

TRANSGENDER ATHLETES AND INTERNATIONAL SPORTS POLICY

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I

INTRODUCTION

The current debate on whether biological sex or gender identity should be paramount in determining who is male, or female has a profound impact when applied to the world of sport. For most of the history of sport, some aspect of sexual biology was used to differentiate male athletes from female ones. There are, however, currently voices suggesting that no one biological component of sex can unambiguously be used to draw a line between men and women, and thus gender identity should become the method of choice when separating athletes into male and female categories. In a 2017 essay for this journal and in my 2019 book *Sporting Gender* I acknowledge that sexual biology is not entirely dimorphic, however, I suggest that one should use that aspect of biology and/or gender that is most appropriate for the task at hand. In the world of sports, this would entail using a biomarker that is important for sports performance differences between male and female athletes and is mostly dimorphic. My previous reasoning on the issue of the division of male and female athletes underpins much of what is discussed below.

The first modern Olympic Games were held in 1896 and no women competed in them. Baron Pierre de Coubertin, their founder, thought that the inclusion of women would be “impractical, uninteresting, unaesthetic, and incorrect”.¹ However, during the 20th century women’s participation gradually increased so that now they make up nearly half of all Olympic competitors.² Female representation in elite sport is an important component of women’s march towards equality.

In most sports, women won’t have the opportunity to be elite athletes without a separate category based on sex. For instance, both the men’s and women’s winners in the 1500 meters races in the Tokyo Games set Olympic records. Norway’s Jakob Ingebrigtsen won the men’s race in 3:28.32³, while Kenya’s

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1. *Women in Sport*, NAT’L LIBRARY OF AUSTR., <https://www.nla.gov.au/digital-classroom/year-7/sport-and-australian-culture/women-sport> [<https://perma.cc/E9JT-YGY9>].

2. Aaron O’Neill, *Summer Olympics: Number of Athletes by Gender 1896-2020*, STATISTA (2021), <https://www.statista.com/statistics/1090581/olympics-number-athletes-by-gender-since-1896/> [<https://perma.cc/P78C-8B2R>].

3. *Jakob Ingebrigtsen*, OLYMPICS.COM, <https://olympics.com/en/athletes/jakob-ingebrigtsen> [<https://perma.cc/98C3-ZTW7>].

Faith Kipyegon won the women's race in 3:53.11⁴ Although Kipyegon shattered the previous women's Olympic record, her time was 12% slower than Ingebrigtsen's. Moreover, even with her Olympic record time, Kipyegon wouldn't have qualified for the Olympics if there wasn't a separate event for women. One had to run 3:35 to qualify automatically for the men's 1500 at the Tokyo Olympics,⁵ and it took 3:37.5 just to qualify for the men's event at Team USA's Olympic Trials.⁶ A similar pattern holds throughout most sports. The very best women would be routinely beaten by second-tier men in swimming, weightlifting, cycling and just about any sport where valid comparisons can be made.

Although female athletes are hampered by a lack of financial and social support, the most important reason for the discrepancy between male and female athletic performance is rooted in biology.⁷ As a result of puberty, men have higher testosterone levels, which are associated with greater muscle size and strength, higher hemoglobin levels, greater bone density, and higher adult height;⁸ all advantages in many sports. We continue to work toward equal financial and social support for female athletes, but such support cannot mitigate these physical sex-linked advantages. No amount of increased financial and/or social support would enable Kipyegon to run as fast as any of the men who ran in the American 1500 trials race. Hence, there are very good reasons to not allow athletes who have undergone male puberty to compete in women's sport.

Not everyone who undergoes male-type puberty, however, is unquestionably a man. Transgender women and women with certain XY differences of sex development (DSDs)⁹ will also undergo male-type puberty and potentially derive male-like sporting advantages from the experience. The presence of male-like advantage in athletes who identify as female, and in some cases were assigned female at birth, has made it very difficult for sports authorities to create appropriate eligibility criteria for the women's category in sport. The challenge

4. *Faith Chepngetich Kipyegon*, OLYMPICS.COM, <https://olympics.com/en/athletes/faith-chepngetich-kipyegon> [<https://perma.cc/YKS6-TD8X>].

5. Gordon Mack, *2020 Olympic Qualifying Standards Released*, FLOTRACK (Mar. 10, 2019), <https://www.flotrack.org/articles/6394026-2020-olympic-qualifying-standards-released> [<https://perma.cc/ZJH8-Y7Q5>].

6. *Qualifying Standards*, USA TRACK & FIELD, <https://www.usatf.org/events/2021/2020-u-s-olympic-team-trials-track-field/qualifying-standards> [<https://perma.cc/4YL9-627L>].

7. David J Handelsman, Angelica L Hirschberg & Stephane Berman, *Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance*, 39 *ENDOCRINE REVIEWS* 803–29 (2018).

8. Emma N. Hilton & Tommy R. Lundberg, *Transgender Women in the Female Category of Sport: Perspectives on Testosterone Suppression and Performance Advantage*, 51 *SPORTS MED.* 199–214 (2020).

