control loads, and (b) higher cognitive-control load with fixed difficulty versus dynamic difficulty, where task speed adapted in real time to match fluctuations in performance. Task performance, subjective, and physiological fatigue indicators were assessed. Results: Perceived fatigue increased over time across all conditions. Higher cognitive-control load impaired performance accuracy by 11% and slowed responses by 59% relative to lower load, accompanied by increased blink rate over time, indicating a decline in visual engagement. Dynamic difficulty adjustments sustained visual engagement, reduced accuracy by 24%, and accelerated responses by 20%, resulting in a 29% faster fatigue onset compared with fixed difficulty. Conclusion: Both higher cognitive-control demands and

dynamic difficulty adjustments contribute to mental fatigue and impair performance accuracy, with the latter promoting task engagement and accelerating fatigue onset. This study introduces a novel, time-efficient fatiguing protocol that reflects the dynamic demands of real-world high-performance activities. It also provides theoretical and practical guidance for applying engagement-focused strategies in skill acquisition to enhance effective learning while managing fatigue.

**2 - TITLE: No need for speed? Slow versus fast acquisition results in comparable performance but at differing cognitive costs.**

**AUTHORS:** Dave Bright<sup>1</sup>, Dr Jenny Smith<sup>1</sup>, Dr Phil Kearney<sup>2</sup>, Dr Oliver Runswick<sup>3</sup>

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OPTIMAL theory suggests that when learning a novel motor skill the presence of task-relevant autonomy leads to increased intrinsic motivation, resulting in improved learning outcomes. These claims have been questioned (Parma et al., 2024), with some work suggesting that task difficulty may suppress the expected outcomes (Bright et al., 2025). To examine this, the current study provided task-relevant autonomy across three speed-constrained difficulty groups (Slow, Medium, Fast) in an on-screen interception task with 34 participants (mean age = 34.2(±10.8) years, 59% male). Results showed that even when low task difficulty allowed for high levels of success in autonomous conditions, the predicted rise in intrinsic motivation was not observed. Across the acquisition and retention phases no between-group differences were found for intrinsic motivation, failing to support the predictions of OPTIMAL theory. Measures of cognitive effort suggested that for the Slow and Medium speed groups, when post-tests were above acquisition speed, the task could be performed with the same level of success as the Fast group but at greater cognitive cost. Results are discussed regarding the cognitive effects of acquisition at different speeds and the limitations of OPTIMAL theory.

## LIGHTNING TALKS 2/POSTERS

**21 - TITLE: Exploring how Momentum Shapes Expectations of Opponent Intentions in Cricket Batters**

**AUTHORS:** Shahbaz Hasan<sup>1</sup>, David P. Broadbent<sup>2</sup>, Paul Dancy<sup>1</sup>, Colm P. Murphy<sup>3</sup>, Jamie S. North<sup>1</sup>, Andre Roca<sup>1</sup>

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Momentum is defined as the perception and observable action of moving towards (positive momentum) or away from (negative momentum) a goal, influencing athlete behaviour in dynamic time constrained sports (Den Hartigh & Gernigon, 2018). Skilled athletes report greater confidence and risk-taking in favourable conditions, and more conservative decisions in unfavourable ones (Levi & Jackson, 2018). Similarly, cricket batters describe perceptual shifts depending on whether incoming information aligns with expectations (Hasan et al., in preparation). Yet, how momentum shapes expectations during sustained one-on-one competition, such as cricket batting, remains underexplored. This study considered how momentum influences batters' expectations of bowler intentions over the course of a match.

Semi-structured interviews were conducted with eleven cricketers (9 male, 2 female) with at least one year of experience at ECB Premier League level or equivalent. Interviews examined the experience, causes, and influence of momentum on perception and decision-making. Data were analysed deductively and inductively. Deductive themes included large positive, large negative, small positive, and small negative momentum shifts. Larger shifts followed clusters of runs or wickets in a short period of time. Smaller positive shifts reflected increased confidence, risk tolerance, and reduced cognitive effort. Small negative shifts involved forced risk-taking, uncertainty about how to regain control, and over-analysis. Findings show momentum shapes how batters anticipate opponents' intentions.

**37 - TITLE: Life skills in youth sport and Physical Education: A preliminary analysis of coach knowledge and experience of holistic session delivery**

**AUTHORS:** Darren Nolan<sup>1</sup>, Chris Pocock<sup>2</sup>, Frank Owusu-Sekyere<sup>3</sup>, Paige Seggery<sup>1</sup>

**AFFILIATIONS:**<sup>1</sup>University of Hertfordshire <sup>2</sup>University of Chichester <sup>3</sup>Kingston University

Life skills are psychosocial competencies developed in one context (e.g. sport), that can be transferred to another context (e.g. school). This study investigated youth sport and Physical Education (PE) coaches' perceptions and experiences of developing life skills in sport and PE sessions. 53 youth sport and PE coaches completed a mixed-methods survey. Coaches held a minimum Level 1 coaching qualification and had at least one year coaching experience. All participants believed that coaches support development of children's life skills during sport and PE, yet 25% did not consider life skills when planning sessions. 68% of coaches believed that life skills were developed automatically during sport and PE. Whilst 50% coaches surveyed believed that life skills were addressed during coach education courses, 33% stated life skills were not addressed on courses. Chi-squared tests showed a significant association ( $p = 0.036$ ) between coaching qualification level and participants perception of whether coaches influence life skill development. Thematic analysis of qualitative data showed that coaches typically use sport to develop life skills such as communication, leadership, problem solving and teamwork. Coaches expressed a desire for NGB-endorsed resources to aid in planning and delivering sessions in which life skills were embedded. Coaches also stated the need for coach educators to raise the awareness of life skills by speaking about them on courses, provide demonstrations of how to embed life skills in sessions, and give coaches opportunities to practice teaching life skills on coaching courses.

