

Abstract

The Caster Semenya debacle touched off by the 2009 Berlin World Athletics Championships resulted finally in IOC and IAAF abandonment of sex testing, which gave way to procedures that make female competition eligibility dependent upon the level of serum testosterone, which must be below the male range or instrumentally countered by androgen resistance. We argue that the new policy is unsustainable because (i) the testosterone-performance connection it posits is unconvincing; (ii) testosterone-induced female advantage is not ipso facto unfair advantage; (iii) the new policy reflects the gender policing impulses endemic to sport as well as the broader cultural impulses to monstrify women and to doctor women who have nothing wrong with them; (iv) female-male performance disparities are not the only reason for sex-segregated sport, but co-exist with respectable cultural and practical reasons, which (v) provide a powerful case for allowing athletes to compete in the sex category congruent with their gender identity.

KEYWORDS Sex categorization; Eligibility; Gender Ideology; Fairness.

Introduction

The majority of sports are sex-segregated. That is, men compete with men only and women compete with women only. Resultant concerns about fraud and fairness have elicited sex testing of putatively female athletes since at least 1936, when *ad hoc* testing took place at the Berlin Olympics (Heggie, 2010; Tucker and Collins, 2010). The test has an uneven history, involving a variety of procedures,¹ false positives² and personal degradation (and worse).³ The variety of procedures and the false positives reflect the well-documented absence of a singular marker of sex.⁴ And the personal degradation courted was thrown into sharp relief by messy and protracted affair touched off by Caster Semenya's win in the 2009 World Athletics Championships in Berlin. This catalysed the end of formal sex testing by the IOC and IAAF, each of whom inaugurated a new policy of eligibility for female competition. We consider whether the new policy, which replaces the supposed test of sex with examination of testosterone levels, is an improvement upon the old one or replicates old problems of rationale and ideology. We conclude that the new approach is problematic too, and finish by arguing that there is, in the final summation, a strong case, incorporating performance and cultural elements, for allowing performers to compete in the sex category which aligns with their gender identity.

New IAAF and IOC Policies

The IAAF subsequently published new regulations governing the eligibility of female athletes with hyperandrogenism (HA), a term used to describe the excessive production of androgenic hormones in females (IOC April 2011; IAAF May 2011).⁵ Shortly after, just weeks ahead of the opening ceremony for the London Olympics, the IOC issued equivalent regulations. They stated that: ‘...these Regulations are designed to identify circumstances in which a particular athlete will not be eligible (by reason of hormonal characteristics) to participate in 2012 OG competitions in the female category’ (IOC June 2012).⁶ According to the IOC and IAAF regulations, an athlete should be eligible to compete in female competitions provided that:

- (i) The athlete’s androgen level, measured by the serum concentration of testosterone, is below the male range;
- (ii) The athlete has androgen levels within the male range, but she has an androgen resistance such that she derives no competitive advantage from such levels.⁷

Ostensibly the new policy signals an end to sporting bodies’ attempts to ‘make any determination of sex’ (IOC June 2012).⁸ The IAAF highlighted the fact that the HA policy ‘abandoned all reference to the terminology ‘gender verification’ and ‘gender policy’ in its Rules’ (IAAF May 2011).⁹ The disuse of the term sex (or gender) verification could be read as an appreciation of the preceding fact that sex is, at least partly, socially determined. Also, that sex cannot be readily delimited into the binary categories male and female.¹⁰

A conspicuous feature of the new policy is the way in which potential cases of athletes with HA are identified. The IAAF policy cites several ways in which an athlete may be requested to undergo evaluation for HA (Karkazis et al., 2012). The first requires an athlete who has previously been diagnosed with HA to notify medical officials so that her case can be evaluated in accordance with the new regulations (IAAF 2011). The second involves the investigation of a female athlete if the IAAF Medical Manager has ‘reasonable grounds for believing that a case of hyperandrogenism may exist’ (IAAF 2011).¹¹ According to the new regulations the medical manager’s reasonable grounds ‘may be derived from any reliable source’, which includes ‘information received by the IAAF Medical Delegate or other responsible medical official at a competition’ (IAAF 2011).¹²

Similarly, under the IOC policy a request for a female hyperandrogenism investigation can be made by:

- i. an athlete who is concerned about personal symptoms of hyperandrogenism
- ii. a Chief NOC Medical Officer
- iii. an IOC Medical Commission member or OCOG Medical Officer
- iv. the Chairman.

