

Tackling Fallibility in Women's Football

James McCarron¹, Lorraine O'Malley², Chin Wei Ong²

¹Manchester City Women's Football Club, City Football Group, United Kingdom, and ²Performance Services and Applied Research, Global Football, City Football Group, United Kingdom

Performance Management | Women's Football | Systems Thinking

Headline

An uneasy paradox exists for performance scientists and clinicians in women's football: Performance science and medicine have contributed to its unprecedented success but are also potential limiting factors. This is due to our persistent failure to view women's football as a unique sport; instead, it is a version of football where performance at the highest level is achieved by men. The general tendency to prioritise knowledge creation and application in performance science and medicine with/for males, and then adapting them for women only serves to confirm our biases.

Aim

The aim of this report is to provide fresh perspective and food for thought regarding the future development of women's football. To really push the envelope of performance and wellbeing, we suggest here the need to be more open about recognising, monitoring and addressing our errors and fallibility, and start viewing women's football through a different lens – one where women's football is not played by men. "I was almost like a bull in a china shop... I just assumed I knew what I was doing and that I was going to give them what I thought they needed... all the advice I had been given about coaching was being given by men who coach men about coaching men." – Dan Hunt, British Cycling women's endurance coach in 2005 (1).

Similar to some of the experiences found within high performance coaching, performance support staff and clinicians practicing in women's football might enter the sport expecting to make an impact, informed by well-honed experience and knowledge that has served them well in previous environments, sometimes male. In the initial phase, being a "bull" to drive change (e.g., introducing a competent system of applied practice) was perhaps in some cases necessary to raise performance standards. More widely, it was possibly such drive from a scientific viewpoint that contributed to the dispelling of supposed "facts" (e.g., long-distance running could damage female reproductive organs) that barred women from participating and competing in sport. Consequently, the women's football we know now is growing at an exponential rate, demonstrated in the recent record-breaking attendances at domestic professional matches in England, Spain and Italy. Not to mention a record 1.12 billion viewers that tuned in worldwide to the 2019 FIFA Women's World Cup. These are substantial achievements and ought to be celebrated. While we have reaped the rewards thus far by being "bulls", to really catapult women's football performance to the next level, we need to start operating beyond our current rules of thumb, and be more sensitive to the sport we operate in. We need to start realising and accepting that we cannot just be the bull; we are in the business of selling "china" too. Indeed, china is fragile and breaks when an ignorant bull knocks it over, but it also has a strong and resilient side that can be harnessed in the right way. In this commentary, we tackle the proverbial bull "by the horns", and explore the areas where we have been fallible, and how we can do better to support our female players to maximise their potential to perform.

Women's Football is Not Played by Men

Consider this hypothetical statement by a female player: "If Raheem Sterling can sprint into the box at 9.7 m/s, so can I". While such Kathrine Switzer-esque belief in defying sexual stereotypes is likely what brought women's football to its current heights of performance achievement, the underlying pervasiveness of male football performance being heralded as the benchmark of women's football performance is not only mostly scientifically irrational, but more crucially, it is a limiting factor. Instead, the comparison (or the lack thereof) of football performance between sexes should be more akin to weight categories in combat sport – we enjoy and are in awe of the unique abilities of both Manny Pacquiao and Tyson Fury, celebrated boxers within their respective weight categories. Like combat sport, both men and women's football are unique, and their performances should be appreciated as such. To put things in the football perspective, Pedersen and colleagues (2) proposed the following thought experiment: Imagine there exists a "third-sex" of super-men whose ability is scaled to the average anthropometric and physiological differences between men and women. If men were to compete with super-men in football, they are likely to do so on a pitch that is 26% bigger, defend a goal that is 8% bigger, kick a ball that is 10% bigger and 52% heavier, over 113 gruelling minutes (or 26% longer in duration). This is not to suggest that rule changes are necessary for women's football, but rather to simply appreciate the level/intensity of women's football performance we see today. As applied practitioners, it is time for us to make a paradigm shift in how we not only think about women's football performance, but about women's football as a whole. It would be our biggest fallibility if we choose not to.

Updating Our Rules of Thumb

Make a thumbs up, extend your arm all the way, close one eye, and see if you can hide the animal with your thumb. This rule of thumb is used to help children to judge the safe distance from a wild animal. Rules of thumb make complex decisions a little easier, particularly in the face of uncertainty commonly experienced in the elite sports environment easier (3). As practitioners, we base our rules of thumb on a mix of experiential-learning and evidence-informed logic. Our rules of thumb could include the use of acute and chronic ratios to gauge training status or criteria-based return to play frameworks to prescribe the training increments during rehabilitation. However, these rules of thumb are likely to be informed by a literature dominated by the male population as the norm (4) and applied practice that is built on decades of wisdom amassed in male football. That is not to say these concepts do not have value, but we perhaps are limiting our ability to influence performance in women's football, if we persist with these current rules of thumb without further refinement or calibration for the female player.

