

LAWRENCE G. WASDEN
ATTORNEY GENERAL

STEVEN L. OLSEN, ISB #3586
DAYTON P. REED, ISB #10775
W. SCOTT ZANZIG, ISB #9361
Deputy Attorneys General
954 W Jefferson, 2nd Floor
P. O. Box 83720
Boise, ID 83720-0010
Telephone: (208) 334-2400
Facsimile: (208) 854-8073
steven.olsen@ag.idaho.gov
dayton.reed@ag.idaho.gov
scott.zanzig@ag.idaho.gov

Attorneys for Defendants

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

LINDSAY HECOX, and JANE DOE with
her next friends JEAN DOE and JOHN
DOE,

Plaintiffs,

v.

BRADLEY LITTLE, in his official capacity
as Governor of the State of Idaho, *et al.*,

Defendants.

Case No. 1:20-cv-00184-DCN

**RESPONSE TO MOTION FOR
PRELIMINARY INJUNCTION
(Dkt. 22)**

INTRODUCTION

The Court should deny Plaintiffs' motion for a preliminary injunction (Dkt. 22).

Plaintiffs cannot establish that they are likely to succeed on the merits. As Defendants' motion to dismiss (Dkt. 40) demonstrates, Plaintiffs cannot meet their burden of establishing standing.

And that burden is even higher when seeking a preliminary injunction. Moreover, Plaintiffs

cannot succeed on their facial challenge to House Bill 500, because they cannot carry their burden of showing that there are no circumstances under which the law could be constitutionally applied.

Even if Plaintiffs did not face these insurmountable jurisdictional and justiciability hurdles, their Equal Protection claim would fail. Settled Ninth Circuit law permits separate sports teams for males and females, along with rules excluding males from female sports teams, due to males' physiological advantages. That is precisely the purpose of HB 500.

Plaintiffs essentially concede that ensuring fair athletic opportunities for girls and women serves important government purposes. They merely argue that the law is not sufficiently tailored to meet this goal. But science says otherwise. Biological males have an indisputable physical advantage over biological females.¹ That advantage persists even in transgender females, who can then displace biological females in athletics. HB 500 properly protects opportunities for biological females by creating a process designed to verify female status of participants in female-only sports.

¹ This case involves issues regarding both sex and gender, or gender identity, as well as physiological differences between the sexes.

“Sex” is defined as the “anatomical and physiological processes that lead to or denote male or female.” Typically, sex is determined at birth based on the appearance of external genitalia.

“Gender” is a “broader societal construct” that encompasses how a “society defines what male or female is within a certain cultural context.” A person’s gender identity is their subjective, deep-core sense of self as being a particular gender.

Doe ex. rel. Doe v. Boyertown Area Sch. Dist., 897 F.3d 518, 522 (3d Cir. 2018), *cert. denied sub nom. Doe v. Boyertown Area Sch. Dist.*, 139 S. Ct. 2636 (2019) (citations omitted). To avoid confusion between sex and gender, this brief uses the terms “biological male” or “biological female” to distinguish between the sexes (as opposed to preferred genders) when their physiological differences are relevant.

Plaintiffs' case fares no better on the other requirements for injunctive relief. For the same reasons Plaintiffs lack standing, they cannot establish that, absent an injunction prohibiting State officials from implementing HB 500, they will suffer irreparable harm. Their alleged potential harm is far too speculative. Nor can they establish that the balance of hardships and public interest favor an injunction. As the proposed intervenors have demonstrated, biological female athletes have a strong interest in the protections HB 500 provides to them.

BACKGROUND

House Bill 500 is the "Fairness in Women's Sports Act." It is designed to protect opportunities for females to participate in sports due to the physiological advantages males have over females. In support of the bill, the Idaho legislature made a number of findings based on court decisions, scholarly publications, and scientific studies recognizing these physiological advantages. Dkt. 1, Exhibit A, HB 500, § 33-6202(8)-(11). The legislature also described its purpose:

Having separate sex-specific teams furthers efforts to promote sex equality. Sex-specific teams accomplish this by providing opportunities for female athletes to demonstrate their skill, strength, and athletic abilities while also providing them with opportunities to obtain recognition and accolades, college scholarships, and the numerous other long-term benefits that flow from success in athletic endeavors.

Id., § 33-6202(12).

HB 500 provides that women's athletic teams "shall not be open to students of the male sex." But the law is not self-executing. The law comes into play only if a "dispute regarding a student's sex" arises, presumably because someone objects to a student's qualification to participate in female sports. If such a dispute arises, the statute provides that it will be governed by rules yet to be promulgated by the State Board of Education. It is impossible to know now how that process will be initiated and what it will entail. All we know from HB 500 is that the

school sponsoring the team on which the student is playing will request the student to “provide a health examination and consent form or other statement signed by the student’s personal health care provider” to “verify the student’s biological sex.” Presumably such a form or statement will settle the issue.

Plaintiff Lindsay Hecox was born a male, but identifies as a female. She has participated on co-ed track and cross-country teams in the past, Dkt. 1, ¶ 25, but now wants to try out for Boise State University’s (“BSU’s”) women’s cross-country team this August. Dkt. 22-6, ¶ 20. She complains that House Bill 500 will prevent her from doing that.

HB 500 would not necessarily prevent Hecox from trying out in August, but Title IX very well might. The U.S. Department of Education’s Office of Civil Rights (“OCR”), the federal agency responsible for enforcing Title IX, recently determined that allowing transgender high school athletes in Connecticut to participate in girls’ sports violated the rights of female athletes under Title IX.² BSU now has to evaluate this decision and determine whether Title IX permits it to allow transgender women to participate on its women’s sports teams and, if so, under what conditions.

Current NCAA rules permit—but do not require—member schools to allow transgender women to participate in women’s sports under certain conditions. Member schools who wish to allow such participation must confirm that the transgender athlete has completed one year of

² See *US: Transgender Sports Inclusion Violates Others’ Rights*, ASSOCIATED PRESS, <https://apnews.com/5c1d9682fb92ed9c277c7e139bdab9ed> (May 28, 2020). For the Court’s convenience, a copy of the Office of Civil Rights’ decision (“OCR Decision”) is attached as Appendix 1. The OCR determined that by permitting transgender girls to compete in girls’ sports, the Connecticut high school athletic conference “denied athletic benefits and opportunities to female student-athletes . . . in violation of the regulation implementing Title IX of the Education Amendments of 1972 (Title IX), at 34 C.F.R. § 106.41(a).” OCR Decision, p. 3.

testosterone suppressing treatment, and must apply to the NCAA for a medical exception.³ It is uncertain whether that NCAA policy will remain in place following the OCR's recent Title IX determination. And even if it does, BSU will need to decide whether to allow Hecox to try out in August and risk violating Title IX. By her own admission, Hecox will not have completed her one-year hormone therapy before BSU's women's cross-country tryouts in August, because she did not begin it until September 2019. Dkt. 22-6, ¶ 14.