Requests must include the reasons and basis for an investigation, 'including any evidence which might suggest that an athlete may have female hyperandrogenism' (IOC 2012)¹³. In considering how investigations are brought about, Karkazis et al. (2012) are right to focus attention on the means used to identify individual athletes for testing. Given that 'anyone can make their concerns about an athlete known to an IAAF medical director' (Karkazis et al., 2012, 13), the HA regulations remain, at least to some degree, suspicion-based.

New Policy, Old Stories?

Considering the history of sex testing in elite sport, claims that the procedures outlined in the HA policy are nothing to do with determining sex seem misleading at best. The new rules still function as a way of determining who can compete as a woman in sporting competition and who cannot. In place of chromosomes or genotype, the level of serum testosterone is used to determine when a female athlete is too masculine (manly) (Crincoli, 2011). Worryingly, therefore, the aim of the new policy is to 'clarify whether women with this condition [excessive androgen levels] are "too masculine" to compete with other women' (Karkazis et al., 2012, 3). This immediately smells of the pervasive gender policing in women's sports, of which Karkazis et al. (2012) fear intensification,¹⁴ and seems also to speak to older, structurally related ideological perspectives and mythological hang-ups, sketched immediately below.

Ideology, Myth and 'Freakish' Female Competitors

One of the most conspicuous qualities of the discourse in this area is the asymmetries of conceptualisation and response generated by unusually prolific male performers such as Usain Bolt and female counterparts such as Caster Semenya. The former are phenomenal and the latter are at

best suspicious and at worst monstrous; the former inspire awe and the latter eerie alarm and sometimes disgust. The pattern is not a new one, with Semenya perhaps merely the latest and most extreme example. Indeed, tennis legend Martina Navratilova – unusually strong and powerful by the standards of the era's female tennis – first incited a precise loathing which is shamelessly expunged from the narrative of her career now typically offered by the British mainstream media. Roscoe Tanner, a male big hitter and 1979 Wimbledon Singles finalist, was extraordinary whilst Navratilova was at best dodgy. This asymmetry seems to find an echo in the fact that while the new IAAF and IOC policies stipulate an upper testosterone limit for female competitors, there is no equivalent for their male counterparts. Indeed, as Crincoli (2011, 3) puts it, '...there isn't even a concept of excessiveness or having 'too much' when it comes to men naturally producing androgens'.

The explanation for the preceding asymmetries probably has several components, which we don't claim to catalogue here. Perhaps the most obvious concerns what Rebecca Lock has felicitously characterised as the 'heterosexually successful' female. Lock (2003) is referring, not to women who have strong heterosexual appetites or lots of great heterosexual sex, but to those who satisfy contingent normative standards of female heterosexual attractiveness, standards which look uneasily upon untypical muscularity, facial hair and the sort of physical capacities which would inspire awe in a male counterpart. A constituency of sportswomen, including Navratilova and Semenya, conspicuously fail to measure up to these standards of heterosexual success, the more unsettling for their apparent indifference to this supposed failure. And since heterosexuality itself is key to what Butler has called the 'heterosexual matrix' of sex, gender, heterosexual femininity and appearance, to be heterosexually unsuccessful is to fail at being a woman. And again, given the preceding staunch binary opposition which respectively conflates physical, psychological and social qualities, to be at once be a woman who fails to be a woman is culturally alarming, since one exposes that the constituents of the female side of the binary are not superglued but can instead be disaggregated. (The same goes, perhaps to a lesser extent, for men who fail to be men.) The heterosexually unsuccessful woman chafes against the heterosexual matrix, and therefore against culturally foundational ideals. She might be spared social obloquy if she can at least retain a certain reserve, but women such as Navratilova and Semenya spectacularly fail there too, since they wear their indifference to the heterosexual matrix on their sleeves. Navratilova is in fact a lesbian, but was heterosexually unsuccessful in any event and loathed before she came out. The new IAAF and

IOC policies seem to offer doubtful deliverance from this narrative, as Karkazis et al. (2012, 13) explain:

It is troubling that more than half of the indicators of hyperandrogenism identified by the IAAF policy to determine which female athletes should undergo sex testing are entangled with deeply subjective and stereotypical Western definitions of femininity: “deep voice, breast atrophy, never menstruation (or loss of menses since several month), increased muscle mass, body hair of male type (vertex alopecia, > 17 years), Tanner score low (I/II), F&G score (>6 /! minimized by the beauty), no uterus, clitoromegaly [larger than typical clitoris]” [sic] (IAAF 2011c, 20). Moreover, the IAAF notes (without support) that “the individuals concerned often display masculine traits and have an uncommon athletic capacity in relation to their fellow female competitors” (IAAF 2011c, 1).