Understanding two types of fallibility may help here (5) (Fig. 1). The first may be our ignorance – we tend to err because science has given us only a partial understanding of

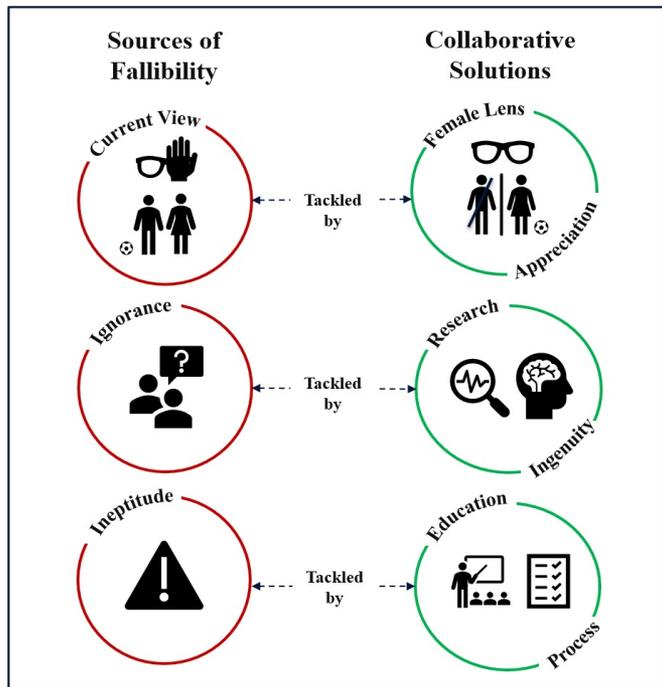


Fig. 1. Tackling Fallibility in Women's Football. Shifting our lens, and effectively tackling our ignorance and ineptitude through research, ingenuity, education and process will lead to improvements in how we support the further development of women's football.

the performance problems we are trying to solve. An example would be there are skyscrapers we do not yet know how to build or snowstorms we cannot predict. The second may be our ineptitude—in these instances the knowledge exists to help problem solving, yet we fail to apply it correctly. This is the skyscraper that is built wrong and collapses or the snowstorm whose signs the meteorologist missed. We sketch out here, examples and some solutions in tackling our fallibility to help enhance our ability to support professional female players.

Ignorance

In a sport such as women's football, which has seen rapid development and professionalisation, our ignorance has never been more glaring. Gender differences in physiology, are driven in large part by endogenous sex hormones that regulate the menstrual cycle. Also unique to women is the ability to legally and ethically alter their hormonal profile and menstrual cycle by using exogenous hormones (hormonal contraceptives). Yet among female athletes there is a pervasive perception of negative performance impact (4), a widespread lack of understanding (6) and added complexity of oral contraceptive use (7). Unfortunately, we still do not fully understand the effects of the menstrual cycle and hormonal contraceptives on training and performance.

Instituting good science and well-supported research programmes to understand women-specific football performance are needed to address this ignorance. Encouragingly, this research activity has been gathering pace. Yet to really deepen our understanding we would encourage interdisciplinary research incorporating physiological, perceptual (symptoms), performance, well-being and educational aspects to any such research endeavour.

Ineptitude

While it may seem obvious that a direct solution to the lack of knowledge is the creation of new knowledge, the thing is, we have been here before. The first report on the influence of the menstrual cycle on women's football players was published just prior to the first Women's World Cup, some 30 years ago (8). Thirty years on, however, a clear set of evidence-based guidelines on the effects of the menstrual cycle on injury remains elusive. Furthermore, male running speed thresholds for high speed running, are still being applied to both assess and monitor physical outputs for women (personal observations), even though applied research would suggest this is not appropriate (9, 10). Similarly, football boots are still made for male players which some female players perceive as a sign of prejudice – furthermore players affirm that they have experienced pain and discomfort due to such oversight (11). Thus, our fallibility is not merely the lack of knowledge that good science can eliminate, but also one of ineptitude.

From a psychological perspective, a practitioner's interpersonal approach can be inherently biased and unsuited to supporting women's football performance, as demonstrated by Dan Hunt's inaugural foray into coaching female elite performers. Although interpersonal approaches can be unsuited, at first, it is an awareness of such bias's that help us move towards addressing this part of our psychosocial ineptitude. The rules by which we each interpret the world are distinct and individual to each of us based on our history. These rules can provide frameworks for our future perceptions, thoughts and behaviours. As a female footballer is not a male, an awareness of possible cognitive and behavioural nuances in how each views their world would help both practitioner and players communicate and interact better together. Research suggests that humans have the capacity to become slaves to their biases unless they spend more time engaged in thoughtful deliberation for how they wish to act and interact with others (12).