9. IAAF introduces new eligibility regulations for female classification: press-release: World Athletics, [worldathletics.org](https://www.worldathletics.org/news/press-release/eligibility-regulations-for-female-classifica), available at <https://www.worldathletics.org/news/press-release/eligibility-regulations-for-female-classifica>. XY differences of development (DSDs) are autosomal recessive conditions in which a human being is born with a Y chromosome and (internal) testes but possesses external genitalia that appear female at birth. Some people with XY DSDs will be phenotypically female, but others will undergo the masculinization that occurs with male-type puberty. World Athletics identified four XY DSDs in which the advantages gained in puberty are large enough that the organization determined it necessary to impose restrictions.

inherent in defining eligibility for the women's category first became apparent in the 1930s when many of the top female athletes in the world probably manifested DSDs, including the three medalists in the women's 100 meter race in the 1936 Berlin Olympics.¹⁰

Both the International Olympic Committee (IOC) and World Athletics first introduced regulations to control access to the women's division in the 1940s.¹¹ It wasn't until 2004 that the IOC first allowed transgender women to compete in the women's category at the Olympic Games.¹² The Stockholm Consensus allowed trans women who had undergone gonadectomy, two years of post-surgical hormone therapy, and all associated legal changes to compete against other women in the Olympics. In 2016, the IOC released guidelines removing the need for surgery or legal changes in trans women, instead substituting a requirement for one-year of low testosterone and a statement of intent to continue competing in the women's category.¹³ (Today, the IOC's positions are called "guidelines" or "frameworks" because the Olympic Charter gives the international sports federations (IFs), not the IOC, the authority to make eligibility rules for their respective sports. Nevertheless, as the titular head of the Olympic Movement, the IOC's policy positions are influential.) In 2021, the IOC changed direction once again, prioritizing trans rights in a framework which abandons testosterone as the proxy for the sex-linked advantages the category is designed to regulate.¹⁴

Not all sports federations are willing to follow the 2021 IOC guidelines. World Athletics is determined to stick to its 2019 testosterone-based transgender regulations¹⁵ while World Rugby continues to affirm its 2020 ban of transgender women in international level women's competition.¹⁶ The fact that three major international governing bodies (the IOC, World Athletics, and World Rugby) can decide on three very different policies for transgender athletes is indicative of the difficulty in establishing universal agreement on transgender regulations for sport.

10. JOANNA HARPER & DAVID J. EPSTEIN, *SPORTING GENDER: THE HISTORY, SCIENCE, AND STORIES OF TRANSGENDER AND INTERSEX ATHLETES* 30 (2019).

11. LINDSAY PIEPER, *SEX TESTING: GENDER POLICING IN WOMEN'S SPORTS* 31 (2016).

12. Arne Ljungqvist, *Sex Segregation and Sport*, 52 *BRIT. J. OF SPORTS MED.* 3, 3 (2017).

13. Myron Genel, *Transgender Athletes: How Can They Be Accommodated?*, 16 *CURRENT SPORTS MED. REPORTS* 12–13 (2017).

14. IOC releases Framework on Fairness, Inclusion and Non-discrimination on the basis of gender identity and sex variations, INT'L OLYMPIC COMM. (Nov. 16, 2021), <https://olympics.com/ioc/news/ioc-releases-framework-on-fairness-inclusion-and-non-discrimination-on-the-basis-of-gender-identity-and-sex-variations> [<https://perma.cc/A4PK-BAJU>] [hereinafter IOC].

15. *World Athletics: Constitution & Book of Rules*, WORLD ATHLETICS, <https://www.worldathletics.org/about-iaaf/documents/book-of-rules> [<https://perma.cc/P6AV-SCZ5>].

16. *World Rugby approves updated Transgender Participation Guidelines*, WORLD RUGBY, <https://www.world.rugby/news/591776/world-rugby-approves-updated-transgender-participation-guidelines> [<https://perma.cc/U4AV-FRKR>].

Generally, the arguments for inclusive transgender policies focus on the human rights of transgender people.¹⁷ Thus, it has been suggested that any exclusion of transgender athletes is inconsistent with who they are because whether one is male, female, or non-binary is a matter of gender not sex,¹⁸ and in terms of their gender trans women are unequivocally women.¹⁹ Privileging gender over sex, they argue that exclusion is “detrimental not only to the excluded athletes but to sport itself”²⁰ because sport becomes a lesser place when the multiple benefits accruing from sports participation are denied to some. For these reasons, inclusion advocates brook no different treatment or restrictions on trans athletes.

On the other hand, those who argue for the exclusion of trans women from women’s sport suggest that there is an inherent unfairness associated with allowing trans women to compete against cisgender women.²¹ They suggest that it is the sexual biology of men and women that is paramount,²² citing the well-known advantages that men have over women²³ and suggesting that there is little or no difference in the athletic capabilities of trans women and cisgender men.²⁴ That is, they suggest that trans women are unequivocally biologically male.²⁵

The differences between those who advocate for the exclusion of trans women from women’s sports and the those who advocate for the unconditional inclusion of trans women in female sport are seemingly unsolvable. If one were to consider that both sex and gender matter when determining who is male and who is female, however, one might make headway. Perhaps there is also justification for some middle ground between total exclusion and unconditional inclusion. If so, then perhaps transgender policies such as the one put forward by World Athletics can be justified.

17. Heather Sykes, *Transsexual and Transgender Policies in Sport*, 15 *WOMEN IN SPORT AND PHYSICAL ACTIVITY* J. 3–13 (2006).

18. John Gleaves & Tim Lehrbach, *Beyond fairness: The ethics of inclusion for transgender and intersex athletes*, 43 *J. OF THE PHIL. OF SPORT* 311–26 (2016).

19. Taryn Knox, Lynley C Anderson & Alison Heather, *Transwomen in Elite Sport: Scientific and Ethical Considerations*, 45 *J. OF MED. ETHICS* 395–403 (2019).

20. Georgina Stebbings et al., *The BASES Expert Statement on Eligibility for Sex Categories in Sport: Trans Athletes* *The Sport and Exercise Scientist*, *BRIT. ASS’N OF SPORT AND EXERCISE SCI.* 14–15 (2021).

21. Summary of Transgender Biology and Performance Research, *WORLD RUGBY* (2020), 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://perma.cc/QAC4-E3WT>].

22. USA Powerlifting Tue Committee Report, *USA POWERLIFTING* (2019), <https://www.usapowerlifting.com/wp-content/uploads/2019/05/USA-Powerlifting-TUE-Committee-Report-2019.pdf> [<https://perma.cc/6A26-U4CT>].

23. Alex Berezow, *Should Men Who Identify As Women Compete In Women’s Sports?*, *THE AM. COUNCIL ON SCI. AND HEALTH* (2018), <https://www.acsh.org/news/2018/10/16/should-men-who-identify-women-compete-womens-sports-13518> [<https://perma.cc/2S8B-UMGE>].

24. Chase Strangio & Gabriel Arkles, *Four Myths About Trans Athletes, Debunked*, *AM. C.L. UNION* (2020), <https://www.aclu.org/news/lgbtq-rights/four-myths-about-trans-athletes-debunked/> [<https://perma.cc/D9KJ-9DMS>].

25. *Id.*

The rest of my essay develops this point in three parts as follows: Part II summarizes the effects of androgenic hormones on athletic performance and situates what we know about transgender athletes in that science. Part III describes the project to include transgender athletes in elite competitive sport which has and continues mostly to classify athletes based on whether they are physically male or female. Using the best available scientific evidence and the goals of international elite sport as the guide, Part IV evaluates the transgender policies of three international governing bodies: the International Olympic Committee, World Rugby, and World Athletics.

II

HORMONES AND TRANSGENDER ATHLETES

As noted in the introduction, there are important biological differences between male and female athletes. Prior to puberty, athletic differences between males and females are generally considered to be minor,²⁶ however, athletic capabilities of males typically increase dramatically during and after puberty due to sharp increases in testosterone levels that result in men having fifteen times the circulating testosterone levels of women.²⁷ The pubertal increase in testosterone in men promotes muscular strength, in association with increased muscle cross section area and increased lean body mass.²⁸ Muscle cross section area is strongly associated with strength, which is recognized as a key determinant in athletic success in those sports demanding power and speed.²⁹ An increased testosterone level also stimulates erythropoiesis, the production of red blood cells, leading to higher levels of the protein hemoglobin in men than women.³⁰ Hemoglobin is responsible for oxygen transport from the lungs to muscles and other peripheral tissues.³¹ Hence, higher hemoglobin or hematocrit, the volume of red blood cells compared with total blood volume, can lead to an increased oxygen supply to the tissues, and increased endurance performance.³²

In contrast to the well-defined athletic differences that exist between cis-gender men and women, the athletic differences between trans men and cis-

26. Espen Tønnessen et al., *Performance development in adolescent track and field athletes according to age, sex and sport discipline*, 10 PLOS ONE (2015).

27. Yoon Ju Bae et al., *Reference intervals of nine steroid hormones over the life-span analyzed by LC-MS/MS: Effect of age, gender, puberty, and oral contraceptives*, 193 THE J. OF STEROID BIOCHEMISTRY AND MOLECULAR BIOLOGY 105409 (2019).

28. David J Handelsman, *Sex differences in athletic performance emerge coinciding with the onset of male puberty*, 87 CLINICAL ENDOCRINOLOGY 68–72 (2017).

29. John Cronin et al., *A Brief Review of Handgrip Strength and Sport Performance*, 31 J. OF STRENGTH AND CONDITIONING RESEARCH 3187–217 (2017).

30. Andrea D. Coviello et al., *Effects of graded doses of testosterone on erythropoiesis in healthy young and older men*, 93 THE J. OF CLINICAL ENDOCRINOLOGY & METABOLISM 914–19 (2008).

31. Robert I. Weed, Claude F. Reed & George Berg, *Is hemoglobin an essential structural component of human erythrocyte membranes?*, 42 J. OF CLINICAL INV. 581–88 (1963).

32. James M Otto, Hugh E Montgomery & Toby Richards, *Haemoglobin concentration and mass as determinants of exercise performance and of surgical outcome*, 2 EXTREME PHYSIOLOGY & MED. (2013).

gender men, and between trans women and cisgender women are less well understood. It is possible that the gender identities of transgender people lead to athletic differences from cisgender people of the same birth-assigned sex, even prior to initiation of gender affirming hormone therapy (GAHT). Later in this essay, I note two areas in which non-athletic, hormone naïve trans women differ physically from cisgender men. There are significant changes in the athletic capabilities of transgender athletes after GAHT initiation, although the magnitude of these changes is generally poorly understood.

GAHT is designed to modify existing bodies to be more phenotypically like cisgender counterparts.³³ As a result, use of GAHT has been shown to be associated with increased wellbeing.^{34,35} For trans women, the goal of hormone therapy is to bring both testosterone and estrogen levels to typical female values (i.e., testosterone to less than 2 nmol/L, and estrogen to approximately 400-600 pmol/L).³⁶ GAHT for trans women typically consists of estrogen supplementation and testosterone-suppressing drugs. The exact drugs prescribed depends on several factors, including geography, clinic, and cost.³⁷ Varied hormone therapy regimens and protocols are employed within and between clinics, and within and between countries. Gonadotropin releasing hormone (GnRH) agonists are highly effective, lowering sex hormone levels by 95% in both sexes,³⁸ but they are expensive.³⁹ Less costly anti-androgen drugs, such as spironolactone and cyproterone, are used in the United States,⁴⁰ and much of Europe and Oceania, respectively.⁴¹

Regimens may also differ by country. For instance, the Karolinska Institute in Sweden starts trans women on GnRH agonists for one month and then initi-

33. B. Fabris, S. Bernardi & C. Trombetta, *Cross-sex hormone therapy for gender dysphoria*, 38 J. OF ENDOCRINOLOGICAL INV. 269–82 (2015).

34. Walter Pierre Bouman et al., *Transgender and anxiety: A comparative study between transgender people and the general population*, 18 INT'L J. OF TRANSGENDERISM 16–26 (2017).

35. Gemma L. Witcomb et al., *Levels of depression in transgender people and its predictors: results of a large matched control study with transgender people accessing clinical services*, 235 J. OF AFFECTIVE DISORDERS 308–15 (2018).

36. Leighton J Seal, *A review of the physical and metabolic effects of cross-sex hormonal therapy in the treatment of gender dysphoria*, 53 ANNALS OF CLINICAL BIOCHEMISTRY: INT'L J. OF LABORATORY MED. 10–20 (2016).

37. Ingrid Bretherton et al., *Cross-sex hormone therapy in Australia: the prescription patterns of clinicians experienced in adult transgender healthcare*, 49 INTERNAL MED. J. 182–88 (2019).

38. Giacomo Novara et al., *Impact of surgical and medical castration on serum testosterone level in prostate cancer patients*, 82 UROLOGIA INTERNATIONALIS 249–55 (2009).

39. Wylie C. Hembree et al., *Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons: An Endocrine Society Clinical Practice Guideline*, 23 ENDOCRINE PRAC. 3869–903 (2017).

40. Jason R. Bisson, Kelly J. Chan & Joshua D. Safer, *Prolactin Levels Do Not Rise Among Transgender Women Treated with Estradiol and Spironolactone*, 24 ENDOCRINE PRAC. 646–51 (2018).

41. Katrien Wierckx et al., *Cross Sex hormone therapy in trans persons is safe and effective at short time follow up: Results from the European Network for the investigation of gender incongruence*, 11 THE J. OF SEXUAL MED. 1999–2011 (2014).

ates estrogen use.⁴² In contrast, clinics in the UK employ gradually increasing doses of estrogen over a six to nine month period, before initiating GnRH agonists.⁴³ Should a trans woman undergo gonadectomy, anti-androgen drugs are no longer required and lower doses of estrogen may also be prescribed.⁴⁴ GAHT for trans men is simpler and primarily consists of testosterone injections⁴⁵ designed to bring serum testosterone levels up to typical male values (15–20 nmol/L), although GnRH agonists are sometimes used to reduce estrogen production in those trans men who have not had their ovaries removed. GnRH agonists are also used alone on both sexes as a method to prevent pubertal changes from occurring in younger patients.⁴⁶

Although the primary purpose of GAHT is to increase the wellbeing of trans patients, the resultant hormonal changes will also affect the physical capabilities of trans athletes. In the 21st century there have been studies that have explored how changes induced by GAHT are related to athletic capability and sports policies. The first study⁴⁷ to explore the questions surrounding GAHT and trans athletes influenced the International Olympic Committee decision to allow trans athletes to compete in the games in 2004. A 2015 retrospective study of eight transgender distance runners⁴⁸ influenced the 2016 IOC hormone-based policy. A 2018 systematic review of hormone-based effects on athletes⁴⁹ influenced the 2019 World Athletics transgender policy. A narrative review of GAHT-based changes in non-athletes⁵⁰ influenced the 2020 World Rugby policy.

If the above four studies are combined with three additional studies^{51,52,53} there are patterns that emerge, but there are also some inconsistencies:

42. Anna Wiik et al., *Metabolic and functional changes in transgender individuals following cross-sex hormone treatment: design and methods of the Gender Dysphoria Treatment in Sweden (GETS) study*, 10 CONTEM. CLINICAL TRIALS COMM. 148–53 (2018).

43. Seal, *supra* note 36.

44. Cécile A. Unger, *Hormone therapy for transgender patients*, 5 TRANSLATIONAL ANDROLOGY AND UROLOGY 877–84 (2016).

45. Nicole Y. Metzger & Soenke Boettger, *The effect of testosterone therapy on personality traits of trans men: a controlled prospective study in Germany and Switzerland*, 276 PSYCHIATRY RESEARCH 31–38 (2019).