Moreover, the tendency to demonise heterosexually unsuccessful women offers attenuated examples of the more primal and global appetite for the monstrosification of women, of which Marina Warner (1994a: 4) has spoken:

The she-monster’s hardly a new phenomenon. The idea of a female, untamed nature which must be leashed, or else will wreak havoc, closely reflects anthropological and mythological encounters with monsters ... Greek myth alone offers a host of Keres, Harpies, Sirens, Moirae. Associated with fate and death in various ways, they move swiftly, sometimes on wings ... and they seize, as in the word ‘raptor’.

The sociocultural hostility towards women such as Navratilova and Semenya, who markedly and indifferently fail the tests of heterosexual femininity, is underwritten by these mythologised anxieties about female nature, themselves a robust part of the explanation of the norms of heterosexual femininity. Furthermore, the hostility and anxieties speak to overlapping fears of female duplicity, also given mythological representations. As Warner (1994a: 5) again elaborates,

In the folklore of the past ... the female beast ... was sometimes cunning – and purposely concealed her true nature; the hero only learns that his beautiful lover Melusine turns into a serpent at the weekend by peeping at her; the sirens lured men with their deceitful songs ... approaching St. Anthony for instance with honeyed words, hiding their diabolical nether parts under sumptuous dresses. Male beasts ... don’t possess the same degree of duplicity: you can tell you’re dealing with the devil on the whole.¹⁵

So the apparent woman might be a serpent, a monster or, as feared in the cases of Semenya and (more neurotically) Navratilova, a man. This in turn calls up the sombre face of the platonising

appetite behind the fierce attachment to the sex binary – she is either *really* a woman or, diabolically, *really* a man.¹⁶ However, the preceding fragility of the sex binary, alongside femininity-indifferent women in sport and elsewhere, suggests that it would be more helpful and faithful to reality to tell some new stories here instead of repeating the old ones. The new IAAF and IOC policies, again, in their supposed rejection of sex testing, might seem to be telling a new story. But are they, and if so, is it one more worthy of acceptance?

Furthermore, the immediately preceding hang-ups are continuous with the sociocultural appetite for doctoring women, including those who have no medical condition. The persisting practice of FGM is obvious illustration, and the new IAAF and IOC policies smell like others.¹⁷

Finally, if it is true (more later), as the IAAF and IOC claim, that male competitive advantage is grounded finally in androgen production, upon which key performance-relevant qualities such as speed, strength and power are taken to rest (see IOC policy document), then sport's role in the confirmation of male hegemony risks undermining by androgenic statistical outliers within the female athlete population. The most prestigious sports reward those qualities – speed, strength and power – in which men historically excel over women. This is impossible to detach from a broader cultural valorisation of these qualities, and accompanying downgrade of qualities, such as grace and balance, in which women historically excel over men. The absence of fears about females surreptitiously competing as males is eloquent of the assumption of male athletic superiority. Therefore, if a woman were to excel very untypically in speed, strength and power, and be accepted categorically as a woman, the ideological elevation of these qualities risks backfiring, since they might be exposed as less sex-indexed than presumed and so not the down payment on male hegemony which they are in turn presumed to be. Male hegemony might eventually face the Scylla and Charbydis of acceptance that masculine touchstones can be acquired by women and cessation of the ontological primacy of these current touchstones. The new IAAF and IOC policies suggest deliverance from this dilemma since, despite their disavowal of formal sex testing, the ideology which inscribes them, with its intolerance of androgenic overlap between the sexes, entails that hyperandrogenic female competitors are, *as women*, finally an apple or two short of a picnic.

Testosterone: Instrumental and Normative Status

In this section we consider whether there is good reason to believe that testosterone carries the performative salience attributed by the new IAAF and IOC policies, and whether any advantage testosterone confers upon a female athlete is *ipso facto* an unfair advantage.