**28 - TITLE: More players can reach national and international levels: Coaches perceptions of birthday-banding in youth squash and its potential for minimising relative age effects**

**AUTHORS:** Adam L. Kelly<sup>1</sup>, Achuthan Shanmugaratnam<sup>1</sup>, Kathryn Johnston<sup>2</sup>, Joseph Baker<sup>2</sup>, Matthew Ferguson<sup>3</sup>, Mark Jeffreys<sup>1</sup>, Josh Taylor<sup>4</sup>, and Alexander B. T. McAuley<sup>1</sup>

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In an attempt to identify, select, and develop the most talented squash players based upon their long-term potential, England Squash designed and implemented the 'birthday-banding' approach (i.e., athletes compete with and against those of the same age and move up to their next birthdate group on their birthday). However, little work has focused on the perceptions of interest-holders on birthday-banding. The purpose of this study was to use semi-structured interviews with fifteen England Squash Talent Pathway coaches, to better understand the

mechanisms of the birthday-banding approach and its potential benefits. Following thematic analysis, three higher-order themes were found that comprised of six lower-order themes: (a) considering organisational structures (e.g., understanding selection processes, and considering competition structures and performance outcomes), (b) building appropriate settings (e.g., promoting flexibility and fluidity in groups, and creating an environment that fosters long-term development), and (c) facilitating individual athlete development (e.g., encouraging holistic development and progression, and evaluating physical and skill development). Overall, coaches spoke highly of the implementation of birthday-banding, noting the value in creating fairness to athletes. Coaches also appreciated seeing athletes having varying competition within and across a year. That said, considerations were raised about implementing birthday-banding, highlighted how to continue making improvements.

**29 - TITLE: Talent identification and talent development in women and girls sport: A systematic review of literature using an intersectionality lens**

**AUTHORS:** Hina Shafi<sup>1</sup>, Alexander B. T. McAuley<sup>1</sup>, Gabriele Morganti<sup>2</sup>, Laura Hodgson<sup>1</sup>, and Adam Leigh Kelly<sup>1</sup>

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Previous reviews on talent identification and talent development in sports such as cricket, rugby, and soccer often lack research on women and girls. Addressing this gap is essential for a comprehensive, globally relevant understanding of talent identification and development in female sport. This systematic review examines current research on talent identification and talent development in women's and girls' sport through an intersectional lens. Studies were assessed by methodology and factors including age, disability, education, ethnicity, level of play, nationality, region, religion, relative access to wealth, sample size, sex, sexual orientation, and sport. Following PRISMA guidelines, a structured search strategy of Web of Science™ Core Collection and SPORTDiscus databases was conducted. Studies were filtered on English language and peer-reviewed publications, with inclusion criteria focused on talent identification and/or talent development in women and girls and sports. From 2,770 articles screened, 90 were included. The most reported intersections were age, level of play, nationality, sample size, sex, and sport. In comparison, few studies reported ethnicity, disability, relative access to wealth, religion, or sexual orientation. Most studies lacked clarity on participant intersectionality, limiting the generalisability and relevance of findings. Future research should clearly describe samples to enhance contextual understanding.

**22 - TITLE: Visual requirements of Shooting in Biathlon**

**AUTHORS:** Dr Zöe L. Wimshurst<sup>1</sup>, Miika Köykkä<sup>2,3</sup>, Professor Vesa Linnamo<sup>3</sup>

**AFFILIATIONS:** <sup>1</sup>School of Health and Rehabilitation Sciences, Health Sciences University. UK

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Sports vision is a growing area of interest within sport and is being utilised to bring about performance enhancements. However, the visual system is made up of a number of different components, each of which are differently important for every sport. Currently there is no systematic way of knowing which visual skills are relevant to each sport. The first aim of this study was to trial a questionnaire to understand which visual skills those involved in biathlon perceive to be important for the shooting element of biathlon. Fifty-six participants completed

the questionnaire, and the visual skills rated as most important were taken forward to phase two of the study. In Phase 2, 27 participants took part in visual skills testing and shooting assessments. The results of these tests were correlated to investigate relationships between vision and shooting performance. The results showed that the test of saccadic eye movements was correlated with nine of the eleven shooting measures. There were further correlations with some shooting measures and gaze stability, central-peripheral awareness, attention, and visual concentration. We conclude that there are clear links between some visual skills and shooting performance and these should be explored further with intervention style training.

## POSTERS

**18 - TITLE: Investigating the Influence of 360° Sound on Decision-Making in Sport**

**AUTHORS:** Charlotte Hargreaves<sup>1</sup>, Oliver Runswick<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>Institute of Psychiatry, Psychology & Neuroscience, King's College London

Perceptual-cognitive skills are crucial for effective decision-making in sport, yet research has largely focused on visual cues, overlooking the role of auditory information. Limited evidence suggests that sound, such as verbal communication, can enhance decision-making and team performance, but the impact of integrated audio-visual stimuli within realistic match contexts remains underexplored. This study addressed these gaps by exploring how sensory modality (visual vs. audio-visual), technology (two-dimensional (2D) vs. 360° virtual reality (VR)), and expertise affect decision-making accuracy in netball. Sixteen participants (eight experienced, eight novices) aged 18–23 viewed centre passes from a centre player's perspective and verbally indicated their passing decisions. A mixed-model ANOVA showed higher decision-making accuracy in audio-visual compared to visual-only conditions, and in 360° VR compared to 2D. Experienced players outperformed novices in all conditions, with no significant interaction effects. These results show that sound presence improves decision-making accuracy, and 360° VR offers a more effective and immersive training tool than 2D video. Practically, the findings support the use of 360° VR and audio-visual drills to develop sport decision-making in ecologically valid environments. Future research should explore interactive VR, include motor responses, and use expert panels to evaluate decision accuracy.