Even if BSU were to risk a Title IX violation by letting Hecox try out, it is uncertain whether HB 500 would have any effect on her ability to participate. HB 500 doesn't prevent her from trying out. HB 500 would come into play only if a "dispute regarding [Hecox's] sex" were to arise, presumably because someone might object to Hecox displacing a biological female's spot on the roster. If it happened, such a dispute would be governed by as-yet-unknown regulations to be developed by the State Board of Education in the future. So even if BSU were to decide to allow Hecox to try out (which is uncertain given the OCR's Title IX analysis), there is no way to know whether HB 500 would affect Hecox. Would Hecox perform well enough to qualify for the team? If she did, would anyone challenge her participation? There simply is no way to know whether HB 500 will affect Hecox in any way until BSU determines whether it wishes to risk a Title IX violation by allowing her to try out; Hecox tries out; she makes the team; and we wait and see whether anyone disputes her eligibility, and, if so, the outcome of such a dispute under yet-to-be-promulgated Board of Education rules.

Plaintiff Jane Doe was born a female and identifies herself as "a girl." *See* Dkt. 22-7, ¶ 13. She participates in school sports. *See id.*, ¶¶ 4-6. HB 500 does not prevent her from doing

³ *See NCAA Inclusion of Transgender Student-Athletes*, p. 14 (available at https://www.ncaa.org/sites/default/files/Transgender_Handbook_2011_Final.pdf).

that. But Doe speculates that maybe some unknown person might act spitefully and challenge her sex. *See id.*, ¶ 13. Based on this hypothetical concern, Doe worries that HB 500 might require her to ask her doctor to perform a genital exam or genetic or hormonal testing. *See id.*, ¶¶ 11-12.

There is no evidence of any actual threat that any person intends to dispute Doe's sex. But even if the hypothetical spiteful person did, HB 500 allows Doe to participate in sports by simply submitting her required health examination and consent form or obtaining a statement from her doctor verifying her sex, neither of which requires any new physical examination or testing. HB 500 allows Doe various avenues to verify her sex: (1) through her health examination and consent form; (2) through a "statement signed by the student's personal health care provider" to "verify the student's biological sex"; or (3) through a "routine sports physical examination relying on" one of anatomy, genetics, or testosterone. Contrary to Doe's contention, the statute does not require her doctor to use the three criteria mentioned in the "routine sports physical examination" process. And even the "routine sports physical examination" provision itself is permissive, using the term "may." In short, Doe has exaggerated her speculative harm by misinterpreting HB 500 to require her personal health care provider to use the three criteria specified for routine sports physical examinations.⁴

⁴ Doe's misinterpretation may have resulted from her mistaken belief that language in HB 500 as it was initially introduced is the same language that exists in the amended bill that became law. Section 33-6203(3) in HB 500 initially required a physician's statement based on the three criteria: "If disputed, a student may establish sex by presenting a signed physician's statement that shall indicate the student's sex based solely on: (a) The student's internal and external reproductive anatomy; (b) The student's normal endogenously produced levels of testosterone; and (c) An analysis of the student's genetic makeup." (available on Idaho Legislature website at <https://legislature.idaho.gov/wp-content/uploads/sessioninfo/2020/legislation/H0500.pdf>). That section was substantially changed by a Senate amendment, resulting in the very different language of the bill that was actually enacted. *See* Dkt. 1, Exhibit A, § 33-6203(3) (reflecting the operative language passed by both Houses and signed into law by the Governor).

We know Doe has had physical examinations in the past. *See* Dkt. 22-7, ¶ 11. And we know the Idaho High School Athletic Association (“IHSAA”) rules require athletes to have a physical examination every other year to participate, and require the examining professional to inquire into and disclose sex-specific information on the prescribed Health Examination and Consent Form.⁵ So even in the unlikely event someone disputed Doe’s sex, she could simply refer the school to her IHSAA Health Examination and Consent Form, which she and every other athlete is required to submit to the school before participating in school sports, or ask her doctor to provide a statement verifying that she is female. Neither approach requires a new, allegedly invasive procedure, which is the harm Doe says she fears.

ARGUMENT

A. Preliminary Injunction Standards

“A plaintiff seeking a preliminary injunction must establish that he is likely to succeed on the merits, that he is likely to suffer irreparable harm in the absence of preliminary relief, that the balance of equities tips in his favor, and that an injunction is in the public interest.” *Winter v. Natural Resources Def. Council, Inc.*, 555 U.S. 7, 20 (2008). “[I]njunctive relief [is] an extraordinary remedy that may only be awarded upon a clear showing that the plaintiff is entitled to such relief.” *Id.* at 22.

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⁵*See* IHSAA Rule 13 (available at <https://idhsaa.org/asset/RULE%2013.pdf>), and Health Examination and Consent Form (available at <https://idhsaa.org/asset/document/99-Physical%20Exam%20and%20Consent%20Form.pdf>) (requiring information regarding a student’s sex including, among other things, an examination of males’ genitalia and details regarding females’ menstrual cycles). For the Court’s convenience, a copy of the IHSAA’s required Health Examination and Consent Form is attached as Appendix 2.

B. Plaintiffs Cannot Establish Standing

Plaintiffs bear the burden of establishing standing. *See Clapper v. Amnesty Int’l USA*, 568 U.S. 398, 408 (2013) (quoting *Raines v. Byrd*, 521 U.S. 811, 818 (1997)) (“‘One element of the case-or-controversy requirement’ is that plaintiffs ‘must establish that they have standing to sue’”). That burden is heightened at the preliminary injunction stage. *See Lujan v. Defenders of Wildlife*, 504 U.S. 555, 561 (1992) (“each element must be supported in the same way as any other matter on which the plaintiff bears the burden of proof, *i.e.*, with the manner and degree of evidence required at the successive stages of the litigation”). As the D.C. Circuit has explained, this means that to obtain a preliminary injunction, a plaintiff must establish a substantial likelihood that he has standing. Mere allegations that might suffice to defeat a motion to dismiss are not sufficient. *See Food & Water Watch*, 808 F.3d 905, 913 (D.C. Circuit 2015) (“party who fails to show a substantial likelihood of standing is not entitled to a preliminary injunction”) (citations and internal punctuation omitted).

The Supreme Court has emphasized the importance of standing, particularly where, as in this case, the plaintiffs are challenging the conduct of political branches as unconstitutional.

