



Response to the United Nations Human Rights Council's Report on Race and Gender Discrimination in Sport: An Expression of Concern and a Call to Prioritise Research

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Dear Editor,

Caster Semenya recently lost her appeal against the restriction of blood testosterone levels in female athletes [1] set by World Athletics [2, 3], requiring female athletes with “Disorders of Sex Development” (DSD) to reduce their blood testosterone concentrations to <5 nmol/L for a period of at least six months, and then must maintain this lower blood testosterone continuously if they wish to remain eligible for events between 400 and 1500 m. This outcome opposes resolution 40/5, on race and gender discrimination in sport published by the United Nations Human Rights Council (UNHRC) which calls for the regulations to be revoked [4]. The UNHRC [4] and World Medical Association [5] argue that World Athletics regulation [2] denies DSD women the right to participate in certain events unless they accept “unnecessary medical intervention”, and that athletes are being coerced into such treatment.

The authors agree that there is currently no direct scientific evidence that DSD women athletes with higher testosterone levels have a performance advantage in sporting events between 400 and 1500 m. This evidence will be difficult to obtain, given the low number of DSD athletes and the ethical considerations in such research. The principles

that underlie a performance advantage as a result of biological differences created by male levels of testosterone have been argued by Handelsman et al. [6], and are robust, but it is acknowledged that the evidence offered in support of the DSD policy creates a contradiction between the theory and evidence, since that policy requires hormonal control and applies to select events only. This selective ban is questionable, with athletes excelling in events at opposite ends of the restrictions such as American athlete Michael Johnson who held world records at 200 m and 400 m, as well as Herb McKenley, who won medals at 100, 200, and 400 m. Athletes have also performed at elite levels in the 1500 and 3000 m, the former of which is regulated by the policy, the latter is not.

Given the influence of high testosterone concentrations, there is concern that 6 months of testosterone suppression is not long enough to negate potential advantages from life-long exposure. There is growing support for the idea that development influenced by high testosterone levels may result in retained anatomical and physiological advantages [7]. One such inherent “legacy” effect may be the phenomenon of muscle memory [8], that has been defined as the ability to rebuild muscle mass and strength after a long intervening period of inactivity and muscle mass loss [9].

The debate over sporting fairness, highlighted by the UNHRC, is particularly pertinent in DSD athletes [1,

10–13]. The argument is that DSD athletes competing in female sports possess potentially unfair advantages created by high levels of testosterone [8, 14–19]. To have meaningful competition, our current opinion is that the much higher than the normal female range in circulating testosterone levels in DSD needs to be mitigated [17, 20]. This action is intended to achieve a balance of fairness and safety while permitting inclusion, as reducing testosterone will reduce or eliminate the advantages conferred by androgens during puberty and development [21]. These measures are consistent with the idea that elite female competition forms a “protected category” with an entry that must be restricted by objective eligibility criteria.

How DSD athletes are integrated into sport will depend on the balance of three philosophical arguments—sporting fairness, safety and inclusion. The sporting fairness and safety arguments are that all athletes competing should have a chance to succeed and an injury risk which each athlete is prepared to accept. As competitors, athletes accept that a degree of unfairness is inherent to sport since the best performing athletes usually possess genetically mediated advantages like the greater height of an athlete in basketball [22, 23], or architecture of skeletal muscle that determines whether an individual has the potential to become a champion sprinter or marathon runner, but not both [23–25]. However, not all natural advantages are left unregulated or unclassified. Rules have been created for weight and age categories to maintain fairness and for safety reasons. In the absence of such categories, sporting competitions may lose their meaning, rewarding factors such as maturity/age or size/mass, rather than the attributes that sport is intended to reward. The same is true of biological sex, necessitating the separation of those who lack the performance-enhancing effects of testosterone from those who benefit from it.

As advocates for sporting integrity and evidence-guided decision-making in sport, we empathise with the viewpoint of the UNHRC. However, abandoning eligibility regulations by allowing athletes to self-identify into women’s sport risks setting a precedent for the integrity of sport, which would pose a health risk to women athletes when biologically male athletes compete in heavy contact sports such as boxing while posing a negligible safety risk to women in sports such as golf. In most running events, for instance, an advantage of 10–15% is often seen in biologically male athletes in comparison with biologically female athletes [26]. If a biologically male athlete self-identifies as a female, legitimately with a diagnosis of gender dysphoria [27] or illegitimately to win medals [28], the athlete already possesses a physiological advantage that undermines fairness and safety. This is not equitable, nor consistent with the fundamental principles of the Olympic Charter [29] and could be a potential danger to the health and safety of athletes. These situations unequivocally demonstrate that eligibility rules are necessary but as

previously stated, they need to be proportionate and evidence based.

Athletes need to be aware of the consequences and obligations of choosing to compete in a protected class and the decision to pursue the necessary therapy for eligibility in that class must belong with the athlete. If athletes are fully informed about the treatment requirements and consequences, they can make an informed choice in what is best for them as individuals. As outlined by the UNHRC, the line between consent and coercion must not be blurred, athlete well-being must be the primary determinant of treatment and no athlete should be coerced into a choice that may harm their long-term health. However, if an athlete is fully informed and consents, then it is their free choice to compete and free choice is a fundamental human right. If there were no eligibility rules, sport would lose its integrity and near-universal support, and as we have seen during the COVID-19 crisis, sport is much poorer without supporters. Without rules that are perceived as fair, sport will not engage the younger generation and likely negatively impact future participation rates in the female category, particularly with self-identification at the elite level.

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