**11 - TITLE: Visual Exploratory Activity and Practice Design in Soccer: An Investigation into Small Sided Conditioned Games**

**AUTHORS:** David Eldridge<sup>1</sup>, Chris Pocock<sup>1</sup>, James Feist<sup>1</sup>, Craig Pulling<sup>1</sup>, Matt Miller-Dicks<sup>2</sup>

**AFFILIATIONS:** <sup>1</sup>University of Chichester <sup>2</sup>University of Portsmouth

Visual Exploratory Activity (VEA) has been linked to improved performance with the ball in soccer, as players 'scan' for information away from the ball to guide their future actions. However, little research has investigated effective practice designs to develop VEA. This study aimed to investigate the impact of four small sided and conditioned games on VEA. Five academy coaches were interviewed to understand effective practice activities perceived to develop VEA. Three small-sided games (4v4) with modified conditions were agreed upon, and were compared to a standard small sided game. Seven players from a Category 2 academy under 18 team played in all four games, which each lasted 10 minutes, twice across two

separate days in a counterbalanced order. VEA whilst in possession was most frequent in the game with end zones ( $M = 10.09$ ,  $SD = 2.87$  seconds/scan) and multiple gate games ( $M = 10.21$ ,  $SD = 3.83$  seconds/scan), with the lowest scan frequency in the small-sided game with no conditions ( $M = 11.27$ ,  $SD = 4.40$  seconds/scan). VEA was similar in and out of possession for all four games. Coaches are encouraged to design conditioned games to support opportunities for players to engage in VEA in practice sessions.

**19 - TITLE: The Role of Video Technology in Subjective Decision-Making in Sport: A Scoping Review**

**AUTHORS:** James Clark<sup>1</sup>, Liis Uiga<sup>1</sup>, Matt Weston<sup>1</sup>, Mark Williams<sup>2</sup>, Robin Jackson<sup>3</sup>, Greg Wood<sup>1</sup>

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Sports officials' interactions with technological aids have continuously evolved. Although these systems now enhance decision-making across virtually all major sports, literature exploring its impacts remains fragmented. This scoping review synthesised research on video technology in subjective sports decision-making. Four databases (PubMed, GoogleScholar, SPORTDiscus, PsycINFO) were searched through May 2025 following PRISMA-ScR guidelines, using five broad search strings combining video technology, officiating, and sports terms. Studies included peer-reviewed English articles examining subjective decision-making technological aids, excluding automated systems. Analysis revealed five key themes. Match variable research showed increased playing time and reduced offsides/fouls, with decision accuracy improving. Slow-motion research revealed duration overestimation effects and heightened intentionality judgements that could undermine expertise. Bias studies found mixed effects on home advantage across sports and competitions. Stakeholder attitudes diverged, with officials supporting the technology while fans expressed concerns about game flow. Communication between video officials remains largely unexplored despite its critical importance. This synthesis reveals optimisation opportunities in video technology despite it enhancing accuracy in decision-making. Critical gaps include examining sports beyond soccer, communication protocols between officials, and the cognitive demands video technology imposes. Future research is essential for developing training frameworks that support expertise acquisition and decision-making excellence in technology-enhanced environments.

**23 - TITLE: Exploring the visual search demands of football goalkeepers under increasing task complexity**

**AUTHORS:** Benjamin Franks<sup>1</sup>, Daniel Tumelty-Bevan<sup>2</sup>, Anthony White<sup>3</sup>

**AFFILIATIONS:** <sup>1</sup>School of Psychology and Life Sciences, Canterbury Christ Church University; School of Sport, Nutrition and Allied Health Professions, Oxford Brookes University <sup>2</sup>Birmingham City Football Club <sup>3</sup>Leeds Trinity; The Football Association

The visual search behaviours of football goalkeepers have provided a long established insight into the demands of making saving actions. However, the typical penalty kick paradigm captures a very limited insight into a goalkeeper's typical practice and performance behaviour. Consequently, the practice conditions of goalkeepers have only very recently been

considered. In this preliminary investigation, we examined the visual search behaviours of Professional Development Phase goalkeepers under ten different practice conditions underpinned by the Goalkeeping Practice Spectrum. Results demonstrated the use of functional visual search strategies depending on the demands of the task (type of service, task sequence, level of complexity). Specifically, a greater number of exploratory eye movements prior to foot-ball contact were found in the upper scale of the un-announced and live part of the spectrum. Our initial findings support the development of a goalkeeping specific practice framework to inform goalkeeper coaches on their choice of practice conditions.

**30 - TITLE: Analysing performance through the prism of relative age and biological age: Towards an approach for adjusting capacity assessments in football**

**AUTHORS:** Elie Rambaud<sup>1,2</sup>, Adrien Sedeaud<sup>1,3</sup>, Adam Kelly<sup>4</sup>, Audrey Difernand<sup>5</sup>

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**20 - TITLE: Virtual Environments Representing Performance Settings and Their Potential to Elicit Emotions in Skilled Performers: A Scoping Review**

**AUTHORS:** Kieran B. Hayes<sup>1</sup>, Neil E. Bezodis<sup>1</sup>, Laura Mason<sup>1</sup>, Oliver R. Runswick<sup>2</sup>, Natalia De Mello<sup>1</sup>, Joanne Davies<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>Swansea University <sup>2</sup>King's College London

xReality (xR), a term describing augmented and virtual reality technologies, is gaining considerable attention for training perceptual-motor and cognitive-affective skills by simulating real-world tasks and environments. To enhance the transfer of skills from xR to the real world, xR practice can align with key principles of representative learning design and affective learning design. However, practical techniques to reliably elicit performance-relevant emotions, which are essential to affective learning design, remain poorly understood, particularly in sporting applications. Some xR studies that utilise representative environments and monitor emotional responses exist in other domains (e.g., military, medicine, music), but their findings typically remain siloed to their respective domains. A scoping review, guided by PRISMA-ScR, will therefore be undertaken to identify studies across domains in which skilled performance is practised within representative virtual environments and emotional responses are measured. This presentation will propose the scoping review methods and identify the information to be extracted from relevant studies, including the methods used to monitor emotions and gather participant feedback.

**31 - TITLE: What FIFA Member Associations Want: A Global Analysis of Talent Development Scheme Funded Projects**

**AUTHORS:** Johann Lux<sup>1,2</sup>, Alexander B.T.McAuley<sup>1</sup>, Cain Clark<sup>3</sup>, Achuthan Shanmugaratnam<sup>1,2</sup>, and Adam L. Kelly<sup>1,2</sup>

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National football associations play a pivotal role in building sustainable systems for talent development. While research highlights the need for coordinated and context-sensitive talent development (Bennett et al., 2019; De Bosscher et al., 2006), there is limited empirical evidence on how associations conceptualize and operationalize such strategies. Accordingly, this study provides global insights into how FIFA Member Associations define their talent development priorities, as reflected in applications submitted to FIFA's Talent Development Scheme (TDS). A descriptive content analysis was conducted on 623 TDS project applications submitted by 172 FIFA Member Associations in 2024. Projects were categorised by seven core areas and coded into detailed project themes. Funding distribution was analysed by project count, allocated funding, and disaggregated by confederation and gender target group (men's, women's, both). Most funding was directed toward Academies (22%) and Talent Identification (19%). Frequent project themes included regional academies and youth national teams programmes. CAF, Concacaf, and OFC primarily allocated funding to academy projects, whereas UEFA prioritised Talent Development and Management & Resources. Most projects targeted both genders (62%), with UEFA leading in women's-only initiatives (19%). This study provides the first global empirical overview of TDS-funded projects, revealing both strategic differences and shared priorities in how associations support long-term talent development, laying the foundation for future research.