46. Caroline Salas-Humara et al., *Gender affirming medical care of transgender youth*, 49 CURRENT PROB. IN PEDIATRIC AND ADOLESCENT HEALTH CARE (2019).

47. LJ Gooren & MC Bunck, *Transsexuals and competitive sports*, 151 EURO. J. OF ENDOCRINOLOGY 425–29 (2004).

48. Joanna Harper, *Race Times for Transgender Athletes*, 6 J. OF SPORTING CULTURES AND IDENTITIES 1–9 (2015).

49. Handelsman et al., *supra* note 7.

50. Hilton & Lundberg, *supra* note 8.

51. Anna Wiik et al., *Muscle Strength, Size, and Composition Following 12 Months of Gender-affirming Treatment in Transgender Individuals*, 105 THE J. OF CLINICAL ENDOCRINOLOGY & METABOLISM (2020).

52. Timothy A Roberts, Joshua Smalley & Dale Ahrendt, *Effect of gender affirming hormones on athletic performance in transwomen and transmen: Implications for sporting organisations and legislators*, 55 BRIT. J. OF SPORTS MED. 577–83 (2020).

Four of these seven studies^{54,55,56,57} examined changes in non-athletes with GAHT. Trans women in these studies lost strength and muscularity but the losses were not sufficient to reduce their strength to levels equivalent to the overall female population. Trans men in these studies gained strength and muscularity but these gains were not sufficient to bring strength up to levels of cisgender men. The hemoglobin levels of the trans women were quickly reduced to levels that were equivalent to those of cisgender women. The hemoglobin levels of trans men increased to levels that were equivalent to those of cisgender men.

These studies on non-athletes may have limited applicability to athletes. A 2015 retrospective study of race times from eight trans women distance runners⁵⁸ found speed loss of greater than 10%. The speed loss was large enough that collectively the runners were no more competitive in the women's category than they had been in the men's category. This finding is consistent with the hemoglobin reductions in the non-athletic trans women. In contrast, a 2020 study of fitness tests of transgender armed forces personnel⁵⁹ found that trans women lost their advantage over cisgender women in the number of push-ups and sit-ups per minute but did not lose all their advantage in the 1.5 mile run time. The increased performance of the trans men in the fitness tests were sufficient to equal cisgender men in the 1.5 mile run and push-ups per minute and exceed cisgender men in sit-ups per minute.

While GAHT clearly affects the performance of trans athletes, it is not possible to draw firm conclusions on the post-GAHT attributes of trans athletes based solely on the above studies. Future transgender studies should be sport-specific and athlete-centric. However, sporting bodies need to make decisions on eligibility for trans athletes in the present time and cannot wait for data from future research. In the absence of definitive answers from science, elite sports governing bodies have gravitated toward three different approaches, as illustrated by policy developments at the IOC, World Athletics, and World Rugby.

III

INCLUSION OF TRANSGENDER ATHLETES

The 2021 IOC transgender framework laid out ten principles to be considered by international sports federations when regulating trans athletes and the first of these principles was inclusion, suggesting that inclusion was the primary

53. Joanna Harper et al., *How does hormone transition in transgender women change body composition, muscle strength and haemoglobin? Systematic review with a focus on the implications for sport participation*, 55 BRIT. J. OF SPORTS MED. 865–72 (2021).

54. Gooren & Bunck, *supra* note 47.

55. Wiik et al., *supra* note 51.

56. Hilton & Lundberg, *supra* note 8.

57. Harper et al., *supra* note 53.

58. Harper, *supra* note 48.

59. Roberts et al., *supra* note 52.

principle.⁶⁰ However, the notion of the primacy of trans inclusion is not new. Publications from as early as 2006 were touting the benefits of trans inclusion within women's sport.⁶¹

The well documented challenges faced by trans people help drive the calls for inclusion. Transgender people suffer from substantial discrimination⁶², elevated depression⁶³, and generally poor mental health.⁶⁴ Trans people face many barriers to participation in sport including extreme discomfort in changing rooms and with rigidly enforced sex-specific uniform requirements.⁶⁵ There is also much ridicule of those who don't match sex/gender stereotypes within sports. Given that the benefits of sports are numerous⁶⁶, and include improved health indices⁶⁷, increased participation in sports should improve the lives of trans people. More generally, the argument is that trans people have the right to participate just as anyone else does, and that classification into the male or the female division based on gender identity should be as legitimate as classification based on sex traits like chromosomes, gonads, or testosterone levels. When they make their case, advocates of inclusion often downplay the physical advantages possessed by trans women in sports.⁶⁸ Thus, trans advocates propose that any restrictions, particularly testosterone-based restrictions, on sports participation of trans people cannot be justified.⁶⁹

Beyond the calls for inclusion, it is also useful to note that there may be important biological differences between the general population of trans women and cisgender men even prior to GAHT initiation. There is significant evidence

60. Sean Ingle, *Trans women should not have to reduce testosterone, say new IOC guidelines*, THE GUARDIAN (Nov. 16, 2021), <https://www.theguardian.com/sport/2021/nov/16/trans-women-should-not-have-to-reduce-testosterone-say-new-ioc-guidelines> [<https://perma.cc/87WB-2TZZ>].