Testosterone and Athletic Performance

The assumption of a strong connection between testosterone and athletic performance is in fact problematic, for several reasons. First, as Karkazis et al. (2012, 8) put it,

Individuals have dramatically different responses to the same amounts of testosterone, and testosterone is just one element in a complex neuroendocrine feedback system, which is just as likely to be affected by as to affect athletic performance.

Indeed, Karkazis et al. (2012) invoke studies by McCaul et al. (1992) and Oliveira et al. (2009), which show that testosterone is raised among fans of winning teams and in experimental subjects randomly assigned to win. They similarly invoke studies by Bateup et al. (2002) and Edwards and O'Neal (2009), showing that both female and male athletes facing a competition have been consistently shown to experience a rise in testosterone, with the proviso that '...there are no data to suggest that precompetition testosterone levels predict an athlete's performance on the field' (Karkazis et al., 2012, 8). Moreover, women with CAIS (Complete Androgen Insensitivity Syndrome), whose tissues are completely unresponsive to testosterone, are overrepresented among elite athletes (Tucker and Collins 2010, 138). Again, in some cases there may be disadvantages that negate the presumed advantages enjoyed by female athletes with elevated testosterone levels. For example, women with CAH (Congenital Adrenal Hyperplasia), whose testosterone levels are high, are vulnerable to short stature, obesity, dysregulation of mood hormones and excessive salt loss (Charmandari et al. 2004; Eugster et al. 2001; Meyer-Bahlburg 2011; Speiser and White 2003; Stikkelbroeck et al. 2003; Volkl et al. 2006).

Again, nearly all research on testosterone and athletics has been conducted on men. There are findings which suggest that the specific mechanisms of testosterone's action may be different for women than for men (MacLean et al., 2008). And, critically, as Karkazis et al. (2010, 8) again

point out, ‘there is a 10-fold gap in male and female endogenous testosterone levels, but smaller differences (including overlap) [a point to which we return] in virtually all aspects of athletic strength and performance’. Tucker and Collins (2010, 136-37) cite the eight races ranging between the 100m and the marathon at the 2009 IAAF Championships, which yield overlap between the male and female times in all but one race (10,000m). Karkazis et al. (2012, 8) note that:

Many aspects of physique or athletic performance differ between males and females, often substantially; however, none of these is close to 10-fold, further underscoring the limitations of a straightforward comparison of average male–female differences in athletic performance to average male–female differences in testosterone levels.

Finally, it is less than clear that testosterone carries the mental benefits for athletes which has been believed. Placebo-controlled studies show that increasing testosterone above minimal functional levels has no effects on mood, cognitive performance, libido or aggression (Bhasin et al. 1996; Bhasin et al. 2001; Kvorning et al. 2006).

Is Testosterone-Induced Advantage Unfair in Women’s Sport?

The immediately preceding suggests that there is no robust connection between performance and testosterone level. Suppose, however, it is true that intersex conditions which result in HA confer an advantage; it would still be necessary to show why this should be considered an *unfair* advantage. Jones and Wilson (2009) identify three possible grounds used for distinguishing between fair and unfair advantages in competitive sports. The first is that advantages may be considered unfair ‘if they are not available to all competitors equally’ (Jones and Wilson 2009, 127). That is, athletes with HA might have biological advantages which are not available to other female competitors. Current doping policy prevents athletes from taking anabolic steroids to elevate testosterone levels. But athletes with HA will have access to just those testosterone levels which current doping policy outlaws for the others. This line of reasoning fails the consistency test. Edwards (2008, 116) rightly points out that ‘advantages abound in sport’. There are several contingent facts about an athlete’s circumstances that ‘tilt the playing field’ (Buzuvis 2010, 39). For example, social and economic advantages bring a host of benefits, including access to high quality coaching, technologically superior equipment and excellent medical care. We also permit athletes to obtain physiological advantages through costly interventions such as laser eye surgery and

ligament replacement (Buzuvis, 2010). Not being available to everyone clearly couldn't, without inconsistency, be regarded as constituting unfairness.

