

Fairness for Transgender People in Sport

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Abstract

Increasingly visible participation by transgender people in athletic competition has resulted in efforts to include transgender women in the women's categories while addressing possible advantage they might have from exposure to typically male levels of testosterone. There does not seem to be any reason to expect advantage for transgender people prior to puberty or for transgender people whose gender-affirming treatment begins at the onset of puberty. To date, the only established driver of athletic advantage in men over women is testosterone. Further, the existing literature suggests that treatment to lower testosterone may be sufficient to erase that advantage in at least some athletic activities. Whether other aspects of puberty are advantages or disadvantages in certain sports remains to be established. There is need for more research on the topic. In addition, there is a need to prioritize the need to motivate people to participate in sport for better health.

Key Words: transgender, transgender women, athletics, exercise, sport, testosterone, estrogen

The greater visibility of transgender people has resulted in raised awareness surrounding the inclusion of transgender people in competitive sport [1]. The focus has been on the participation of transgender women in female-only sports divisions due to a concern for possible residual athletic advantage from a history of a typical male puberty [2]. Transgender men have not been the source of concern both because the male category in sports can often be considered an open category and because the testosterone treatment could be subject to the existing therapeutic use exemption process already in place for other men requiring testosterone treatment.

As those among us endocrinologists who focus on weight management and diabetes know well, for most of the population our biggest athletics-related concern is how to motivate people to participate. Transgender people are likely at greater risk of failing to participate in exercise than average, so that opportunities to motivate transgender people to engage in athletic activity would be anticipated to be a major health priority [3].

A possible tension exists because of the observation that, on average, cisgender boys and men have better performance outcomes in athletics than do cisgender girls and women [4, 5]. The performance difference has resulted in the establishment of female-only divisions for sport participation where girls and women can safely compete and reliably win events. The female-only divisions are a major factor to encourage greater participation of girls and women in sport with a goal of equal participation rates.

To date, the only established driver for the athletic differences between men and women is testosterone, first during puberty and then ongoing [5]. For example, higher testosterone levels along with lower estrogen levels during a typical male puberty result in larger physical stature. In addition,

there are bone formation differences that relate to hormone levels in puberty, such as the widened pelvis that develops during a typical female puberty. Many hormone-related physical characteristics acquired during puberty are not reversed if hormone levels are changed later in life. By contrast, muscle mass, fat distribution, and red blood cell mass are among the physical characteristics that relate to an individual's current testosterone levels. Such characteristics may indeed shift if hormone levels change.

The upshot is that prior to puberty there are no measurable athletic differences between boys and girls [6]. Epidemiologic observations that report otherwise are confounded by societal bias and by access to athletic opportunity. Thus, there is no reason for transgender children who are prepubertal to do anything other than to participate in sport in the sex category that makes sense for them socially. Similarly, there would not be a reason to predict measurable athletic advantages accruing to transgender people who received puberty blockers at the onset of puberty and then hormone treatment aligned with gender identity afterward.

The questions arise most with transgender women who begin hormone treatment after puberty. The situation includes most trans feminine people because it is most common to undergo endogenous puberty prior to seeking medical interventions appropriate to gender identity.

There is societal bias that superior athletic performance will be observed for transgender women who have gone through a typical male puberty in the past, even if they are treated with gender-affirming hormones afterward. However, existing peer-reviewed research for athleticism among transgender people is limited to small studies of sit-ups, push-ups, and medium distance running, which suggest athleticism that correlates broadly with current testosterone levels

after some period of years [7, 8]. Notably, the data to date do not include evidence of athletic advantage from historical puberty among transgender women while on standard testosterone-lowering regimens for multiple years. It is possible that larger physical stature may be an advantage for some sports. It is also possible that a person with larger stature from a typical male puberty but with smaller muscle mass due to a testosterone-lowering regimen might suffer an athletic disadvantage.

At elite levels of competition like the Olympics, rule-making began in 2003 with 2 goals [9]. The first goal was to include transgender people in competition as part of an overarching inclusive Olympic and other elite international athletic organization theme that people worldwide could find athletic role models in order to be encouraged to engage in physical activity. The second goal fits with the theme that the competition is fair. The second goal has been to mitigate a systematic unfair advantage that transgender women might enjoy if they underwent typically male puberty historically.

Because testosterone is the only established driver relevant to athletic performance that differs between men and women, the most recent elite athletic guidance has been narrowed to testosterone levels. Guidance from the International Olympic Committee and some of the international athletic federations including World Athletics have suggested maximum testosterone levels acceptable for participation in a female-only category. Typically, total testosterone cut points of 5 nmol/L and 10 nmol/L have been used with athletes mandated to have achieved those levels for some time period prior and to maintain those levels at all times going forward. Such thresholds are considered to be fair to transgender women because they are well above the 1.7 nmol/L target testosterone threshold in medical treatment guidelines.

Collegiate sport and high school sport sit between elite international level competition and sports among prepubertal children. The National Collegiate Athletic Association mandates that transgender women be treated with hormone-lowering medical regimens for at least 1 year.

The societal priorities at the scholastic level can be complicated. For example, as children enter puberty at the scholastic level, should the need to encourage athletic participation win out over the possibility of evolving athletic advantage from testosterone? If advantage from testosterone is demonstrated, does society want to implement rules that may indirectly coerce transgender children to begin medical regimens prior to their being ready and that they might never actually choose otherwise?

Much remains unknown scientifically. For example, at what point in puberty is advantage from testosterone significant? Is there a point where such an advantage would outweigh a priority to motivate all to participate in sport of some sort? For those who have completed puberty, what duration of testosterone-lowering treatment is sufficient to create a level playing field in a given sport? Might there be different testosterone level cut points and treatment duration times

for different sports? And what are other considerations for specific sports?

The field of transgender medicine is filled with decisions based on fear of negative consequences rather than good scientific evidence. We in the endocrine healthcare community have much work to do to create an evidence base to help guide decision makers so that choices for transgender women in sport are data driven. In the interim, it is our responsibility to counsel those around us about the healthcare priority to encourage participation in sport and the importance of avoiding fear-driven policies.

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Conflict of Interest

None.

Data Availability

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

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