## 12 - TITLE: **Effect of Bowler and Delivery Characteristics on Anticipation in Male International Pathway Cricket Batters**

**AUTHORS:** Megan Smith<sup>1</sup>, Dr Oliver R Runswick<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>King's College London

Anticipation is a vital skill in cricket, with batters using a range of information sources to develop predictions of the opponent's behaviour. Identifying a batter's anticipation skills against different types of bowler and different delivery characteristics could inform targeted training interventions. Therefore, we investigated the use of an immersive anticipation test to measure the effects of bowler and delivery characteristics on batters' anticipation accuracy. Cricket batters (n=124) enrolled in the England Men's development pathway faced a temporal occlusion anticipation task viewing 360-degree footage in a virtual reality headset. Players faced nine different T20 scenarios with different bowling arm, delivery type, and game context. Each scenario was faced for three balls, totalling to 27 deliveries. Footage was occluded after 120ms of ball flight with participants then anticipating the landing location of the ball on a 4 x 5 grid. Main effects of delivery type, length, and sequence number when facing different delivery types were found (all ps = <.001). A main effect of bowler laterality congruency was found (p = 0.042), but no significant effect of bowler hand was found (p = 0.104). Findings could inform training design helping to identify batters' weaknesses.

## 24 - TITLE: **Many Kicks: A proposal for a Multi Lab Project aiming to replicate the main findings of a highly cited eye tracking study**

**AUTHORS:** Dr Harry Ramsey<sup>1</sup>, Dr Matt Miller-Dicks<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>University of Portsmouth

Research in the wider sports sciences, including skill acquisition, typically suffers from small sample sizes due to the challenge of recruiting skilled participants from small population pools. As highlighted in a large-scale replication project within the sport sciences (Murphy et al., 2025), studies with small sample sizes are often less likely to replicate. In other psychology domains, research communities have come together to tackle this challenge by conducting “Many Labs” projects, where a large group of researchers collaborate to collect data on one project from several sites. The aim is to build a much larger participant pool and ensure the results are a more accurate reflection of the actual population effect, and are therefore more likely to replicate. This poster will overview a project proposal led by myself and Matt Miller-Dicks to conduct a conceptual replication of Dicks et al., (2010) with a considerably larger sample size, and a simplified study design. To achieve this, we are proposing a multi-lab project to collect data from multiple sites to ensure the findings are as robust as possible. The aim of this poster is to raise awareness of our project and the importance of open research practices in the sport sciences.

#### **8 - TITLE: The effect of task load and the availability of contextual information on anticipation in soccer**

**AUTHORS:** Dr Colm P. Murphy<sup>1</sup>, Mr Joshua Bainbridge<sup>1</sup>, Dr Viktor N. Gredin<sup>2</sup>, Dr Oliver R. Runswick<sup>3</sup>, Dr David P. Broadbent<sup>4</sup>

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Dynamic, time-constrained tasks such as defending in soccer often require skilled athletes to anticipate opponent intentions under severe cognitive demand. Although it is acknowledged that anticipation involves effective utilisation and integration of contextual and kinematic cues, the cognitive demand associated with using this information is not clear. Research findings are mixed as to how secondary cognitive tasks (e.g., strategic planning/communication with teammates) affect anticipation and the utilisation of these information sources (Gredin et al., 2020; Runswick et al., 2018). This discrepancy may arise from differences in the secondary task used to investigate task load effects on anticipation. Therefore, this study sought to investigate how dual tasks with different cognitive requirements affect the use of contextual and kinematic information during anticipation. We used a 2 vs 2 defensive scenario to compare skilled soccer players’ ability to anticipate opponent intentions when provided with two forms of contextual information about opponent tendencies (directional tendencies, action tendencies) and a control condition with no contextual information provided. Participants anticipated the outcome of the scenarios under three task load conditions (single; dual [letter recall]; dual [backward counting]). Ratings of perceived mental demand were also collected (NASA-TLX). Anticipation was detrimentally affected by the backward counting, but not the letter recall dual task. Perceived mental demand was also highest in the backward counting task. Findings have implications for how

researchers manipulate task load in experimental designs, and highlight the need for coaches to consider how the cognitive demands of competition may influence anticipation.

**25 - TITLE: The effects of simulated loss of visual acuity on performance in a first-person shooter game**

**AUTHORS:** Henry Kaplan<sup>1</sup>, Zahra Kuliev<sup>1</sup>, Oliver Runswick<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>King's College London

The growing popularity of FPS games and their visual demands necessitate research into accessibility for players with vision impairment (VI). Current understanding of how visual function affects FPS performance is limited, hindering the development of accessibility features and the development of competition for VI players. This study aimed to (1) develop and validate an FPS-based task sensitive to visual performance and (2) investigate effects of simulated visual acuity loss on performance. Participants completed an Aimlabs task assessing target detection and aiming accuracy. 26 individuals participated in a repeated-measures design across 7 levels of simulated VI ranging from a visual acuity (LogMar) of 0 to 2.4. Performance was measured as overall and per-target accuracy. Construct validity of the task was assessed by comparing novice (n=23) and expert (n=3) FPS players. While data collection is not yet complete for expert participants, initial findings confirm Gaussian blur has a significant effect on target accuracy. Post hoc analysis showed significant decreases in accuracy between LogMAR 0.4 and 0.8, 0.8 and 1.2, and 2 and 2.4. This research informs the effects of simulated visual acuity loss on FPS skill and offers the first steps of evidence for classification categories in esports for VI players.