With greater consciousness of the gender knowledge gap in football performance, and our inherent biases, it is timely that we start updating our rules of thumb to support women's football performance on its own terms, distinct from the men's game. One way to achieve this is to frame the relatively greater complexity of female physiology (i.e., caused by hormonal fluctuations during the menstrual cycle) not as an inconvenience, but as an exciting area where performance advantages can be more than marginal. This encourages us to be more open and critical of our own biases and gaps in knowledge.

Our ineptitude has a few clear antidotes – continuing to raise awareness through educational campaigns such as the SmartHER project led by the English Institute of Sport, and the development of systematic approaches to supporting performance improvements – including processes such as systematic documentation, checklists, reviews and professional rigor (13). Further, to reduce blind spots such a system should be "owned" not by a few at the top of the hierarchy but a shared ownership amongst staff and players.

Conclusion

In aiming to answer how we can do better to support our female football players to maximise their potential to perform, we have sketched out an unstable ground for future improvement stemming from our inherent fallibility. Yet we hope to have signposted to some solutions to settling this uneasy paradox (Fig. 1), starting with a shift in how we view women's football. Further, ineptitude can be largely tackled through continued education and developing systematic approaches to performance improvement. Tackling our ignorance is to take on the endeavour of knowledge generation requiring a keen

eye for connections, contradictions, coincidences and perhaps some ingenuity from a curious and creative mindset (13).

Outlining here our fallibility we hope is taken in the right spirit, as to really strive for better, we need to be more open about recognising, monitoring and addressing our errors. A starting point could simply be to adopt a similar view to those in the health care service – “Better is possible. It does not take genius. It takes diligence. It takes moral clarity. It takes ingenuity. And above all, it takes a willingness to try” (14). We suggest “making things better” is not only a possibility but a responsibility.

Practical Applications

- To support future performance improvements, establishing women's specific research streams is required.
- Build frameworks of continued player and staff education would help to ensure current knowledge and any new knowledge generation is consolidated and instilled within performance environments.
- Practitioners are urged to develop a shared diligence to systematically supporting performance and well-being, ensuring consistent processes are in place to reduce blind spots.

Acknowledgements

We would like to thank Aoife Mannion and Karen Bardsley for offering valuable insights from a player's perspective.

References

1. Romero R. Empowering female talent. In Slot O, Timson S, Warr C. (eds.) *The talent lab: the secret to creating and sustaining success*. Ebury Press, London; 2017. P101-122.
2. Pedersen AV, Merete Aksdal I, Stalsberg R. Scaling demands of soccer according to anthropometric and physiological sex differences: A fairer comparison of men's and women's soccer. *Front. Psychol.* 2019; 10: 762.
3. Raab M, Gigerenzer G. The power of simplicity: a fast-and-frugal heuristics approach to performance science. *Front Psychol.* 2015; 29(6):1672.
4. Bruinvels G, Burden RJ, McGregor A J, Ackerman KE, Dooley M, Richards T, Pedlar C. Sport, exercise and the menstrual cycle: where is the research? *Br J Sports Med.* 2016; 0:1.
5. Gorovitz S, MacIntyre A. Towards a theory of medical fallibility. *The Hastings Centre Report.* 1975; 5(6): 13-23.
6. Larsen B, Morris K, Quinn K, Osborne M, Minahan C. Practice does not make perfect: A brief view of athletes' knowledge on the menstrual cycle and oral contraceptives. *J Sci Med Sport.* 2020.
7. Martin D, Sale C, Cooper SB, Elliott-Sale KJ. Period prevalence and perceived side effects of hormonal contraceptive use and the menstrual cycle in elite athletes. *Int J Sports Physiol Perform.* 2018; 13(7): 926–932.
8. Möller-Nielsen J, Hammar M. Women's soccer injuries in relation to the menstrual cycle and oral contraceptive use. *Med Sci Sports Exerc.* 1989; 21(2):126-9.
9. Park LAF, Scott D, Lovell R. Velocity zone classification in elite women's football: where do we draw the lines? *Science and Medicine in Football.* 2019.
10. Bradley P, Vescovi JD. Velocity Thresholds for Women's Soccer Matches: Sex Specificity Dictates High-Speed-Running and Sprinting Thresholds—Female Athletes in Motion (FAiM) *Int J Sports Physiol Perform.* 2016; 10(1): 112-6.
11. The Norwegian Broadcasting Corporation. Norske Toppspillere må Bruke Barnesko, Ekstra Strømper og Såler (Norwegian Top [Soccer] Players have to Use Shoes Made for Kid). Available from: <https://www.nrk.no/sport/norsketoppspillere-ma-bruke-barnesko.-ekstra-stromper-og-saler-1.14386279>. [March 2020]
12. Abraham A, Collins D. Taking the next steps: ways forward for coaching science. *Quest.* 2011; 63(4): 366-384.
13. Klein G. *Seeing what others don't: The remarkable ways we gain insights*. Nicholas Brealey Publishing; 2014.
14. Gawande A. *Better: A surgeon's notes on performance*. London: Profile Books; 2008.

Copyright: The articles published on Science Performance and Science Reports are distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated.