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Impossible "Choices": The Inherent Harms of Regulating Women's Testosterone in Sport

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Abstract In April 2018, the International Association of Athletics Federations (IAAF) released new regulations placing a ceiling on women athletes' natural testosterone levels to "ensure fair and meaningful competition." The regulations revise previous ones with the same intent. They require women with higher natural levels of testosterone and androgen sensitivity who compete in a set of "restricted" events to lower their testosterone levels to below a designated threshold. If they do not lower their testosterone, women may compete in the male category, in an intersex category, at the national level, or in unrestricted events. Women may also challenge the regulation, whether or not they have lowered their testosterone, or quit sport. Irrespective of IAAF's stated aims, the options forced by the new regulations are impossible choices. They violate dignity, threaten privacy, and mete out both suspicion and judgement on the sex and gender identity of the athletes regulated.

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On April 23, 2018 the International Association of Athletics Federations (IAAF), the governing body for track and field, released new regulations for participation in the female category placing a ceiling on women's natural testosterone levels. The testosterone regulations are but the latest in a series of regulations that have governed women's eligibility in sport for decades, and that have been criticized as both discriminatory against women and a form of "sex testing" (for example, Ritchie 2003; Heggie 2010; Karkazis et al. 2012). An earlier iteration of these regulations was issued by the IAAF in 2011. They were suspended in 2015 by the Court of Arbitration for Sport (CAS)—the world's highest adjudicating body for sport—following a legal challenge by Indian sprinter Dutee Chand (CAS 2015).

Both the 2018 and 2011 regulations rest on the IAAF's claim that higher natural testosterone levels give some women an unfair competitive advantage over their peers and thus women's testosterone levels should be regulated.[1] There is no scientific consensus that this is the case. In reviewing Chand's case, CAS accepted an approximate 1–3 per cent performance difference estimated by the IAAF between female athletes with higher

[1] The 2018 regulations are substantively similar to the 2011 regulations. Analysis of the 2011 regulations thus remains relevant (see, for example, Karkazis et al. 2012; Schultz 2012; Viloria and Martínez-Patiño 2012; Cooky and Dworkin 2013; Sönksen et al. 2015; Bavington 2016; Karkazis and Jordan-Young 2018).

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testosterone (or "hyperandrogenism") and their peers but found this to be marginal and incommensurate with an estimated 10–12 per cent advantage that male athletes typically have over female athletes. The Court of Arbitration for Sport thus found there was insufficient scientific evidence that this performance difference warranted discrimination against women with higher natural testosterone to ensure fair competition among female athletes (CAS 2015). Chand's case prompted a multi-year suspension of the 2011 regulations, during which time the IAAF was granted an opportunity to present evidence proving a substantial performance advantage bestowed on women athletes with naturally high testosterone.

In the intervening years, the IAAF repeatedly stated its intention to return to CAS with such evidence. In September 2017, the IAAF filed papers with CAS proposing to revise its regulations to cover only a subset of track events (CAS 2018, ¶2). In response, CAS stated that "If the IAAF withdraws the Hyperandrogenism Regulations and/or replaces them with the proposed draft regulations it has submitted, then these proceedings will be terminated" as Chand has never sought to compete in the targeted events (CAS 2018, ¶5). CAS "made no ruling" on the scientific evidence provided and thus it has not ruled on the degree of any performance difference conferred by higher testosterone (CAS 2018, 4).

The IAAF released the proposed new regulations in 2018. They share the same rationale as the 2011 regulations. Both rely on the claim that regulation of higher natural testosterone in women is necessary to "ensure fair and meaningful competition" (IAAF 2018a, sec. 1.1a). The IAAF links several claims to make this assertion. It argues that sport is divided into sex categories because "of the significant advantages in size, strength and power enjoyed (on average) by men over women from puberty onwards, due in large part to men's much higher levels of circulating testosterone" (IAAF 2018a, sec. 1.1a). The IAAF claims that that there is a medical and scientific consensus that female athletes with naturally high testosterone have an advantage over their peers, not unlike the advantage men typically have over women. They contend that this advantage is unfair. To eliminate this perceived advantage, women are required to lower their testosterone to remain eligible to compete in the female category.

A discussion of the scientific evidence is beyond the scope of this paper, but the claim that higher natural testosterone provides some women with a competitive advantage over other women is profoundly contested (e.g., Karkazis et al. 2012; Karkazis and Jordan-Young 2013; Healy et al. 2014; Bermon et al. 2014; Ritzén et al. 2015; CAS 2015; Karkazis and Jordan-Young 2015; Bermon and Garnier 2017; Karkazis and Meyerowitz-Katz 2017; Sönksen et al. 2018; Menier 2018; Franklin, Ospina Betancurt, and Camporesi 2018). Critics of these regulations have also noted that the evidence proffered by the IAAF has been produced by researchers linked to the IAAF (e.g., Kidd 2018). Without evidence of a significant performance difference between women with different testosterone levels, the harm to women with lower testosterone levels is perceived rather than actual. Moreover, even if the science demonstrated such a performance difference, it does not necessarily follow that it is inherently unfair.

There are several key differences between the 2011 and 2018 regulations. Whereas the 2011 regulations applied to all athletics competitions, the 2018 regulations apply only to a subset of races, as presaged in the CAS filing: the 400m, 400m hurdles, 800m, 1500m, and the mile, as well as relays and combined events in these distances. In support of this, the IAAF have stated that evidence "shows elevated testosterone levels give athletes the biggest performance advantage in the events from 400m to 1 mile" (IAAF 2018c, 1).[2] The IAAF retains the discretion to add more events in the future.

A second key difference concerns testosterone levels. Whereas the 2011 regulations stipulated a testosterone threshold of 10 nmol/L, the new regulations set a lower arbitrary threshold of 5 nmol/L. The rationale is that there is "limited evidence" of material advantage when testosterone is lower than 5 nmol/l, but there is "a clear

[2] An IAAF "fact sheet" states: "The IAAF's new regulations are based on a range of published research, expert review and most importantly, evidence collected over 15 years. The evidence and data, some of which is not able to be shared publicly due to confidentially [sic], but has been shared with the Court of Arbitration for Sport (CAS), shows elevated testosterone levels give athletes the biggest performance advantage in the events from 400m to 1 mile. As wide a range of evidence as possible has been made available where it does not breach individual confidentiality" (IAAF 2018b, 1). In fact, a single study by IAAF researchers provides the primary published evidence for this claim (Bermon and Garnier, 2017). The study's methods have been extensively critiqued (Karkazis and Meyerowitz-Katz 2017; Sönksen et al. 2018; Menier 2018; Franklin, Ospina Betancurt, and Camporesi et al. 2018) leading independent researchers to request that the IAAF release the study's raw data for re-analysis (Pielke 2018). Following the release of a subset of those data, the independent researchers calculated errors in the data ranging from 17–33 per cent for four of the regulated events (400m, 400H, 800m, and 1500m) and called for the study to be retracted (Pielke 2018; Longman 2018). Days before the independent researchers submitted their re-analysis, Bermon and colleagues released their own re-analysis of the data (Pielke 2018; Bermon et al. 2018).

performance advantage" when it is between 5 and 10 nmol/L (IAAF 2018c, 5).[3]

A third key difference is a more explicit statement about the target population for the regulations. The 2011 regulations focused on hyperandrogenism, a term encompassing a broad group of diagnoses in which women have higher natural testosterone. The use of that term in the 2011 regulations, when read alongside the regulation's higher testosterone threshold, revealed a focus on women with intersex variations. The 2018 regulations make that focus explicit. The "Eligibility Regulations for the Female Classification (Athletes with Difference of Sex Development)" apply only to women with a subset of intersex variations (also called differences of sex development) characterized by higher natural testosterone levels and "sufficient androgen sensitivity for those levels of testosterone to have a material androgenising effect" (IAAF 2018a, sec. 2.2). [4] This focus is reinforced by an apparent exemption of other causes of hyperandrogenism from this regulation. That is, while a range of medical diagnoses may lead to higher natural testosterone in women, intersex variations are explicitly included whereas non-intersex diagnoses are explicitly excluded from the 2018 regulations "even if such conditions cause the individual to have testosterone levels in her blood above the normal female range" (IAAF 2018a, fn. 4). The net effect is to tighten the focus on women with intersex variations even though the cause of endogenous higher testosterone should be immaterial.

A final key difference concerns the options available to women under the regulations. Both the 2011 and 2018 regulations require women to keep their testosterone levels below the specified threshold in order to remain eligible. Under the 2011 regulations women who did not want to lower their testosterone could quit sport, compete with men, or challenge the regulations as Chand did.[5] The 2018 regulations note that a woman who does not lower her testosterone may compete in the male category, in an intersex category, at the national level, or in unrestricted events. Women may also challenge the regulation, whether or not they have lowered their testosterone, or quit sport.

The IAAF has premised the need for regulation on the benefit and protection it affords to women athletes:

> These Regulations exist solely to ensure fair and meaningful competition within the female classification, for the benefit of the broad class of female athletes. In no way are they intended as any kind of judgement on or questioning of the sex or the gender identity of any athlete. To the contrary, the IAAF regards it as essential to respect and preserve the dignity and privacy of athletes with DSDs. (IAAF 2018a, sec. 1.1)

Despite these intentions, this article reveals the options forced by the new regulations as *harmful* to athletes. We show them to violate dignity, threaten privacy, and mete out both suspicion and judgment on the sex and gender identity of the athletes regulated. We have organized our discussion around an athlete's "choices" in order to underscore the calculus an athlete would need to go through to successfully navigate the regulation, asking: What harms and other issues are raised with respect to each "choice"?

"Submit to Assessment"

The regulations state that "no athlete will be forced to undergo any assessment and/or treatment under these Regulations," but specify that any athlete who "does not meet the Eligibility Conditions (and any athlete who is asked by the IAAF Medical Manager to submit to assessment under these Regulations and fails or refuses to do so) will not be eligible to compete in the female

[3] Just as this article went to press, IAAF-affiliated researchers published a review article with their evidence for this claim (Handelsman, Hirschberg, and Bermon 2018). They argue that there is a "reproducible dose-response relationship between circulating testosterone and muscle mass and strength as well as circulating hemoglobin in both men and women. These dichotomies largely accounts [sic] for the sex differences in muscle mass and strength and circulating hemoglobin levels resulting in at least an 8–12% ergogenic [performance] advantage in men" (Handelsman, Hirschberg, and Bermon 2018, 2). Conceding the evidence is "incomplete," the researchers nevertheless conclude it is "highly likely that the sex difference in circulating testosterone of adults explains most if not all the sex differences in sporting performance" (Handelsman, Hirschberg, and Bermon 2018, 22). Noting that the data on women with intersex variations is "sparse and mostly uncontrolled" (Handelsman, Hirschberg, and Bermon 2018, 22), they extrapolate that elite women athletes with naturally high testosterone will have a male-typical advantage (~10 per cent) over their fellow competitors. There is no evidence to support this claim.

[4] Throughout this paper we use intersex variations in lieu of the more contested nomenclature "differences of sex development" and "disorders of sex development."

[5] Women can also challenge a decision made under the regulation, such as a finding of material androgenizing effect.

classification" (IAAF 2018a, secs. 2.5, 2.6). Should an athlete want to continue her career in women's athletics, at minimum she must "submit to assessment" (IAAF 2018a, sec. 2.6). It is only possible to establish if an intersex variation is the cause of high testosterone and to assess androgen sensitivity through specialist medical investigations, as the following process outlines.

The assessment requires athletes who fit or think they may fit the IAAF criteria to identify themselves for investigation by the IAAF Medical Manager. A consecutive clause gives the IAAF Medical Manager unchecked authority to investigate any woman it deems suspicious: "the IAAF Medical Manager may investigate at any time ... any athlete who has not advised the IAAF Medical Manager in accordance with clause 3.1 may be a Relevant Athlete *whose case requires assessment* under these Regulations" (IAAF 2018a, sec. 3.2, authors' emphasis). While "only the IAAF Medical Manager may initiate an investigation" the breadth of those who may raise concern include "sources, such as (for example, but without limitation) the athlete herself, the team doctor of the National Federation to which the athlete is affiliated, results from a routine preparticipation health examination, and/or information/data (including but not limited to blood testosterone levels) obtained from the collection and analysis of samples for anti-doping purposes" (IAAF 2018a, sec. 3.3). National Federations are also obliged to identify potential athletes for investigation (IAAF 2018a, sec. 3.1).

So, which athletes "require assessment"? The 2011 regulations made it clear that women with higher testosterone "often display masculine traits and have an uncommon athletic capacity in relation to their fellow female competitors," while the International Olympic Committee similarly urged National Olympic Committees "to actively investigate any perceived deviation in sex characteristics" (IAAF 2011, 1; IOC 2012, 2; IOC 2014, 2). This language is absent from the 2018 IAAF regulations, but one of the three criteria for a "relevant athlete" is androgen sensitivity that produces a "material androgenising effect" (IAAF 2018a, sec. 2.2), thus conveying the same concerns of the 2011 regulations and continuing surveillance of athlete's bodies for what may be perceived as signs of high testosterone.

Relying on suspicion as a basis for investigation effectively legitimizes widespread surveillance of all women athletes by instructing national federations as well as doctors, doping officials, and other official personnel to scrutinize women athletes' perceived femininity. This can include appearance, gender expression, and sexuality. Who is understood to be "suspicious" is tied to subjective and cultural expectations regarding which bodies and modes of gender expression are "appropriate" or even valorized by adherence to traditional or normative aesthetics of femininity. As such, the "neutral" bodily fact of higher testosterone levels is mediated through culturally-coded ideas about gender expression and gender stereotypes (Jordan-Young and Karkazis 2012). This regime risks creating a climate of fear and suspicion.

Recognizing the potential for discrimination, the new regulations state that: "No stigmatisation or improper discrimination on grounds of sex or gender identity will be tolerated" including persecution "on the basis that their appearance does not conform to gender" (IAAF 2018a, sec. 3.4). However, this is precisely how these regulations operate because of the identification of women for screening based on the degree to which they adhere to subjective expectations for femininity. Moreover, despite the claim that the regulations do not question the sex or gender identity of any athlete, the very singling out women for investigation based on their sex and gender characteristics functions as an investigation of the sex and gender identity of athletes.

Once an athlete is identified for assessment, the IAAF Medical Manager assembles an Expert Panel chosen from "a pool of independent medical experts" to review her case (IAAF 2018a, sec. 3.7). The elements of the assessment process have not substantively varied since they were first instituted decades ago. At Level 1, the assessment by "a suitably qualified physician," includes a full endocrine work-up and physical examination to assess "androgenizing effects" from testosterone. The 2011 regulations included a checklist detailing the numerous signs of these effects (IAAF 2011, 20), many of which, such as body hair, breast size, muscularity, clitoral size, and voice, are deeply entangled with subjective assessments of gender (Karkazis et al. 2012).

The 2011 regulations also suggested gathering "anamnestic information" (IAAF 2011, sec. 6.2). Anamnesis refers most broadly to a patient's medical history but has a "strong history of use in sexology, where it specifically indicates an interview on the subjective experiences of gender and sexuality" and where a subject's sexuality is perceived as relevant, read through a heteronormative lens and thus understood to be "male-typical" or "virilized" (Karkazis and Jordan-Young

2018, 33). Karkazis and Jordan-Young note, for example, that Fénichel et al. reported that none of "four young women athletes 'reported male sex behavior'" (Karkazis and Jordan-Young 2018, 33).

In Level 2 of assessment, the Expert Panel reviews the athletes' medical information, with the possibility of further investigation and "expert opinion(s) […] The athlete and her personal physician must cooperate and assist with that process" (IAAF 2018a, sec. 13). Level 3 occurs when an athlete is referred to an IAAF "specialist reference centre" for further assessment and diagnosis (IAAF 2018a, sec. 3.7). The Level 3 Assessment will normally include: physical, laboratory (including urine and blood analysis and appropriate genetic testing for mutations in the genes involved in the conditions at issue), imaging, and psychological assessment. The findings then revert to the Expert Panel, which sends a "recommendation" on eligibility to the IAAF Medical Manager to relay to the athlete and her physician: "It should also specify what else the athlete must do to satisfy the Eligibility Conditions, should she wish to do so" (IAAF 2018a, sec. 3.9).

Assessment involves examinations of the most intimate details of a person's body and physiology, including genital exams, chromosomal testing, and imaging of sex organs. Behavior is also assessed. As has historically been the case, athletes affected by sex testing may be unaware of any intersex variation prior to such investigation. The process and the information imparted can serve both to pathologize and to abruptly raise intensely personal questions for and about an athlete, including her body, her sense of self, her sex classification, and her gender identity. Moreover, isolation during such a time can be harmful. Individualized and sometimes oblique medical processes can deter collective assistance, solidarity, and action; these are especially important to a vulnerable population that benefits from peer support (Lee et al. 2016).

Although a personal physician may be involved at various points of this process, the initial assessment, the work-up, and the recommendation as to "what else the athlete must do to qualify" are all conducted by IAAF-affiliated individuals (IAAF 2018a, sec 3.9). The IAAF will pay for the initial assessment and diagnosis including ongoing monitoring of testosterone levels. The athlete, however, will pay for the cost of "her personal physician(s) and of any treatment prescribed for her by her personal physician(s)" (IAAF 2018a, sec. 3.16), adding a significant financial burden to the physical and psychic harms that may result. That the athlete must comply at all levels is coercive; her reason for being assessed and the involvement of her personal physician do not derive from her health needs but solely from a mandate to comply with this regulation.

"What Else the Athlete Must Do To Qualify": Medically Unnecessary Interventions

The only option for a woman with high testosterone and androgen sensitivity to continue to compete in the female category and in the event(s) she currently runs is to lower her testosterone. In this instance, she will undergo one or more medically unnecessary interventions to comply with the regulation. Testosterone can be lowered surgically or pharmacologically, though the 2018 regulations state, "surgical anatomical changes are not required in any circumstances." While an IAAF Expert Medical Panel will review the cases, these new regulations note that: "It is the athlete's responsibility, in close consultation with her medical team, to decide whether or not to proceed with any assessment and/or treatment" (IAAF 2018a, sec. 2.5). Thus, it is entirely possible that gonadectomy and other interventions may be performed as part of a medical plan instigated and driven by compliance with these regulations.

This new language stating that surgical changes are not required is likely in response to criticism of an IAAF study that revealed that four women aged 18–21 from "rural and mountainous regions of developing countries," (Fénichel et al. 2013, E1056) had been subjected to medically unnecessary surgery, including gonadectomy, in order to comply with prior regulations (Jordan-Young, Sönksen, and Karkazis 2014; Sönksen et al. 2015). The IAAF identified the athletes through various means and had sent them to the IAAF-approved specialist reference centre in France for assessment (Fénichel et al. 2013, E1056). The study authors, many of whom are affiliated with the IAAF, acknowledge that although the gonads

> … carr[y] no health risk, each athlete was informed that gonadectomy would most likely decrease their performance level but allow them to

> continue elite sport in the female category. We thus proposed a partial clitoridectomy with a bilateral gonadectomy, followed by a deferred feminizing vaginoplasty and estrogen replacement therapy […] Sports authorities then allowed them to continue competing. (Fénichel et al. 2013, E1057–E1058).