A second principle of fairness distinguishes between advantages that are *deserved* and advantages that are *undeserved*. Again, inconsistency afflicts the argument that women advantaged by excessive levels of testosterone are unfairly advantaged since the advantage is not of their own making. Prevailing conceptions of fair play seem unconcerned about the effect of the 'natural lottery' (Jones and Wilson 2009; Edwards 2008; Loland 2002). It would be inconsistent to rule that genetic inequalities allegedly enjoyed by a smattering of female athletes confer an unfair advantage since advantages derived from other forms of 'undeserved' genetic variation are considered acceptable. As Jones and Wilson (2009, 128) point out in a related discussion, Usain Bolt's stature is 'not of his own making, yet he is allowed to take maximum advantage of its benefits in competition'. Importantly, the ideal of fair play does not require us to level the athletic abilities of athletes. As Coggon, Hammond and Holm (2008, 6) maintain:

...while the playing field should be level, the athletes must not be equal. If *all* were equal, there would be little to derive from competition, for everything would result in a draw or a win that was only the result of chance.

In fact, any attempt to equalise competitors is not only undesirable but, given the reality of genetic and environmental variation, utterly impractical.

The third argument, usually proposed in the anti-doping literature, is that advantages are unfair if they are somehow unnatural or artificial (Jones and Wilson 2009). The argument here might be that so-called disorders of sex development (DSD) give some athletes a distinct advantage over other female athletes because their bodies deviate from the "natural" or typical female range of testosterone. However, similar arguments can be made about numerous genetic abnormalities which are happily accepted in elite sport. Athletes with Marfan's Syndrome are not excluded from sporting competitions, despite having a clinical condition which could provide a competitive advantage in sport, including above average height and limb lengths. Similarly, basketball players who have a hormonal condition called acromegaly that results in exceptionally large hands and feet are not required to undergo hormone therapy in order to level the playing field (Xavier and McGill, 2012). Other examples include athletes such as Eero Maentyranta who won 3 gold medals in cross

country skiing at the 1964 Winter Olympics, 'whose blood carries more haemoglobin and therefore more oxygen than that of the average male' (Kayser, Mauron and Miah 2007, 2).

It seems that none of the arguments above establish convincingly that testosterone-induced advantage in women's sport is significantly different from other competitive advantages. As Karkazis et al. (2012, 11) put it:

Even if some sort of evaluation were available that could decisively link hyperandrogenism to sporting ability (the traits of which would vary considerably by sport as well), hyperandrogenism should be viewed as no different from other biological advantages derived from exceptional biological variation.

Attempts to justify the new policy on the grounds that HA eligibility rules are necessary in order to level the playing field seem inconclusive at best. In fact, it is just as possible that an athlete with HA would be disadvantaged. The interruption to training and the potential psychological and physical effects of the proposed evaluation and treatment of female athletes seem likely to outweigh any advantage. There is little evidence of a level playing field in women's elite athletics and seemingly no means of normatively distinguishing between the alleged advantages enjoyed by female athletes with untypical testosterone levels and the array of other advantages in sport.

Therefore, neither the putative testosterone-performance connection nor the normative outlawry of testosterone-induced female advantage is convincing. Neither gives traction in the establishment of policy about who is eligible to compete in female sport. To get this traction, we need to reflect upon our rationales for sex-segregated sport, and perhaps, again, cast out an old story as we do.

What is Sex-Segregation in Sport About?

The new IAAF and IOC policies seem underwritten by two assumptions: the first is that the disparity in performance between women and men is the *raison d'être* of sex-segregated competition,¹⁸ and the second is that the said disparity is explained by the respective testosterone levels of women and men. We have already seen ample reason to doubt the second assumption. But the first, while it seems more innocent, might finally be comparable in ambitiousness to the second. The attempt to reduce the rationale of sex-segregated sport to one factor, performance-

disparity or anything else, smells at the end of the day of the false reductionism inherent in the second assumption. An apparent *reductio ad absurdum* of this first assumption is seemingly provided by the earlier and luminously illustrated point (pp. 7-8) that there is in many sports swift overlap between the performances of men and women, yet males do not therefore compete with comparably performing females and nor is there a clamour for it to happen or a social feeling of injustice that it does not. Indeed, if victory prospects were the only consideration, there might be a compelling case for the best females to compete against males who are better but are realistically 'catchable' with the practice of competition, a case which becomes yet stronger if the task-orientation of self-improvement co-exists with the ego-orientation of winning (see Tannsjo 2000, 105-07).

