

# Redressing the Balance: Women in Sport and Exercise Academic Network Conference, University of Worcester, United Kingdom, April 19–22, 2021

Gillian Renfree

School of Sport and Exercise Science, University of Worcester, Worcester, United Kingdom

The 3rd Women in Sport and Exercise Academic Network (WiSEAN) conference was hosted by the University of Worcester, United Kingdom, from April 19th to 22nd 2021. Due to COVID-19 restrictions the delegates were not able to be in person together in one location, so instead the organizing committee took the opportunity to strengthen the program with delegates and invited speakers joining from all over the globe within a virtual forum.

The conference brought together practitioners and academics from a range of disciplines including physiology, coaching, performance, and strength and conditioning to socio-cultural, leadership, and management to debate and discuss women's participation in sport, exercise, and physical activity. The purpose was to raise awareness and address inequalities, and therefore the third WiSEAN conference theme was "Redressing the Balance" to focus our attention on excellent research and sport industry practice to assess impacts and implications for both policy and practice.

There was a parallel conference on day four (April 22, 2021) focused on Generation Z and equality in sport. The University of Worcester led a European Commission-funded Erasmus+ project with six other international partners focused on educating Generation Z via an online resource Massive Open Online Course. The GETZ project ([www.getzproject.eu](http://www.getzproject.eu)) focused on educating Generation Z on issues of equality in sport with the aim of increasing awareness and encouraging greater levels of women in leadership and management roles. The impact and implications for practice from this 3-year project were shared alongside results of research studies focusing on Gen Z perceptions of gender (in)equalities in sport.

## Redressing the Balance: Online and Global

Clare Balding OBE, who was awarded an Honorary Doctorate by the University of Worcester in 2017, and Vice Chancellor Professor David Green CBE provided conference opening addresses. As this conference was hosted online and encouraged a global reach of delegates, the timetable was reversed and keynote and round-the-table discussions were held in the evening (BST). This ensured that Professor Kim Toffoletti could join from Deakin University, Australia, for their keynote address on the evening of day one, Professor Leanne Norman from Carnegie School of Sport at Leeds Beckett University, UK, could join on the evening of day three, and Mark Bullingham, Chief Executive Officer, the Football Association (FA); Maggie Alphonsi OBE, former rugby player and Rugby World Cup 2014 winner; and Håvard Øvregård, Senior Adviser with the Norwegian Olympic and Paralympic Committee could join on day four.

Address author correspondence to [g.renfree@worc.ac.uk](mailto:g.renfree@worc.ac.uk)

The evening of day two focused on those who work in the sport industry to discuss negotiating new identities within sport. They were Jo Yapp, Director of Rugby, Worcester Warriors' Women; Marianne Spacey-Cale MBE, Head of Girls' and Women's Football/Head Coach, Southampton Football Club; Don Vinson, Principal Lecturer in Sports Coaching, University of Worcester; Di Lewis, England and Wales Cricket Board (ECB) National Talent Manager for Women's Cricket; and Josie Janz-Dawson, Executive Leader of Education Programs at Wirrpanda Foundation, Western Australia.

## Conference Review

Over 680 delegates, presenters, and keynote speakers joined the 4-day conference from 58 different countries from the continents of North and South America, Africa, Oceania, Asia, and Europe. The virtual conference was specifically designed to allow delegates flexibility to join sessions over a variety of times during the day including evenings (BST) to ensure a global reach. There were 82 abstracts included in the conference program, reflecting the continued growth and development of women in sport and exercise. New additions to the WiSEAN conference were introduced in 2021 to use the power of social platforms #redressingthebalance and Twitter @wiseconf, and podcast interviews focusing on female sport coaches were available through the conference website (<https://www.worcester.ac.uk/about/academic-schools/school-of-sport-and-exercise-science/sport-and-exercise-science-research/past-research-events/women-in-sport-and-exercise-conference.aspx>). Vanessa Jones (co-chair of the organizing committee) stated that,

"It's pleasing for us at the University of Worcester to host such a large, vibrant, and successful conference, but what really matters is the message we wanted to share. The global reach of presenters and delegates, the phenomenal quality of the work being shared, and the inspirational ideas being generated, we have the chance to take a big step forward in redressing the balance for women in sport."

The conference completed a significant week for the University of Worcester in the field of women's sport and inclusion, as the university was officially unveiled as one of the founder members of the new British Wheelchair Basketball Women's Premier League. The League will be the first of its kind for women's wheelchair basketball anywhere in the world and the first professional parasport league in the UK. Mick Donovan, Pro Vice Chancellor at the University of Worcester, said,

"We are proud to have hosted the Women in Sport and Exercise conference at the University of Worcester this year. It's great to see what a huge success the event has been, and the impact much of the work showcased

here is having across the world. At Worcester we have always striven to play our part in educating the next generation of sports professionals to be bold and ambitious in aiming for equality of opportunity. We hope the sport graduates from Worcester will be the change makers that bring the joy of sport to everyone, regardless of gender, disability, or background.”

WiSEAN Conference Prizes were awarded to Jess Boyd, Nic Evans, and Abbe Brady from St Mary’s University, UK, for their presentation on caring as a feature of effective coaching in women’s and girls’ football in England and to Shakiba Oftadeh-Moghadam and Paul Gorczynski from the University of Portsmouth, UK, for their presentation on the mental health of rugby players: systematic review and meta-analysis.

This conference represented the efforts of many people and so I would like to thank all of those who submitted abstracts, our invited speakers, session chairs, our partners, and the organizing conference committee for their hard work in planning and organizing the event. The conference organizing committee comprised Gillian Renfree (co-chair), Vanessa Jones (co-chair), Jaime Guinan, Julia West, Michelle Morgan, Hannah Crowther, Beth Burgess (all University of Worcester) and Rachael Bullingham (University of Gloucestershire).

## Looking Ahead

The next Women in Sport and Exercise Academic Network Conference will be hosted by Liverpool John Moores University (LJMU), Liverpool, UK, on June 21–22, 2023. In 2023, LJMU will celebrate its 200th anniversary and so have consciously bid to host a conference theme that aligns with their university core values. The conference has been titled “We Are Courageous: Speaking out Boldly and Acting for Change.”

The aim of the conference is to provide a platform for students, academics, and practitioners to connect and share knowledge to create, promote, and lead change for women and girls across all facets of sport. The aim is to bring together students, academics, and practitioners from fields including psychology, physiology, strength and conditioning, coaching and performance, sociology, cultural studies, and leadership and management to the first in-person WiSEAN conference since 2019.

The Women in Sport and Exercise Academic Network (WiSEAN) is a research-orientated interdisciplinary group that aims to grow, strengthen, and promote research with women in sport and exercise, with the goal of optimizing women’s athletics success and their sport participation. Further activities of WiSEAN can be found on the website ([www.wisean.net](http://www.wisean.net)).

## Oral Presentation Abstracts

### A qualitative analysis of women rugby coaches' lived experiences of coaching and coach education in England

Gareth M Barrett<sup>1</sup>

<sup>1</sup>Staffordshire University, UK

In the UK there has been a significant increase of participants within women's rugby and therefore an increase in the provision of formal coach education. Moreover, according to UK Coaching, numbers have improved, although the balance and representation within the UK coaching workforce has not and therefore women remain peripheral figures on the coaching landscape. This underrepresentation is most notable in rugby union within the UK and Ireland and is present across grassroots to elite domains. Subsequently, there is a need to understand why this underrepresentation exists. Therefore, this study investigated and analysed the lived experiences of ten women coaches with emphasis on coach education and CPD (continued professional development). Ensuing interpretive analysis and data was collected through semi-structured interviews that revealed both positive and negative experiences within the coaching landscape. Findings to emerge highlighted there remain barriers that prevent women entering rugby coaching environments, such as traditionalist attitudes, self-belief, and opportunities. However, most of the women coaches identified that coach education programmes are beneficial in supporting their coaching development. Therefore, recommendations for future coach education courses to support women coaches, identified an early introduction of mentoring, more female educators, and contextualizing the course content to offer an interpersonal approach to meet individual coaching needs.

### Caring as a feature of effective coaching in women's and girls' football in England

Jess Boyd<sup>1</sup>, Nic Evans<sup>1</sup> and, Abbe Brady<sup>1</sup>

<sup>1</sup>St Mary's University, UK

Although it is recognised that care plays an essential role in player wellbeing, there is still an emphasis on players' physical performance in terms of training and development. Recent studies have found that care contributes to sustainable coaching and that if this is not understood, it can negatively impact on the athlete performance and create conflict. By understanding female players' perceptions of care and its relationship with effective coaching, reflection on practice is needed to ensure that empathy, appreciation, and mutual understanding is at the heart of all dialogue undertaken. An action research methodology was undertaken which adopted mixed qualitative methods. Data was collected from participants (n=236, age 9-61 years) attending coach/player diversity workshops (n=24) throughout England. This included thematic analysis of group discussions, individual worksheets, and task-based artefacts. Noddings' (1984) concept of caring was used as a theoretical framework to explore the connection between the carer (coach) and cared-for (player). Findings demonstrated that across all tiers, care was an integral characteristic of effective coaching; highlighting how across all tiers of women's and girls' game, relational care within coaching needs to focus on the human first to be deemed effective. Care should be recognized as a core component of coaching within women and girls' football and should be a focus within coach development to place the human at the heart of the process.

### 'I didn't plan it, but I found myself here': Women's access to high-performance coaching

Marta Borrueco<sup>1</sup>, Anna Jordana<sup>1</sup>, Miquel Torregrossa<sup>1</sup>, Susana Pallarès<sup>1</sup> and, Yago Ramis<sup>1</sup>

<sup>1</sup>Universitat Autònoma de Barcelona and Sport Research Institute, Spain

The existing research in the athlete-to-coach transition has drawn mainly from a male perspective, partly due to the underrepresentation of women occupying coaching positions. The main objective of this study was to explore the demands, barriers, and resources experienced by thirteen women in their transition from athletes to coaches. Participants were high-performance coaches ranging between 28 and 46 years old (M=36.7). All of them were involved in high-performance settings (e.g., high-performance centres, first level teams) and had been coaches for more than five years on average. Data were collected through in-depth semi-structured interviews and analysed using content thematic analysis. We identified four main themes: (a) reasons, or the absence of conscious reasons, behind the decision of becoming coaches, (b) adjustment to the new role as coaches, (c) the role played by their support groups and (d) opportunities provided by their sports environment. Specifically, our findings established that women found themselves in coaching positions without making a deliberate decision, almost as if it was the next natural step to continue being linked to sport after athletic retirement. Despite being satisfied with their new position, most participants reported problems related to the loss of their athletic identity. Moreover, women coaches perceived their support groups (e.g., family, peers) and the sports environment (e.g., club, federations) as key facilitators in their first steps into the profession of coaching. Recommendations for supporting women through their transition from competing as athletes to coaching are presented.

### Sex differences in neck strength and head impact kinematics in university rugby union

Freja J. Petrie<sup>1</sup>, Elisabeth M. P. Williams<sup>1</sup>, Thomas N. Pennington<sup>1</sup>, David R. L. Powell<sup>1</sup>, Hari Arora<sup>1</sup>, Kelly A. Mackintosh<sup>1</sup> and, Desney G. Greybe<sup>1</sup>

<sup>1</sup>Swansea University, UK

Globally, the empowering physicality of women's rugby has encouraged unprecedented growth; participation now exceeds three million. Existing injury prevention strategies, based on predominantly androcentric data, may have limited generalizability to females. The cervical spine is less adept at resisting inertial loading, with greater susceptibility to whiplash. There is a dearth of literature linking sex-specific head kinematics to brain injury risk. In this pilot study, isometric neck strength was measured in male and female university rugby players. Head impact magnitude in six male and six female competitive matches was recorded using bespoke instrumented mouthguards. Average female maximal isometric neck strength (131.7 N ± 25.2) was 47% lower than male (251.9 N ± 58.3). No significant differences were observed for peak linear head acceleration (male: median 12.5 g, IQR 7.0 g; female: median 11.7 g, IQR 7.9 g, p=0.23) or peak rotational head acceleration (male: median 849.4 rad-s<sup>2</sup>, IQR 479.8 rad-s<sup>2</sup>; 849.4 rad-s<sup>2</sup>, IQR 479.8 rad-s<sup>2</sup>; female: median 800.2 rad-s<sup>2</sup>, IQR 677.7 rad-s<sup>2</sup>, p=0.76). Uncontrolled whiplash was observed in 51% of all recorded female impact events but only once in a male. Direct head-to-ground kinematics accounted for 38.5% of female and 9.7% of male recorded head impacts. However, whiplash dominated 78% of these occurrences in females and 0.5% in males. These substantial biomechanical head impact differences are consistent with previous reports of cervical spine dimorphisms compromising neck and head stability. To safely grow the women's game, a significant research effort focusing on female-specific injury mechanisms and epidemiology is required.

### The burden of injury from amateur to elite women's rugby union

Caithriona Yeomans<sup>1,2</sup>, Ian C Kenny<sup>2</sup>, Thomas M Comyns<sup>2</sup>, and Nicol Van Dyk<sup>1</sup>

<sup>1</sup>The Irish Rugby Football Union, Ireland;

<sup>2</sup>University of Limerick, Ireland

Women's rugby participation rates are rising with female players currently accounting for approximately 30% of all registered players worldwide. Despite this recent growth, little is known about injuries occurring at the elite and amateur level of play. The aim was to compare injury incidence and burden in amateur and elite women's rugby. A review of match injury data was collected over three rugby seasons (2017-18 – 2019-20) from the Irish Rugby Injury Surveillance Project (n=8 amateur teams) and one elite national squad (n=1). Results indicate elite players had a higher injury rate compared to amateur players, with respective incidence rates of 51.7/1,000 player hours and 35.5/1,000 player hours. Concussion was the most common injury in both amateur and elite cohorts, with respective incidence rates of 5.5/1,000 player hours and 11.7/1,000 player hours. The ankle (20%) was the most common injury location in elite players, followed by the shoulder (16%) and head (16%). In the amateur game the knee (18%), head (18%) and ankle (14%) were most commonly injured. In elite players, the ankle carried the highest injury burden, with syndesmosis injuries the highest burden overall (average 123 days absence). In comparison the knee carried the highest burden in amateur players, with anterior cruciate ligament injuries resulting in the highest burden (average 354 days absence). While concussion injuries were the most common injury in both cohorts, the high burden of ankle and knee joint injuries in the elite and amateur game should be investigated to reduce injury risk and maximize performance.

#### **Injury coding trends among women's US rugby 7s tournament players over five years**

Som P. Singh<sup>1, 2</sup>, Richard Ma<sup>1,3,4</sup>, Kiera G. Borthwick<sup>1,5</sup>, Meghan P. Moir<sup>1,6</sup>, Samantha Lopez-Cruz<sup>1,7</sup>, Annette Ramos<sup>1,8</sup>, Answorth A. Allen<sup>1,5,9,10,11</sup> and, Victor Lopez Jr.<sup>1,4</sup>

<sup>1</sup>Rugby Research and Injury Prevention Group, Hospital for Special Surgery, USA;

<sup>2</sup>University of Missouri Kansas City, USA;

<sup>3</sup>Missouri Orthopaedic Institute, Thompson Laboratory for Regenerative Orthopaedics, USA;

<sup>4</sup>Auckland University of Technology, New Zealand;

<sup>5</sup>Washington and Lee University, USA;

<sup>6</sup>Hood College, USA;

<sup>7</sup>Keiser University, USA;

<sup>8</sup>Mt. Sinai South Nassau, Department of Critical Care, USA;

<sup>9</sup>Sports Medicine Institute, Hospital for Special Surgery, USA;

<sup>10</sup>New York Knickerbockers, National Basketball Association, USA;

<sup>11</sup>Team USA Basketball, USA

Women's rugby 7s is an Olympic sport associated with a high injury rate (Fuller, Taylor, and Molloy, 2010). Despite similar injury exposure, the research in this playing population lags its male counterpart (King et al., 2019). Let alone, the financial impact that US rugby 7s injuries have on women players have limited quantification. Our study aims to quantify injured player medical costs sustained in adult US women's rugby 7s. A prospective epidemiology study of injuries during a USA Rugby- sanctioned Northeast Territorial series (2010-2015), using the Rugby Injury Survey and Evaluation (RISE) Report methodology (Lopez et al., 2012), following the rugby consensus statement (Fuller et al., 2007). Data was evaluated provisional diagnosis, severity, and follow-up. Analysis used diagnostic (ICD-10-CM) and procedural billing (CPT/HCPCS) programmes using institutional charges in US dollars (US\$). The results indicate that the average annual medical costs of injuries (n=249) over five years were \$7,443, with over a 2.3x increase between 2011 and 2012. Ankle sprains, concussions, and fractures were among the most frequent ICD- 10CM

diagnosis coding in women players. The highest costs were fractures (\$6,006) and ankle sprains (\$3,717). The elevated trend of costs in 2012 indicates growth of rugby prior to its 2016 Olympic inclusion. Injuries with the highest costs were also likely to have a longer reported absence period and used more medical interventions. Further investigations of injury codes after Olympic inclusion will provide further understanding of medical costs for female participants and will help provide data to improve emergency preparedness and injury response implications among this cohort.