The law of Article III standing, which is built on separation-of-powers principles, serves to prevent the judicial process from being used to usurp the powers of the political branches. . . . In keeping with the purpose of this doctrine, [o]ur standing inquiry has been especially rigorous when reaching the merits of the dispute would force us to decide whether an action taken by one of the other two branches of the Federal Government was unconstitutional.

Clapper, 568 U.S. at 408 (internal citations and punctuation omitted). Principles of federalism similarly demand an “especially rigorous” approach to standing when plaintiffs ask a federal court to determine that state officials are violating the Constitution.

To meet the “irreducible constitutional minimum” of standing, Plaintiffs must prove: (1) that they have suffered an “injury in fact”—an invasion of a judicially cognizable interest which

is (a) concrete and particularized and (b) actual or imminent, not conjectural or hypothetical; (2) a causal connection between the injury and the conduct complained of—the injury must be fairly traceable to the challenged action of the defendant, and not the result of the independent action of some third party not before the court; and (3) that it be likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision. *Lujan*, 504 U.S. at 560-61 (1992).

Plaintiffs cannot meet their burden here. Any potential harm they might suffer is far too speculative. It is neither “actual or imminent,” nor traceable to Defendants’ actions from applying HB 500, as opposed to the actions of third parties not before the Court or applications of laws or rules Plaintiffs have not challenged.

Title IX or NCAA rules, but not HB 500, may prevent Plaintiff Hecox from trying out for BSU’s women’s cross-country team in August. Given the OCR’s recent decision that allowing transgender girls to compete in girls’ high school sports violates Title IX,⁶ BSU may not be willing to risk violating Title IX by allowing Hecox to try out in August when she has not completed year-long hormone therapy as required by NCAA rules. Hecox has presented no evidence whether her treatment would satisfy NCAA requirements, regardless of Title IX hurdles, so we don’t know whether she would qualify for a medical exemption under NCAA rules. And even if Hecox could meet these burdens, it is far from clear whether HB 500 would

⁶ The OCR Decision applied to a high school rule allowing transgender girls to participate in girls’ sports based on gender identity and behavior, but did not require hormonal treatment. Nevertheless, the Decision was based on a distinction between biological differences between males and females. *See* OCR Decision, p. 2 n.2 (“the terms ‘male’ and ‘female’ are defined by biological sex”). And it refers to transgender girls, referred to as Students A and B, as “biologically male student athlete[s],” *id.*, p. 3, or “male student-athletes.” *Id.*, p. 4. The OCR concluded that allowing Students A and B to compete in girls’ track meets “placed female student-athletes in athletic events against male student athletes, resulting in competitive disadvantages for female student-athletes.” *Id.*

have any effect on her ability to participate. Would she make the team? Would anyone object if she did? Hecox has offered no proof on any of these “what ifs.” Hecox’s alleged potential injuries from the statute are neither actual nor imminent, and dependent on the actions of third parties. She has fallen far short of her especially rigorous, heightened burden of proving that it is substantially likely HB 500 will harm her sometime in the future.

Plaintiff Doe’s alleged irreparable harm is perhaps even more speculative. She is a biological female, qualified to play girls’ sports under HB 500. There is no evidence that any person intends to dispute that she is female. There is nothing but speculative worry to support Doe’s claim that she may suffer some harm. Like Hecox, Doe’s alleged potential injuries from HB 500 are neither actual nor imminent. Instead, they are based on the highly speculative risk that some irresponsible person not before the Court will challenge her sex. Even in the unlikely event that occurred, she could easily obtain a statement from her doctor verifying her sex, or simply provide the health examination and consent form from her required physical verifying her sex. Under the circumstances, Doe has not come close to meeting her burden to establish standing.

C. Plaintiffs Cannot Establish They are Entitled to Bring Their Facial Challenge

There are two kinds of challenges a plaintiff can make to a law: as-applied or facial. An as-applied challenge “contends that the law is unconstitutional as applied to the litigant[].” *Foti v. City of Menlo Park*, 146 F.3d 629, 635 (9th Cir. 1998). “[A] ‘successful as-applied challenge does not render the law itself invalid but only the particular application of the law.’” *Desert Outdoor Advertising, Inc. v. City of Oakland*, 506 F.3d 798, 805 (9th Cir. 2007) (quoting *Foti*, 146 F.3d at 635). In contrast, the much broader facial challenge seeks to “invalidate[] the law itself.” *Foti*, 146 F.3d at 635. Proper relief in an as-applied challenge might include injunctive

relief prohibiting application of the law to the plaintiffs in the case, but it would not include a declaration that the law itself is void or an injunction prohibiting the law's application in every case. *See, e.g., Italian Colors Restaurant v. Becerra*, 878 F.3d 1165, 1175 (9th Cir. 2018) (enjoining a "law in its entirety" "would have been appropriate only if plaintiffs had prevailed on a facial challenge").

It is beyond dispute that the relief Plaintiffs seek on their preliminary injunction motion would be available only under a successful facial challenge to HB 500. The injunctive relief they seek would be a wholesale prohibition on implementation of the law. *See* Dkt. 22, p. 2 (requesting an order prohibiting all defendants "from enforcing any of the provisions of House Bill 500").

Facial challenges are disfavored. *See* Dkt. 40-1, pp. 11-12 and cited cases. Under *United States v. Salerno*, 481 U.S. 739, 745 (1987), Plaintiffs must establish that the challenged law is unconstitutional under all circumstances. *See also Almerico v. Denney*, 378 F. Supp. 3d 920, 925-26 (D. Idaho 2019) (applying *Salerno* to bar Equal Protection claim because Ninth Circuit law requires adherence to *Salerno*). This they cannot do. For example, suppose an athletically-talented biological male who identifies as a man wanted to play on BSU's women's basketball team. Due to his physical advantages, the man would certainly displace a woman on the roster. And his superior skills would allow him to dominate the team and the competition, taking opportunities otherwise available to the women on the roster. HB 500 would allow a challenge to the man's status and prevent him from playing on the team.

This application of HB 500 would be plainly constitutional. *See Clark ex rel. Clark v. Arizona Interscholastic Ass'n*, 695 F.2d 1126 (9th Cir. 1982), *cert. denied*, 464 U.S. 818 (1983). In *Clark*, high school boys who wished to play on the girls' volleyball team challenged a policy

prohibiting boys from playing on a girls' sports team. The Ninth Circuit rejected the boys' argument that the policy amounted to unconstitutional sex discrimination, even though the boys' school offered no boys' volleyball team. The court held that the policy even withstood heightened scrutiny, because "there is clearly a substantial relationship between the exclusion of males from the team and the goal of redressing past discrimination and providing equal opportunities for women," which the court held is unquestionably "a legitimate and important governmental interest." *Id.* at 1131. The policy was constitutional because it "simply recognize[ed] the physiological fact that males would have an undue advantage competing against women for positions on the volleyball team." *Id.*

HB 500 prohibits all males from participating in female sports, regardless of their gender identity. *Clark* makes clear that HB 500 can be constitutionally applied to prohibit boys from participating in girls' sports. Thus, Plaintiffs cannot meet the *Salerno* test. Their request for a preliminary injunction based on their facial challenge to HB 500 must be denied.