**3 - TITLE: Conscious Control Propensity Modulates the Effects of Attentional Focus on Motor Skill Performance**

**AUTHORS:** Zara A. Abbas<sup>1</sup>, Jamie S. North<sup>2</sup>, Adam Bruton<sup>3</sup>, Luke Felton<sup>1</sup>, Andrew Greene<sup>1</sup>

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This study investigated the effect of conscious control propensity (CCP) and attentional focus on motor skill performance using a golf-putting task. Novice golfers (n=28) putted to a 3m target under three attentional focus conditions: internal focus (IF; "keep the wrist and arms steady"), external focus (EF; "focus on the clubface making contact with the ball"), and holistic focus (HF; "make the putt as smooth as possible"). Participants were classified as low (n=15) or high (n=13) in CCP using the Movement-Specific Reinvestment Scale (Masters et al., 2005). Findings revealed a significant interaction between CCP and attentional focus: those low in CCP performed more accurately under EF compared to IF instructions, whereas those high in CCP showed the opposite pattern. Stroke path was more accurate under both IF and EF compared to HF; but no significant effects were observed for movement consistency, or kinematic measures of face angle, club velocity, and impact spot. Self-reports of attentional focus adherence and preference aligned with performance outcomes. While external focus is generally promoted as optimal for performance (Wulf & Lewthwaite, 2016), these findings

suggest its effectiveness may depend on individual differences in conscious control. Tailoring attentional cues accordingly may enhance motor performance in applied settings.

**9 - TITLE: The Impact of Expertise and Cognitive Load on Decision Making in Soccer**

**AUTHORS:** Kirsty Brown<sup>1</sup>, Nicholas Smeeton<sup>1</sup>, Natasha Sigala<sup>2</sup>

**AFFILIATIONS:** <sup>1</sup>School of Education, Sport and Health, University of Brighton, UK <sup>2</sup>Brighton and Sussex Medical School, UK

Accurate and rapid decision-making under cognitive load is a fundamental component of high-level performance in dynamic, open-skill sports. However, current understanding of how expertise and cognitive load interact to affect these processes remains limited. The present study examined how increased cognitive load affects decision-making in an immersive soccer task. Twelve skilled and thirteen unskilled players viewed counterattacking scenarios from a first-person perspective and predicted the intended outcome (dribble or pass) under high (with a concurrent mental addition task) and low (no additional task) cognitive load. Primary dependent measures were anticipation efficiency, response awareness, and signal detection measures of sensitivity and response bias. Results revealed significant effects of both expertise and cognitive load. Skilled players demonstrated more efficient anticipation than unskilled players, and anticipation performance decreased under high cognitive load. However, the load-induced impairment was only significant for unskilled participants, while skilled players maintained decision-making performance despite increased cognitive demands. Both groups exhibited reduced response awareness under high cognitive load.

These findings suggest that, in line with the Cognitive Control Hypothesis and the Expertise Reversal Effect, skill-related adaptations help mitigate the negative effects of cognitive load on decision-making in fast-paced, time-constrained sports. Future research should examine whether similar patterns occur in closed-skill sport contexts.

**32 - TITLE: Characteristics and Practice Behaviours of Youth Footballer who Transition to Professional Football through Independent School Pathways.**

**AUTHORS:** Tabitha A. Clark<sup>1</sup>, Nicholas J. Smeeton<sup>1</sup>

**AFFILIATIONS:** <sup>1</sup>School of Education, Sport and Health Sciences, University of Brighton UK

Independent school football talent development programmes have increased in recent years. However, there is little published evidence on the characteristics and practice behaviours of footballers that transition to professional football through these routes. Six males with current or past playing experience of professional football in the UK were interviewed using an adapted retrospective practice history assessment (Côté et al., 2003) to record experiences playing youth football and practice behaviours whilst in an independent school elite youth football development system. The main findings of this study indicate the self-reported importance of individual, self-initiated practice away from structured activities as a means of talent development. Furthermore, the early specialisation was seen to influence the progression to adult professional football. Negative influences were burnout and a diminished sense of enjoyment towards football. Positive influences were accelerated career progression through facilities and receiving professional coaching from an early age. Early diversification was viewed as positively influenced youth transitions to academy systems and developing transferrable skills. Family influence was seen as central to progressing to

professional football for all participants. Further research is needed to better understand the attributes of independent school football talent development programmes that facilitate progression to professional football.

**38 - TITLE: Player insights into the dynamics of serve-return dyads in wheelchair tennis**

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This study aimed to understand expert wheelchair tennis players' perceptions of the challenges and necessity for anticipatory judgements while returning serves. Semi-structured interviews were conducted with six international wheelchair tennis players, comprising two males and three females from the open category, and one male from the quads category. Thematic analysis was used to identify three common themes: perceptual and physical challenges, information sources for anticipating serve trajectory, and returner strategies. All participants highlighted the importance of anticipating serve trajectory using both kinematic and contextual information sources. Participants also discussed strategies for optimal chair positioning, movement, and return techniques, emphasizing agility, decision-making skills, and confidence as important determinants of hitting an effective return. The study underscores the importance of anticipation in wheelchair tennis, highlighting both shared and unique information sources and strategies compared to ambulatory tennis for effective returns of serve.

**42 - TITLE: Testing the Reliability and Validity of a Space Shuttle Alignment Task**

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Research into conditions like Spaceflight-Associated Neuro-Ocular Syndrome (SANS) is gaining more and more pertinence as the demand for long-duration space flight increases (Good et al., 2024; European Space Agency; Uppal, 2024). Domain-specific tasks allowing for changes in performance to be captured need to be researched. This study aims to test the reliability of a widely available docking task. Seventeen participants were recruited to complete an online International Space Station (ISS) SpaceX docking task six times. Time taken to complete the task, number of clicks, and Accuracy-Speed Trade-Off (ASTO) were measured. Within-day reliability was supported, without significant difference across trials for number of clicks ( $F(5, 80) = 1.96, p = 0.093, \eta^2 = 0.11$ ). The Bland-Altman analysis indicated number of clicks between Trials 5 and 6 served as a suitable benchmark for setting limits of agreement, with a mean difference of  $\sim 3.47$  [95% CI: -26.81, 33.75]. However, task completion time was significantly different ( $F(5, 80) = 7.46, p < 0.001, \eta^2 = 0.32$ ), with the first trial notably slower, indicating a need for 3 familiarisation trials. The ISS docking task seems a reliable tool for future performance-based, vision-related space research. Future studies should explore the effects of SANS symptoms on both visual acuity and task performance.