#### **Perceptions of physical activity changes due to Covid-19 restrictions among women in the UK**

Jacky J. Forsyth<sup>1</sup>, L. Mackay<sup>1</sup> and, V. Riley<sup>1</sup>

<sup>1</sup>Staffordshire University, UK

As a result of Covid-19, measures to curb the virus have included closure of gyms and sports centres, mandatory bans on both indoor and outdoor gatherings, and closure of public spaces of any kind, including parks and recreational grounds. Such restrictions have invariably impacted people's exercise and physical activity habits, with previously published research suggesting that Covid-19 has impacted more adversely on women's physical activity levels than it has on men. The consequences of Covid-19 on women's exercise behaviours have yet to be elucidated via interview. The purpose of the current study was, therefore, to explore, via interview, how and why women felt their physical activity levels and active lifestyles had been affected by Covid-19. Telephone interviews were conducted with 23 women, aged between 28 and 52 years from a variety of ethnicities and social-economic backgrounds in the UK. Data were analysed using reflexive thematic analysis. Key motivators for a change in exercise and sedentary behaviour were felt to be because of the physical restrictions imposed through gym and leisure-facility closure and as a result of a change in circumstance (work and home life), but also because of the perceived risks associated with exercising during a pandemic and because of a lack of peer support. The public health message for women, based on the current findings, is to remove as many of the physical barriers as possible, to promote appropriately socially distanced exercise with others and to provide opportunities for safe exercise.

#### **Coaching and training in 2D: Coaches' and players' experiences of a live online coaching programme**

Michael Ayres<sup>1</sup>, Merle Redhead Ling<sup>1</sup>, Maureen McAllister<sup>1</sup>, Tom Hounsell<sup>1</sup> and, Tom Howard<sup>1</sup>

<sup>1</sup>St Mary's University, UK

It has been suggested that the current pandemic will have a far-reaching consequence that will impact sport participation for the foreseeable future. Current physical activity data suggests that since the onset of the Covid-19 pandemic young people's activity rates, especially young and adolescent girls, have fallen (Sport England, 2020). Current restrictions have also led to the suspension of grassroots football leaving many young girls without opportunities to be physically active and to develop their technical skills. A range of temporary 'novel arrangements' have been established to overcome these sporting restrictions. One solution to mediate this lack of training time has been to use online video conferencing tools such as Zoom and Microsoft Teams. However, very little is known about the 'coaching' and 'playing' experiences of using such technologies. The study aimed to explore and examine these experiences throughout an eight-week online football coaching programme for adolescent female grassroots football players. A variety of qualitative methods were utilized in the study. Using Schulman's (2005) signature pedagogies as a conceptual framework semi structured interviews were used to understand two neophyte coaches' experiences of coaching online. In addition, two focus groups of adolescent female players (24 players in total) were established to examine their

empirical experiences of online coaching. The study is in its final data collection stage and the main findings will be presented at the conference.

### **Establishing appropriate velocity thresholds for quantifying and interpreting physical performance of elite youth female soccer players**

Alice Harkness-Armstrong<sup>1</sup>, Kevin Till<sup>1</sup>, Naomi Datson<sup>2</sup> and, Stacey Emmonds<sup>1</sup>

<sup>1</sup>*Leeds Beckett University, UK;*

<sup>2</sup>*University of Chichester, UK*

Research quantifying physical characteristics of youth female soccer have adopted senior-derived velocity thresholds. This is problematic, as age-related improvements in physical performance may lead to erroneous interpretation of physical data when senior-derived velocity thresholds are applied to youth populations. Research has yet to propose age-specific velocity thresholds for youth female soccer. Thus, the aim was to establish age-specific velocity thresholds for U14 and U16 elite youth female soccer players. GPS data was collected from 187 players (U14 n=89; U16 n=98) representing six regional talent centres in The Football Association's Girls' England Talent Pathway League, during 50 matches within the 2018-19 and 2019-20 seasons. Spectral clustering computed velocity thresholds for high-speed running (HSR), very high-speed running (VHSR), and sprinting (SPR), for 699 half-match observations (U14 n=369; U16 n=330). Linear mixed modelling estimated youth (U14 and U16) and age-group (U14 or U16) velocity thresholds, and compared HSR, VHSR and SPR distances covered when adopting youth, age-group, and existing senior velocity thresholds. The model estimated youth velocity thresholds of HSR ( $\geq 3.00$  m·s<sup>-1</sup>), VHSR ( $\geq 4.83$  m·s<sup>-1</sup>), and SPR ( $\geq 5.76$  m·s<sup>-1</sup>). When adopting these thresholds, both age-groups covered significantly greater distance at HSR, VHSR and SPR ( $p < 0.001$ ; moderate-large ESs=0.86-1.97) compared to existing senior thresholds, and similar distances compared to age-group thresholds (trivial-small ESs=0.002-0.23). The youth velocity thresholds are the first age-appropriate thresholds for quantifying physical characteristics within youth female soccer. They provide practitioners and researchers an alternative to existing arbitrary thresholds from senior or male populations, to facilitate appropriate quantification and interpretation of physical data.

### **Beyond the bottom line? Gender, branding and the Australia/New Zealand AsOne 2023 bid strategy for the 2023 FIFA Women's World Cup**

Verity Postlethwaite<sup>1</sup>, Adam Beissel<sup>2</sup> and, Andrew Grainger<sup>3</sup>

<sup>1</sup>*De Montfort University, UK;*

<sup>2</sup>*Miami University, USA;*

<sup>3</sup>*Massey, New Zealand*

The hosting rights for the 2023 FIFA Women's World Cup (WWC) were awarded in 2020 to a joint bid from Australia and New Zealand. The Trans-Tasman bid, known as AsOne 2023, will be one of several firsts for the tournament: the first to be held in the southern hemisphere; the first to be hosted under an expanded 32-team format; and the first-time hosting rights have been shared by two nations. This paper critically interrogates the conjectural politics of the AsOne 2023 bid's digital-media-focused public relations and branding campaign that emphasized themes of women's empowerment and global collaboration. We do so through a multiperspectival approach which combines aspects from quantitative content analysis with qualitative discourse analysis to explore the AsOne joint bid strategy. Quantitatively, we use more than six weeks of AsOne 2023-related tweets through the #GetOnside hashtag between June and July 2020, to consider the reach, use and negotiation of a popular social media posts. Qualitatively we critically interrogate media coverage from major

news publications from Australia and New Zealand and around the world to further supplement the contextual and discursive elements of our analysis. Despite inconsistencies in the 2023 messaging across diverse constituencies, what is readily apparent is the growing role played by (contextually specific) digital and mobile brand strategies, and wider discourses about gender equality and change in women's sport, in gaining momentum and support for international sport event hosting bids.

### **Evaluating the impact of inclusive sporting opportunities for disabled individuals within Wales**

Rachael A. Newport<sup>1</sup>, Rachel Hughes<sup>2</sup> and, Fiona Reid<sup>1</sup>

<sup>1</sup>*Disability Sport Wales; UK;*

<sup>2</sup>*Dotiau Consulting, UK*

Disability Sport Wales (DSW) aims to create inclusive sporting opportunities for disabled people to have a lifelong enjoyment of physical activity. The 22 local authorities within Wales are provided with support and investment to create and enhance the inclusive opportunities that are provided to disabled people through the delivery of key objectives. In the majority of Local Authorities (LAs) there is a DSW Development Officer who facilitates, coordinates, or leads local delivery. Each LA is required to produce case studies as evidence of projects impacts and progression linked to DSW's Strategic Priorities. The aim was to understand the impact of the support and investment provided to each LA through analysis of case studies. Method: For the first half of the 2020-2021 financial year, twenty-six case studies were collected from LAs. These case studies were analysed using Braun and Clarke's (2006) thematic analysis. The impact centered around, adapting to Covid-19, considering design and approach to ensure inclusivity, valuing social contact, being insight-led, plus recognizing the benefits for participants and volunteers. The benefits for the participants included: improved confidence, enhanced physical and mental health, created friendships, and developed independence. The benefits for the volunteers were: provided them with structure and a focus to their week, increased their confidence and communication skills, and gave them a sense of belonging. Conclusion: In conclusion, despite Covid-19 the LAs within Wales were able to adapt and provide inclusive and positive experiences for individuals with a disability to take part in physical activity.

### **Women's cycling in Qatar**

Thomas Ross Griffin<sup>1</sup>

<sup>1</sup>*Qatar University, Qatar*

This project focuses on women's cycling in Qatar and how this has often been the stage where tensions between modernity and tradition are brought to the fore. Although in many ways still a conservative Muslim country, the project argues that Qatar has made tangible contributions to women's cycling both overall and regionally by launching the Ladies' Tour of Qatar in 2009 to run alongside the men's race, and by creating the short-lived ladies' national team, the first of its kind at the time in the Gulf. The research then examines the trickle-down effects of such efforts to understand the impact they may have had on amateur women's cycling in Qatar. In a series of one-to-one interviews, Qatari, Arab and expat riders living in Qatar are asked about how and why they participate and engage with cycling as a sport. What kinds of barriers and obstacles they face in taking part in cycling, what top-down infrastructural supports they receive, and what changes should be enacted to grow the sport in Qatar are also discussed. The project looks to build on work by Toffoletti and Palmer on how Muslim women consume sport, both traditionally and in a digital fashion. In doing so, the project hopes to continue the move away from traditional portrayals of sportswomen in the Arab world as victims or rebels, focusing more on the riders as athletes whose agency is comparable to their male counterparts.

### Side-to-side asymmetry of single-leg repeated deceleration-acceleration performance is related to deterioration of running change-of-direction performance in amateur adult female netball players

Nicholas C. Clark<sup>1</sup> and, Elaine M. Mullally<sup>2</sup>

<sup>1</sup>University of Essex, UK;

<sup>2</sup>St Mary's University, UK

Side-to-side asymmetry of single-leg motor-performance is hypothetically linked to deterioration of running change-of-direction (CoD) performance in games-players. Currently, asymmetry research biases single-leg motor-performance in elite male and female athletes. Asymmetry issues that influence performance and have implications for practice have not been examined for amateur adult female games-players. The aim was to determine the relationships between triple-hop-for-distance (THD) absolute- asymmetry (THD-AA) and Illinois-agility-test (IAT) performance, and single-hop-for-distance (SHD) absolute-asymmetry (SHD-AA) and IAT performance, in amateur adult female netball players. Twenty-three players participated (mean±SD: age 28.7±6.2yr; height 171.6±7.0cm; mass 68.2±9.8kg). Test order was THD (cm), SHD (cm), IAT (s). For THD and SHD, leg order was right, left. Practice trials preceded three measured trials. For THD and SHD, trial means were used to compute a limb-symmetry- index (LSI; %): (right + left)×100. Absolute-asymmetry (%) was calculated: 100–LSI. Negative signs were removed. Normality of data was tested (Shapiro-Wilk). Spearman's correlation (rs) assessed relationships. Coefficient of determination (rs<sup>2</sup>) assessed the proportion (%) of variance shared between variables. Alpha was set a priori (0.05). The resulting data were (median, range): THD-AA 3.3%, 0.2-15.8%; SHD-AA 2.4%, 0.0-17.3%; IAT 19.6s, 17.8-22.9s. Relationships were: THD-AA/IAT, rs=0.54, rs<sup>2</sup>=0.29, p=0.01; SHD-AA/IAT, rs=0.31, rs<sup>2</sup>=0.10, p=0.07. Conclusions drawn are as THD-AA increased, IAT performance deteriorated. Approaching one-third (29%) of the variance in IAT performance was explained by THD-AA. Therefore, to enhance repetitive running CoD performance in amateur adult female netball players, training efforts may need to consider mitigating right-left asymmetries in sagittal plane single-leg repeated deceleration-acceleration performance as represented by the THD.

### Locomotor effort: An observational study in elite women's rugby 7s

Bethany Smith<sup>1</sup> and, Nicolette Bishop<sup>2</sup>

<sup>1</sup>Irish Rugby Football Union, Ireland;

<sup>2</sup>Loughborough University, UK

Technology such as Global Positioning Systems (GPS) are regularly used to improve team performance and drive positive match involvements. Locomotor effort may be objectively measured as: Intent (%)=[Acceleration Distance(m)/Total Distance(m)]×100. The aim was to establish locomotor effort in elite women's rugby 7s. A retrospective analysis of sixteen female international rugby 7s players during the 2019-20 World Rugby 7s Series. Results indicate that between the first and second half of match play locomotor decline was minimal, suggesting appropriate substitute use to maintain game intensity. Between first and second round tournaments, a percentage decline in locomotor activity was observed; relative total distance (-11.3%), relative acceleration distance (-14.2%), locomotor effort (-6.7%) and positive involvements (-5.5%). A greater negative points difference was observed for second round tournaments compared to first, with an additional four points (average) scored against the team. Positive match involvements for individual players did not substantially correlate with locomotor metrics. On a team level, relative acceleration distance and locomotor team effort had large, positive correlations with positive match involvements (r=0.616 and r=0.633, respectively) and relative total distance had a moderate, positive correlation (r=0.453). Conclusions are that Locomotor metrics in isolation provided limited insight into individual positive match involvements however, locomotor efforts on a team level

showed positive correlations with positive match involvements. Physical performance staff should drive performance improvements using both locomotor and performance analysis metrics within a team, with emphasis on movement quality as quantity is often limited by match opportunities.

### It's not all about power: A systematic review and meta-analysis comparing kicking biomechanics in male and female athletes in field-based sports

Molly Boyne<sup>1</sup>, Ciaran Simms<sup>1</sup>, Nicol van Dyk<sup>2</sup>, Garreth Farrell<sup>3</sup>, Emmet Farrell<sup>3</sup>, Clodhna McHugh<sup>1</sup>, Julia Wall<sup>1</sup>, David Mockler<sup>1</sup> and, Fiona Wilson<sup>1</sup>

<sup>1</sup>Trinity College Dublin, Ireland;

<sup>2</sup>Irish Rugby Football Union, Ireland;

<sup>3</sup>Leinster Rugby, Ireland

Kicking is a fundamental action in many field-based sports. Understanding the mechanism by which athletes produce optimal kicks is important for performance and injury prevention. Most studies investigating kicking have been conducted with male athletes, despite the recent exponential growth in women's sport. This has resulted in a dearth of specific data to inform the coaching of this skill in females. The aim of this systematic review was to compare the kicking biomechanics of male and female athletes in field-based sports. As per PRISMA guidelines, articles were retrieved from searches across five online databases. Studies investigating kicking biomechanics in field-based athletes of both sexes were eligible for inclusion. Articles were screened using Covidence and data extracted based on STROBE recommendations. Methodological quality was assessed using the AXIS Tool. The review yielded 23 studies, featuring 455 soccer players. Male athletes produced significantly greater peak ball velocities (mean difference (MD) 4.32m/s) and linear velocities of the ankle (MD 2.02m/s), foot (MD 1.60m/s), and toe (MD 2.79m/s) during kicks than females. Women exhibited greater trunk flexion range of motion, as well as decreased ankle plantarflexion at ball contact and peak distal joint velocities compared to males. The findings of this review indicate that variations in kicking biomechanics between the sexes are caused by differences, not only in power, but in technique. This paper highlights the need to redress the balance of research in this area by investigating kicking performance in female athletes across the spectrum of sports to inform women-specific coaching programmes.

### 'I guess I'll just climb high enough that I can't hear them anymore': Exploring alternative trans\* narratives in the world of mountaineering and beyond

Kate Russell<sup>1</sup>, Thomas Leeder<sup>2</sup> and, Lee Beaumont<sup>1</sup>

<sup>1</sup>University of East Anglia, UK;

<sup>2</sup>University of Essex, UK

Erin Parisi is a mountaineer attempting to become the first trans\* person to ascent the highest mountain on each of the seven continents, through her project TranSending7. Part of Erin's efforts is to create alternative trans\* narratives that are based on the possibility of positive futures, as opposed to negative tropes of a limited life from the decision to transition. Multiple semi-structured interviews were conducted with Erin to understand her experiences and how narratives she hopes to present, not only impact upon her own sense of self, health, and wellbeing, but also present the opportunity for others to follow. Data were analysed via reflexive thematic analysis. Preliminary analysis highlighted for Erin how there exists a paradox for many trans\* people in the movement from one closet to another, where being invisible as a trans\* person is the ultimate goal. Erin's desire to shape positive trans\* narratives acknowledge the gendering practices that take place within the climbing community and a sense of her having to 'earn the

right to climb'. In drawing upon theoretical concepts informed by post-structural explorations of sport and education, this research seeks to untangle the gendered space of the mountain for shaping positive and transformational trans\* narratives that can be essential to individuals positioned within these gendered boundaries. Suggestions for supporting young trans\* people in sport, health, and education through the use of trans\* positive role modelling and alternative futures are also given.