D. Plaintiffs Cannot Establish that They are Entitled to Injunctive Relief

On top of these justiciability bars that are fatal to their case, Plaintiffs cannot meet their burden of proving that they are entitled to a preliminary injunction.

1. Plaintiffs are not likely to succeed on the merits

Plaintiffs cannot establish a likelihood of success on the merits of their Equal Protection challenge to HB 500.⁷ The law protects athletic opportunities for females. The State has an

⁷ Plaintiffs suggest that the standard preliminary injunction burdens do not apply, and that Defendants must prove that Plaintiffs are not likely to succeed on the merits of their Equal Protection claim. *See* Dkt. 22-1, p. 12 (citing *Gonzales v. O Centro Espirita Beneficente Uniao do Vegetal*, 546 U.S. 418, 429 (2006)). The Ninth Circuit has interpreted this shifted-burden approach to be applicable in First Amendment cases, where strict scrutiny applies. *See Thalheimer v. City of San Diego*, 645 F.3d 1109, 1116 (9th Cir. 2011) ("in the First Amendment context, the moving party bears the initial burden of making a colorable claim that its First

important interest in doing so. And even if the law is subject to heightened scrutiny,⁸ HB 500 satisfies that scrutiny because it does what it is intended to do.

Assuming *arguendo* that HB 500 must satisfy heightened scrutiny, HB 500 meets that standard so long as it ““serve[s] important governmental objectives and [is] substantially related to achievement of those objectives.”” *Clark*, 695 F.2d at 1129 (quoting *Craig v. Boren*, 429 U.S. 190, 197 (1976)). *See also* Dkt. 22-1, p. 17 (citing *Craig*, 429 U.S. at 198, and *Latta v. Otter*, 771 F.3d 456, 491 (2014) (law satisfies heightened scrutiny if it “is substantially related to an important government interest”)). “In applying this standard, the Supreme Court is willing to take into account actual differences between the sexes, including physical ones.” *Clark*, 695 F.2d at 1129.

Amendment rights have been infringed, or are threatened with infringement, at which point the burden shifts to the government to justify the restriction”). Plaintiffs have not cited, and Defendants have not found, any authority holding that such a shift also occurs in an Equal Protection case applying rational basis or intermediate scrutiny. If such a shift were extended to a case like this, what would Plaintiffs’ initial burden be? Absent applicable authority, Defendants submit that Plaintiffs must prove a likelihood of success on their Equal Protection claim. Thankfully, the Court need not resolve this issue because under any burden Plaintiffs are not likely to succeed.

⁸Defendants acknowledge that under *Clark*, HB 500 may be subject to heightened scrutiny because it excludes all males from female sports. 695 F.2d at 1129. Plaintiffs argue that heightened scrutiny also should apply because HB 500 discriminates against transgender and female athletes. Defendants disagree. Defendants acknowledge that the Ninth Circuit and a judge in this district have held heightened scrutiny applies if a law or policy treats transgender persons in a less favorable way than it treats all others. *See Karnoski v. Trump*, 926 F.3d 1180, 1201 (9th Cir. 2019); *F.V. v. Barron*, 286 F. Supp. 3d 1131 (D. Idaho 2018). But HB 500 is different. It does not single out transgender athletes and subject them to discriminatory treatment. It treats all biological males the same and prohibits them from participating in female sports to protect athletic opportunities for biological females. Therefore, it does not unlawfully discriminate against transgender athletes. *See Doe 2 v. Shanahan*, 755 Fed. Appx. 19, 23-25 (D.C. Cir. 2019) (reversing finding that plan requiring military personnel to serve in their biological sex was a blanket transgender ban and acknowledging that the military had substantial arguments that the plan complied with equal protection principles). Nor does HB 500 treat females differently as Plaintiffs suggest. It requires any athlete subject to dispute, whether male or female, to verify his or her sex.

Plaintiffs do not dispute that HB 500 serves important governmental objectives. *See* Dkt. 22-1, p. 17. Nor could they. The Ninth Circuit long ago established that “[t]here is no question” that “redressing past discrimination against women in athletics and promoting equality of athletic opportunity between the sexes” is “a legitimate and important governmental interest” justifying rules excluding males from female sports. *Clark*, 695 F.2d at 1131. Excluding males from female sports to “promote sex equality” and protect fair opportunities for female athletes is precisely what HB 500 does.

Plaintiffs take issue with the second prong of the test, contending that HB 500 is not substantially related to the important goal of ensuring equal and fair opportunities for females to participate in sports. Plaintiffs’ argument flies in the face of a well-established physiological fact recognized by courts and recently confirmed by the OCR: allowing biological males to compete in female sports is unfair to biological females due to males’ inherent physical advantages. *See, e.g., Clark*, 695 F.2d at 1131 (noting that rule excluding boys from girls’ team “is simply recognizing the physiological fact that males would have an undue advantage competing against women,” and would diminish opportunities for females). HB 500’s legislative findings specifically cite this physiological fact and case law recognizing it. Dkt. 1, Exhibit A, § 33-6202(8). To protect biological female athletes’ athletic opportunities in light of biological males’ indisputable physical advantage, HB 500 provides that female sports “shall not be open to students of the male sex.” *Id.*, § 33-6203(2). Just as the rule in *Clark* excluding boys from the girls’ volleyball team was substantially related to the important objective of preserving equal opportunities for females to participate in sports, so too is HB 500.

Plaintiffs cannot validly challenge this conclusion. So instead, they try to argue that HB 500’s objectives could be served by different rules. But as *Clark* makes clear, the fact that

athletic opportunities could be equalized through other means is of no constitutional consequence. 695 F.2d at 1131-32. “[E]ven wiser alternatives than the one chosen does not serve to invalidate the policy [of excluding males from female sports] since it is substantially related to the goal” of providing fair and equal opportunities for females to participate in athletics. *Id.* at 1132.