It is true, for sure, that we cannot have sex-segregated competition for legitimate reasons and yet ignore those reasons. But this realisation, again, begs the question of exactly what those reasons are. It is, again, salutary to abjure our analytic taste for binary oppositions, essences and criteria, and entertain the prospect that there is no crisp, singular reason out there in physiological, psychological or indeed ludic nature which ontologically rubber-stamps our sex-segregated sport competition. Our social practices are rarely as hygienic as that. Nor should we expect them to be. We have sex-segregated competition for an arguably respectable collage of reasons, of which performance disparities are only one and quite possibly not the most important. Coggon, Hammond and Holm (2008) propose, for instance, a contingent rationale. This combines three separate arguments. The first fragments into two. The first part is that segregation provides more unpredictability and allows a wider range of performers to take part, since fewer women would swiftly or heavily lose under conditions of segregation. The second part is that segregated competition facilitates a richer range of skills and enjoyments, illustrated in 'the markedly different style of men's and women's tennis' (Coggon, Hammond and Holm 2008, 9). The second argument is that the absence of sex segregation courts a substantial constituency of irrevocably discouraged women. A third argument emphasises the contingently imperfect world in which we live. Women still suffer significant material and symbolic inequality which already restricts their participation and performance in sport. As Coggon et al. (2008), following Schneider (2000) put it, '...it is surely better to have an imperfect system that fits more happily in a world that is also imperfect than a philosophically perfect system that disadvantages 50 per cent of the population in the present (imperfect) world'.

Despite Coggon et al's legitimate third argument, it is not clear that sex-segregated sport is essentially a symptom, even if it is so in the world we inhabit. As the preceding point about men's and women's tennis suggests, the segregation might survive the end of the material and symbolic inequalities to which it is a response. Sex-segregated sport might be (among other things) an example of what Janet Radcliffe Richards (1980, 186-90) characterises as innocuous cultural preferences, the end of which might significantly diminish the happiness of human beings. As she puts it,

most people like cultural differences ... furthermore, it is not just difference which is attractive, but its rooting in tradition ... while feminists must be committed to attacking all cultural distinctions which actually degrade women, the indiscriminate pursuit of an androgynous culture must involve the elimination of innocuous cultural differences as well, and with them the source of a great deal of pleasure to many people ... Of course it *might* be true that everyone would be happier if all sex-based culture disappeared; however it might equally be true that much happiness would be lost through its elimination. Any evidence on either side ought to be considered impartially.

There are also, to be sure, related but separate banal practical reasons why we have sex-segregated sport. For instance, considerable inconveniences would arise, resulting from (for instance) the need for separate changing and showering facilities, if a team were mixed-sex.

Once the messy, flexible, but generally respectable plurality of reasons (including performance levels) for sex-segregated sport is realised, the notion of elevating one quality such as testosterone levels (notwithstanding preceding difficulties) to sex classificatory status should look ever-more fragile. And, once the heavy and arguably innocuous role of cultural preference in sex-segregated sport is appreciated, the case for allowing performers to compete *a priori* in the sex in which they have been acculturated – which is almost always their legal sex too – should be considered a very strong one. Buzuvis (2010, 39) proposes persuasively that the IOC and other athletic governing bodies abandon a rigid sex binary in favour of a more flexible approach 'that allows athletes to participate in the category that is most consistent with, or at least most closely approximates, their gender identity.'

Care should be taken to separate the immediately preceding question of how to apply sex categories in sex-segregated sport from the question of which sports should be sex-segregated. On the latter, Karkazis et al. (2012, 11) speak wisely:

We expect the overall value of sex segregation is both sport specific and a moving target, as some differences may diminish as greater numbers of girls play sports at young ages and as opportunities for elite, including professional, competition expand for adult women.

This approach echoes a recent approach to performance-enhancing drugs and devices such as that used by Oscar Pistorius (see Jones & Wilson 2009), i.e. there can be no general pro or anti-rationale or policy, only specific permissions and prohibitions for specific reasons. In the case of sex-segregation, those reasons can, again, include robustly cultural ones (outrunning Karkazis et al's above suggestion), which might, in turn, be sport-specific and a moving target.