Lowering testosterone can result in side effects that diminish well-being and are of medical concern. Gonadectomy can cause irreversible harms, including "hypogonadism, compromising bone and muscle strength and risking chronic weakness, depression, sleep disturbance, poor libido, adverse effects on lipid profile, diabetes, and fatigue" (Jordan-Young, Sönksen, and Karkazis 2014, 2). The procedure necessitates long-term hormone replacement and may also sterilize women. The partial clitoridectomies were unnecessary, unrelated to the regulation, and are part of a treatment paradigm that has long been challenged by intersex advocates and the human rights system (Human Rights Commission of the City and County of San Francisco 2005; Karkazis 2008; Carpenter 2016).

When pharmacologically lowering testosterone, "side effects can be serious for an athlete, including diuretic effects that cause excessive thirst, urination, and electrolyte imbalances; disruption of carbohydrate metabolism (such as glucose intolerance or insulin resistance); headache; fatigue; nausea; hot flushes; and liver toxicity" (Jordan-Young, Sönksen, and Karkazis 2014, 2).

Writing about this implementation of these regulations, scholars have "questioned the validity of informed consent "in a situation that compromised the voluntariness of the athletes" (Ha et al. 2014, 1039), while others have argued that

> Given that their eligibility to compete was clearly dependent upon agreeing to the procedures, the line between consent and coercion is blurred in this instance. The reported medical decisions rendered violate ethical standards of clinical practice and constitute a biomedical violence against their persons. (Sönksen et al. 2015, 826)

Though the IAAF has tried to provide a veneer of informed consent in the new regulations by allowing independent physicians to make a "treatment decision," the entire reason the athlete is seeing an independent doctor is to lower her testosterone to comply with these regulations. Moreover, meaningful consent, as required by basic rights and medical ethics, cannot be obtained under the circumstances of an athlete facing the end of her career should she not comply with the regulations.

In the 2018 regulations, the "athlete consent" defines a contractual relationship. Athlete obligations, requiring full compliance and co-operation with all requests for medical exams and information, include waivers so that the IAAF may have full access to records held by her personal physician for "any information that the Expert Panel deems necessary to its assessment," "including sensitive personal information" (IAAF 2018a, sec. 3.18). In this context, compliance with requests for medical information, examinations, and interventions cannot be said to rely on informed consent.

These regulations are further punitive in their requirement for ongoing compliance: "If in the IAAF Medical Manager's view the athlete fails to cooperate fully and in good faith, she may be declared ineligible to compete in the female classification in Restricted Events at International Competitions," such as if she "refuses or fails to provide the evidence of her continuing satisfaction of the Eligibility Conditions," "refuses or fails to submit to the testing and/or other monitoring," and/or for "failing to maintain" her testosterone below the threshold (IAAF 2018a, sec. 3.13).

Compete with Men or in an Intersex Category

If a woman declines to lower her testosterone, she may theoretically compete with men or in a novel, as yet unestablished category termed intersex that an IAAF policymaker said, "will happen, and probably in five or 10 years," subject to "changes in public opinion" (Ingle 2018, ¶2–3). The 2018 regulations state that legal categories "other than simply male and female" now exist because people with intersex variations exist (IAAF 2018a, sec. 1.1b).

The women covered by these regulations are women. Forcing them to compete in categories other than female violates their lifelong legal and social identity as women; and manifestly redefines the sex of athletes who compete in categories other than female. Given their legal and social identity—which is no different than their fellow competitors'—regulations that exclude women from the female category unless they submit to medical intervention may also call into question their very sense of self.