Ignoring *Clark*’s holding that the Constitution does not require a perfect fit between the legislature’s goal and the means used to achieve it, Plaintiffs argue that athletic opportunities for biological females could be adequately protected by requiring transgender male-to-female athletes to undergo one year of hormone therapy. They argue that current circulating testosterone is the only thing that gives males a competitive advantage. *See* Dkt. 22-1, p. 18 (“[t]he *only* physical sex characteristic with a documented effect on athletic performance is circulating (not endogenous) testosterone”) (citing Safer Decl.).⁹

Even if Plaintiffs’ premise were true, it would be legally irrelevant. But in fact Plaintiffs’ premise is false. Indeed, the very source that Plaintiffs’ own expert, Dr. Safer, relies on refutes this argument.

The striking male postpubertal increase in circulating testosterone provides a *major, ongoing, cumulative, and durable physical advantage* in sporting contests by creating larger and stronger bones, greater muscle mass and strength, and higher circulating hemoglobin as well as possible psychological (behavioral)

⁹ In a similar vein, Plaintiffs argue that HB 500 is not sufficiently narrowly tailored, suggesting that puberty blockers might eliminate biological males’ athletic advantages. There are several problems with this argument. First, neither Plaintiff has standing to raise it; it’s a purely hypothetical red herring. Second, while it might be legally relevant in a case involving strict scrutiny, it’s irrelevant under any heightened scrutiny applicable here, as *Clark* makes clear. Finally, even if this argument were relevant, it is based on the false premise that prepubertal boys have no athletic advantages over girls. In fact, studies have shown that boys have athletic advantages over girls that manifest themselves as early as six years of age. Expert Declaration of Gregory A. Brown, ¶ 23 (“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”). *See also id.*, ¶¶ 65-68 (discussing relevant studies comparing boys’ and girls’ athletic abilities).

differences. In concert, these render women, on average, unable to compete effectively against men in power-based or endurance-based sports.

Handelsman DJ, et al. Circulating testosterone as the hormonal basis of sex differences in athletic performance. *Endocrine Reviews* 2018; 39:803-829 (p. 805) (“Handelsman Paper”)¹⁰ (emphasis added) (cited in Expert Declaration of Joshua Shafer (Dkt. 22-9), ¶ 25). This “major, ongoing, cumulative, and durable physical advantage” that Plaintiffs’ own expert validates is a problem HB 500 seeks to address.¹¹ And as the authors of the Handelsman Paper note, males’ larger and stronger bones generally result in males: having a height advantage over females, which provides an obvious physical advantage in many sports; “greater leverage for muscular limb power exerted in jumping, throwing, or other explosive power activities”; and greater bone density, helping them to avoid stress fractures. *See* Handelsman Paper, p. 818-19. It is undisputed that the hormone therapy Plaintiffs tout does not change this. Moreover, other scientific studies confirm that hormone therapy does not eliminate the physical advantages males enjoy over females. *See* Expert Declaration of Gregory A. Brown (“Brown Decl.”), ¶ 11.c. (administration of testosterone suppressing drugs “does not eliminate the performance advantage of men or adolescent boys over women or adolescent girls in almost all athletic events”). *See also id.*, ¶¶ 127-153 (and cited authorities and data).

Plaintiffs’ expert, Dr. Safer, is an endocrinologist, not an expert in athletic performance. *See* Dkt. 22-9, ¶¶ 5-15. His opinion about hormone therapy’s effect on athletic performance is based not on his expertise studying athletic performance, but in reliance on one article, whose reliability is subject to serious questions. Dr. Safer cites an article comparing performances of eight transgender women before and after testosterone therapy. *Id.*, ¶ 51 (citing Harper J. Race

¹⁰ Available at: <https://academic.oup.com/edrv/article/39/5/803/5052770>.

¹¹ *See* HB 500, § 33-6202(8)-(12).

times for transgender athletes. *Journal of Sporting Cultures and Identities* 2015 (“Harper Article”); 6:1-9). The Harper Article and the study it reflects have shortcomings and limitations “rendering the data and conclusions to be of little to no scientific validity” in proving the overall efficacy of testosterone therapy’s ability to eliminate performance advantages. Brown Decl., ¶ 154. *See also id.*, ¶¶ 155-161 (discussing the flaws of the Harper study, including problems with subject recruitment and sampling, and techniques for collecting and verifying race times, to name a few).

In contrast to Dr. Safer, Defendants’ expert, Dr. Gregory Brown, is an expert in sports science. He is a professor of exercise science in the University of Nebraska Kearney’s Department of Kinesiology and Sport Sciences. Brown Decl., ¶ 1. His thorough opinion, supported by scientific studies and data, is that biological male physiology—not merely currently circulating testosterone—is why males have a decided advantage over females in athletic contests. *Id.*, ¶ 11.b. *See also id.*, ¶¶ 77-125 (relying on numerous authorities to describe physiological differences between the sexes). Due to males’ physiological differences from women, administration of androgen inhibitors (i.e., drugs designed to reduce circulating testosterone levels) to male-to-female transgender persons does not eliminate their performance advantages. *See id.*, ¶¶ 11.c. 127-153. Plaintiffs’ suggestion that limited hormone therapy is enough to equal the playing field between males and females does not stand up to scientific scrutiny.

The experience of one transgender female athlete provides a good example. Craig Telfer was a male on the Franklin Pierce University men’s track team in 2016 and 2017. Brown Decl., ¶ 152. During those years Telfer was ranked 200th and 390th (respectively) against other NCAA Division 2 men and did not qualify for the National Championships in any events. *Id.* Telfer

then transitioned to a transgender female, changed her name from Craig to Cece, and underwent a year of hormone therapy. *Id.* In 2019 Cece Telfer competed on the Franklin Pierce University women's team, qualified for the NCAA Division 2 Track and Field National Championships, and placed first in the women's 400-meter hurdles and placed third in the women's 100-meter hurdles. *Id.* A comparison of Telfer's pre- and post-transition race times shows that she actually ran a little faster as a woman. *Id.*, ¶ 153. Obviously, a year of hormone therapy did not eliminate, or even reduce, Telfer's competitive advantages over biological females women.

The Telfer example does not prove that hormone therapy is ineffective in reducing athletic performance advantages in all male-to-female transgender athletes. But it does prove that the therapy is not effective in all cases. And it demonstrates the significant athletic advantages males have over females, where an athlete who ranked no better than 200th in men's competition can win the national championship race in women's competition, a year's worth of hormone therapy notwithstanding.

