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**UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF IDAHO**

LINDSAY HECOX, et al.,

*Plaintiffs,*

v.

BRADLEY LITTLE, et al.,

*Defendants.*

No. 1:20-cv-184-CWD

**SUPPLEMENTAL DECLARATION  
OF JOSHUA D. SAFER, MD,  
FACP, FACE, IN SUPPORT OF  
PLAINTIFFS' MOTION  
FOR PRELIMINARY  
INJUNCTION**

I, Joshua D. Safer, MD, FACP, FACE, declare as follows:

1. I have personal knowledge of the matters stated in this declaration.

2. As set forth in greater detail in my previously submitted declaration dated April 24, 2020, my background and credentials include the following: I am a Staff Physician in the Endocrinology Division of the Department of Medicine at the Mount Sinai Hospital and Mount Sinai Beth Israel Medical Center in New York, NY. I serve as Executive Director of the Center for Transgender Medicine and Surgery at Mount Sinai. I have served as a Transgender Medicine Guidelines Drafting Group Member for the International Olympic Committee (“IOC”) since 2017. I have also served since 2019 as a drafting group member of the transgender medical guidelines of World Athletics, formerly known as the International Amateur Athletic Federation (“IAAF”). My CV is attached to my previously submitted declaration.

3. I reviewed the declaration of Gregory A. Brown, Ph.D. (“Brown Decl.”) dated June 3, 2020, and am responding to certain statements therein. Here, I respond to the central points raised in Dr. Brown’s declaration. I do not specifically address each study or article cited by Dr. Brown, but instead explain the overall problems with the conclusions that he draws and provide data showing why such conclusions are in error. I reserve the right to supplement my opinions concerning Dr. Brown’s opinions if necessary as the case proceeds.

4. In his declaration, Dr. Brown makes three general arguments: “a. At the level of elite, college, high school, and recreational competition, men or boys have an advantage over comparably aged women or girls, in almost all athletic contests; b.

Biological male physiology and anatomy is the basis for the performance advantage that men or boys have over women or girls, in almost all athletic contests; and c. Administration of androgen inhibitors and cross-sex hormones to men, or adolescent boys, after male puberty, and administration of testosterone to women or adolescent girls, after female puberty, does not eliminate the performance advantage of men or adolescent boys over women or adolescent girls in almost all athletic contests.” (Brown Decl. ¶ 11.)

5. With respect to point (a), it is my opinion that on average, beginning during puberty, cisgender men and boys have better performance outcomes in most athletic competition as compared to cisgender women and girls. However, this is not a controversial statement and is beside the point here, as it does not concern the alleged performance advantages of transgender athletes (as opposed to men versus women generally).

6. As to Dr. Brown’s point (b), he states that “[b]iological male physiology and anatomy is the basis for the performance advantage.” (Brown Decl. ¶ 11.)

7. This point is not supported by the studies that Dr. Brown cites. Rather, these studies explain that the advantage observed among cisgender boys and men is due to circulating testosterone levels that typically diverge significantly between cisgender males and females at puberty. Dr. Brown only speculates that any advantage is not due to testosterone alone but other physiological factors that he describes as “male physiology and anatomy.” This claim is not supported by the studies that exist and that we both cite. For example, Dr. Brown cites Handelsman

et al, which states that “. . . evidence makes it highly likely that the sex difference *in circulating testosterone* of adults explains most, if not all, of the sex differences in sporting performance.” (Brown Decl. ¶ 81 (emphasis added).)

8. In paragraphs 63 and 64, Dr. Brown cites to additional studies that look at differences between adult cisgender men and adult cisgender women. These studies make no claims about inherent differences in athleticism that are independent of levels of circulating testosterone. (Brown Decl. ¶¶ 63–64.) The Gershoni et al. study compares genes from adult cisgender men and adult cisgender women. (Brown Decl. ¶ 63.) However, hormone levels might explain the differences observed. Notably, the largest number of genes observed to be different are related to breast tissue, which is a type of tissue that can be changed with hormone therapy. The Haizlip et al. study (Brown Decl. ¶ 64) reviews 56 articles relating to sex-based differences in skeletal muscle. This study draws no conclusions about the impact of hormone suppression or circulating testosterone on the differences the authors observe, underscored by the authors’ concluding observations that future “studies should be aimed at determining the role of hormonal interventions in males and females given their clinical relevance” and that “[t]his review summarizes key findings in skeletal muscle physiology in the hopes of bringing to the forefront areas of future research . . . .”<sup>1</sup>

9. In addition, none of the studies cited by Dr. Brown about comparative foot and toe size of cisgender men and cisgender women look at the impact of

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<sup>1</sup> K. M. Haizlip, et al., Sex-based differences in skeletal muscle kinetics and fiber-type composition, 30 *PHYSIOLOGY (BETHESDA)*, 39 (2015).

circulating testosterone on those differences. In fact, several of the articles (cited in Brown ¶ 72) simply look at intra-sex differences among male athletes with no data about any differences between cisgender men and cisgender women.

10. The proven impact of circulating testosterone on the body is the reason why the Olympics, World Athletics, and the National Collegiate Athletic Association (“NCAA”) focus on testosterone suppression for transgender and intersex inclusion in women’s sports. Though Dr. Brown calls these standards into question, claiming that they still allow for levels of circulating testosterone above what is typical for cisgender women, he fails to note that (a) some cisgender women have testosterone levels of up to approximately 5 nmol/L;<sup>2</sup> and (b) these are the best practices that have been in place for years with absolutely no evidence of any dominance among transgender women at the elite level—in fact no trans woman has ever even qualified for the Olympics.

11. The majority of the studies that Dr. Brown cites and almost the entirety of his declaration have nothing to do with transgender women who have suppressed testosterone. For example, the data about the general differences between male and female athletes cited in paragraphs 12-112 and 114-125 includes no reference to or information about transgender athletes. That is also true of the first *fourteen* studies (those identified from letters (a) through (l) in paragraph 20) that Dr. Brown

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<sup>2</sup> Approximately 6% to 10% of women have a condition called polycystic ovary syndrome (PCOS), which can raise women’s testosterone levels up to 4.8 nmol/L. See Handelsman DJ, et al. Circulating testosterone as the hormonal basis of sex differences in athletic performance. *Endocrine Reviews* 2018; 39:803-29 (pp. 806-807).

references. These studies have no bearing on transgender athletes who have suppressed testosterone—i.e., the impact of hormone therapy on physiological characteristics relative to undergoing endogenous puberty.

12. Though Dr. Brown states that “a number of studies indicate that males’ athletic advantages over females begin before puberty, and may be apparent as early as six years of age,” the cited studies are epidemiological studies from which cause cannot be assessed. (Brown Decl. 23.) The studies merely observe phenomena across a population sample but do not determine the cause for whatever is observed. Here, for example, the role played by cultural factors is not addressed in these studies. Thus, differences could be explained by, among other things, greater encouragement of athleticism in boys and greater opportunities to play sports. (Brown Decl. ¶ 23.)

13. Moreover, the more detailed studies that Dr. Brown cites state that before puberty there are not noticeable performance difference between boys and girls. For example, Dr. Brown cites Louis J. G. Gooren & Mathijs C. M. Bunck, *Transsexuals & Competitive Sports*, 151 *European J. of Endocrinology* 425 (2004) in paragraph 114 of his declaration stating: “[b]efore puberty, boys and girls do not differ in height, muscle and bone mass. Recent information shows convincingly that actual levels of circulating testosterone determine largely muscle mass and strength.” (Brown Decl. ¶ 114.) Likewise, Dr. Brown references Tonnessen et al., which states that “[m]ale and female athletes perform almost equally in running and jumping events up to the age of 12.” (Brown Decl. ¶ 49.) Similar conclusions can be found in

almost every study he cites. There is simply no basis for the assertion that pre-pubertal children have physical sex-based performance differences.

14. With respect to point (c), Dr. Brown and I both agree that levels of circulating testosterone are the definitive factor impacting sex-based performance differences between cisgender males and females beginning in puberty.