**33 - TITLE: Laterality in male international football: The influence of footedness on selection and progression**

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Technical and tactical advantages in football can arise when players occupy a specific field position based on their laterality (the preferential use of one side of the body over the other). To help better understand the influence of laterality on selection and progression in international football, this study recorded the foot preference of 7507 male players selected for their respective national youth (U17, U19, and U21) and senior teams (England, France, Germany, Italy, and Spain) to examine the association between laterality, the likelihood of international selection, and playing positions, and explore laterality impact on players' youth-to-senior transition. Chi-square statistics revealed an overrepresentation of left-footed players at youth (>27%) and senior levels (26.5%) (p-values <0.001) compared to normative values (15%) and indicated left-footed players were more likely to be recruited as defenders, whereas right-footed players as midfielders and forwards (p-values= 0.001). The youth-to-senior transition was generally low, with no significant difference according to laterality. Findings suggested left-footed players, due to their relative rarity, experience selection advantages related to helping their teams in symmetric offensive opportunities of playing (crosses from both pitch sides), penetrating opposing defences (unpredictability in one-on-one confrontations), and supporting ball-possession-based pressure (situational demands requiring on-the-ball actions with players' preferred foot).

**34 - TITLE: How do recruiters identify and select talent in sport? A systematic review of literature**

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Therefore, this systematic review aimed to synthesise empirical evidence on how recruiters identify and select talent in sport. It is framed through the coach's eye perspective, and categorised by quantitative, qualitative, and mixed-method designs. Following PRISMA guidelines, a structured search was conducted across Web of Science™, SPORTDiscus, and Google Scholar. Keywords included terms related to talent identification, athlete selection,

and the coach's eye. Studies were included if they featured recruiters as participants, were peer-reviewed, published in English, and presented primary empirical research. From 2,688 screened articles, 41 met the criteria. Recruiters used both objective and subjective assessments across 18 sports, with soccer being the most studied (n=25). Evaluations included technical, tactical, physical, psychosocial, and multidisciplinary factors. Findings underline key influences on identification and selection decisions, while highlighting underexplored areas—particularly female recruiters, longitudinal designs, and non-Western settings—for future research.

**10 - TITLE: Exploring the cognitive mechanisms of anxiety and error propagation: A test of Attentional Control Theory Sport.**

**AUTHORS:** So Hyun Park<sup>1</sup>, Tom Arthur<sup>1</sup>, David J. Harris<sup>1</sup>, Samuel J. Vine<sup>1</sup>, Mark R. Wilson<sup>1</sup>

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Attentional Control Theory: Sport proposes that anxiety arises from ongoing appraisals of the probability (POF) and cost of failure (COF). Harris et al. (2023) found that anxiety levels increased when POF and COF increased following errors. However, the study did not fully explore the link between anxiety, attentional disruption, and motor performance. Moreover, how individuals perceive and interpret errors likely shapes their POF and COF measures, but this too remains underexplored. This study addresses these gaps using a more robust pressure manipulation, increased error feedback, refined attentional and motor performance measures, and a focus on trait-level moderators of anxiety. Participants will complete a virtual reality catching task under low- and high-pressure conditions. In some trials, they will receive bogus feedback simulating high or low error rates. Attentional control will be assessed via gaze behaviour variables and performance in a Go/NoGo task. Motor performance will be measured using task accuracy, response time, and variability. Personality traits linked to anxiety—trait anxiety, neuroticism, reinvestment, and intolerance of uncertainty—will be assessed to explore individual differences in susceptibility to error and anxiety-induced performance breakdown. This study offers a rigorous test of ACTS and advances theoretical understanding of compounded errors under pressure. Findings will also support clearer profiling of high-anxiety performers, enabling more tailored interventions.

**4 - TITLE: Manipulation Checks in Focus of Attention Research: A Methodological Systematic Review**

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Manipulation checks are an essential component of quality experimental design in motor learning. Guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses framework, this methodological systematic review examined the utilization of manipulation checks in focus of attention research. Seventy-eight protocols from four scientific databases from September 2021–September 2023 were evaluated. A secondary analysis was conducted on 10 data sets where manipulation check failures had not been explicitly considered. No manipulation check was used in 53% of protocols, where a manipulation

check was used: 19% used a single rating question, 11.5% used multiple questions, 11.5% used open questions, and 5% used other forms. When manipulation checks were utilized in studies, 68% of experiments did not report if any participants failed the manipulation check or not; the remaining reports either analyzed the failures (11%), excluded the failures (8%), ran multiple analyses (8%), or stated that no participants failed (5%). In the secondary analysis of data, the interpretation of results changed in two of the 10 reanalyzed sources when compared with the original analysis. We conclude with recommendations on how researchers can optimize their use of manipulation checks within focus of attention research when collecting and analysing data.

## 26 - TITLE: **The Predictive Mind in Motion: Exploring Visuomotor Expertise Through Interception**

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This study examined the role of predictive processing mechanisms in naturalistic visuomotor skill learning. We investigated whether the acquisition of an interceptive skill was characterised by encoding and using learned probabilistic associations. Forty-five participants were randomly assigned to either an intervention or control group and practiced intercepting bouncing balls in virtual reality across two sessions. Only the intervention group received probabilistic visual cues – specifically, ball and room colours – that signalled likely bounce trajectories, offering an opportunity to learn and exploit these associations. We assessed task performance (interception rate, return accuracy), anticipatory gaze behaviour (predictive fixations and gaze tracking), and pupillary responses to unexpected outcomes. Participants in the intervention group learned the cue-outcome contingencies and demonstrated more predictive gaze strategies, finer post-bounce tracking, and physiological surprisal responses to probabilistically unlikely bounce outcomes. These findings suggest that encoding probabilistic environmental cues is a key component of effective visuomotor control. The results offer novel evidence for the role of top-down prediction and contextual modulation in motor learning, with implications for training and expertise development in sport. More broadly, this work contributes to an alternate account of expertise as the capacity to encode and exploit environmental regularities through predictive mechanisms.

## 39 - TITLE: **An Exploration into Cricket Batters Sense-making over the Course of a Match**

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Expert performance in time-constrained tasks like cricket batting depends on integrating multiple information sources to anticipate ball trajectories effectively (Müller et al., 2020). While previous research has examined how skilled batters perceive and update information across individual actions (e.g., Connor et al., 2020; Runswick et al., 2018), less is known about how information is managed over extended sequences of play. The concept of sense-making offers a useful framework for understanding this process, highlighting the dynamic

interaction between data and mental models to anticipate outcomes (Klein et al., 2006). This study explored how experienced batters acquire and update information sources throughout a match to make sense of the situation. Semi-structured interviews were conducted with ten semi-professional cricketers (7 male, 3 female), examining how they acquire information, what shapes their expectations, and how these are updated. Thematic analysis, grounded in sense-making theory, identified three overarching themes: constructing an initial understanding of the game situation, monitoring its evolution, and revising it as new information emerges. Participants reported building a stable sense of the situation from contextual cues, updating it with dynamic information, and monitoring key sources like field positioning and bowling patterns. They revised their understanding by interpreting changes as positive or negative momentum shifts, influencing tactical risk-taking and strategic adjustments. Findings show how sense-making enables expert batters to adapt and make effective decisions in time-pressured environments.

**40 - TITLE: Mundane, repetitive, and forgettable: A qualitative investigation of elite football players perceptions of half-time team talks**

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The processes underpinning half-time (HT) breaks in elite sport and their impact are an aspect of performance that has largely been neglected in research. Therefore, this study explored the experiences of senior elite Football players during HT. A qualitative design was employed, utilising semi-structured interviews with elite male football players (N = 25). Interview recordings for each participant were transcribed verbatim, and reflexive thematic analysis identified three higher-order themes. First, players described HT talks as mundane, repetitive, and a missed opportunity to enhance second-half performance. Participants noted insufficient time for recovery and excessive tactical details, interspersed with coaches' emotional outbursts, which led to player disengagement. Second, participants highlighted the negative psychological impact of harsh feedback, citing diminished confidence and self-esteem, as well as potential trauma after recalled instances of humiliation. While some players used these HT coach criticisms as a motivator to increase second half performance, most preferred constructive, solution-focused communication.

Finally, players emphasised the importance of a calm and tactically focused environment supported by visual aids that incorporated storytelling when the specific HT situation required inspiration. The findings highlight players' desire for more structured HT communication, higher player involvement, and an appropriate balance to tactical and motivational elements that enhance message clarity and talk impact, respectively. Thus, the above experiences regarding HT talks can serve coaches to understand players' preferences albeit these might not necessarily match players' needs during HT.

**13 - TITLE: Scoping review of decision-making measurement instruments used in soccer**

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Researchers have developed notational analysis instruments to assess individual player decision-making in soccer games. The aim of this scoping review is to assess the instruments that have been employed to measure individual-level decision-making, seeking to outline current measurement methods. Following published PRISMA-ScR guidelines, a systematic search identified 11 eligible studies. Most were published in the last decade (n = 7) and validated for small-sided games (n = 9). Some instruments measured both action selection (AS) and execution (AE) in decision-making (n = 5), whereas others measured only AE (n = 6). Decision-making was measured either across all phases of game possession (n = 6), the offensive phase (n = 4) or combined offensive-defensive phases (n = 1). Decision outcomes were predominantly measured as successful or unsuccessful, with data converted into percentage success scores (n = 4), indices (n = 6) or total frequency (n = 1). There were 91 technical and tactical decision-making coding categories across instruments, which were collapsed into 44 categories by removing overlaps. A key limitation across instruments is the lack of underpinning theoretical or conceptual frameworks. Variation in measurement methods highlight the need for standardisation towards a single instrument.

### 35 - TITLE: **The Global Talent Development Ecosystem in Football**

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National football associations play a pivotal role in identifying, training, and playing the best football talents within their countries. However, current research highlights a lack of diverse global perspectives on the talent development ecosystem in football. This study aimed to quantitatively examine the talent development ecosystems of 152 FIFA Talent Development Scheme (TDS) Member Associations (MAs) across the six FIFA confederations. MAs responded to a 20-item survey related to how they find (n=10), train (n=7), and play (n=3) their top male and female talents aged 12 to 21. Descriptive statistics revealed that only 66% and 51% of MAs have a formal talent identification strategy for boys and girls, respectively, which was noticeably lower in CONCACAF MAs (boys=48%, girls=42%). In terms of training, youth national team players globally spent an average of 29% of their total practice time with their national teams, rising to 39% for boys and 35% for girls in OFC MAs. Additionally, the global average number of domestic games per year was 25 for boys and 17 for girls, with significantly lower averages noted in CAF (boys=16, girls=8). These findings reveal notable regional discrepancies, emphasising the need for context-specific support to strengthen the global football talent development ecosystem.

### 5 - TITLE: **Towards a phenomenologically informed study of perception, action, and cognition**

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Contemporary models of skill acquisition remain dominated by representationalist paradigms, where perception is reduced to sensory input, and cognition to rule-based processing. Drawing from the philosophical lineage of Heidegger, and Merleau-Ponty I propose a phenomenologically informed approach to researching skilled action to challenge the traditional orthodoxy. It is posed that skill is not best understood as the internal manipulation of mental representations, but as embodied, situated, and pre-reflectively meaningful engagement with the world. Through a critical historical account of how perception and action have been separated in dominant scientific thought, the computational legacy has obscured the lived nature of skilful behaviour. Emphasising Merleau-Ponty's concepts of body schema, motor intentionality, and the intentional arc, I make the case for methodological frameworks—such as experimental and front-loaded phenomenology—that respect the irreducibility of lived experience. I also advocate for methodological triangulation that can integrate first-person descriptions with empirical data without reducing one to the other. In doing so, I intend to encourage a rethinking of how skill is investigated: not as abstract computation, but as expressive, meaningful action that unfolds within the world. This phenomenological shift opens the door to richer and more socio-culturally sensitive approaches to sport and movement science.

