

## Concussion in Sport

### Evidence from Fair Play For Women

#### 1. Who we are

Fair Play For Women Ltd is a campaigning and consultancy organisation which raises awareness, provides evidence and analysis and works to protect the sex-based rights of women and girls in the UK. Founded in 2017, our work is focused on understanding when and how gender-and sex-based rights conflict in law and policy-making. Our aim is to ensure that everyone's needs are fairly balanced and that women and girls are not forgotten in good policy-making.

We believe in compassion and fairness for all. We support the rights of trans people to live in safety and to be treated fairly. We also support the rights of women and girls, and this is our focus.

#### 2. Summary and recommendation

The risk of concussion in sport is being increased for women players and officials, by the adoption of transgender inclusion policies which permit males to play and compete in the women's category.

The only detailed exploration of the issue has been conducted by World Rugby, whose conclusions are quoted below. On the evidence, they concluded that it is not safe for male-bodied players to play with and against women in contact rugby. No other body has properly considered the evidence, and to date none of the rugby NGBs in the UK has followed the World Rugby guidance.

Sport is played by bodies. The female category in sport exists as an *exclusive* category to enable females to play and compete safely and fairly. It is based on biological sex not gender identity. Segregation by sex is permitted as a single-sex exception in the Equality Act 2010.

Inclusion of male bodies in the female category in the basis of gender identity undermines the integrity, safety and fairness of the female category. A focus on inclusion over safety can only lead to an increase in head and other injuries within the women's game at a time when increased awareness of concussion risks should be driving risk reduction strategies.

The committee should ask for an immediate change of policy from Uk Sports Councils and NGBs, to restore the integrity of female sports categories, to reduce concussion risk in those sports such as rugby where it is already a known risk.

### 3. Evidence

#### 3.1 Head injury is a risk factor for concussion

There have been a number of studies in the last 50 years looking at links between head injury and onset of Alzheimer's/Dementia (AD). The majority confirm a link either in terms of repeated mild head traumas or fewer significant head injuries, with some studies suggesting other compounding factors.

'Repeated mild head trauma in both animals and humans accelerates amyloid  $\beta$  peptide accumulation and cognitive impairment. Retrospective autopsy data support clinical studies suggesting that severe traumatic brain injury with long-lasting morphological residuals are a risk factor for the development of dementia/Alzheimer's disease.'<sup>1</sup>

Studies have suggested that there is a familial and genetic component resulting in a predisposition for head trauma to progress to AD in some individuals with a specific genotype.

'Head injury is a risk factor for AD. The magnitude of the risk is proportional to severity and heightened among first-degree relatives of AD patients. The influence of head injury on the risk of AD appears to be greater among persons lacking *APOE- $\epsilon$ 4* compared with those having one or two  $\epsilon$ 4 alleles, suggesting that these risk factors may have a common biological underpinning.'<sup>2</sup>

Confirmation of this link in a larger study would allow for some mitigation strategies in identifying those individuals most at risk of AD at the outset of their sporting career through genotyping, and to offer counselling in terms of their participation in contact sports.

#### 3.2 Head injury leading to concussion is a significant sports injury risk

England Rugby have carried out extensive monitoring of concussion within rugby through its Professional Rugby Injury Surveillance Project (PRISP). The main objectives of PRISP are to accurately report the risk of injury in the professional game and to highlight any patterns or trends over time, allowing for the targeted investigation of specific areas of injury risk and the development of evidence-based strategies to reduce injury risk.'<sup>3</sup>

'Concussion was again the most commonly reported match injury (6.7 per 1000 hours, or one concussion every 3.7 matches), making up 19% of all match injuries. Concussion

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1 Jellinger, Kurt A. (2004) Head Injury and Dementia, *Current Opinion in Neurology*, Vol 17 (Issue 6) p. 719 -723. Available at: [https://journals.lww.com/co-neurology/Abstract/2004/12000/Head\\_injury\\_and\\_dementia.12.aspx](https://journals.lww.com/co-neurology/Abstract/2004/12000/Head_injury_and_dementia.12.aspx)

2 Guo, Z. et al. (2000) Head Injury and the risk of AD in the MIRAGE study, *Neurology*, Vol 54 (issue 6). Available at: <https://n.neurology.org/content/54/6/1316.short>

3 England Professional Rugby Injury Surveillance Project (2017/18). Available at: [https://www.englandrugby.com/dxdam/96/960006d9-269d-4250-a15f-d9e62f8bfe70/PRISP\\_1718.pdf](https://www.englandrugby.com/dxdam/96/960006d9-269d-4250-a15f-d9e62f8bfe70/PRISP_1718.pdf)

prevention is a priority for the women's game, alongside developing strategies to optimally detect and manage such injuries.<sup>4</sup>

### **3.3 Concussion and brain injury risk are greater for females than males**

'Women and girls face double the risk of concussion and developing brain injuries from playing sport, but the issue is largely being ignored, British MPs have been told. Dr Willie Stewart, a consultant neuropathologist at the University of Glasgow and a leading researcher into [brain injuries in sport](#), said he had growing concerns over the potential long-term consequences for women and called for urgent research.

"What does concern me is that while the rules for women's and men's football are exactly the same, the risk of concussion in women's football is about twice that as men's football. So the risk of brain injury is double. That repeats itself through rugby and various other sports where the rules are also the same."<sup>5</sup>

### **3.4 Transgender inclusion policies are putting female players at risk**

Almost all UK NGBs have policies to include transgender women in women's teams. These policies were based on guidance from the Sports Councils Equality Group which focused on the desirability of "inclusion" rather than the rationale for the female category, which is *exclusive* by definition in the interests of safety and fairness for female players.