15. I disagree with and the science does not support Dr. Brown's assertion that "[a]dministration of androgen inhibitors and cross-sex hormones to men, or adolescent boys, after male puberty . . . does not eliminate the performance advantage of men or adolescent boys over women or adolescent girls in almost all athletic contests." (Brown Decl. ¶ 11.)

16. Though Dr. Brown argues that testosterone suppression is not sufficient to reduce any performance disparities between transgender women and girls and cisgender women and girls, his assumptions are not borne out by data.

17. Dr. Brown states that "[i]t is obvious that some effects of male puberty that confer advantages for athletic performance—in particular bone size and configuration—cannot be reversed once they have occurred." (Brown Decl. ¶ 128.) This is misleading. First, decreased muscle will have some impact on corresponding bone. That means that bone grows when corresponding muscle grows and bone shrinks when corresponding muscle shrinks (Hart NH et al. *J Musculoskelet Neuronal Interact* 2017; 17:114-139.) Second, carrying larger bones without typical male range levels of circulating testosterone does not necessarily confer an athletic

advantage. As I explained in my previous declaration, it could potentially slow a runner down or change an athlete's weight class.

18. The Knox study that Dr. Brown discusses in paragraphs 138 through 144 does not accurately assess the impact of sustained hormone therapy on transgender women. The study documented the effects of administering hormone therapy to cisgender males for a period of 20 weeks. By contrast, transgender women who are on consistent treatment and eligible to participate on women's teams under prevailing NCAA or Olympic inclusion policies would be suppressing their levels for at least one full year.

19. The Wiik study that Dr. Brown cites does not study athletes at all. As the authors report, because the subjects were not athletes, findings might be attributable in part to the subjects improving over time as they got better at the items tested. For example, for knee flexion, the authors state “. . . measurements in the TW [transgender women] most likely arose from the learning effects from repeating the test . . .” All the Wiik study shows is that testosterone makes a difference with regard to muscle. More testosterone is associated with more strength and more muscle mass. Also, the Wiik study is only “provocative,” meaning the findings are not conclusive but should be studied in the future. The authors themselves state, “[i]t is also important to recognize that we only assessed proxies for athletic performance, such as muscle mass and strength. Future studies are needed to examine a more comprehensive battery of performance outcomes in transgender athletes” and “. . . it is still uncertain how the findings would translate to transgender athletes . . .”



20. The Scharff study that Dr. Brown cites (his final cited study dealing with transgender individuals) also does not support the conclusion he draws. Transgender women had a decrease in grip strength and transgender men had an increase in grip strength while on their respective hormone regimens. (Brown Decl. ¶ 151.) Dr. Brown suggests that the decrease in grip strength observed among transgender women still left them with more strength than would be expected for most cisgender women. However, the study was only intended to demonstrate the direction of change, not its absolute amount. The absolute degree of change in a larger population of transgender women along with the net impact on specific athletic activities remains conjecture, subject to future study.

21. My opinions about the impact of hormone therapy, including testosterone suppression and estrogen, on transgender people are not from the Harper study as the Defendants suggest. They are, by contrast, drawn from my more than 15 years of treating transgender patients with hormone therapy, my training as an endocrinologist, my review of the literature concerning the impact of circulating testosterone on athletic performance, and my experience as an expert in establishing policies for the inclusion of transgender athletes in the Olympics and World Athletics.


22. The Harper study, although modest with a sample of eight individuals, is the only study of transgender female athletes treated for a sustained period of time with (1) evaluation of athletic performance prior to gender affirming treatment relative to cisgender men followed by (2) evaluation of athletic performance after gender affirming treatment relative to cisgender women. This study, even with its

limits, supports the conclusion that suppression of testosterone *does* diminish performance outcomes for women who are transgender.

23. Research with greater rigor must be done along the lines of the Harper study, but until that time there is no reason to conclude that the opposite of the Harper findings is true.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on: June 25, 2020

  
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Joshua D. Safer, MD, FACP, FACE