More pertinently, none of the affected athletes are asking to be put in these categories. Placing the athletes into them is a public judgement on the sex and gender identity of the athletes. Recent changes outside sport that allow for additional legal sex categories were not intended by their proponents to be coercively applied to women or men (Carpenter 2018a), but the IAAF regulations make such categories function as an incentive to comply with medical interventions to lower testosterone. The regulations deploy an outdated interventionist clinical framework, enforcing narrowed gender norms (Carpenter 2018a) but now accommodating a third sex as punishment for those who resist medicalization of their bodies (Carpenter 2018b).

The creation of such a category in sport sets a significant precedent with long-term consequences for all athletes with intersex variations—women and men—who are not the subject of the current regulations; they, too, may find themselves pushed in future into competing in a new sex classification.

The IAAF states that the female category was created because women—including women with intersex variations—lack a fair opportunity to succeed in male competition. As affirmed by CAS, there is no science to show a male-equivalent performance advantage; women excluded from female competition by the new regulations are not on par with similarly ranked, elite men's times (CAS 2015). By competing with men, these women are denied precisely what the IAAF aims to guarantee for all women with this regulation: incentivization of commitment, sacrifice, and hard work and inspiration of excellence for new generations.

Moreover, a woman who competes in the male category or an intersex category, simply by doing so also discloses that she has an intersex variation violating her privacy and calling her identity into question.

Compete at National Level, Outside Restricted Events, or Quit Sport

The remaining options presented to athletes are to compete in events outside the restricted events and/or at the national level. The IAAF, however, has indicated that the scope of restricted events is subject to change or expansion, which will limit and perhaps even foreclose this option. Competing at the national level limits an athlete's potential to excel in sport including her ability to earn a livelihood.

A woman can also quit sport if she doesn't want to make any of the above "choices." These options may lead to other more pernicious harms: underachievement or underperformance in order not to trigger investigation. Sport has long been an avenue to success based on personal merit. All options can result in reduction or loss of livelihood for women, particularly from resource-poor regions, who may have fewer options. Moreover, suspicion regarding an intersex variation may also be raised if a woman henceforth changes events, stops competing internationally, or quits sport.

Challenge the Regulation

An athlete's only protest option is to challenge these regulations or a decision made pursuant to them. Mounting a case is a significant undertaking, with tremendous personal, financial, emotional, and psychological costs. Challenging these regulations necessitates disclosure that an athlete has an intersex variation. Owing to widespread misunderstandings about sex biology and variations in sex characteristics this will necessarily mete out both suspicion and judgement on the sex and gender identity of the athletes. In doing so, it reproduces the same harms as prior regulations. As previously, women are likely to suffer from "having their underlying biology indiscriminately scrutinized in the world media" (Genel, Simpson, and de la Chapelle 2016, E2).

Athletes must bear half the cost of an ombudsperson as well as the cost of a legal challenge (IAAF 2018a, secs. 3.16, 3.17). She may also be barred from competing while the case is active, forced to watch her prime competitive years pass her by as the case drags on. Any challenge may mark the end of an athlete's career.

Conclusion

The new IAAF regulations not only fail to uphold dignity, privacy, and fairness for all women athletes, they violate these principles and more generally hamper athlete participation. These harms are not incidental to the regulations; they are inherent to them. Contrary to claims made in the regulations regarding confidentiality and non-disclosure to third

parties, all choices available to athletes other than lowering testosterone have the strong potential to reveal the athletes as having an intersex variation thus violating privacy at the broadest level under the regulations. Moreover, recent and historical media debates about women's biological characteristics exemplify the exclusion, public misconceptions, and stigmatization that continue to make disclosure harmful and even dangerous. Indeed, some of the options here raise the bar for challenges so high as to discourage them. The regulations will, as they always have been, be enforced through humiliation, stigmatization, and fear. The alternatives available to athletes are presented under the guise of choice, but each option carries its own high price. The choice is to subjugate oneself to power: alter your body, accept being labelled, or leave. It is an impossible set of choices.

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