In an effort to promote their narrative that HB 500 was the product of animus toward transgender persons and was based on unfounded stereotypes, Plaintiffs argue that there is no need to protect athletic opportunities for biological females by excluding biological males from their sports. But this argument is directly refuted by examples like Cece Telfer; and June Eastwood, the University of Montana runner against whom intervenors Madison Kenyon and Mary Marshall could not effectively compete, Dkts. 30-2, ¶¶ 8-12, 14-16, and 30-3, ¶¶ 10-12, 17; and Connecticut high school Students A and B, who were the subject of the recent OCR Decision. Instead, as the OCR determined, allowing male-to-female transgender athletes to compete in female sports "place[s] female student athletes in athletic events against male student-athletes, resulting in competitive disadvantages for female student-athletes," denying

female student-athletes “the opportunity to compete in events that [are] exclusively female,” and denying “female student-athletes athletic opportunities that [are] provided to male student-athletes.” OCR Decision, p. 4. Through HB 500, the legislature has provided a reasonable, legally permissible means to prevent these wrongs from occurring.

2. Plaintiffs cannot establish that they will suffer any harm, much less irreparable harm

As Plaintiffs’ standing problems suggest, there is no proof that either plaintiff will suffer any harm from HB 500. Title IX, and perhaps NCAA rules (or even COVID-19), may prevent Plaintiff Hecox from trying out for BSU’s women’s cross-country team in August. But there is no guarantee HB 500 will affect her chances to participate. Even if Hecox is able to try out, will she make the team? Will anyone object if she does?

Plaintiff Doe’s alleged irreparable harm is perhaps even more speculative. She is a biological female, qualified to play girls’ sports. There is no evidence that any person intends to dispute that she is female. And even if someone did, that would easily be resolved by reference to the IHSAA required Health Examination and Consent Form Plaintiff Doe submitted in order to compete in school sports. There is nothing but speculative and unfounded worry to support Doe’s claim that she may suffer some harm.

Mere speculation of harm does not establish proof of irreparable harm necessary to justify an injunction. *Alliance for the Wild Rockies v. Cottrell*, 632 F.3d 1127, 1131 (9th Cir. 2011) (citing *Winter*, 555 U.S. at 21-22) (“plaintiffs must establish that irreparable harm is *likely*, not just possible, in order to obtain a preliminary injunction”).

3. Neither the balance of hardships nor the public interest weighs in favor of an injunction

In arguing that the equities favor an injunction, Plaintiffs focus solely on themselves and ignore the interests of all female athletes who will benefit from HB 500. As the declarations of
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intervenors Kenyon (Dkt. 30-2) and Marshall (Dkt. 30-3) demonstrate, there are female athletes whose interests will be harmed if they do not have the protection of rules designed to prevent the unfair advantages males or male-to-female transgender athletes have when competing against females. Ms. Kenyon and Ms. Marshall describe how discouraging and demoralizing it can be for female athletes to try to compete against biological male athletes who identify as female, and the unfairness of such a process. *See especially* Dkt. 30-2, ¶¶ 10, 12, 20, 25; Dkt. 30-3, ¶¶ 19-20. Both Ms. Kenyon and Ms. Marshall note that their team, Idaho State University, sometimes competes against BSU. They express their concerns about having to compete against Lindsay Hecox or other transgender athletes. Dkt. 30-2, ¶ 29; Dkt. 30-3, ¶ 14. Plaintiffs conveniently ignore these interests, but the Court should not.

Moreover, unlike the plaintiff boys in *Clark* who had no school boys' volleyball team to play on, both Plaintiffs here have options to participate in school sports under HB 500. It is undisputed that Plaintiff Doe qualifies to play girls' sports at Boise High School. And while Plaintiff Hecox might prefer the option of trying out for women's teams, she has the option of continuing to run in the club she organized, *see* Dkt. 22-6, ¶ 22, or trying out for BSU's men's cross-country or track teams.

Under these circumstances, Plaintiffs cannot satisfy their burden of establishing that the balance of hardships and public interest weigh in favor of injunctive relief. *See Winter*, 555 U.S. at 24 (“A preliminary injunction is an extraordinary remedy never awarded as of right. In each case, courts must balance the competing claims of injury and must consider the effect on each party of the granting or withholding of the requested relief. In exercising their sound discretion, courts of equity should pay particular regard for the public consequences in employing the extraordinary remedy of injunction”) (internal citations and punctuation omitted).

CONCLUSION

Plaintiffs' motion for a preliminary injunction must be denied for several reasons. Plaintiffs cannot establish standing. Nor can they establish that they are entitled to pursue a facial challenge to HB 500. And even if the Court were to reach the merits of Plaintiffs' Equal Protection challenge, they cannot demonstrate that they are entitled to injunctive relief. HB 500 would satisfy either the rational basis test or heightened scrutiny because it is substantially related to the important government interest of protecting fair opportunities for females to participate in sports, so Plaintiffs are not likely to succeed on the merits. Similarly, Plaintiffs cannot establish the other factors necessary for an injunction.

Dated this 4th day of June, 2020.

STATE OF IDAHO
OFFICE OF THE ATTORNEY GENERAL

By: /s/ W. Scott Zanzig
W. Scott Zanzig
Deputy Attorney General

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on June 4, 2020, I electronically filed the foregoing with the Clerk of the Court using the CM/ECF system which sent a Notice of Electronic Filing to the following persons:

Richard Eppink
AMERICAN CIVIL LIBERTIES UNION
OF IDAHO FOUNDATION
REppink@acluidaho.org

Matthew K. Wilde
BOISE STATE UNIVERSITY
OFFICE OF GENERAL COUNSEL
mattwilde@boisestae.edu

Gabriel Arkles
James Esseks
Chase Strangio
AMERICAN CIVIL LIBERTIES FOUNDATION
garkles@aclu.org
jesseks@aclu.org
cstrangio@aclu.org

*Attorney for Defendants Boise State
University and Marlene Tromp*

Bruce D. Skaug
Raul R. Labrador
bruce@skauglaw.com
raul@skauglaw.com

Kathleen Hartnett
Elizabeth Prelogar
Andrew Barr
COOLEY LLP
khartnett@cooley.com
eprelogar@cooley.com
abarr@cooley.com

Roger G. Brooks
Jeffrey A. Shafer
ALLIANCE DEFENDING FREEDOM
rbrooks@ADFlegal.org
jshafer@ADFlegal.org

Catherine West
LEGAL VOICE
cwest@legalvoice.org

Kristen K. Waggoner
Parker Douglas
Christiana M. Holcomb
ALLIANCE DEFENDING FREEDOM
kwaggoner@ADFlegal.org
pdouglas@ADFlegal.org
cholcomb@ADFlegal.org

Attorneys for Plaintiffs

Attorneys for Proposed Intervenors

/s/ W. Scott Zanzig
W. Scott Zanzig
Deputy Attorney General

APPENDIX 1
RESPONSE TO MOTION FOR
PRELIMINARY INJUNCTION (Dkt. 22)
Hecox, et al. v. Little, et al.
Case No. 1:20-cv-00184-DCN