**14 - TITLE: Understanding and enhancing decision-making expertise in football video match officials**

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Amid growing pressure for video assistant referees (VARs) to make flawless decisions while maintaining the flow of the game, it is crucial to understand the unique challenges affecting their performance. This research explored how expert referees describe their cognitive and emotional responses under pressure, and identified the psychological and contextual factors that influence VAR decision-making. This mixed-methods study combined qualitative interviews with quantitative analysis to examine the characteristics of expert performance among video match officials, as well as the circumstances and underlying psychological mechanisms linked to performance decrements. First, a comprehensive dataset of 2033 key match incidents from the 2023/24 and 2024/25 Premier League seasons was analysed to identify contextual factors affecting VAR accuracy and decision time. Second, semi-structured interviews were conducted with 8 VARs in order to explore the VAR procedure from preparation through reflection, with a particular emphasis on the decision-making process. The interviews were analysed using inductive content analysis to uncover psychological and environmental themes, with particular attention to the pressures unique to video officiating. This comprehensive analysis provides an empirical foundation for future experimental studies to identify causal relationships, guiding the development of evidence-based interventions and training protocols to enhance expert performance in VAR officiating.

**15 - TITLE : Deceptive sidesteps and the effects of kinematic exaggeration**

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Deceptive movements, such as the rugby sidestep, exploit early visual cues in an attempt to mislead opponents. Research has demonstrated that exaggerating kinematic features can enhance the deceptive quality of an action, making it more difficult for observers to accurately anticipate its outcome. This study investigated how kinematic exaggeration affects the ability to distinguish between genuine and deceptive movements in high-skilled and recreational rugby players. Participants (19 high-skilled, 19 recreational) judged the final running direction of point-light stick-figure representations of an opponent performing a directional "cut" to the left or right. These actions were performed with or without a deceptive sidestep, and the degree of exaggeration was systematically manipulated using a linear morphing technique. Analysis indicated that exaggeration increased susceptibility to deception across both groups. High-skilled players demonstrated superior overall accuracy in judging movement direction, although their performance also declined under certain exaggerated conditions. These findings suggest that although expertise enhances perceptual discrimination, it does not fully protect against the effects of kinematic exaggeration. The study highlights the potential for athletes to exploit exaggerated motion to mislead opponents. If performers can exaggerate their movements, while maintaining the required postural stability, they may be able to gain a competitive advantage in duelling tasks; however, this warrants further investigation.

**16 - TITLE: Developing Volleyball Defence Anticipation and Performance via Postural Cue Video Training**

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Anticipation is critical in time-constrained sports such as volleyball, where elite attackers strike the ball at over 130 km/h, giving defenders less than 200 milliseconds to respond. This study explores whether a video-based intervention can enhance defenders' anticipatory skills and improve defensive performance during competitive matchplay. Sixteen sub-elite male volleyball athletes ( $M = 21.33$ ,  $SD = 2.22$ ) participated in the study while based in a daily training environment. Over seven weeks, athletes completed three 15-minute sessions per week, each involving 60 video clips of elite attackers filmed from a baseline perspective. Videos paused at ball contact for two seconds, requiring athletes to predict ball landing zones via screen clicks before viewing the outcome. In total, each participant viewed 1,260 clips—equivalent to a full season's worth of game exposure. Anticipated ball destinations were tracked using a Qualtrics heatmap. Preliminary analysis indicates improved postural cue task performance in post-tests, with minimal decline in retention tests. Defence performance data from the competitive season will be compared to historical norms to assess transfer. These early findings suggest that video interventions may enhance anticipation and defensive capability in volleyball, potentially offering a low-load, high-impact method for accelerating skill development. Further research is warranted on intervention frequency and content.

**17 - TITLE: Expertise differences in prediction of serve direction in wheelchair tennis**

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The present study investigated expertise differences in the prediction of serve direction in wheelchair tennis (WT). Using a video-based progressive temporal occlusion paradigm, 16 skilled WT players (ranked top 100 internationally) and 16 novices predicted serve direction from serves occluded at four instances - one frame after ball release, at the apex of the ball toss, one frame before racket-ball contact, and 200 ms post-contact. Participant response accuracy, response times, and gaze behaviours were assessed. A significant main effect of expertise was observed in overall response accuracy with skilled players significantly outperforming novices (56.1% vs. 49.4%). Response accuracy increased across time of occlusion, with ceiling effects for both groups at the post contact occlusion. The interaction between expertise and time of occlusion was non-significant due to a consistent difference in response accuracy at the three pre-contact occlusion points. No significant difference in the number of fixations was observed between the two groups while novices ( $M = 376.24$  ms) had longer average fixation durations than expert WT players ( $M = 307.39$  ms). Both groups predominantly fixated on the predicted racket-ball contact zone, potentially utilizing it as a visual anchor for gathering peripheral kinematic information. These findings underscore the importance of attunement to early kinematic information sources for effective anticipation of serve direction in WT.

**41 - TITLE: Expanding Skill Acquisition as a Domain: The Lessons and Learnings from Developing an MSc in Skill Acquisition in Sport**

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Until recently, no postgraduate programme has existed with a dedicated focus on Skill Acquisition for Sport. Given the growing number of undergraduate modules in this area, the natural next step is to design an advanced, bespoke programme at postgraduate level. Responding to this need, the Skill Acquisition Team within the HEX-SPO Research Group at Munster Technological University, Ireland, have developed a new MSc in Skill Acquisition for Sport. This presentation outlines the process behind creating such a programme, an endeavour rarely shared among peers. It traces the journey from initial informal conversations and collaborative ideation through to the structured design process that brought the MSc in Skill Acquisition for Sport to life. In doing so, it reflects on the challenges encountered, the strategies employed, and the lessons learned throughout this exploratory journey, with the aim of supporting colleagues who may wish to pursue similar initiatives in the future. In addition, the presentation highlights key features of the MSc, including its overall structure, content, thematic areas, and specialist modules, offering insight into how the programme addresses the evolving needs of sport, research, accreditation, and practice.