61. Ann Travers, *Queering Sport: Lesbian Softball Leagues and the Transgender Challenge*, 41 INT'L R. FOR THE SOCIOLOGY OF SPORT 431–46 (2006).

62. Michael A. Trujillo et al., *The buffering role of social support on the associations among discrimination, mental health, and suicidality in a transgender sample*, 18 INT'L J. OF TRANSGENDERISM 39–52 (2017).

63. Gemma L. Witcomb et al., *Levels of depression in transgender people and its predictors: Results of a large matched control study with transgender people accessing clinical services*, 235 J. OF AFFECTIVE DISORDERS 308–15 (2018).

64. Nat Thorne et al., *A comparison of mental health symptomatology and levels of social support in young treatment seeking transgender individuals who identify as binary and non-binary*, 20 INT'L J. OF TRANSGENDERISM 241–50 (2018).

65. Bethany Alice Jones et al., *Barriers and facilitators of physical activity and sport participation among young transgender adults who are medically transitioning*, 18 INT'L J. OF TRANSGENDERISM 227–38 (2017).

66. Kelsey Logan & Steven Cuff, *Organized Sports for Children, Preadolescents, and Adolescents*, 143 PEDIATRICS (2019).

67. Kelsey Logan et al., *Youth Sports Participation and health status in early adulthood: A 12-year follow-up*, 19 PREVENTIVE MED. REPORTS (2020).

68. Bethany Alice Jones et al., *Sport and Transgender People: A Systematic Review of the Literature Relating to Sport Participation and Competitive Sport Policies*, 47 SPORTS MED. 701–16 (2017).

69. Katrina Karkazis & Morgan Carpenter, *Impossible "Choices": The Inherent Harms of Regulating Women's Testosterone in Sport*, 15 J. OF BIOETHICAL INQUIRY 579–87 (2018).

that gender identity is largely or perhaps entirely biological.⁷⁰ Hence transgender women are never wholly biologically male. There may also be physical differences between non-athletic transgender women and cisgender men prior to GAHT initiation. For instance, hand grip strength of non-athletic trans women pre-GAHT was measured at 10–14% less than that of cisgender men in two studies.⁷¹ Additionally, an analysis of the height and weight of non-athletic trans women taken from eleven studies reviewed in two papers^{72,73}, reveals that although trans women reach full adult male height, their body masses may be less than cisgender men,⁷⁴ and may be closer to the body masses of cisgender women. Both the reduced strength and body mass of pre-GAHT non-athletic trans women versus cisgender men can be explained by a combination of the gender identity of trans women and their lack of physical exercise. It is true that data taken from studies on non-athletic trans people are a poor substitute for data obtained from athletes. It is also true that employing data from cisgender men to explain the performance of transgender women^{75,76} is a poor proxy, hence there is a pressing need for data gathered specifically from athletic trans women.

70. Aruna Saraswat, Jamie D. Weinand & Joshua D. Safer, *Evidence supporting the biologic nature of gender identity*, 21 *ENDOCRINE PRAC.* 199–204 (2015).

71. Harper et al., *supra* note 53.

72. *Id.*

73. Hilton & Lundberg, *supra* note 8.

74. *See* Table 1.

75. *Girls' and Women's Sports*, COALITION FOR BIOLOGICAL REALITY, <https://coalition4biologicalreality.org/elementor-540/> [<https://perma.cc/Q6KE-X4WF>].

76. *Transgender Sport Policy in Female Sport*, FAIR PLAY FOR WOMEN (2021), <https://fairplayforwomen.com/campaigns/sports-campaign/> [<https://perma.cc/6ZU4-VUCD>].

Table 1
Height and weight of trans women (TW), cis men (CM), and cis women (CW)
in 5 countries

Country	Authors, publication date	No. TW	TW Height (cms)	TW Weight (Kgs)	CM Height (cms) *	CM Weight (Kgs) *	CW Height (cms) *	CW Weight (Kgs) *
IT	Gava et al., 2016 ⁷⁷	40	176	70.2	177	83.6	164	67.0
BE	Auer et al., 2018 ⁷⁸	45	177	75.8	181	87.8	165	70.0
BE	Auer et al., 2016 ⁷⁹	20	180	78.5	181	87.8	165	70.0
BE	Wierckx et al., 2014 ⁸⁰	53	178	76.4	181	87.8	165	70.0
BE	Lapauw et al., 2008 ⁸¹	23	175	75.0	181	87.8	165	70.0
NL	Defrayne et al., 2019 ⁸²	239	179	72.8	183	87.4	169	72.3
NL	Klaver et al., 2018 ⁸³	179	179	76.7	183	87.4	169	72.3
NL	Gooren & Bunck, 2004 ⁸⁴	19	178	69.9	183	87.4	169	72.3
NL	Van Caenegem et al., 2015 ⁸⁵	49	178	80.8	183	87.4	169	72.3
NO	Haraldsen et al., 2007 ⁸⁶	12	179	81.0	180	89.1	166	72.6
SE	Wiik et al., 2019 ⁸⁷	11	180	73.0	180	86.8	166	70.0

* Height and weight data on men and women (World data, 2020)

IV

TRANSGENDER POLICIES OF THREE GOVERNING BODIES

The 2021 IOC transgender framework can be classified as inclusive, the existing policy of World Rugby can be classified as exclusive, while the policy of World Athletics can be classified as inclusive but restrictive. This section will critically examine the three policies using published data and the previous sections of this essay.