UNITED STATES DEPARTMENT OF EDUCATION
OFFICE FOR CIVIL RIGHTS
32 OLD SLIP, 26TH FLOOR
NEW YORK, NEW YORK 10005

TIMOTHY C. J. BLANCHARD
DIRECTOR
NEW YORK OFFICE

May 15, 2020

Sent via email only to:

MIZEL001@hartford.gov

Lori Mizerak
Assistant Corporation Counsel
City of Hartford
550 Main Street, Room 210
Hartford, Connecticut 06103
Attorney for Hartford Public Schools

dmonastersky@HL-Law.com

David S. Monastersky, Esq.
Howd & Ludorf, LLC
65 Wethersfield Avenue
Hartford, Connecticut 06114
Attorney for Glastonbury Public Schools
and Canton Public Schools

pjmurphy@goodwin.com &

lyoder@goodwin.com

Peter J. Murphy, Esq.
Linda L. Yoder, Esq.
Shipman & Goodwin, LLP
One Constitution Plaza
Hartford, Connecticut 06103-1919
Attorneys for Connecticut Interscholastic Athletic Conference
and Danbury Public Schools

izelman@fordharrison.com

Johanna Zelman, Esq.
Ford Harrison
CityPlace II
185 Asylum Street, Suite 610
Hartford, Connecticut 06103
Attorney for Bloomfield Public Schools
and Cromwell Public Schools

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Re: Case No. 01-19-4025
Connecticut Interscholastic Athletic Conference

Case No. 01-19-1252
Glastonbury Public Schools

Case No. 01-20-1003
Bloomfield Public Schools

Case No. 01-20-1004
Canton Public Schools

Case No. 01-20-1005
Cromwell Public Schools

Case No. 01-20-1006
Danbury Public Schools

Case No. 01-20-1007
Hartford Public Schools

Dear Attorneys Mizerak, Monastersky, Murphy, Yoder, and Zelman:

The U.S. Department of Education, Office for Civil Rights (OCR) issues this Letter of Impending Enforcement Action¹ in the above-referenced cases. The Complainant filed complaints against the Connecticut Interscholastic Athletic Conference (CIAC) and the Glastonbury Board of Education (Glastonbury) on behalf of three high school student-athletes and their parents. The Complainant alleged that the CIAC’s policy permitting certain biologically male student-athletes to participate in interscholastic athletics (Article IX, Section B of the CIAC By-Laws, adopted May 9, 2013, and titled, “Transgender Participation” (hereinafter referred to as the Revised Transgender Participation Policy)) discriminated against female student-athletes competing in interscholastic girls’ track in the state of Connecticut on the basis of their sex.² Specifically, the Complainant alleged that the Revised Transgender Participation Policy denied girls opportunities to compete, including in state and regional meets, and to receive public recognition critical to college recruiting and scholarship opportunities. The Complainant further alleged that implementation of the Revised Transgender Participation Policy by Glastonbury, the school attended by one of the complainant student-athletes (Student 1), denied opportunities to girls competing in interscholastic girls’ track on the basis of their sex. In addition, the Complainant alleged that the CIAC retaliated against one of the complainant parents (Parent 1), after Parent 1 complained about the Revised

¹ Section 305 of OCR’s *Case Processing Manual* states as follows: “When following the expiration of the 10 calendar day period referenced in CPM subsection 303(g) . . . the recipient does not enter into a resolution agreement to resolve the identified areas of non-compliance, OCR will prepare a Letter of Impending Enforcement Action.”

² For the purposes of this letter, the terms “male” and “female” are defined by biological sex. *See Mem. from U.S. Attorney General to U.S. Attorneys Heads of Department Components* (Oct. 4, 2017), available at <https://www.justice.gov/ag/page/file/1006981/download>; and Brief for the Federal Respondent, *Harris Funeral Homes, Inc. v. EEOC, et al.*, No. 18-107, 2019 WL 3942898 (U.S.) (2019).

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Transgender Participation Policy; and that a Glastonbury track coach retaliated against Student 1 for her and her parent's (Parent 2's) advocacy against the Revised Transgender Participation Policy.

Pursuant to OCR's *Case Processing Manual* (the *Manual*),³ Section 103, OCR also opened an investigation of Bloomfield Public Schools (Bloomfield) and Hartford Public Schools (Hartford), based on allegations that these school districts allowed a biologically male student-athlete (Student A) to participate on their girls' track teams. OCR also opened an investigation of Cromwell Public Schools (Cromwell), based on allegations that this school district allowed a biologically male student-athlete (Student B) to participate on its girls' track team. Additionally, OCR opened an investigation of Canton Public Schools (Canton) and Danbury Public Schools (Danbury), the school districts attended by the other two complainant student-athletes (Students 2 and 3, respectively), following a determination that these school districts may have been involved in alleged acts of discrimination related to the complaints filed against the CIAC and Glastonbury. OCR investigated whether these school districts denied athletic benefits and opportunities to female student-athletes competing in interscholastic girls' track through implementation of the Revised Transgender Participation Policy, or limited the eligibility or participation of any female student-athletes competing in interscholastic girls' track through implementation of the Revised Transgender Participation Policy.

Summary of Findings

As detailed below, the actions of the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury resulted in the loss of athletic benefits and opportunities for female student-athletes. One complainant student-athlete explained to OCR that no matter how hard she trained, she felt that she could never be good enough to defeat Students A and B. She also stated that female student-athletes were missing out on great opportunities to succeed and felt that female student-athletes could be "completely eradicated from their own sports." Another complainant student-athlete explained to OCR that she felt that she could not fairly compete against Students A and B, because they had a physical advantage over her. In this sense, they were denied the opportunities that Connecticut male student-athletes had of being able to compete, on a level playing field, for the benefits that flow from success in competitive athletics. OCR determined that the participation of Students A and B in girls' track events resulted in lost benefits and opportunities for female student-athletes.

OCR determined that the CIAC, by permitting the participation of certain male student-athletes in girls' interscholastic track in the state of Connecticut, pursuant to the Revised Transgender Participation Policy, denied female student-athletes athletic benefits and opportunities, including advancing to the finals in events, higher level competitions, awards, medals, recognition, and the possibility of greater visibility to colleges and other benefits. Accordingly, OCR determined that the CIAC denied athletic benefits and opportunities to female student-athletes competing in interscholastic girls' track in the state of Connecticut through the Revised Transgender Participation Policy, in violation of the regulation implementing Title IX of the Education Amendments of 1972 (Title IX), at 34 C.F.R. § 106.41(a).

³ <https://www2.ed.gov/about/offices/list/ocr/docs/ocrcpm.pdf>.