Conclusion

The new IOC and IAAF policies on eligibility to compete in female sport are problematic on several counts. The criterion of testosterone level is freighted with dubious assumptions about the performative salience of testosterone, the normativity of testosterone-induced advantage and the rationale for sex-segregated sport competition.

There is a cluster of reasons to believe that there is no robust connection between athletic performance and testosterone level. The argument that testosterone-induced advantage is *ipso facto* an unfair advantage in female competition is finally unconvincing. Given, also, the asymmetry of policy on female and male sport – the latter housing no conception of improper testosterone levels – the new policies appear grounded on old and oppressive ideological conceptions of what it means to be a woman (gender policing).

The new IOC and IAAF policies are also inscribed with the belief that the disparity in athletic performance between women and men is the singular reason for sex-segregated sport. There are, again, very strong grounds for challenging this belief. More positively, it might well be that sex-segregated sport is in substantial measure an innocuous cultural preference of both performers and spectators, and often a practical necessity. If so, this yields a strong case for allowing athletes to

compete in the sex category which most aligns with their gender identity, itself undetachable from their cultural history. Exactly which sports should be sex-segregated is, again, properly informed by performance and cultural elements, and is therefore, on both counts, sport-specific and a moving target.

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¹ These include a medical 'certificate of femininity', 'naked parades', gynaecological examination, the Barr body sex-chromatin test and the DNA-based polymerase chain reaction (PCR) test.

² For instance, at Atlanta 1996 eight women failed the IOC's PCR test (see endnote 1), but were all allowed to compete after further examinations of 'femaleness' (and discussions) took place.

³ For instance, Spanish hurdler Maria Martinez-Patinio was excluded from the 1985 World University Games. She was reinstated three years later, but with a legacy of expulsion from her athletes' residence, revocation of her sports scholarship, erasure of her running times from Spain's athletics records, and the loss of friends, fiancé, 'hope and energy' (Martinez-Patinio 2005, S38).

⁴ Karkazis et al (2012, 6) put it: 'It is often assumed that people with intersex traits are somehow exceptional because of their complex biologies, but sex is *always* complex. There are many biological markers of sex but none is decisive: that is, none is actually present in *all* people labelled male or female. Sex testing has been and continues to be problematic because there is no single physiological or biological marker that allows for the simple categorization of people as male or female' (emphases in text).

⁵ http://www.olympic.org/Documents/Commissions_PDFfiles/Medical_commission/2012-06-22-IOC-Regulations-on-Female-Hyperandrogenism-eng.pdf

⁶ One of the problems with relying on testosterone as the biological marker for determining eligibility is that testosterone differs in its effectiveness, depending on the sensitivity of an individual's testosterone receptors. We return to this.

⁷ http://www.olympic.org/Documents/Commissions_PDFfiles/Medical_commission/2012-06-22-IOC-Regulations-on-Female-Hyperandrogenism-eng.pdf

⁸ http://www.olympic.org/Documents/Commissions_PDFfiles/Medical_commission/2012-06-22-IOC-Regulations-on-Female-Hyperandrogenism-eng.pdf

⁹ <http://www.iaaf.org/about-iaaf/documents/medical>

¹⁰ For compelling critique of the dichotomising impulse in general, see Kretchmar (2007) and Prokhovnik (1999: 20-49).

¹¹ <http://www.iaaf.org/about-iaaf/documents/medical>

¹² <http://www.iaaf.org/about-iaaf/documents/medical>

¹³ http://www.olympic.org/Documents/Commissions_PDFfiles/Medical_commission/2012-06-22-IOC-Regulations-on-Female-Hyperandrogenism-eng.pdf

¹⁴ Vioria and Martinez-Patino (2012, 18) similarly suggest that 'the implicit message to the women subjected to these policies is that they are not "female enough"'.
¹⁵ And see Warner (1994b), esp. 121-28.

¹⁶ Of Semenya, Time.com ran the headline, 'Could This Women's World Champ Be a Man?' (Adams 2009) [in Karkazis et al. 2012]

¹⁷ For graphic and disturbing representation of males' appetites for disempowering inconvenient women, see Warner (1994b, 28 and 50).

¹⁸ Tucker and Collins (2010, 138) endorse this assumption by stating that "gender categories exist for the very reason that performance differences between males and females require that two separate categories exist."