Clear evidence is now available pointing to the safety risks inherent in such policies. Recent studies by Hilton & Lundgren and a separate review by Joanna Harper et al are consistent in showing a continued disparity in power and strength amongst transgender women, even after the 12 months of testosterone suppression required by many sporting organisations. The Harper review showed that a disparity remains after three years of testosterone suppression. No one should be surprised by this, since the many physiological and anatomical differences between men and women<sup>6</sup> are established early in life and set through puberty, and not maintained by circulating testosterone in adulthood. Testosterone suppression does not reverse the effects of puberty.

'Longitudinal studies examining the effects of testosterone suppression on muscle mass and strength in transgender women consistently show very modest changes, where the loss of lean body mass, muscle area and strength typically amounts to approximately 5% after

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<sup>4</sup> Women's Rugby Injury Surveillance Project (2018/19) Available at:

<https://www.englandrugby.com/dxdam/92/926587ce-0702-4794-9013-b52c860e93d7/England%20WRISP%2018.19.pdf>

<sup>5</sup> Women and girls face double the risk of concussion in sport, British MPs are told, The Guardian, 9 March 2021. Available at:

<https://www.theguardian.com/sport/2021/mar/09/women-face-double-the-risk-of-concussion-in-sport-mps-told>

<sup>6</sup> <https://fairplayforwomen.com/biological-sex-differences/>

12 months of treatment. Thus, the muscular advantage enjoyed by transgender women is only minimally reduced when testosterone is suppressed.<sup>7</sup>

‘..values for strength, LBM [lean body mass] and muscle area in transwomen remain above those of cisgender women, even after 36 months of hormone therapy.’<sup>8</sup>

World Rugby conducted a ground-breaking consultation that included a review of available data on the reduction of strength and muscle mass in trans women following testosterone reduction and found:

‘biomechanical modelling suggests that typical male players experience and create head and neck forces 20 per cent to 30 per cent greater in men’s elite rugby than in women’s elite rugby as a result of mass differences alone.

Scrum forces in men’s elite rugby and community rugby range from 40 per cent to 120 per cent higher than in women’s rugby.’<sup>9</sup>

‘The reduction of testosterone removes only approximately one-fifth of muscle and strength advantages.’ (see note ix)

In addition to the evaluation of available data a comprehensive workshop process was conducted involving multiple stakeholders for women’s rugby, law and ethics and determined that ‘As a result of this process and based on the available evidence, it was concluded that a balance between safety, fairness and inclusion could not be provided for transwomen playing women’s contact rugby.’<sup>10</sup>

The World Rugby process was chaired by Dr Araba Chintoh who summarised, “‘This has been a complex and emotive process, but a necessary one. We set out to determine whether it would be possible to maintain inclusion in contact rugby based on the available research and evidence and rugby’s unique context of combining strength, power, speed and endurance in a physical, collision environment. As we progressed through a comprehensive and inclusive review, it became clear that there are compelling evidenced safety considerations which we simply cannot ignore.’ (see note x)

It is sometimes suggested that weight or other factors could be used to manage a trans inclusion policy. It is important to note that matching body sizes does not mitigate these risks, because a male body and female body of the same weight are so different that the

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7 Hilton, E. & Lundgren, T. (2021) Transgender Women in the Female Category of Sport: Perspectives on Testosterone Suppression and Performance Advantage, *Sports Medicine*, Vol 51 p. 199-214. Available at:

<https://link.springer.com/article/10.1007/s40279-020-01389-3>

8 Harper, J. et al. (2021) How does hormone transition in transgender women change body composition, muscle strength and haemoglobin? Systematic review with a focus on the implications for sports participation, *British Journal of Sports Medicine*, Available at:

<https://bism.bmj.com/content/early/2021/02/28/bisports-2020-103106>

9 Transgender research summary of data. Available at:

[https://resources.world.rugby/worldrugby/document/2020/10/09/a67e3cc3-7dea-4f1e-b523-2cba1073729d/Transgender-Research-Summary-of-data\\_ENGLISH-09.10.2020.pdf](https://resources.world.rugby/worldrugby/document/2020/10/09/a67e3cc3-7dea-4f1e-b523-2cba1073729d/Transgender-Research-Summary-of-data_ENGLISH-09.10.2020.pdf)

10 World Rugby approves updated transgender participation guidelines, 9th October 2020, *World Rugby*. Available at:

<https://www.world.rugby/news/591776/world-rugby-approves-updated-transgender-participation-guidelines>

male has a significant advantage in speed, strength and power. In the two Olympic weightlifting classes where the male and females compete at the same weight, males lift between 30% and 54% more weight than women who weigh the same.<sup>11</sup> Sports which operate weight classes always do so *within* sex classes, not as an alternative to them.

#### **4. Conclusion**

A focus on inclusion over safety can only lead to an increase in head and other injuries within women's sports at a time when increased awareness of concussion risks should be driving risk reduction strategies.

Many sports use the single-sex exception in the Equality Act to permit the exclusion of males from the female category. Many of these also have an Open category, in which anyone may participate, although it is often referred to as the men's category. There is a place in sport for everyone, but it must be based on bodies not gender identities.

Safety and fairness always trump inclusion in sport – that is why age categories exist in junior sport, and weight categories exist in combat sports. Wishing or believing oneself to be younger or lighter does not make it legitimate to access a sporting category on that basis. The same must be true of the female category in sport. The law permits sex segregation in sport. The Gender Recognition Act cites sport as a case where legal “gender” may not apply.

The conscious decision to expose women to a higher risk of head and other injuries when most sporting programmes are claiming to seek a reduction in the risk of injury must be challenged for both its ethical and legal implications.

#### **References**

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<sup>11</sup> <https://medium.com/@drtonylycholat/male-sports-performance-advantage-f00e1a334e1f>