**Women in boxing – Seeking to understand barriers to inclusion, identity conflict and empowerment of women, using ethnographic methods: How does digital technology change the landscape?**

Elaine de Vos<sup>1</sup>

<sup>1</sup>*Brunel University, UK*

We can build understanding of human experience through conceptualizing an object or event through use of language. However, sensory embodied or 'lived' experience cannot be reduced to language. Ethnographic research seeks to investigate embodied experience using a combination of participant-observation, interview, and documentary analysis. This presentation seeks to consider the significance of the researcher's positionality on the field of study during an ethnography of women in boxing and how ethnographic methods are suited to the study of inclusion, identity, and empowerment. It will also address the possible impact of using digital technologies to conduct ethnographic research. Using participant-observation at one of two field-sites, detailed field notes and vignettes were handwritten in a journal. These were supplemented with voice recordings if writing was limited. Further reflexive consideration was given to these field notes when transferring to secure storage device. Researcher interpretation of actions observed during this stage is addressed iteratively by way of ongoing data analysis. Interviews were conducted using online platforms to begin to build understanding of the lived experience of women who box. I will discuss four issues: how researcher positionality affects the actions of participants 'in-the-field', how to mitigate such effects during data collection and interpretation, the importance of reflexivity during ethnographic research and how data collected via digital platforms may have changed the shape of my research.

**Cultural and environmental associations with body image, diet, and wellbeing in NCAA DI female distance runners: a qualitative analysis**

Traci Lyn Carson<sup>1</sup>, Troy Tournat<sup>1</sup>, Kendrin Sonnevill<sup>1</sup>, Ronald F Zernicke<sup>1</sup> and, Carrie Karvonen-Gutierrez<sup>1</sup>

<sup>1</sup>*University of Michigan, USA*

We aimed to describe current and former National Collegiate Athletic Association (NCAA) Division One (DI) female distance runners' experiences of perceived norms of body image and disordered eating in their sport, as well as the emergence and influence of coach-athlete power dynamics. This manuscript reports a qualitative research study (consisting of interviews and thematic analysis) of women athletes' experiences of perceived norms of body image and disordered eating in their sport. We also report athletes' experiences of coach-athlete power dynamics. Methods: The study sample included 29 current and former female NCAA DI female distance runners, defined as competing in 800-metre distance or greater. Interviews were conducted, audio-recorded and hand transcribed. A thematic analysis was performed and presented. Two major themes emerged: (1) sport body ideals and body image norms and myths that exist in the sport, and (2) the power dynamic between athletes and coaches. It is not clear whether sport body ideals and culture of running influences coaching culture, or whether the coaches who maintain positions of power in the sport perpetuate the culture. These themes likely feed into each other and reinforce the existing and dominant mentalities of the sport. Conclusions are that sport body image ideals and the power dynamic between

coach and athlete may contribute to female athletes' risk of disordered eating and body image disturbance. We call for the NCAA and athletic departments to develop and implement prevention and intervention programmes to prevent eating and body image disorders in this high-risk population.

**Can universities lead the change for women in sport science? An Irish context**

Domenico Crognale<sup>1</sup> and, Tara Acheson<sup>1</sup>

<sup>1</sup>*University College Dublin, Ireland*

Olympic sports, at both university and professional level, are usually the most popular and established organisations in Europe and worldwide. Although Olympic teams, sports clubs and their respective governing bodies offer employment opportunities for sport and coaching science graduates, only 27% of active female Irish coaches (2020) receive payment for coaching and related roles. A staggering 65% of Irish female coaches are volunteers and receive little or no support from their club or governing body. Employment opportunities are even more limited for female sport science and athletic development support staff/graduates. This lack of opportunity is attributable to multiple barriers, most of them related to scarcity of funding within the Irish national sport system. Since all governing bodies of sport and Olympic committees operate within a budget, it is challenging to employ professional staff members for all female and male sports teams. This task is of greater difficulty for small to medium sized countries, with reduced participation in several Olympic sports. We hypothesize that a more specific re-allocation of financial resources, focused on Olympic sports already popular in Europe, could significantly improve employment opportunities for female sports coaches and scientists in Ireland. University sports clubs can support this change through collaboration with sports science departments and by offering existing facilities to encourage participation among students in the Olympic sports of interest. Moreover, this enhanced attention to well-established Olympic sports will be beneficial to European championships and events due to increased number of participating nations/athletes, following/spectators, interest by media and potential revenue.

**The use of gratitude to develop greater coach athlete relationships and player feelings of wellbeing**

Nic Evans<sup>1</sup>, Jess Boyd<sup>1</sup> and, Abbe Brady<sup>1</sup>

<sup>1</sup>*St Mary's University, UK*

Within the field of positive psychology practicing gratitude has been found to contribute towards feelings of wellbeing. Understanding what athletes value in coach behaviours and attitudes may enable us to enhance overall athlete wellbeing, therefore improving performance, satisfaction, and motivation. This study aimed to identify what coach behaviours and practices players value across three tiers: grassroots, talent and performance in women's and girl's football. Qualitative data was generated through collection of gratitude postcards (n=148) completed at inclusive workshops (n=24). Working in the interpretive paradigm, thematic analysis of the postcards was conducted across grassroots, development and elite levels of the women's and girls' game in football. Athletes at each tier of the game valued different attributes in coach behaviour and practice. At grassroots level players appreciated support, inclusivity, and encouragement. Players on the talent pathway appreciated individual development and belief in them as a person. Elite players valued honesty and clarity while continuing to develop them as an individual. The findings offered clear insight into how to foster positive culture within a team environment at each tier. Coaches utilizing a gratitude protocol can gain insight into what athletes' value which can encourage coaches to modify behaviour to



meet the athletes' needs and build effective interpersonal relationships that foster successful outcomes.

### **Going beyond visibility: Theorizing a framework of visibility, recognition, and voice to understand elite women cricketers' perceptions of social media**

Hannah Thompson<sup>1</sup>

<sup>1</sup>Loughborough University, UK

The call for increasing visibility of women's sport, is an empty call if it not accompanied by 'progressive' representations. In this paper I argue for a framework of visibility to go beyond simply 'being seen' to go deeper, to consider the role of representation, recognition, and voice, especially in terms of online social media platforms where scholarship has persisted to focus mainly on its perceived feminist potential to disrupt both the lack of quality and quantity of media afforded to sportswomen. How 'seen' do athletes perceive themselves to be both in traditional media and on social media? Do they feel recognised and that their voices are heard? These questions are not fully understood in academia, so this paper directly asks eight England women cricketers for their perceptions of social media, questions whether they are actively seeking visibility through social media to combat a lack of mainstream media visibility as scholarship has claimed or whether they are simply using social media like the everyday person. And, that athlete social media use does not necessarily equate to more visibility, that the responsibility should be on the traditional media outlets to do more, to redress the balance rather than the onus on the athletes themselves. Thus, this paper seeks to set the tone for going beyond visibility as a framework to redress the balance in terms of calls for fairer coverage of sportswomen.

### **Female African football players are at high risk of injury: A study of functional movement screening (FMS), range of motion and muscle endurance**

Nonhlanhla S. Mkumbuzi<sup>1,3</sup>, Senanile B. Dlamini<sup>1</sup>, Fidelis Chibhabha<sup>3</sup>, Fredrick M. Govere<sup>2</sup> and, Brenda Oulo<sup>4</sup>

<sup>1</sup>University of Cape Town, South Africa;

<sup>2</sup>Africa Evaluation and Research Development, South Africa;

<sup>3</sup>Midlands State University, Zimbabwe;

<sup>4</sup>Centre for the Study of Adolescence, Kenya

Being injured is inherent to participating in football activities; therefore, prevention of injuries is very important. However, to design effective preventative interventions, mechanisms and risk factors for these injuries should first be established. However, such studies are rarely conducted in female African athletes. This impairs the ability of sports clinicians to prescribe relevant interventions. The aim of the study was to explore risk factors for injury among female African football players using functional and musculoskeletal assessments. Participants (n=40) completed demographic questionnaires and had upper and lower limb range of motion (ROM); muscle endurance and functional movement screening (FMS) assessed. The median (Q1; Q3) age (years) of the players was 24 (20; 27); FMS score was 12 (10; 13); ankle dorsiflexion (cm) 10 (7; 12); sit and reach (cm) 14 (10; 20); number of push-ups 21 (0; 31) and squats 30 (28; 38) in 60 seconds and time to exhaustion in prone plank (seconds) 46 (31; 65). History of injury related to lower muscle endurance (p=0.009) and ROM (p=0.016). From the FMS, only 34% (n=13) performed the squat properly; 29% (n=11) performed the hurdle step properly and 66% (n=25) scored ≤ 1 on the FMS for shoulder mobility. Therefore, female African football players present with overall low muscle endurance, flexibility, and movement imbalances, which might predispose them to injury. Hence, strength and conditioning measures should be instituted in this population

to prevent injuries. However, due to resource constraints, these players' teams may not have the requisite personnel to provide appropriate coaching in strength and conditioning.

### **Non-contact knee injury prevention in adult recreational female netball players: A review of current understanding with future research directions**

Elaine Mullally<sup>1</sup>, Alexandra Atack<sup>1</sup>, Nicola Brown<sup>1</sup>, Mark Glaister<sup>1</sup> and, Nicholas Clark<sup>2</sup>

<sup>1</sup>St Mary's University, UK;

<sup>2</sup>University of Essex, UK

In netball, epidemiological evidence shows that knee injuries are the second most common injury after ankle injuries. Knee injuries are of concern due to their severity and extended recovery duration, resulting in prolonged time away from training/competing. In the sequence of sport injury prevention, knowledge of the injury burden, followed by an understanding of the mechanism of injury, is important. The aim of this research was to investigate 1) the situations and mechanisms of non-contact knee injury in netball; and 2) training and injury prevention practices of netball players. First, a systematic review was conducted to examine the results of previous research on knee injury in netball. Secondly, a survey was conducted to investigate current training and injury prevention practices in 193 recreational netball players. The results showed that non-contact knee injury in netball consistently occurs during single-leg landing tasks. Netball players commonly land with low knee flexion angles and knee abduction (valgus) collapse when sustaining an anterior cruciate ligament injury. Despite many players reporting that they have sustained a knee injury in the last five years, the majority were not following appropriate training and injury prevention practices. Barriers that were identified to explain the above included lack of knowledge, confidence, time, and access to facilities. Future research is planned to analyse the risk factors associated with a netball-specific landing task with a view to designing an appropriate intervention programme to address the risk factors for non- contact knee injury.

### **Effect of functional fatigue on knee force sense in amateur adult female football players**

Nicholas C. Clark<sup>1</sup> and, Victoria A. James<sup>2</sup>

<sup>1</sup>University of Essex, UK;

<sup>2</sup>St Mary's University, UK

Intact proprioception (joint position sense, kinaesthesia, force sense (FS)) is critical for optimal neuromuscular control of knee functional joint stability. Fatigue impairs knee FS in adult male footballers. The effect of fatigue on knee FS and resulting implications for injury prevention practice have not been studied for adult female footballers. The aim was to determine the effect of functional fatigue on knee flexion FS (KF- FS) in amateur adult female football players. Twenty-one players participated (mean±SD: age 23.3±3.5yr; height 164.1±6.4cm; mass 62.6±6.4kg). Functional fatigue was defined/induced using the Functional Agility Short-Term Fatigue Protocol (FAST-FP). The FAST-FP incorporated acceleration- deceleration tasks typical of football training/match-play. Dominant leg (preferred stance leg) KF-FS was measured (Newtons (N)). Players sat on an isokinetic dynamometer in isometric mode, the knee flexed 45°. A knee flexion target trial-reproduction trial sequence was repeated three times, the difference between trials designated the absolute error (AE), the mean AE used for data analyses. Force sense measurements occurred before and immediately after the FAST-FP. Results indicate that force sense AE did not significantly change following fatigue (pre-fatigue = 7.0±4.8N; post-fatigue = 10.1±6.8N; pre-/post-difference = 7.7±5.6N;



$P = 0.14$ ; Cohen's  $d = 0.34$ ). Four players' (19%) post-fatigue FS deteriorated by more than twice the group's pre-/post-difference standard deviation. Conclusions are that despite functional fatigue, group mean KF-FS did not significantly change. However, one-fifth of players' KF-FS deteriorated substantially after functional fatigue was induced. Some players, therefore, may be more in need fatigue-resistance training than others to maintain optimal KF-FS and neuromuscular control of knee functional joint stability.

### Sex-segregation in sports: The continuation of historical inequities

Grace Athanas-Linden<sup>1</sup>

<sup>1</sup>Temple University, USA

Sport was institutionalized at the end of the 1800s to keep men from becoming 'feminized' and to teach boys 'masculinity' as gender dynamics in society changed (Dworkin and Cooky, 2012). From this desire to enforce gender roles and a gender hierarchy, our sex-segregated system of sport grew, which discriminates against cisgender, transgender and intersex athletes. This work examines sport's origins as a sex-segregated institution and this segregation's impact. The sociohistorical context of sport and sex-testing is laid out, as well as issues with the scientific basis of sex-testing. Using Intergroup Contact Theory (ICT) as a framework, studies addressing cisgender female athletes' experience in sex-integrated sports show how even in integrated settings female athletes may be marginalized. To understand the effects of sex-segregation on transgender athletes, where there is a dearth of case studies, existing studies are supplemented by an investigation into sport governance policies. The impact on intersex individuals is also examined through policies, supplemented by a review of Caster Semenya's lawsuit against World Athletics and its Differences of Sexual Development (DSD) Regulations. The policies of sport organizations such as the International Olympic Committee (IOC), World Athletics, and the National Collegiate Athletic Association (NCAA) are shown to generally discriminate against transgender and intersex athletes. To improve the status of cisgender female athletes, transgender athletes, and intersex athletes, sport must move to a system where the default is integration. Historically marginalized groups, however, should retain the ability to self-segregate to preserve a space for themselves where they have been historically excluded.

### A dangerous playing field: Sexual harassment of female athletes in sport

Rachel Huggett<sup>1</sup>

<sup>1</sup>Smith College, USA

Sexual harassment in the workplace is all too prevalent in every aspect of most women's lives. What happens, however, when the workplace is the whole world? Athletes perform and compete in front of the public every day of their lives. Modern day sport functions similarly to how it did when it was first started. It is yet another 'boys' club' in which women have to fight to be included. In 1972, Congress passed Title IX of the Educational Amendments. This changed the number of opportunities available for girls and women in sport and played a large role in shifting society's view of women's sports. Title IX is seen as the programme that helped to protect female athletes by prohibiting educational programmes from discriminating against them based on sex, as well as helping survivors of sexual assault and rape. Once women are on the field, however, it is unclear what protections they have as there have barely been any Title IX cases relating to this situation. For Title IX to adequately help female athletes, a number of steps need to be taken. The institution of sport was not made by or for women. They now have the potential of changing that system from within.

### Henley Women's Regatta and cultural preservationism

Olivia R. Howe<sup>1</sup>

<sup>1</sup>Charles University, Czech Republic

In this paper I argue that if a sporting institution is to thrive it must abandon harmful practices and conventions. My hypothesis will focus on the harmful practices that enable and preserve female-targeted sexism, paying particular attention to the British sporting event, Henley Royal Regatta, and its female counterpart, Henley Women's Regatta. I will argue that, in adhering to 'cultural preservationism' some sporting institutions perpetuate morally culpable traditions, preferring to place greater value on their historical significance and associated cultural prestige over an egalitarian agenda. In this cultural examination, I will show that women are severely disadvantaged by the practices that Henley Royal Regatta rigidly enforces, whilst further stipulating that Henley Women's Regatta does nothing to rectify the situation. I suggest that holding sporting events exclusively for women, at least in the context of rowing, reinforces what is referred to as the Beauvoirian concept of 'Otherness'. Whilst acknowledging the overall significance of cultural preservation and tradition in British sport, I will employ what I call the 'preservation of moral sport argument', which suggests that traditions that are morally culpable should be abolished. My overall conclusion will be that, although traditions can be an important part of sport, the abolition of harmful practices and conventions is essential if sport is to remain relevant and reflective of the moral values of the society it represents.

### 'It's hard to find balance when you're broken': Exploring female endurance athletes' psychological experience of recovery from relative energy deficiency in sport (RED-S)

Rachel K. Langbein<sup>1</sup>, Patricia Jackman<sup>1</sup>, Jacquelyn Allen-Collinson<sup>1</sup> and, Dan Martin<sup>1</sup>

<sup>1</sup>University of Lincoln, UK

Relative Energy Deficiency in Sport describes a syndrome of impaired health and performance caused by low energy availability (LEA). It has been proposed that psychological factors may precede or result from RED-S, but a continued reliance on objective and physiological markers of LEA has largely neglected the importance of psychological factors underlying recovery from RED-S. This integrated methods multiple case-study qualitatively explored female endurance athletes' psychological experience of recovery from RED-S. Eight female endurance athletes (M age = 29.75 years, SD = 5.03) identifying as 'in recovery', or having 'recovered' from RED-S, participated in the following tasks: (1) topical life-history interview to elucidate psychological antecedents and consequences of RED-S; (2) a three-week online diary and one-week PhotoVoice task to capture psychological stressors encountered when managing energy availability; and (3) a follow-up stimulated recall interview encouraging further reflection on their RED-S 'recovery' journey and experience during the study. Thematic and cross-case analysis generated seven common sources of psychological conflict: body image or weight concerns; eating opportunities; exercise volume; media influences; physiological symptoms of RED-S; social situations; and professional education and advice. Subjective appraisals of, and responses to, these stressors were captured by four themes: in two minds (cognitive appraisals); an emotional rollercoaster (affective appraisals); the only way is through (adaptive behavioral responses); and giving in (maladaptive behavioral responses). These findings contribute valuable insights into psychological mechanisms underlying efforts to overcome RED-S by highlighting the importance of psychological wellbeing in restoring and maintaining adequate energy availability.

### Knowledge of triad and RED-S in female cross-country athletes and support staff

Melissa T. Lodge<sup>1</sup>, Jessica L. Garay<sup>1</sup> and, Kathryn E. Ackerman<sup>2</sup>

<sup>1</sup>*Syracuse University, USA;*

<sup>2</sup>*Boston Children's Hospital, and Harvard Medical School, USA*

Female endurance athletes exhibit increased risk of female athlete triad (triad) and Relative Energy Deficiency in Sport (RED-S). Triad and RED-S are conditions that explore the health and performance consequences of low energy availability (LEA). Proper education has been shown to be effective in increasing knowledge of sports medicine concerns for athletes. Yet, there are no known continuing education programmes for triad and RED-S at collegiate institutions. The primary purpose was to assess the knowledge and confidence of triad and RED-S. Design: An evidence-based online survey was developed and administered via Qualtrics. Knowledge, confidence, and impact scores were assessed amongst current collegiate female cross-country athletes, coaches, and ATs. Results indicate that female cross-country athletes' total knowledge, confidence, and impact scores (mean scores of  $25.00 \pm 5.27$ ,  $95.42 \pm 28.83$ ,  $18.81 \pm 7.05$  respectively) were significantly different from scores of coaches (mean scores of  $26.92 \pm 5.02$ ,  $111.35 \pm 24.14$  and  $22.41 \pm 6.33$ ) and ATs (mean scores of  $28.66 \pm 4.02$ ,  $117.67 \pm 22.53$ , and  $23.93 \pm 5.69$ ) ( $p < 0.05$ ). This study illustrates that the scores of triad and RED-S were lowest in female cross-country athletes and highest in ATs. This is important because female cross-country athletes, knowledgeable about triad and RED-S, may more readily seek medical help to address health and performance consequences of triad and RED-S. These findings support the call for educational training, which should be regarded as the primary tool to increase knowledge to improve the prevention and treatment of triad and RED-S.

### Covid-19 self-isolation period increases adherence to exercise intervention in pregnant women

Olga Roldan-Reoyo<sup>1</sup>

<sup>1</sup>*Swansea University, UK*

In March 2020 pregnant women were identified as a vulnerable group and asked to self-isolate for 12 weeks. This has shown to decrease physical activity levels among the pregnant population. In our PECAMP Study (Physical Exercise and Cardiovascular Adaptation Monitoring in Pregnancy) a supervised exercise intervention (SEI) for pregnant women was being carried out from May 2018 until July 2020. The SEI continued online due to Covid-19 restrictions as an opportunity to support pregnant women and diminish the negative impact of lockdown in their physical and mental health. Since the EI has been carried out in the long term, we found interesting to study adherence to the EI before and during lockdown. Participants randomized to the SEI were asked to attend three supervised exercise classes from 16 weeks pregnant to birth. Two groups of pregnant women randomized into the SEI between middle March and middle July in 2019 (pre-pandemic) and 2020 (pandemic) were selected for analysis. Thirty-two participants were included in the analysis (21 pre-pandemic/11 pandemic). Percentage of adherence between groups was analysed. In all the months studied the pandemic group showed higher adherence: March: 30% vs 47.72%; April: 36.75% vs 76.92%; May: 36.50% vs 74.44%; June: 35.46% vs 76.45%; July: 37.28% vs 66.26%;  $p < 0.05$ . Adherence to the whole SEI was statistically significant in the pandemic group: 60.79% vs 76.21%  $p < 0.05$ . Conclusions are that online SEI should be considered when designing exercise interventions for pregnant women as it could constitute an easier way to increase adherence, especially during pandemic times.

### Exploring the experiences of non-heterosexual women within individual sports

Beth Burgess<sup>1</sup>, Rachael Bullingham<sup>2</sup> and, Győző Molnár<sup>1</sup>

<sup>1</sup>*University of Worcester, UK;*

<sup>2</sup>*University of Gloucestershire, UK*

The experiences of non-heterosexual women within sporting contexts have been documented since the 1980s, evidencing a variety of sporting climates ranging from hostile to open and inclusive. Previous literature focused on the experiences within team sports and categories of sexuality. In response, the present study explored the experiences of non-heterosexual women within individual sports. This research adopted a life history approach utilising interviews and timelines to gather rich data from five athletes across various sports (tennis, golf, squash, and mountain biking). The findings highlighted the uniqueness of each athlete's journey regarding their sexuality and sport participation while demonstrating both resistance and reproduction of heteronormative ideals.

### Unisex sports: Tackling the male/female binary in sport

Irena Martínková<sup>1</sup>

<sup>1</sup>*Charles University, Czech Republic*

Sport has been historically based on the male/female binary, while the majority of sports have privileged physiological aspects of the male body within the sporting challenge, and so most sports are 'male-apposite'. This results in various problems in contemporary sport for the female category. I shall first attend to problems caused by the binary (such as e.g., the inferiority of female athletes, different conditions of competition for males and females' athletes), and second, I shall present several solutions that have been suggested by various authors. One of these solutions is the 'mixing' of athletes in sports competition. I shall distinguish between different kinds of mixing of the sexes in sport, discussing their advantages and disadvantages. This is a philosophical inquiry, based on an analytical understanding of sport ('the logic of sport') and on contemporary problems. Solutions are sought for a less discriminatory and more inclusive sport, based on the logic of sport. The distinction between 'mixed sports' (sports with an allocated position for a number of males and females in a team) and 'unisex sports' (sports participation based on merit) is made and discussed. Modifications of existing sports or the creation of new sports are suggested, as ways of accommodating athletes of different sexes, without the need of the binary. Conclusions are that eradicating the binary could help with problems caused by the binary itself, and so make sport more inclusive not just for female athletes, but also for all athletes of different talents, shapes, and sizes.

### Lesbian coaches' perceptions of sports governing bodies' (lack of) support in Catalonia

Judith Solanas Sánchez<sup>1</sup>, Susanna Soler Prat<sup>1</sup> and, Anna Vilanova Soler<sup>1</sup>

<sup>1</sup>*Institut Nacional d'Educació Física de Catalunya, Uni de Barcelona, Spain*

There is a scientific knowledge gap on lesbian coaches in sport worldwide, and in Spain no such research has been conducted to date. The few studies that do exist internationally highlight the double discrimination that lesbian coaches face based on their gender and sexual identity. Building on Norman's theory of everyday gendered homophobia (2011), the research aims to understand lesbian coaches' experiences in Catalonia. Semi-structured interviews were conducted with ten lesbian coaches from a variety of sports and performance levels, including football, tennis, athletics, basketball, hockey, volleyball, and skiing. Preliminary findings on the role of sports governing bodies suggest that there is a public

discourse in favor of women in sport, and campaigns to promote women coaches. However, everyday gendered homophobia towards lesbian coaches is still prevalent. The lesbian coaches interviewed experience barriers to accessing professional development and feel undervalued in their day-to-day, as well as on a structural level. Additionally, lesbian coaches report a lack of training on gender and sexual diversity, and that managerial positions and training programmes are still highly dominated by men. According to them, the measures developed by sports federations aimed at promoting women and sexual diversity in coaching are deemed ineffective and often remain once-off actions without continuity or are awareness-raising actions that do not transform power structures. They also consider that more gender and sexual diversity among people in key positions in sports governing bodies would lead to a more inclusive environment with training and support based on the needs of lesbian coaches.

### **Motherhood, gender, and postpartum physical activity**

Jaime DeLuca<sup>1</sup> and, Jacob Bustad<sup>1</sup>

<sup>1</sup>Towson University, USA

Maternal identity often involves the ideology of the 'good mother,' referring to a mother who is happily, capably, and exclusively devoted to her children and family. However, the reality of the daily and competing logistics of managing multiple personal and professional responsibilities is time consuming and stressful, and consequently new mothers face significant challenges and barriers to their ability to engage in physical activity, despite its value for women's health and wellness. This presentation focuses on data collected from 128 in-depth semi-structured interviews with 32 mothers at three, six, nine, and 12 months postpartum, and offers insight regarding the relationship between postpartum physical activity and gender roles and responsibilities. Study results emphasize how women's lived experiences of engaging in physical activity, including scheduling time for physical activity, and achieving physical activity goals, are structured through a negotiation of their maternal identity. Specifically, many participants reported a gendered division in roles that enabled their spouses' physical activity while ultimately constraining their own. At the same time, many participants also expressed a relationship between physical activity and forms of self-care, including the conceptualization of physical activity as an important aspect of their overall health, wellbeing, and sense of self. This topic has received limited scholarly attention from a qualitative approach; this study therefore contributes to the field through an identification of factors associated with addressing and improving postpartum women's physical activity and health.

### **Physiotherapy to manage urinary incontinence in athletic women: A feasibility study (the Positive Study)**

Gillian Campbell<sup>1</sup>, Mark Batt<sup>2</sup> and, Avril Drummond<sup>1</sup>

<sup>1</sup>University of Nottingham, UK;

<sup>2</sup>Nottingham University Hospitals, UK

Urinary incontinence affects nearly half of all adult women in the UK. The prevalence in athletes is unusually high, reportedly almost twice that of sedentary women (Carvalho, Natal Jorge, and Bø, 2018). Yet, incontinence can be a barrier to exercise for many women (Menezes, 2015). Although there is robust evidence to support pelvic floor muscle training to manage urinary incontinence in the general population, there is little research investigating the management of this condition in athletes (Bø and Nygaard, 2020). We report on a feasibility study with nested qualitative interviews to explore the feasibility and acceptability of conducting a definitive trial. Intervention: Athletic women, recruited directly from gyms and sports clubs, were offered up to seven sessions of tailored physiotherapy delivered over a six-month period. Recruitment, eligibility,

consent, data completion and attendance rates were assessed to determine feasibility of progression to a definitive trial. Acceptability of recruitment, the intervention, questionnaires, and randomization within a future trial were explored. Results indicate that despite most participants experiencing symptoms for many years only one had previously sought treatment. Direct recruitment from sporting venues was both feasible and acceptable to the women. Inclusion of an intimate examination of the pelvic floor muscle was not only regarded as acceptable by participants but considered an important part of the intervention. Attendance rates and completion of questionnaires to track progress was high. Provision of a smartphone app proved useful for motivation but did not monitor compliance effectively. Conclusions drawn are that our study lays the foundation for a future definitive trial. Athletic women valued assessment and treatment for urinary incontinence.

### **Preliminary findings of the MOBILE study: Menopause, osteoporosis and bone intervention using lifestyle exercise**

Jacky J. Forsyth<sup>1</sup>

<sup>1</sup>Staffordshire University, UK

The aim of the study was to apply a bone-strengthening exercise intervention, which had previously been successful among oestrogen-deplete pre-menopausal women, to a postmenopausal population. Clinical trial registration: NCT04469374. Forty-nine participants (M = 57.8, SD = 4.3 years) were randomized into either an exercise intervention or sham-control group in a double-blinded fashion. The intervention consisted of ten maximal, rest-inserted countermovement jumps, performed three times a week on a hard surface without shoes. The sham-control group performed unilateral balance exercises of equivalent duration. The intervention lasted eight months. Of the 39 participants who completed the study (n=23 intervention, n=16 control), there were no significant differences in Broadband Ultrasound Attenuation (BUA) using Quantitative Ultrasound of the calcaneum within and between groups (pre-BUA M = 64.4, SD = 7.2 dB/MHz and post-BUA M = 66.0, SD = 4.5 dB/MHz for intervention versus pre-BUA M = 63.6, SD = 4.2 dB/MHz and post-BUA = 64.4, SD = 4.5 dB/MHz for controls) or for any of the other outcome measures relating to bone, jump height, ground reaction force, balance and quality of life. The study was curtailed due to Covid-19, making the current analysis underpowered. The exercises were, however, well tolerated, with women in the jumping group completing 92% of the prescribed exercise and women in the sham-control group completing 88%. The non-significant findings might be explained by the study being underpowered, the lifestyle changes that occurred as a result of Covid-19-related restrictions, and/or the post-menopausal hypo-oestrogenism preventing substantial gains in bone strength with exercise.

### **Gender inequality faced by female athletes, with special reference to the Sabaragamuwa University of Sri Lanka**

Nayana Amarathunga<sup>1</sup>, A.A.L. Madhushani<sup>1</sup> and, D.S.L. Perera<sup>1</sup>

<sup>1</sup>Sabaragamuwa University, Sri Lanka

This particular study was accomplished to identify the gender inequality faced by female athletes; with special reference to the Sabaragamuwa University of Sri Lanka. Identify the gender inequality faced by female athletes in Sabaragamuwa University was the key objective and it examined about what kind of factors of gender inequality related to participation in sports and how gender inequality experienced in other areas of sports life. A survey method was applied to examine the gender inequality faced by female athletes in Sabaragamuwa University. The questionnaire was used to collect the data and it consisted of 13 categories with two subsections as gender inequality related to participation in sports and inequality experienced in other areas of sports life. The study has provided

conclusions after wearing out detail scientific analyses of data using suitable statistical tools. SPSS 21.0 version is the software used in analyzing the collected data to gain meaningful conclusions. According to the results, six factors were accepted from the chi-square analyze. There is a positive moderate correlation among all factors. The results which were identified under the sub sections inequality faced in other areas of sports life is highly affected for the females to participate sports. Results suggested that there is need to enhance gender equity among the University sport participants. The recommendations were suggested of this study can be able to use as a tailor advertising messages among the different stakeholders of the University sport sector. Keywords: gender inequality, female athletes, university sport participation, economic, social, cultural.

### **Redressing the balance in girls' and women's football: Gender justice as a platform for social change**

Hanya Pielichaty<sup>1</sup>

<sup>1</sup>University of Lincoln, UK

The patriarchal hegemony engulfing British football continues to be problematic for girls and women who play. Despite years of intervention and focused initiatives alongside growing participation numbers; football culture still positions girls and women players as 'other'. This cultural stronghold, however, is starting to weaken due to the players' everyday experiences in relation to family, friendship, and activism. By taking a reflective account of my work in the field over the past decade I hope to provide new ways to think about equality, culture, and praxis. A critical focus on the 'football self' will be informed by my insider-perspective as former player, woman, and researcher. The use of 'memory snippets' will assist in framing my reflections in connection to the management and negotiation of football identities amidst a backdrop of historical oppression. By using a gender justice lens for analysis, a strategy towards social change in girls' and women's football is presented, in a bid to make football a more equitable space.

### **'Not quite a lady's expedition': Introducing Anne Lister's mountaineering excursions to inspire greater engagement, discourse and understanding in women's sporting achievements**

Marlene Oliveira<sup>1</sup> and, Amanda Pryce<sup>2</sup>

<sup>1</sup>SIAG, Portugal;

<sup>2</sup>Oxford University Hospitals NHS Foundation Trust, UK

In the history of mountaineering, achievements by pioneering women are often overshadowed by those of their male peers. Gender and class played a role in women's access to mountaineering excursions but, for those with the means to prepare and attempt these climbs, sometimes the challenge was also getting their achievements recognized afterwards. We look at the example of Anne Lister (1791-1840), a Yorkshire landowner and diarist, and examine how she prepared for her climbs, achieved her goals, and carved a spot in history alongside her male peers. Lister is known as the first tourist to reach the summit of Mt. Vignemale in the Pyrenees (1838), but her mountaineering experience includes climbs of Mt. Perdu and Ben Nevis, among others. After successfully reaching the summit of Vignemale, Lister learned that a man had claimed her achievement. She then ensured that the truth was restored. Our research focuses on uncovering and bringing Anne Lister's achievements to modern audiences as a way to inspire greater engagement, discourse, and understanding in women's sporting achievements. We're providing an accessible way to visualize Lister's adventures as told in her journals and other archival materials in the form of interactive maps and other online resources, while also providing as much historical context as possible. Future work includes additional research into historical context and dissemination of knowledge

by means of short talks, online articles, or other interactive resources that modern audiences can use to get inspiration to achieve more.

### **The effects of menstrual cycle phase on exercise performance in eumenorrhoeic women: A systematic review and meta-analysis**

Kelly Lee McNulty<sup>1</sup>, Kirsty Jayne Elliott Sale<sup>2</sup>, Eimear Dolan<sup>3</sup>, Paul Alan Swinton<sup>4</sup>, Paul Ansdell<sup>1</sup>, Stuart Goodall<sup>1</sup>, Kevin Thomas<sup>1</sup> and, Kirsty Marie Hicks<sup>1</sup>

<sup>1</sup>Northumbria University, UK;

<sup>2</sup>Nottingham Trent University, UK;

<sup>3</sup>Universidade de São Paulo, Brazil;

<sup>4</sup>Robert Gordon University, UK

The purpose of this systematic review with meta-analysis was to determine the effects of the menstrual cycle (MC) on exercise performance and provide evidence-based, practical, performance recommendations to eumenorrhoeic women. Four databases were searched for published experimental studies that investigated the effects of the MC on exercise performance, which included at least one outcome measure taken in two or more defined MC phases. All data were meta-analysed using multilevel models grounded in Bayesian principles. The initial meta-analysis pooled pairwise effect sizes comparing exercise performance during the early follicular phase with all other phases (late follicular, ovulation, early luteal, mid-luteal and late luteal) amalgamated. A more comprehensive analysis was then conducted, comparing exercise performance between all phases with direct and indirect pairwise effect sizes through a network meta-analysis. Results from the network meta-analysis were summarized by calculating the Surface Under the Cumulative Ranking curve (SUCRA). Study quality was assessed using a modified Downs and Black checklist and a strategy based on the recommendations of the Grading of Recommendations Assessment Development and Evaluation (GRADE) working group. Of the 78 included studies, data from 51 studies were eligible for inclusion in the initial pairwise meta-analysis. The three-level hierarchical model indicated a trivial effect for both endurance- and strength-based outcomes, with reduced exercise performance observed in the early follicular phase of the MC, based on the median pooled effect size (ES0.5 = -0.06 [95% credible interval (CrI): -0.16 to 0.04]). Seventy-three studies had enough data to be included in the network meta-analysis. The largest effect was identified between the early follicular and the late follicular phases of the MC (ES0.5 = -0.14 [95% CrI: -0.26 to -0.03]). The lowest SUCRA value, which represents the likelihood that exercise performance is poor, or among the poorest, relative to other MC phases, was obtained for the early follicular phase (30%), with values for all other phases ranging between 53 and 55%. The quality of evidence for this review was classified as "low" (42%). The results indicate that exercise performance might be trivially reduced during the early follicular phase of the MC, compared to all other phases. Due to the trivial effect size, the large between-study variation and the number of poor-quality studies included in this review, general guidelines on exercise performance across the MC cannot be formed; rather, it is recommended that a personalised approach should be taken based on each individual's response to exercise performance across the MC.

### **Menstrual cycle education provision in schools relating to participation in physical activity**

Natalie Brown<sup>1,2</sup>, R. Williams<sup>3,4</sup>, G. Bruinvels<sup>5,6</sup>, L. J. Forrest<sup>7</sup> and, J. Piasecki<sup>8</sup>

<sup>1</sup>Swansea University, UK;

<sup>2</sup>Welsh Institute of Performance Science, UK;

<sup>3</sup>*Stride Active CIC, UK;*

<sup>4</sup>*Whitecross Hereford, UK;*

<sup>5</sup>*St Mary's University, UK;*

<sup>6</sup>*Orreco, Ireland;*

<sup>7</sup>*University of the West of Scotland, UK;*

<sup>8</sup>*Nottingham Trent University, UK*

The menstrual cycle can affect school attendance, confidence, and participation in physical activity through a lack of knowledge and support, yet research has not quantified education provided in schools. The aim was to explore menstrual cycle education in UK schools, with specific focus on the impact of participation in physical activity. 789 teachers (91% female) from all stages of school education in England (48%), Scotland (24%), Wales (22%) and Northern Ireland (6%) completed a qualitative online survey. The survey captured information on menstrual education in schools, teachers' knowledge and confidence of the menstrual cycle, impact of the menstrual cycle on school performance and participation in physical activity. Results indicated that 498 teachers reported lessons were provided on the menstrual cycle (63%), predominantly delivered within personal, social, health and economic (PSHE) or science subjects, with lessons focusing on the biology (56%) and menstrual products (40%) rather than lived experiences (14%). Only 15% of teachers reported more than two lessons were provided in one year, with 77% of teachers feeling further training would be beneficial to help teaching. 88% of teachers perceived the menstrual cycle as the most prevalent reason to affect participation in physical activity. The results highlight education is scientifically focused with less education on management of symptoms or lived experiences, with teachers perceiving the menstrual cycle influencing participation in physical activity. There is a need to address menstrual education provided in schools to help empower girls to manage their menstrual cycle, preventing impact on physical activity and health.

### **Menstruation and football: The experiences of female football players from low- and middle-income countries**

Nonhlanhla S. Mkumbuzi<sup>1,2</sup>, Senanile B. Dlamini<sup>1</sup>, Fidelis Chibhabha<sup>3</sup>, Fredrick M. Govere<sup>2</sup> and, Lucinda Manda-Taylor<sup>4</sup>

<sup>1</sup>*University of Cape Town, South Africa;*

<sup>2</sup>*Africa Evaluation and Research Development, South Africa;*

<sup>3</sup>*Midlands State University, Zimbabwe;*

<sup>4</sup>*University of Malawi, Malawi*

Menstruation is a normal biological process in females. However, females tend to be excluded from sports science research because of it. Consequently, our understanding of menstruation and athletic performance is still not well researched. Furthermore, much of the current literature on menstruation in sport fails to account for the intersection of gender, race, culture, and economics – factors which compound the difficulties faced by female African athletes. The study aimed to explore female African football players' current and historical menstrual cycle status, menstrual symptoms, lived experiences, and perceptions of the menstrual cycle. Participants completed demographic questionnaires and the Moos Menstrual Distress Questionnaire. The main findings were that 67% of the players did not use contraceptives, likely due to socio-cultural factors at community level. Most of the players had access to their preferred choice of sanitation; however, 35% used old rags during their periods, likely because they could not always afford their preferred choice. The most commonly reported menstrual symptoms were abdominal cramps (55%), headache (42%), mood swings (42%) and irritability (48%). Further, players reported irritability (48%), mood swings (52%), and breast

tenderness (48%) in their most recent period and the week before their period. These symptoms can affect training and competition; therefore, team support personnel should be aware of menstruation's physiological, psychological, and social implications for sportswomen and its effect on athletic performance and wellbeing.

### **'We got next': Understanding the experiences of women collegiate athletic administrators in Division III NCAA-member institutions in Mississippi**

LeKesha L. Perry<sup>1</sup>

<sup>1</sup>*The University of Toledo, USA*

Nearly five decades after it became law, Title IX of the Education Amendments of 1972 has significantly changed the landscape of sports in the United States. The law does not mandate the equality of sports or athletics, nor does it mention athletics at all. However, the law has been credited with directly expanding equitable opportunities for women to play collegiate sports. While Title IX has had a significant impact on creating opportunities for women and girls to play, yet the same opportunities have not translated into an equitable number of women holding leadership positions at the collegiate level. The intent of this phenomenological study is to describe and understand what women administrators at the National Collegiate Athletic Association (NCAA) Division III level perceive as profound along the way to acquiring their current position. In doing so, this study addresses the dearth of literature regarding women intercollegiate administrators' perceptions concerning what contributed to their success in climbing the leadership ranks. The research is designed to describe and understand what participants, in their own voices and deep recollections, believe are the essences of the phenomenon.

### **Gender and sports: Experiences of the Surinamese Olympic Committee with safeguarding measures**

Kirtie Algoe<sup>1</sup>

<sup>1</sup>*Suriname Olympic Committee; Anton de Kom University, Suriname*

The advocacy of gender equality in sports is a worldwide struggle, but a greater challenge for small nations with a fragile economy like Suriname, a Dutch speaking country in the Caribbean. This paper seeks to share experiences of the Suriname Olympic Committee (SOC) with countering gender inequality in sports within the global context of actions undertaken by the International Olympic Committee (IOC). The case of Suriname is worthwhile for it shows a small nation's successes in creating safeguarding measures. SOC has managed to develop a code of conduct in sports and is now undertaking steps to establish an institute of justice in sports. All this happens in a situation with limited female leadership in sports: only three of 17-member national federations are female headed and the board of the SOC with nine persons has two women. Three arguments are posed. Firstly, Suriname's gender inequality in sports reflects national power structures and cultural obstacles for women in sports. Secondly, IOC's policy and resources to reduce gender disparity in sports are essential, but not a guarantee for national changes. Thirdly and more importantly SOC tackled gender disparity using an approach based on principles of walk the talk, and trial and error. All three arguments are elaborated using the framework of intersectionality. The study draws empirically upon data gathered during seminars and workshops of the Gender and Sport Commission of the SOC.

### **Reframing the narrative: Examining men's attitudes towards women's participation in sport and physical activity**

Milly Blundell<sup>1</sup>, Kaye Richards<sup>1</sup>, Simon Roberts<sup>1</sup>, Matthew Reeves<sup>2</sup> and, Hazel Andrews<sup>1</sup>

<sup>1</sup>Liverpool John Moores University, UK;

<sup>2</sup>University of Central Lancashire, UK

A persistent gender gap exists in sport with women and girls participating less than their male counterparts. Much of the research in this area has framed the narrative around this being a women's 'problem' seeking to identify the barriers and enablers to women's and girls' engagement and involvement. This paper is based on a study which was part of an 18 month publicly funded pilot project to evaluate a targeted sport and physical activity (PA) programme for women and girls (14+), which informed the development and roll out of the national campaign, 'This Girl Can'. This presentation reports on one of the five components of the study based on semi-structured telephone interviews with 222 males (2252 calls were made to households in the geographical location of the targeted programme: 9.9% response rate). The interviews focused on the interviewees' perceptions about, and attitudes towards women's participation in sport and PA generally, and in the context of the targeted programme. The findings of the study suggest that whilst men were on the whole supportive of women's participation in sport and PA, 'everyday sexism' was still an undercurrent of the cultural and social reference points that men draw upon in attitudes towards women's participation in sport and PA. These findings highlight the need to consider the role of men in tackling the 'everyday sexism' which characterizes much of the culture of sport.

#### Mental health of elite female cricketers

Hassan Mahmood<sup>1</sup>

<sup>1</sup>Birmingham Community Healthcare NHS Foundation Trust, UK

Cricketers from different countries have suffered from mental health disorders such as anxiety and depression (Alderson, 2012; Sahni and Bhogal, 2017; Schout, 2019; Schuring et al, 2017). Whilst the focus has mostly been on the mental health of male cricketers, female cricketers have been playing more frequently, including away from home, with increased media scrutiny (Caldwell, 2018). The aim was to highlight mental health disorders amongst female cricketers and make recommendations. A literature review included keywords 'female cricket', 'cricket and mental health' and 'female cricket and mental health' being searched in Pubmed and Google Scholar. The results indicate that female cricketers have suffered from mental health disorders (Caldwell, 2018; Guardian Sport and Agencies, 2019; Phillips, 2019), which in some cases has led to retirement (Guardian Sport and Agencies, 2019). Open discussions about mental health may have helped to decrease stigma (Phillips, 2019). Due to the Covid-19 pandemic, the game has been played in biosecure bubbles. This has been a challenge given the restrictive environments, resulting in 'bubble fatigue' (Thorpe, 2020). Although there is structured mental health support in some countries (Australian Cricketers' Association, n.d.; New Zealand Cricket Players' Association, n.d.; Professional Cricketers' Association, n.d.; South Africa Cricketers' Association, n.d.), there is no equivalent in South Asian nations where it is needed (PR, 2019), but there is little discussion about female cricketers' mental health, possibly due to stigma (Khan, 2014). All elite cricketers should be supported to have access to mental health literacy programmes, mental health screening to allow earlier interventions, a team psychologist focusing on mental health and wellbeing and a psychiatrist when required (Mahmood and Friedman, 2021). Mental health screening (Gouttebauge et al; 2020) should be tailored to the needs of the multiple cricket-playing nations. Research is also needed to determine prevalence of mental health disorders amongst female cricketers.

#### Mental health literacy, help-seeking and mental health outcomes in women rugby players

Shakiba Oftadeh-Moghadam<sup>1</sup> and, Paul Gorczynski<sup>1</sup>

<sup>1</sup>University of Portsmouth, UK

Within rugby, a plethora of research has focused on male rugby players, with some recent attention being directed to examining their mental health. Such attention has not been evident for their female rugby counterparts. The aims of this study were to ascertain levels of mental health literacy (MHL) in United Kingdom semi-elite rugby players who identified as women and examine whether MHL is associated with better mental health outcomes and general help-seeking intentions. In total, 208 semi-elite women rugby players completed an online multi-section questionnaire measuring MHL, general help-seeking intentions, distress, and wellbeing. Overall, most players scored a low rating of wellbeing, however those who indicated a previous mental health problem exhibited significantly higher levels of MHL. Players were more likely to display general help-seeking intentions towards an intimate partner or a friend than a healthcare professional. High levels of distress were reported in 64.4% of players, particularly those who had been previously medically diagnosed with a mental disorder and those who identified as bisexual. MHL was significantly, positively correlated with general help-seeking intentions, but not significantly correlated with distress or wellbeing. This study is the first to examine MHL in women rugby players and suggests that strategies devised by multi-disciplinary teams of experts to help promote, engage, and offer tailored mental health support to women rugby players would be beneficial. Further investigations exploring the determinants of, and barriers to, MHL amongst women rugby players would be worthwhile to better understand and support players throughout their sporting career.

#### An investigation into the effect of Zumba® and ZumbaGold® on non-specific, pre-existing musculoskeletal pain

Lorna Mackay<sup>1</sup>, John Erskine<sup>1</sup> and, Helen Branthwaite<sup>1</sup>

<sup>1</sup>Staffordshire University, UK

The aim of this study was to determine whether participating in regular Zumba® or ZumbaGold® classes had an effect on non-specific, pre-existing musculoskeletal pain. The focus was on the neck, shoulders, lower back, hips, knees, ankles, and multi-sites. Methods: A mixed methods approach was adopted to measure changes in pain intensity and frequency for 34 female participants who suffered with pain prior to commencing Zumba® or ZumbaGold® classes. Data from pain questionnaires were complemented by 19 post questionnaire interviews to provide exploratory and contextual understandings. The results demonstrate regular participation in Zumba® or ZumbaGold® offers a positive effect on reducing perception of non-specific, pre-existing musculoskeletal pain in a variety of anatomical locations. Large significant differences were evident in perception of both pain frequency and intensity between pre and post data. In addition, improvements in health-related quality of life (HRQOL) factors, such as daily activities, depression, anxiety, and sleep were reported. These changes were mostly associated with medium to large effect sizes for Zumba® and ZumbaGold®. Two themes emerged from qualitative data: relationship with pain and motivation inspired by classes. It is strongly suggested participation in Zumba® or ZumbaGold® classes is an important alternative to consider for the treatment of chronic, non-specific musculoskeletal pain in a variety of anatomical locations, which can support improvements in HRQOL. Knowledge of these benefits could help individuals suffering with non-specific musculoskeletal pain to alleviate the fear of exercising and increase confidence to participate in Zumba® or ZumbaGold®.

#### Support for organised sport as a strategy to close the gender gap in physical activity in youth

Aoife Lane<sup>1</sup>, Kevin Gavin<sup>1</sup> and, Kieran Dowd<sup>1</sup>

<sup>1</sup>Athlone Institute of Technology, Ireland

Sport has been identified as an investment that works for the promotion of physical activity (PA). In Ireland, 61% of adolescent girls are members of a sports club and young people who play sport are more likely to meet guidelines for PA2. However, the typical gender gap in PA is apparent in sport, as girls consistently accrue less health enhancing/moderate-vigorous PA (MVPA) during sport participation than boys. The aim is to examine the level of MVPA accumulated through sport participation in adolescent boys and girls who play the team based, field sport of Gaelic football. 130 sport participating adolescent (mean age=15 years) boys (n=65) and girls (n=65) wore an activPAL accelerometer for a 7-day period during (1) 'pre-season'/Spring and (2) 'in season'/Summer. At 'preseason', girls accumulated significantly less MVPA during Gaelic football participation than boys (35.5 v 27.4 MVPA min/hour). At 'in season', girls significantly increased their time in MVPA during Gaelic football, resulting in no gender difference during organised sport time; 35.9 and 34.5 MVPA min/hour for boys and girls respectively. In turn, across a full day, there were no gender differences in MVPA at 'in season' with 54% boys and 49% girls meeting PA guidelines. Summer brings increased discretionary time, and a lack of school commitments that likely contributed to higher PA among girls in this analysis. However, observed changes in MVPA in girls was directly linked to increases in sport based MVPA, which affirms the value of sport in the promotion of PA, particularly among girls.

#### **Injury, illness, and medications' use surveillance during the 2020 COSAFA women's championship**

Nonhlanhla S. Mkumbuzi<sup>1,2</sup>, Senanile B. Dlamini<sup>2</sup>, Fidelis Chibhabha<sup>3</sup> and, Fredrick M. Govere<sup>2</sup>

<sup>1</sup>University of Cape Town, South Africa;

<sup>2</sup>African Evaluation and Research Development, South Africa;

<sup>3</sup>Midlands State University, Zimbabwe

Injury, illness, and medications use surveillance studies during regional, continental, and global tournaments are an important aspect of protecting athletes' health. However, systematic analyses of injuries, illnesses or medications use and their risk factors among female African athletes are scarce, which has implications for management of these athletes; these athletes rely on information on injuries, recovery and training that is generated without their bodies or circumstances in mind. The objectives were to analyse the incidence and characteristics of injuries, illnesses and medications use during the 2020 COSAFA Women's Championship. The medical personnel of all participating teams reported all new injuries, illnesses and medications used by players daily. Sixty-three injuries were reported: 45 match and 18 training injuries; 45.5 injuries/1000 match-hours (95% CI 32.2 to 58.8) and 21.7 injuries/1000 training- hours (95% CI 11.7 to 31.7). Most injuries (n= 55, 87%) were caused by contact with another player and involved the lower extremity (n=43; 68%). Fifty-eight illnesses/ailments were reported: 44.4 illnesses/1000 player-days (95% CI 33.0 to 58.8), mostly diarrhoea/loose stools (43.1%) and dysmenorrhoea (31%). No cases of Covid-19 were reported. In total, 175 medications were prescribed: 133.9 medications/1000 player-days (95% CI 133.8 to 134.0). Non-steroidal anti-inflammatory drugs (NSAIDs) (34.3%) and analgesics (18.9%) were the most commonly prescribed drugs. Conclusions were that the incidences of injury, illnesses and use of medications were high; therefore, it is imperative that further studies be conducted to inform appropriate prevention or management protocols among female African football players.

#### **From washing boots to motor racing champions: Women affected by dementia and their relationship with sport reminiscence**

Rebecca Oatley<sup>1</sup>

<sup>1</sup>University of Worcester, UK

This ethnographic qualitative study is the first to explore experiences of sport reminiscence for women affected by dementia. Sport reminiscence (using sport-related prompts to trigger memories and conversation) is reportedly a popular activity for people living with dementia that tackles loneliness and supports wellbeing. Yet, it remains rooted in a traditional masculine hegemony that negates the diverse experiences that both men and women have within sporting domains. Data were generated through qualitative interviews and observations during sport reminiscence group activities hosted by professional sports clubs. Evidence illustrated that women had vibrant and varied sporting histories that reflected both traditional gender stereotypes and challenged perceptions of female sport. Sport was an enjoyable topic and could promote sociability, whilst person-centered sport reminiscence enabled some women to uphold aspects of identity, experience empowerment and share a sense of belonging. However, results demonstrated group activities remained highly gendered and group dynamics could impede participation. Furthermore, overgeneralized prosocial assumptions advocating sport-for-change benefitted the sport clubs, rather than individuals affected by dementia. For some women, sport did form a valuable topic beneficial for wellbeing, which could counteract stigma related to dementia, age, or gender stereotyping; nonetheless, existing sport reminiscence research and practice lacks the critical perspective that is necessary to address its limitations and, reach its potential.

#### **Focus-group discussions of the female hormonal cycle as a tool for increasing knowledge and communication among elite endurance athletes and their coaches**

Martina Höök<sup>1,2</sup>, Max Bergström<sup>1</sup>, Stig Arve Sæther<sup>3</sup> and, Kerry McGawley<sup>1</sup>

<sup>1</sup>Mid Sweden University, Sweden;

<sup>2</sup>Swedish Ski Association, Sweden;

<sup>3</sup>Norwegian University of Science and Technology, Norway

Competitive female athletes perceive their hormonal cycles to affect training, performance, and wellbeing (Armour et al., 2020; Findlay et al., 2020; Solli et al.,2020). Despite this, athletes rarely discuss their hormonal cycles with coaches or others, and this appears to be at least partly due to a lack of knowledge among athletes and coaches (Brown et al., 2020; Kroshus et al., 2014; Larsen et al., 2020; Solli et al., 2020). This study aimed to provide an in-depth understanding of the perceptions and experiences of athletes and coaches in relation to 1) Female hormonal cycles and how they affect training, performance, and wellbeing; 2) Barriers to athlete-coach communication. Participants included 13 Swedish national-/international-level female cross-country skiers (age 25.8±3.6 y) and eight coaches (two females, six males; age 47.8±7.5 y). All 21 participants completed an online survey of their current knowledge relating to female hormonal cycles. They then participated in semi-structured focus-group interviews led by the first author. Three key themes revealed that: 1) Athletes question whether it is necessary and/or healthy to experience amenorrhoea during their competitive careers; 2) Coaches feel that they lack the knowledge of female-specific health issues required to help their athletes; 3) Both athletes and coaches found that the focus-group discussions provided a platform for open communication and improving their knowledge of hormonal-cycle related issues. Conclusions drawn were that survey and focus-group discussions can be used to assess and improve knowledge and communication relating to female-specific hormonal and health issues among athletes and coaches.

#### **The effects of oral contraceptives on exercise performance in women: A systematic review and meta-analysis**

Kelly Lee McNulty<sup>1</sup>, Kirsty Jayne Elliott Sale<sup>2</sup>, Eimear Dolan<sup>3</sup>, Paul Alan Swinton<sup>4</sup>, Paul Ansdell<sup>1</sup>, Stuart Goodall<sup>1</sup>, Kevin Thomas<sup>1</sup> and, Kirsty Marie Hicks<sup>1</sup>



<sup>1</sup>Northumbria University, UK;

<sup>2</sup>Nottingham Trent University, UK;

<sup>3</sup>Universidade de São Paulo, Brazil;

<sup>4</sup>Robert Gordon University, UK

The purpose of this systematic review and meta-analysis was to explore the effects of oral contraceptive pill (OCP) use on exercise performance in women and to provide evidence-based performance recommendations to users. A between-group analysis was performed, wherein performance of OCP users was compared with naturally menstruating women, and a within-group analysis was conducted, wherein performance during OCP consumption was compared with OCP withdrawal. For the between-group analysis, women were phase matched in two ways: (1) OCP withdrawal versus the early follicular phase of the menstrual cycle and (2) OCP consumption versus all phases of the menstrual cycle except for the early follicular phase. Study quality was assessed using a modified Downs and Black Checklist and a strategy based on the recommendations of the Grading of Recommendations Assessment Development and Evaluation working group. All meta-analyses were conducted within a Bayesian framework. 42 studies and 590 participants were included. Most studies (83%) were graded as moderate, low, or very low quality, with 17% achieving high quality. For the between-group meta-analysis comparing OCP users with naturally menstruating women, posterior estimates of the pooled effect were used to calculate the probability of at least a small effect ( $d \geq 0.2$ ). Across the two between-group comparison methods, the probability of a small effect on performance favoring habitual OCP users was effectually zero ( $p < 0.001$ ). In contrast, the probability of a small effect on performance favoring naturally menstruating women was moderate under comparison method (1) ( $d \geq 0.2$ ;  $p = 0.40$ ) and small under comparison method (2) ( $d \geq 0.2$ ;  $p = 0.19$ ). Relatively large between-study variance was identified for both between-group comparisons ( $ES_{0.5} = 0.16$  [95% credible interval (CrI) 0.01–0.44] and  $ES_{0.5} = 0.22$  [95% CrI 0.06–0.45]). For the within-group analysis comparing OCP consumption with withdrawal, posterior estimates of the pooled effect size identified almost zero probability of a small effect on performance in either direction ( $d \geq 0.2$ ;  $p \leq 0.001$ ). OCP use might result in slightly inferior exercise performance on average when compared to naturally menstruating women, although any group-level effect is most likely to be trivial. Practically, as effects tended to be trivial and variable across studies, the current evidence does not warrant general guidance on OCP use compared with non-use. Therefore, when exercise performance is a priority, an individualized approach might be more appropriate. The analysis also indicated that exercise performance was consistent across the OCP cycle.

### Inspiring women to be active during midlife and menopause

Liz Prinz<sup>1</sup> and, Clare Taylor<sup>1</sup>

<sup>1</sup>Women in Sport, UK

Midlife can be a time of declining physicality and health and an exhausting period when women are often caring for children and aging parents, managing demanding careers, and coping with perimenopausal symptoms. All of this means that some women struggle to be active, but we know that more women are interested in being active during this time. Being physically active during perimenopause makes it easier for women to be active into later life, embeds good habits, and can prevent illnesses and injuries. The sport sector must do more to facilitate this. The aims were to understand the pressures midlife women face (including perimenopause), identify how these factors prevent inactive women from getting active, and find solutions. An iterative three-month qualitative study was undertaken: 1) seven-day ethnographic tracking followed by online activities exploring attitudes to exercise and menopause with 30 women; 2) in-depth interviews with 12 of the 30 women and supplementary interviews; 3) four-week activity exploration with eight

women; 4) review implications with expert stakeholders. Results inspired the creation of a midlife model identifying midlife and menopause factors playing out in women's lives, and their capability, opportunity and motivation barriers to being active; developed five principles for the sport sector to help women get active in midlife: endless possibilities (expand perceptions and opportunities for being active), judgement-free zone (welcoming and supportive environment), support network (offer built-in social support), expand the image of what sporty means (inspiring, relatable role models) and make it relevant (reference specific, relevant benefits).

### Educating and engaging Gen Z through a massive open online course

Gillian Renfree<sup>1</sup> and, Beth Burgess<sup>1</sup>

<sup>1</sup>University of Worcester, UK

The GETZ project was a three-year initiative to educate and engage Generation Z about the issues regarding gender inequality in sport. This presentation will aim to provide some implications for practice for other educators on utilizing a MOOC as an educational toolkit, by outlining the outcomes of the pilot stage, student engagement, resulting adaptations, and future plans for the Gender Equality Toolkit. Themes of persistent gender stereotypes, lack of communication through social media contrary to previous research and altering content to reflect Generation Z engagement will be covered. Thus, demonstrating the challenges of educating through a virtual space and the flexibility required for effective engagement.

### What Gen Z students know and don't know about gender inequality in sports

Hebe Schaille<sup>1</sup> and, Inge Derom<sup>1</sup>

<sup>1</sup>Vrije University Brussel (VUB), Belgium

As part of the GETZ Project, we have conducted a Gender Equality in Sport Research Study, which allows us to assess Generation Z's perception and understanding of gender inequality in sport prior to and after the GETZ toolkit has been delivered. The research methodology included two phases. First, qualitative data were collected from Gen Z students across four European countries, including Belgium, Norway, England, and Netherlands, through eight focus groups. The 54 participants were enrolled in an (under)graduate sport programme. Second, quantitative data were collected from Gen Z students who completed the GETZ toolkit during their academic sport programme. Two online surveys were administered: one prior to ( $n=240$ ) and one following the completion ( $n=77$ ) of the roll-out of the GETZ toolkit. These data provided us with valuable information regarding the potential impact and effectiveness of the GETZ toolkit and helped us to identify socio-cultural nuances relating to this topic in countries in which we delivered the GETZ toolkit. The findings from the first phase showed that awareness around gender inequality could further be increased by focusing on knowledge gaps such as the underrepresentation of women in coaching positions. The findings from the second phase highlighted that although members of Gen Z reported increased awareness about gender inequality in sports, changes in personal intentions and behaviours are more difficult to achieve. Therefore, sport and physical education scholars should continue to address and challenging traditional gender stereotypes and beliefs as well as foster career and leadership aspirations for the next generation of prospective employees.

### Leadership and governance seminar and reflections from the sport sector

Alma Papić<sup>1</sup> and, Sunčica Bartoluci<sup>2</sup>

<sup>1</sup>Croatian Olympic Committee, Croatia;

<sup>2</sup>University of Zagreb, Croatia

The Croatian Olympic Committee organised a conference entitled 'Good governance and gender equality in sport' as the activity planned within the GETZ project. The conference gathered experts and practitioners from different sectors and organisations: sport, education, science, public sector, etc. High-level speakers reflected on the ongoing issues related to gender inequality in sport. The emphasis of their contribution was on the relation between good governance and gender equality in sport, on limited access to leadership positions to women in sport, on gender perceptions of women in sport in different roles and positions (athletes, leaders, administrators, etc.), and on the portrayal of female athletes in media which was based on the results of the international research carried out by competent authorities and stakeholders in the Mediterranean region. The first session, which was dedicated to sharing of knowledge and good practice, was followed by the second session held in the format of a workshop. While the first session of the conference gave the opportunity to participants to learn about issues such as the real cases of discrimination against women in sport and jurisdiction of the Ombudsperson for Gender Equality, the workshop provided them with the opportunity to share their insights in a semi-structured discussion in small groups of participants moderated by local experts in the field of sport management. The main aim of the workshop was to identify relevant ideas that can contribute to the development of the GETZ toolkit.

#### Dissemination activities through the student sport body in Europe

Sara Rozman<sup>1</sup> and, Andrej Pišl<sup>1</sup>

<sup>1</sup>*European Universities Sports Association, Slovenia*

European University Sports Association (EUSA) is an umbrella federation of university sport in Europe, having members in 46 countries across the continent. EUSA and its Institute promoted the GETZ project both directly, as well as indirectly through its gender equality and equity activities. Apart from publicizing the initiative through the printed media (annual magazines, special anniversary book), and digitally (website, e-newsletter, social media), the project and its activities have been presented to our members and partners also at a special seminar held in Slovenia in the spring of 2019. End of 2020, a dedicated webinar on gender quality and GETZ workshop have been held online. Gender equality was also one of our key topics at the last EUSA Conference held live in Aveiro in 2019. The dissemination and promotion of the project is planned also after the official lifecycle of the project; next activities are already foreseen at the upcoming European Universities Games.

#### GETZ project monitoring and student involvement

Solveig Straume<sup>1</sup>, Oskar Solenes<sup>1</sup> and, Seada Šaldić<sup>1</sup>

<sup>1</sup>*Molde University College, Norway*

This presentation will provide insights from the monitoring of the GETZ project. We will also present some main insights and experiences made from hosting the student seminar in Molde, March 2020. Based on monitoring we observe how student engagement seems to be depending on whether Universities apply the GETZ MOOC in their teaching or not. Results indicated a difficulty to keep the MOOC engaging outside the Universities and their use in teaching. Another observation seems to be that many have registered and started on the MOOC, but do not complete. As part of the GETZ project a student seminar was hosted in Molde (Norway) in March 2020. This was organized heavily depending on students to engage and to take part in creating and hosting the event. We will present some of our experiences from this event and how we succeeded in making a high degree of student engagement both for participants, but especially for those students taking part in organizing.

#### Insights into the learning gains of the GETZ MOOC: Evaluation, impact, and intentions

Sam Geijer<sup>1</sup>

<sup>1</sup>*Amsterdam University of Applied Science, Netherlands*

The purpose of the GETZ MOOC was to 'tackle the issues around the gender imbalance in sport in relation to leadership and management roles in an industry which is heavily male dominated' by means of education. Qualitative research has been conducted among participants in four countries to deeper understand: how they experienced gender inequality in their home countries, how participants experienced learning via a massive open online course and if it has motivated them to 'tackle the issues' in their (future) careers. In this presentation you will be provided with the main findings in relation to these three topics.

## 5 in 5 Presentation Abstracts

#### Qualitative analysis of female para powerlifting competitive process

Jenny Ortiz Cárdenas<sup>1,2</sup>, Kelly Alejandra López Mora<sup>3</sup> and, Ivan Ricardo Pérdomo Vargas<sup>4</sup>

<sup>1</sup>*El Bosque University, Colombia;*

<sup>2</sup>*World Para Powerlifting, Germany;*

<sup>3</sup>*Areandina University, Colombia;*

<sup>4</sup>*UniMinuto University, Colombia*

Para powerlifting is a Para sport practiced by people with physical disabilities which includes eight types of impairments like Impaired Muscle Power, Impaired Passive Range of Movement, Limb Deficiency, Leg Length Difference, Short Stature, Hypertonia, Ataxia and Athetosis (World Para Powerlifting, n.d.) Although this sport is open to both genders, most of the participation in different roles (athletes, coaches, and technical officials) is male, possibly due to societal beliefs and biases of women's participation in strength sports, hence requiring further investigation. The purpose of this research project aimed to establish specific actions and perceptions of coaches that work with successful female Para powerlifting athletes. Through interviews with eleven female coaches who attended the Bogotá 2018 World Para Powerlifting Americas Open Championships, we found that they consider the important factors to success in the sport as proper training planning, institutional support, and recognition for the Para athletes. In addition, they identified family support, early talent identification and having more competition opportunities as important for female athletes to participate in the sport.

#### The race to the chequered flag: The representations of women racing drivers in British printed newspapers between 2010 and 2020

Desiree Campbell<sup>1</sup>

<sup>1</sup>*Northumbria University, UK*

Within the large body of research on the media's representations of sports-women, little academic research has focused on women racing drivers; this doctoral research aims to address that gap. This presentation will discuss the initial findings from a longitudinal media analysis examining how women racing drivers are represented in the British media. Britain has long been considered the birthplace and the home of motorsport. Motorsport is one of the few sports in which men and women can compete directly against each other. Despite the sport's gender-neutral status, the sport is male-dominated, with very few women competing in the sport's top levels. Over the past decade, there have been significant developments in the progression of women in motorsport, which have included campaigns to increase participation in the sport, women in Formula One teams as development and test drivers and the launch of the WSeries, a woman-only racing series. The media

analysis examined 445 newspaper articles from six British national newspapers between 2010 and 2020. In addition, newspaper articles relating to men racing drivers were examined to establish the accepted norms for reporting racing drivers in British newspapers. The initial findings suggest that women racing drivers' representations reflect those found in the existent research on media representations of sportswomen, including the use of gender marking, infantilization and focus given to non-task related aspects in the reporting. However, in addition, there appears to be a narrative of women racing drivers as extraordinary, exceptional, and mythical, which will be discussed in this presentation.

### **Getting into the zone: Preliminary insights as an outsider researcher in women's bodybuilding and physique athletes**

Airnel T. Abarra<sup>1</sup> and, Tamas Doczi<sup>1</sup>

<sup>1</sup>*University of Physical Education, Hungary*

Ethnographic methods provide meaningful treatment of data, especially in doing Sociology of Sport Research. Experiences of different researchers imply the challenges gathering data especially coming as an outsider. Different studies highlighted the access of 'insiders' to their chosen discipline to provide better rapport with their participants. The 'insider' access might provide perceived convenience in data gathering. Studying bodybuilding are dominated by auto ethnographic and insider point of view. Due to the personal attachments to the women bodybuilding and physique athletes was the primary motivation of the author to study this discipline. The paper aims to present initial experiences and insights as a first step in doing research related to women's bodybuilding and physique competition. The article offers a review on contemporary studies related to the discipline, especially on the discussions on methods and being an insider or an outsider researcher.

### **Homogenizing dual identities in women's rugby: A socio-cultural interpretation of RFU 'Inner Warrior' camps**

Alex Gardener<sup>1</sup>

<sup>1</sup>*University of Worcester, UK*

In 2017, the RFU launched a strategic plan to increase the participation numbers of women and girls within rugby union across four years (Women and Girls Action Plan 2017-2021). Within this plan, there are various initiatives to help improve opportunities, facilities, and the perceptions of women's rugby union. As part of this initiative, Inner Warrior camps are sessions usually delivered by RFU and club coaches to encourage women and girls to channel a warrior-like identity. These camps are intended to be a welcoming and inviting opportunity for beginners and existing players, to participate in games and activities associated with rugby union in an exclusively female environment. To understand women's experiences, this project has taken a phenomenological approach to exploring the lived experience of women rugby players through non-participant, field observations. Interpretations of the Inner Warrior camps will be gathered through semi-structured, focus group interviews. Using theories and concepts such as 'The Living Paradox' (Krane et al, 2004) and Foucault's work on Power (Foucault and Faubion, 1994) this project will decipher the encouragement of dual identities within women's sport. In accordance with a liberal feminist perspective, this project argues that sport can and should be used as a platform for liberation and empowerment for women's equality of opportunity. However, as rugby has been considered a game of male preserve (Berberich 2007; Chandler and Nauright 1999; Dunning 1986; Howe 2001; Wright and Clarke 1999) this research explores the idea that women are only being empowered to participate in this traditionally 'masculine' sport under the guise of female warrior.

### **Impact of resting metabolic rate and physical activity on weight loss during postpartum period**

Nicolas D. Knuth<sup>1</sup> and, Jaime R. DeLuca<sup>1</sup>

<sup>1</sup>*Towson University, Towson, USA*

Difficulty losing weight gained during pregnancy puts women at a significantly greater risk for becoming obese. The two largest components of energy expenditure are resting metabolic rate (RMR) and physical activity (PA), yet how these factors change during the postpartum period is not well-characterized. The aim was to evaluate changes in RMR and PA in relation to weight loss during the postpartum period. PA was measured objectively using wrist-worn accelerometers over seven days in eight women at three, six, and nine months postpartum. RMR was measured using indirect calorimetry. Body composition was measured by DXA. Changes in body stores and self-reported three-day food logs were used to calculate energy intake (EI). Results indicated that body mass decreased from three to six months postpartum ( $72.0 \pm 16.0$  vs  $69.5 \pm 16.4$  kg,  $p < 0.05$ ), however no further change occurred from six to nine months ( $68.6 \pm 17.3$  kg). Total energy expenditure (TEE: average  $3045 \pm 733$  kcal/d) and EI (average  $2894 \pm 834$  kcal/d) did not change over the observed time-period; however. Within TEE, RMR increased from three to six months postpartum ( $30.0 \pm 2.1$  vs  $34.0 \pm 4.8$  kcal/kg FFM/day,  $p < 0.05$ ), but was not different at nine months ( $31.4 \pm 2.9$  kcal/kg FFM/day), while PA did not differ from three to six months ( $3.7 \times 10^6 \pm 0.4 \times 10^6$  vs.  $3.7 \times 10^6 \pm 0.5 \times 10^6$  counts) but did increase by nine months ( $4.1 \times 10^6 \pm 0.6 \times 10^6$  counts,  $p < 0.05$ ). Conclusions were that increased RMR is a greater contributor to weight loss than PA during the postpartum period. Interventions aimed at evaluating the impact of greater PA during the postpartum period in creating greater energy expenditure and weight loss may reduce the risk for maternal obesity.

### **Distinction between women's and men's amateur rugby union match injury: A three-year examination**

Patrick Dolan<sup>1</sup>, Thomas M. Comyns<sup>1</sup>, Liam G. Glynn<sup>1</sup>, Caithriona Yeomans<sup>4</sup> and, Ian C. Kenny<sup>1</sup>

<sup>1</sup>*University of Limerick, Ireland;*

<sup>2</sup>*Irish Rugby Football Union, Ireland*

Participation in women's rugby union continues to grow but comprehensive injury epidemiology surveillance distinct from the men's game is required. This longitudinal study aimed to identify injury incidence and related factors among top-tier adult amateur community women's rugby union in Ireland. Designated club injury recorders logged match injury circumstance on a web-based injury monitoring system (IRISweb) over three competitive seasons. Female participants were: 2017-18 season: 4 clubs/129 players; 2018-19 season: 7 clubs/195 players; 2019-20 season: 5 clubs/126 players. Male participants were: 2017-18 season: 15 clubs/479 players; 2018-19 season: 25 clubs/959 players; 2019-20 season: 20 clubs/929 players. Measures included >24hr time loss match injury incidence rate, nature, and timing. Results indicated that time-loss match injury incidence rates (per/1,000 player hours) were: 2017- 2018 season 46.2 female Vs 49.7 male; 2018-2019 season: 27.7 female Vs 47.2 male; 2019-2020 season: 34.9 female Vs 49.1 male. Concussion followed by ankle sprain were the most common diagnoses each year for both men and women. Timing of all injuries showed that while men were most commonly injured in the third or fourth quarter, women's injuries manifested earlier in the second quarter and plateaued or increased in rate thereafter. These data are specific to adult women amateur players in Ireland and offer evidence to support the design of training and game management strategies to this cohort, particularly with respect to earlier timing of match injury. Coaches and clinicians should apply education and interventions addressing the ankle, lower extremity, and head injury in both sexes.

### Preliminary findings from a global women's rugby union survey

Anna Stodter<sup>1</sup>, Elisabeth Williams<sup>2</sup>, Genevieve Williams<sup>3</sup>, Freja Petrie<sup>2</sup>, Izzy Moore<sup>4</sup>, Tilly Russell<sup>2</sup>, Callum Jarvis<sup>2</sup>, George Wells<sup>2</sup> and, Kelly Mackintosh<sup>2</sup>

<sup>1</sup>Anglia Ruskin University, UK;

<sup>2</sup>Swansea University, UK;

<sup>3</sup>University of Exeter, UK;

<sup>4</sup>Cardiff Metropolitan University, UK

The number of female rugby players worldwide exceeds 2.8 million, with a reported increase of 28% in 2018 alone. Injury prevention, training and return to play protocols in rugby, however, are based on androcentric data. There is a dearth of studies focusing on female athletes in general, but lack of female representation in literature surrounding brain injury is of particular concern. To address this, a multidisciplinary academic group constructed a global survey to further understanding of women's rugby injury epidemiology, playing history, training practices, concussion knowledge and positional anthropometrics. Different surveys were constructed for players and coaches. The survey was distributed via social media, facilitated by governing bodies, and translated into nine languages. The survey was open for three months and received 1896 responses from 62 countries, 1596 responses coming from players and 300 from coaches. Across all levels and countries, the body mass of forwards (80.8± 15.8 kg) was significantly greater than backs (65± 9.8 kg). For the top ten world-ranked countries, the average age players began playing rugby was generally correlated with ranking apart from England. The most reported injuries were ankle sprain (24%), concussion (12%), fractured finger (6%), nose fracture (4%) and ACL tear (3%). When asked about the most common mechanism of concussion at their playing level, 49.4% of respondents selected head collision with the ground, followed by direct head contact with hard body part. Differing from existing studies on men's rugby, 41.5% of respondents reported higher risk of concussion as the ball carrier (41.5%) than the tackler (35.4%).

### The speed and countermovement jump height characteristics of elite inter-county camogie players

Philip M. Connors<sup>1</sup>, Declan T. Browne<sup>1</sup>, Des Earls<sup>1</sup>, Paula Fitzpatrick<sup>1</sup> and, Paula Rankin<sup>1</sup>

<sup>1</sup>Institute of Technology Carlow, Ireland

A significant gender divide is present within Gaelic games research, with little understanding or knowledge of speed and countermovement jump height capabilities of elite camogie players compared to their male peers. This investigation aimed to bridge this gap within the literature and provide normative values for these metrics. Forty-five senior inter-county camogie players (age: 23.31 ± 3.47 years; height: 168.97 ± 5.60cm; body mass 68.37 ± 7.44kg) completed pre-season speed and jump height testing using 5- and 10m sprints, and countermovement jump (CMJ) assessment. Players were sub-divided into their playing position (defenders, midfielders, and forwards) to assess if positional differences occur. A multivariate analysis of variance (MANOVA) revealed no significant positional differences for any test ( $p > 0.05$ ). Trivial to small main positional effects (ES = 0.13-0.58) for 5- and 10m sprint times, and CMJ heights were evident, however. Mean 5m sprint times and CMJ heights were 1.20 ± 0.08s and 27.49 ± 3.11cm, respectively. These results indicate similar 5m sprint times to Australian Rules football players (Black et al., 2017), but CMJ heights lower than that of Danish, and NCAA Division I soccer athletes (Krustrup et al., 2010; Vescovi and McGuigan, 2008). The relative homogeneity across performance measures suggests no obvious position specific speed or jump height characteristics within this cohort of elite inter-county camogie players. This study is the first to

provide normative speed and jump height values of elite camogie players to further inform coaches and players to advance the game of camogie.

### She can lift: Perception of barriers and facilitators of female technical officials in the sport of para powerlifting

Dillon Richardson<sup>1</sup>, Jenny Ortiz Cardenas<sup>2</sup> and, Yonatan Alexis Montenegro Bejarano<sup>2</sup>

<sup>1</sup>International Paralympic Committee, Germany;

<sup>2</sup>Areandina University, Colombia

Despite the sport of Paralympic powerlifting having an equal number of medal events for men and women since 2000, the number of women involved in the sport in different roles is imbalanced. This research project aimed to identify the perceived barriers and facilitators of female technical officials currently involved in the sport. Through surveys of female technical officials at the Bogota 2018 Americas Open Regional Championships, results were categorized into three main themes: sport management, social factors, and personal factors. Findings directly impacted the sport's community in the creation of World Para Powerlifting's 'She Can Lift' Programme.

### Effects of home-based combined exercise training in Covid-19 pandemic on physical performance and body composition in Iranian overweight pregnant women

Mahdieh Molanouri Shamsi<sup>1</sup>, Lida Moghaddam Banaem<sup>1</sup> and, Farzaneh Sinapour<sup>1</sup>

<sup>1</sup>Tarbiat Modares University, Iran

Physical activity of pregnant mothers has always been associated with misconceptions about potential risks. Aim: The aim of this study was to evaluate the effect of home-based combined exercise training on body composition and physical performance in the second and third trimesters of pregnancy in overweight women as one of a first studies in Tehran, Iran. Participating mothers (n=25; gestational age between 16 and 18 weeks) were randomly divided into two groups of home-based exercise training and control. The exercise protocol of the intervention group included home-based aerobic and resistance training. Body composition and physical performance were measured in the first and second, third trimesters from mothers of both groups in 16-18, 24-28 and 38-36 weeks of pregnancy. The results showed significant differences between control and trained groups in fat percentage and some functional indices ( $P < 0.05$ ). Conclusions were that home-based combined exercise training in Covid-19 pandemic have been accompanied by improvements in body composition and performance indicators in Iranian pregnant young women.

### The mental health of rugby players: Systematic review and meta-analysis

Shakiba Oftadeh-Moghadam<sup>1</sup> and, Paul Gorczyński<sup>1</sup>

<sup>1</sup>University of Portsmouth, UK

The aim of this systematic review and meta-analysis was to investigate the epidemiological evidence on the prevalence of mental health symptoms in rugby players. Six electronic databases were searched in December 2020. Studies were included if they provided quantitative data on mental health symptoms and disorders and consisted of adult rugby players. Eight studies were included, covering symptoms of anxiety, depression, alcohol use/misuse, distress, sleeping/sleep disturbance and eating disorders/adverse nutrition behaviours. Prevalence of mental health symptoms ranged from 13.4% (anxiety) to 29.2% (alcohol use/misuse). Some rates were similar to the general population, whilst symptoms of sleeping/sleep disturbance were lower, and symptoms of eating disorders/adverse nutrition behaviours and alcohol use/misuse were higher than the general population.

One study included female rugby players. Epidemiological evidence comprising of rigorous diagnostic data and inclusive of gender, race, ethnicity, sexuality, and other protected characteristics is needed to inform future mental health support in this population.

### **‘A mother’s work’: An exploration of the maternity rights of elite athletes**

Tenille Burnside<sup>1</sup>

<sup>1</sup>*Gibson Sheat Lawyers, New Zealand*

Athletes reach peak performance at a similar time to reaching peak fertility, but until recently elite athlete mothers have navigated their sporting careers and motherhood silently. The purpose of this submission is to highlight the need for the maternity rights of elite athletes to be recognised and respected by sport’s governing bodies (SGBs). Considering the precarious nature of an athlete’s profession in a monopolistic, pseudo-professional environment and underlying female medical issues, it is apparent that this need is heightened. Support for this position is found in international human rights instruments and in the recent recognition of human rights by major international SGBs. An analysis of maternity policies and practices of certain SGBs and sponsors is undertaken. This reveals patches of excellent policies, which respect athletes’ autonomy, remove discrimination, and provide organisational and/or financial support, such as maternity pay and childcare. However, with such policies being the exception rather than the norm, conclusions are drawn that a lack of maternity rights will continue to be detrimental to the advancement of women’s sport and human rights. Therefore, addressing human rights requires systemic change and collective action. Continuing to ignore the rights of athlete mothers will impact on their recruitment and retention and moreover, threatens sport’s social license. Practical recommendations are offered to individual SGBs for the introduction of maternity policies taking into consideration the nuances of their respective sport and available resources. Recommendations are also made for collective action by SGBs, including investing in research, creating model policies, raising minimum standards in funding and hosting contracts and centralizing specialist resources.

### **Cycle and elite sport: An orientation guide**

Adrian Rothenbühler<sup>1</sup>, Sibylle Matter Brügger<sup>2</sup> and, Maja Neuenschwander<sup>3</sup>

<sup>1</sup>*Eidgenössische Hochschule für Sport Magglingen, Switzerland;*

<sup>2</sup>*Medbase Sports Medical Center Bern Zentrum, Switzerland;*

<sup>3</sup>*Swiss Olympic, Switzerland*

The influence of the female menstrual cycle on competitiveness in sport varies from one individual to another (McNulty, Kelly Lee et al., 2020, p. 1-15). Women athletes need to understand the effects of cycle-dependent hormonal changes to enable them to make better use of and more effectively control the ways in which those changes influence training and performance. The three-stage support model shows this development of understanding. The following spheres: communication, awareness, and documentation, as well as individual training plans, form the basis – not always with the same weighting, however. Stage 1: address and understand. Empowerment of both sides (female athlete and coach) – thus, informing and raising awareness of topics specific to women (e.g., menstrual cycle, RED-S, among other things) are central at this stage. A crucial tool in this is the communication between the parties involved. The individual physiology and basic knowledge of the female menstrual cycle are picked out as central themes in an easily accessible way. Cycle-monitoring can provide initial information and insights for further work. Stage 2: integrate and optimise. At the second stage, the physiology sphere becomes more important and mutual trust is further developed. Insights into the hormonal and structural situation have to be considered in more depth. The awareness and

documentation of cycle-related problems and positive influences lead to adaptations in the training process. This enables an optimization of performance and an improved injury prophylaxis (of e.g., ACL injuries) to be achieved. Stage 3: maximize. At the third stage, the insights gained previously are implemented in the training plan of the competitive sport. The timing and type of training incentive are adapted to the individual effects of the athlete’s cycle (cycle-directed training). To enable athletes and coaches to strive for this performance optimization, a very good knowledge of the gender-specific realities is crucial for the training plan. The presented model can be a starting point for that.

### **CrossFit, mood states and menstrual symptoms**

Jamie Lincoln<sup>1,2</sup>

<sup>1</sup>*East Norfolk Sixth Form College, UK;*

<sup>2</sup>*Staffordshire University, UK*

This study aimed to examine the effect of regular CrossFit exercise on mood states and menstrual cycle symptoms for both eumenorrhic participants and hormone-based contraception users. Two groups of CrossFit participants [eumenorrhic (n = 21) and hormone-based contraception users (n = 15)], alongside additional groups of sedentary participants [eumenorrhic (n = 17) and hormone-based contraception users (n = 16)], completed the Menstrual Distress Questionnaire (MDQ) and the Differential Emotions Scale (DES-IV) premenstrually, menstrually, and intermenstrually. Repeated measures ANOVAs recorded significant differences ( $p \leq .001$ ) for between CrossFit eumenorrhic participants and CrossFit hormone-based contraception users on all negative mood states and menstrual cycle symptoms (neuroticism factor,  $p \leq .001$ ; hostility factor,  $p \leq .001$ ; psychological factor,  $p \leq .001$  and physical factor,  $p \leq .001$ , respectively) compared to sedentary participants. Menstrual cycle phase was significant across all CrossFit groups ( $p \leq .001$ ) with clear differences reported across premenstrual and menstrual phases. Positive mood (extraversion factor,  $p \leq .001$ ) was significantly higher in both CrossFit groups compared to sedentary groups across all phases ( $p \leq .001$ ) of the menstrual cycle. Conclusions were that regular CrossFit exercise significantly reduced negative mood states and menstrual cycle symptoms for both eumenorrhic, and hormone-based contraception users compared to sedentary controls. Regular CrossFit exercise promotes positive mood states and demonstrates less prevalent menstrual cycle symptoms across all menstrual cycle phases.

## **Twitter Presentation Abstracts**

### **Differentiating trait and context-specific self-objectification in stereotypically feminine and non-feminine sports**

Megan Hurst<sup>1</sup> and, Lucia Halliwell<sup>1</sup>

<sup>1</sup>*University of Sussex, UK*

Stereotypically ‘feminine’ sports have been linked with a stronger focus on appearance (‘self-objectification’) among participants (e.g., Parsons and Betz, 2001; Slater and Tiggemann, 2011); this may result in body image concerns and disordered eating, but also worse biomechanics and performance. However, research often focuses on trait self-objectification, rather than the focus on appearance in the sporting environment. We sought to assess (1) whether self-objectifying thoughts during sessions were distinct from trait self-objectification, and (2) whether trait self-objectification and self-objectifying thoughts during sessions varied across feminine and non-feminine sports. Women student athletes from a UK university from a feminine non-aesthetic sport (netball), feminine aesthetic sport (cheerleading), and non-feminine sport (football) reported on their trait self-objectification (SOQ, Noll, and Fredrickson, 1998) and their self-objectifying thoughts during training or competition (Wolfe, 1998). We found that trait

self-objectification and self-objectifying thoughts during sport were related but distinct constructs ( $r = .44$ ). Trait self-objectification was highest among cheerleaders ( $n = 16$ ), who were different from netballers ( $n = 9$ ) and footballers ( $n = 33$ ). Cheerleaders had the highest self-objectifying thoughts during sessions and footballers the lowest, with netballers located in the middle. These findings suggest that future research with athletes may benefit from assessing self-objectifying thoughts in the sporting environment, not just trait self-objectification or body image. Our findings also suggest the importance of recognizing differences between stereotypically feminine sports, which are often combined in body image or self-objectification analyses. Future work will investigate the differential impacts of trait self-objectification and self-objectifying thoughts during sport.

### **Effective coaching in women's performance football: A case study approach from various perspectives within a semi-professional team in England**

Dani Taylor<sup>1</sup> and, Alex Blackett<sup>1</sup>

<sup>1</sup>*Staffordshire University, UK*

The increase in women's football participation has not been reflected in the numbers of women occupying coaching roles within football. Although a growing area of interest amongst academics, the topic of coach efficacy and understanding how athletes interpret effective coaching has been overwhelmingly focused on male coaches within the contexts of men's sport. To redress the balance in our current understanding of coach efficacy, the research objective of this study was to identify how athletes and senior management defined effective coaching. A case study research design was employed to analyse the perceptions of both players and senior management personnel of a semi-professional women's football team in England. Individual semi-structured interviews with players ( $n=6$ ), the head coach and technical director ( $n=2$ ) were conducted. Inductive thematic analysis of the interviews identified two higher-order themes: 1) primary knowledge and actions, and 2) secondary effects on team culture. Primary knowledge/actions specifically focused on coach's knowledge, behaviours and actions that included three sub-themes: 1) performance markers; 2) understanding, and 3) communication. Secondary effects concentrated on the consequences of the primary knowledge/actions and included three sub-themes: 1) environment; 2) relationships, and 3) perception. The study recorded similarities with previous coaching research conducted in men's sport. Salient differences were also noted, such as a greater need to exhibit behaviours associated to humanistic approaches along with an emphasis on coaches working cooperatively as a team rather than as independent individuals. The findings can inform further research within women's coaching that can aid coach education structures.

### **Barriers to women progressing to leadership positions within sport's governing bodies**

Haanii Lorea binti Mohd Azmi<sup>1</sup>

<sup>1</sup>*SIDMA College, Malaysia*

Women are still underrepresented in leadership positions at sport's governing bodies. The purpose of this study is to examine the barriers that women face to senior leadership positions regarding their career progression within sport governing bodies. The study also seeks to understand the challenges that women encounter while seeking to higher leadership positions within sports organisations. A qualitative approach using a systematic literature review (PRISMA guidelines) was chosen to identify key barriers that occur specific to women who are currently working in the sport industry. PRISMA guidelines were used to examine the literature. The chosen databases were JSTOR, Taylor and Francis Online, Scopus and Elsevier. To be eligible for the inclusion, the journal articles must be published between 2010 to 2020 and using English language. Findings were: (1) Macro-level: sports are masculine, (2) Meso-level: discrimination, stereotypes and women's talent

are popular research topic, (3) Micro-level: women's education and women's roles as mothers/wives in families, parenting and relationship roles. The results suggest that identifying the barriers by using the three levels (macro, meso and micro level) may help in reconstructing and evaluating the progression for women in their leadership career.

### **Exploring women's leadership in China's sport national governing bodies**

Han Zheng<sup>1</sup>

<sup>1</sup>*Loughborough University London, UK*

This research is about exploring China's women's leadership in sports organisations. Although the importance of women's leadership has been more widely mentioned in the past decade, in most areas, women are still seriously underrepresented at the leadership or decision-making level; while sport, as a long-term male-dominated industry is no exception. In the past decade, there have been few in-depth studies on Chinese women's leadership in the sports industry. From the perspective of numerical data, the underrepresentation of women's leadership is still very serious in China. In Chinese enterprises, women occupy only 16% of the leadership, while in scientific and technological research institutions, women occupy 5.6% of the leadership. According to the data collected by the author in 2020, the average proportion of female occupational leadership in China's NGBs is less than 20%. Therefore, the purpose of this research is to explore the current situation of women leadership in sport governing bodies in China to fill the research gap. In this research, a multi-level framework proposed by Leberman and Burton in 2017 was applied. By using both questionnaires and interviews, data on sport NGBs in China will be collected. In addition to barriers being classified into three levels, the inner connections between each level will also be explored. Finally, the degree of representation of women's leadership will be explored, while some targeted options will be put forward on how to support women's representation in leadership. At present, the research is in progress, and part of the questionnaire and interview have begun. Some preliminary results will be presented in the report and PowerPoint.

### **US women's university rugby 7s contact injuries over five years**

Kiera G. Borthwick<sup>1,2</sup>, Som P. Singh<sup>1,3</sup>, Samantha Lopez-Cruz<sup>1,4</sup>, Dimpie P. Shah<sup>1,5</sup>, Scarlet N. Roldan<sup>1,6</sup>, Annette Ramos<sup>1,7</sup>, Xinning Li<sup>1,8</sup> and, Victor Lopez Jr. <sup>1,9</sup>

<sup>1</sup>*Rugby Research and Injury Prevention Group, Hospital for Special Surgery, USA;*

<sup>2</sup>*Washington and Lee University, USA;*

<sup>3</sup>*University of Missouri - Kansas City, USA;*

<sup>4</sup>*Keiser University, USA;*

<sup>5</sup>*Rutgers Robert Wood Johnson Medical School, USA;*

<sup>6</sup>*Hunter College, City University of New York, USA;*

<sup>7</sup>*Mt. Sinai South Nassau, Department of Critical Care, USA;*

<sup>8</sup>*Boston University School of Medicine Department of Orthopaedic Surgery, USA;*

<sup>9</sup>*Auckland University of Technology, New Zealand*

Rugby 7s participation continues to grow rapidly as a collision sport among the US women's university population. Despite the fact that rugby injury rates and patterns differ by sex (Fuller et al., 2017), there is a lack of injury data on the female cohort. This study aims to quantify incidence of contact injuries for university women in USA Rugby 7s sanctioned events. A prospective epidemiology study of injury incidence (injuries/1000 playing hours (ph)) in the women's university population was undertaken. Data

was collected at USA Rugby 7s events from 2012-2016 with the Rugby Injury Survey and Evaluation (RISE) Report (Lopez et al., 2012) and in accordance with the rugby consensus statement (Fuller et al., 2007). Results indicate that the total injury rate was 107.9/1000ph (n=71). Injuries most often resulted from contact with another player and/or the playing surface (91.2/1000ph) as compared to non-contact injuries (9.1/1000ph) ( $P < 0.01$ ). Among contact injuries, more injuries were encountered after impact with another player (71.7%) as compared to impacts involving the playing surface (28.3%) ( $P < 0.01$ ). The incidence of contact injuries did not differ between position groups (backs=88.4%, forwards=89.5%,  $P=0.07$ ). This study provides necessary data on women university players, who would benefit from population-specific training for contact events, such as proper tackling form during player contact with load production (Castillo-Rodríguez et al., 2020) and breakfall form during contact with the playing surface (Koshida et al., 2017). Additional analysis on this cohort will help in the development of women-specific training protocols and guidance of return-to-play protocols following both contact and non-contact injuries.

### **Coach like a girl: US collegiate athletes' views of women as coaches**

Elizabeth Norene Lutz<sup>1</sup> and, Lora Ebert Wallace<sup>1</sup>

<sup>1</sup>Western Illinois University, USA

In this paper, we report findings of a study on the opinions of collegiate student athletes regarding coaching competence and acceptance of women coaches for men's collegiate sports teams. Student-athletes (men and women) completed questionnaires regarding capabilities of coaches, acceptance of women as coaches in general, and of women as coaches of men. Descriptive and bivariate analyses of quantitative data from 115 collegiate athletes at a public, Division I, Midwestern university in the US showed significant differences between the views of men athletes compared to women athletes, with athletes identifying as men more negative in their beliefs about women coaches as leaders of athletic teams. However, sexist views regarding sport leadership were commonly expressed by all genders. Other interesting findings were noted, including evidence that male respondents believe themselves to be less sexist than their collegiate athletic teammates. Since very few studies on the topic of athletes' views regarding women coaching men in sports have been published to date, the present study adds to understanding of this topic, and extends work on social role theory and role congruity theory by providing additional evidence that masculine hegemony is consistent with views expressed by both women and men collegiate athletes. This line of research is important to understanding the culture of sport and to the study of gendered roles and leadership. Implications for progressive reform of collegiate athletics and relevance to larger cultural changes regarding women and sport are discussed.

### **Does increased simulated breast mass change posterior trunk muscular activity?**

Hannah Divall<sup>1</sup>, C. Mills<sup>1</sup>, T. Exell<sup>1</sup> and, M. Jones<sup>1</sup>

<sup>1</sup>University of Portsmouth, UK

Correct posture refers to the plumbline position, requiring sufficient muscular strength and endurance to minimize excessive stress on the

body. Breast mass (augmentation/hypertrophy) can alter the trunk centre of gravity. Maintaining correct posture, posterior muscular activity may increase to counteract increased anterior breast mass. This study aimed to investigate the effect of increasing simulated breast mass and correcting breast mass asymmetry on back extensor muscle activity. Simulated breast mass was altered by adding mass as a percentage increase (0-150%) from eight participants natural breast mass, estimated from a 3D breast scan. Five Qualisys cameras (250 Hz) provided real-time postural plumbline feedback to standardize posture. Simultaneously, eight EMG sensors (1000 Hz), placed bi-laterally on the upper and lower trapezius and erector spinae, recorded muscle activation during two minutes of sitting and standing. Mean EMG data were calculated, and a Pearson correlation tested for a relationship between mean muscle activity and breast mass change. Muscle asymmetry from the symmetry angle equation showed no significant group differences between no mass and 150% mass conditions. A small positive correlation ( $0.1 \leq r < 0.3$ ) between muscle activity and simulated breast mass was identified in all muscles sitting and two muscles standing. Increased breast mass is associated with small increases in muscle activity, suggesting muscles may work harder to maintain posture with an additional anterior load, potentially altering spinal loading. Therefore, it is suggested that a lighter weight implant be considered for breast augmentation to minimize the increases in muscle activity required to maintain correct posture.

### **Historical perspective on women's rugby merging with male-orientated governing bodies: A costs/benefits analysis**

Lydia Furse<sup>1,2</sup>

<sup>1</sup>De Montfort University, UK;

<sup>2</sup>World Rugby Museum, UK

Sport governance structures in the twenty-first century are often seeking to redress a gender-imbalance. The lack of women in the boardroom and indeed at all levels of sport leadership perpetuates the concept of sport as a male preserve. However, the historical development of women's sport often occurred independently from male-orientated sports' governing bodies. In Great Britain, the autonomy of women's rugby facilitates the sport's rapid internationalization during the 1980s and 1990s, including the foundation of Women's Rugby World Cups. This rapid growth altered the dynamics between women's rugby and men's rugby, and women faced increasing pressure to merge with male-orientated governing bodies at the national and international level. The resultant mergers offered new opportunities for the women's game but equally came at a cost, most notably in terms of women in leadership positions. An historical analysis of these events, utilizing first-hand accounts and archival sources, reveals the ways in which mergers marginalized women from decision-making positions and sport's leadership, failing to transform these governing bodies' patriarchal cultures. Building on the author's original research for a PhD thesis examining the history of women in rugby union, the historical perspective can illuminate present policy discussions as it demonstrates that the institutional acceptance of female participation both supported and restricted the development of women's rugby union.