The 2021 IOC framework emphasized inclusion,⁷⁷ after previously suggesting that the 2016 guidelines prioritizing “fairness” for female athletes as no longer “fit for purpose”.⁷⁸ The framework also claims that there should be no presumption of advantage held by transgender athletes, and that no sporting federation should place any restrictions on trans athletes without “robust and peer reviewed research”.⁷⁹ The IOC also abandoned its commitment to the use of testosterone levels as the basis for determining eligibility for the female category. This policy shift will probably come at the cost of meaningful competition for all women. The IOC’s new framework reflects its own institutional policy preferences; it recognizes that only the individual federations have the power to establish eligibility rules. However, the voice of the IOC is itself influential, if for no other reason than that it holds the purse strings for federations that are not fully self-funded.

Given that rugby is a collision sport, it is reasonable that its governing body should be concerned with safety as well as competition level when transgender and cisgender players face one another. Prior to 2020, World Rugby allowed post-GAHT trans women to compete in the women’s category. After consultation with a panel of experts holding diverse opinions concerning trans athletes in February 2020,⁸⁰ World Rugby rendered its verdict later that year. The heart of the argument used by World Rugby to ban trans women from the women’s category consisted of calculations asserting that there is a 20–30% increased risk when a ball carrier of typical female mass is tackled by a ball carrier of typical male mass.⁸¹ The two important metrics in collision calculations are mass and speed. World Rugby stated that the increased risk of trans women tackling cis women was primarily based on larger mass. Although World Rugby has banned trans women from the women’s category in international level matches, several of the unions (as the national governing bodies are called) have failed to follow suit.⁸² At this point, it is not clear if any trans women have been prevented from playing in the women’s category of rugby because of the World Rugby ruling, but some have surely left the sport. World Rugby have also announced their willingness to fund research on transgender rugby players.⁸³

77. IOC, *supra* note 14.

78. Sean Ingle, *IOC admits guidelines for transgender athletes are not fit for purpose*, THE GUARDIAN (July 30, 2021), <https://www.theguardian.com/sport/2021/jul/30/ioc-admits-guidelines-for-transgender-athletes-are-not-fit-for-purpose> [<https://perma.cc/2FSB-M33M>].

79. IOC, *supra* note 14

80. Nancy Gillen, *World Rugby Holds Landmark Workshop on transgender policy*, INSIDE THE GAMES (2020), <https://www.insidethegames.biz/articles/1091178/world-rugby-transgender-workshop> [<https://perma.cc/7ESK-ZJE2>].

81. World Rugby, *supra* note 16.

82. Emma Powys Maurice, *Rugby Football Union rejects ban on trans women and reiterates commitment to LGBT+ players in blow to World Rugby*, PINK NEWS (Oct. 14, 2020), <https://www.pinknews.co.uk/2020/10/14/rugby-football-union-transgender-women-cisgender-teams-world-rugby-guidelines/> [<https://perma.cc/Q2SF-E3BZ>].

83. World Rugby states that one of its research priorities is the topic of transgender participation at the secure site, WORLD RUGBY, *available at* https://worldrugby.fluix.io/user_sessions/new.

World Athletics has a long history on eligibility issues for the female category, although most of their efforts have revolved around intersex rather than transgender athletes.⁸⁴ In 2011 the organization instituted a testosterone-based policy for trans athletes⁸⁵ and issued an updated policy in 2019.⁸⁶ The 2019 policy requires trans women to maintain a testosterone level below 5 nmol/L for 12 continuous months, as determined by liquid chromatography-mass spectrometry (LC-MS) methods, prior to competing in the women's category, and to continue to keep testosterone below 5 nmol/L as long they compete in the women's category.⁸⁷ The organization also suggests that those trans athletes who are competing below national levels of the sport could face "less stringent eligibility requirements".⁸⁸ Dr Stéphane Bermon who is the director of the World Athletics Health and Science Department has been active in research on intersex and transgender athletes. He was one of the co-authors of the paper that recommended a testosterone limit of 5 nmol/L using LC-MS methodology.⁸⁹ This limit of 5 nmol/L matches the upper testosterone level that can be achieved by cisgender women with a relatively common condition known as polycystic ovary syndrome.⁹⁰ If one allows cisgender women to compete with a testosterone level of 5 nmol/L, then it is reasonable to also allow transgender women the same testosterone level in competition.

That three such disparate transgender policies could be enacted within two years by three major international governing bodies might seem surprising. However, given the divisiveness of the topic, the lack of definitive data, the differing nature of the sports involved, and the motivations of the decision-makers in each sport, the resulting policy divergence is understandable. It is certainly reasonable that World Rugby would devise the most restrictive policy of the three organizations given the propensity for injury within the sport, and the safety concerns of the organization. The IOC has different priorities. The Olympic charter prohibits "discrimination of any kind"⁹¹ and that dictum is perceived by some as allowing trans athletes to compete based on gender identity. I think there are flaws in the policies of both the IOC and World Rugby.

World Rugby's concern over safety issues regarding trans women in the sport is justified. On average non-athletic trans women are taller, bigger, and

84. Katrina Karkazis et al., *Out of Bounds? A Critique of the New Policies on Hyperandrogenism in Elite Female Athletes*, 12 THE AMER. J. OF BIOETHICS 3–16 (2012).

85. *Eligibility Regulations for Transgender Athletes*, WORLD ATHLETICS, Sec. 1.3.1, available at <https://www.worldathletics.org/download/download?filename=ace036ec-a21f-4a4a-9646-fb3c40fe80be.pdf&urlslug=C3.5%20-%20Eligibility%20Regulations%20Transgender%20Athletes>.

86. World Athletics, *supra* note 15.

87. *Transgender Regulations*, *supra* note 96 at Sec. 3.2.

88. *Id.* at Sec. 2.6.

89. Handelsman et al., *supra* note 7.

90. *Id.*

91. *Olympic Charter*, OLYMPICS.COM (in force as from July 17, 2020), <https://stillmed.olympic.org/media/Document%20Library/OlympicOrg/General/EN-Olympic-Charter.pdf> [<https://perma.cc/98W6-CP44>].

stronger than cisgender women,⁹² and the size and strength disparity between trans women and cisgender women may lead to higher injury rates in cisgender women. World Rugby assumed in their collision calculations used to assess the increased injury risk resulting when trans women tackle cisgender women, that trans women have the same mass as cis men. As demonstrated in the previous section of this essay,⁹³ that assumption is not valid for *non-athletic* trans women, and thus the question is how valid it is for trans women rugby players. The size, speed, and strength of trans women rugby players versus cisgender women rugby players has yet to be determined. Moreover, World Rugby rule makers should have looked beyond the increased risk on a per tackle basis also to the increased risk caused by trans women during a given match, tournament, or league. Given the paucity of trans women in the sport⁹⁴ few tackles will be made by trans women leading to a very small overall risk increase. Additionally, there are no comparisons of injury rates in matches in which trans women play versus those matches where trans women do not play. There has also never been an openly trans woman who has qualified for international level rugby matches, and thus there has not been any increase in risk in international matches from allowing trans women into the sport. Hence, prohibiting trans women from playing in international-level women's rugby matches seems to be an extreme reaction to the potential for increased risk.

The IOC's focus on the human rights of transgender individuals in their 2021 framework is laudable. Trans people have been marginalized throughout history and the fact that such a prominent organization has stepped forward to champion trans rights is important. Moreover, the IOC does not determine which athletes are entered into the Olympic Games. Those decisions are made by national and international sporting federations. Lastly, trans women will, in general, maintain their testosterone levels within female norms, mostly through GAHT, regardless of any sports policy, as they are happier, healthier, and less suicidal when they do so. However, it is detrimental to the goal of fair and meaningful competition for all women to allow trans women unrestricted access to women's sport. The suggestion in the 2021 IOC framework that trans women do not have sporting advantages over cisgender women is unfounded. The potential advantages held by trans women who undergo male-type puberty and who do not use GAHT to maintain their levels within female norms are too large to go unchecked. Moreover, the suggestion that sports federations should not place any restrictions on trans women until research is finalized is also untenable. These federations need to make policy in the current time frame and should not wait for definitive research that may take decades. It may be true that few sporting organizations will follow the IOC guidelines, but time will tell.

92. Harper et al., *supra* note 53.

93. See Table 1.

94. The RFU (English governing body) reported that fewer than 10 of 600,000 English women playing rugby were transgender at the World Rugby workshop.

Instead of the extremes of the policies of the IOC and World Rugby, given the best available scientific evidence and the legitimate goals of international elite sport, policies that are like that of World Athletics would appear to be more reasonable. In most sports, the mitigation of athletic advantage in trans women that occurs with GAHT may be sufficient to allow meaningful competition with cisgender women. There may be some sports where additional restrictions would be indicated for fairness or safety concerns. For instance, volleyball, basketball, and rugby could limit each national team to one transgender woman. Different rules could be enacted in individual sports. For instance, the LPGA could have separate tees for trans women, and the International Weightlifting federation could use some sort of handicap system. Of course, any sort of handicap (such as longer tees) would require data to determine how much advantage trans women have in driving distance or in weightlifting. It isn't yet clear how detailed data would need to be to create a handicap. Would one need driving distance changes with GAHT from a cohort of trans women golfers, or would it be sufficient to determine that trans women maintain a specific general level of body strength advantage? However, if officials and scientists cooperate then there are appropriate restrictions that could be applied in any given sport to allow both transgender inclusion and meaningful competition for all women.

Additionally, it is important that sports federations require trans women competing at lower levels of their sport to face fewer (or perhaps no) restrictions, as World Athletics recommends. The Union Cycliste Internationale (UCI, the governing body for World cycling) has stated that trans women can compete in categories three and four (the lowest levels) without restrictions, but trans women in categories one and two of amateur cycling and all professional categories need to maintain testosterone levels below 5 nmol/L. Not all sports have a defined category system like the UCI, but all sports should recognize that most trans women, like most cisgender women, participate in sports with no hope of professional contracts or Olympic glory. Given the barriers to sport, and the level of discrimination faced by transgender people along with the small size of the population, it is not unreasonable that in recreational sports we set aside the mandate for a level playing field and allow trans athletes to compete based on gender identity.