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OCR determined that the participation of Glastonbury, Canton, and Danbury in athletic events sponsored by the CIAC, consistent with the CIAC's Revised Transgender Participation Policy, which resulted in Students 1, 2, and 3, and other female student-athletes competing against Students A and B, denied athletic benefits and opportunities to Students 1, 2, and 3, and other female student-athletes, in violation of the regulation implementing Title IX, at 34 C.F.R. § 106.41(a). Glastonbury, Canton, and Danbury placed female student-athletes in athletic events against male student-athletes, resulting in competitive disadvantages for female student-athletes. The athletic events in which the female student-athletes competed were coeducational; female student-athletes were denied the opportunity to compete in events that were exclusively female, whereas male student-athletes were able to compete in events that were exclusively male. Accordingly, the districts' participation in the athletic events sponsored by the CIAC denied female student-athletes athletic opportunities that were provided to male student-athletes. Glastonbury's, Canton's, and Danbury's obligations to comply with the regulation implementing Title IX are not obviated or alleviated by any rule or regulation of the CIAC. 34 C.F.R. § 106.6(c).

Student A participated in girls' outdoor track during school year 2017-2018 on the Bulkeley (Hartford) team; and participated in girls' indoor and outdoor track during school year 2018-2019 on Bloomfield's team. OCR determined that the participation of Hartford and Bloomfield in athletic events sponsored by the CIAC, consistent with the CIAC's Revised Transgender Participation Policy, which resulted in Student A's participating in events against Students 1, 2, and 3, and against other female student-athletes, denied athletic benefits and opportunities to Students 1, 2, and 3, and other female student-athletes, in violation of the regulation implementing Title IX, at 34 C.F.R. § 106.41(a). Student B participated in girls' indoor and outdoor track during school years 2017-2018 and 2018-2019 on Cromwell's team. OCR determined that the participation of Cromwell in athletic events sponsored by the CIAC, consistent with the CIAC's Revised Transgender Participation Policy, which resulted in Student B's participating in events against Students 1, 2, and 3, and against other female student-athletes, denied athletic benefits and opportunities to Students 1, 2, and 3, and other female student-athletes, in violation of the regulation implementing Title IX, at 34 C.F.R. § 106.41(a). Hartford's, Bloomfield's, and Cromwell's obligations to comply with the regulation implementing Title IX are not obviated or alleviated by any rule or regulation of the CIAC. 34 C.F.R. § 106.6(c).

For the aforementioned reasons, OCR also determined that the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury treated student-athletes differently based on sex, by denying benefits and opportunities to female students that were available to male students.

With respect to the retaliation allegation filed against the CIAC, there was insufficient evidence to substantiate the Complainant's allegation that the CIAC retaliated against Parent 1 after Parent 1 complained about the Revised Transgender Participation Policy. With respect to the retaliation allegation filed against Glastonbury, there was insufficient evidence to substantiate the Complainant's allegation that Glastonbury retaliated against Student 1.

Nothing in this letter should be interpreted to impute misconduct on the part of any biologically male students who participated in these competitions.

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Investigation and Issuance of Letter of Impending Enforcement Action

During the course of the investigation, OCR interviewed the Executive Director of the CIAC; administrators and staff from Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury; and the students and parents on whose behalf the complaint was filed. In addition, OCR reviewed documentation that the Complainant, the CIAC, the school districts, and some of the students and parents submitted. OCR also reviewed publicly available information regarding the CIAC and its member school student-athletes.

At the conclusion of the investigations, OCR informed the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury of its findings and determinations that the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury had discriminated against female student-athletes. OCR requested that the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury enter into resolution agreements to remedy the violations. Because the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury did not enter into resolution agreements, OCR issued letters of impasse to the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury on March 17, 2020, in which it advised the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury that it would issue this letter if each did not reach an agreement with OCR within 10 calendar days of the date of its impasse letter.⁴ OCR issues this Letter of Impending Enforcement Action because the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury have to date failed to voluntarily enter into resolution agreements to remedy the identified violations.

Jurisdiction

OCR is responsible for enforcing Title IX, as amended, 20 U.S.C. § 1681 *et seq.*, and its implementing regulation at 34 C.F.R. Part 106, which prohibit discrimination on the basis of sex in education programs and activities receiving financial assistance from the U.S. Department of Education (the Department).

OCR has jurisdiction over the CIAC as follows:

- a) The CIAC is a direct recipient of Federal funding from the Department through a grant awarded by the Department's Office of Special Education Programs (OSEP) to support the Special Olympics Unified Champion Schools program administered by the CIAC.
- b) The CIAC is also an indirect recipient of Federal funding. The CIAC is governed by member school representatives who devote official time and district resources to the CIAC (e.g., determine athletic eligibility, make rules for athletic competitions, run state boys' and girls' tournaments, and control state championships). In addition, the CIAC receives revenue through the sale of tickets to tournament contests—revenue that would otherwise go to the schools—and by the assessment of entry fees on schools for

⁴ In emails dated March 27, 2020, OCR informed the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury that in view of their COVID-19-related duties and responsibilities, OCR was extending the 10-calendar-day deadline to respond to OCR's proposed resolution agreement for a period of 30 days, to April 27, 2020.

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participation in various tournaments. The CIAC is also an indirect recipient of Departmental financial assistance through Special Olympics of Connecticut (which receives grant money from OSEP) because several employees of Special Olympics of Connecticut provide to the CIAC technical assistance in the administration of the Special Olympics Unified Champion Schools program.

- c) The CIAC's member schools also have ceded controlling authority over Connecticut's high school athletic program to the CIAC, whose purpose is to supervise, direct, and control interscholastic athletics in Connecticut. In addition to the CIAC's governance by local school representatives (noted above), the Connecticut General Assembly's Office of Legislative Research stated that school districts have the power to organize athletic programs and decide in what sports to compete, adding, "Boards have delegated authority over the organization of interscholastic high school athletics to [the CIAC]. CIAC regulates high school sports, promulgates eligibility and safety and health rules for teams, and organizes and controls games and championships."

OCR has jurisdictional authority under Title IX to investigate Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury, because each is a recipient of financial assistance from the Department.

I. ATHLETIC BENEFITS AND OPPORTUNITIES

Findings of Fact

The CIAC's Organizational Structure

The CIAC is the only association governing interscholastic athletic programs for secondary schools in Connecticut.⁵ The CIAC is a division of the Connecticut Association of Schools (CAS). Any public or parochial school accredited by the Connecticut State Department of Education, as well as any private school or academy, and any private school holding associate institutional membership in the CAS can become a member of the CIAC. The CIAC currently has 188 member schools. Member schools sign an annual Membership Agreement, pay annual dues, and agree to abide by the CAS Constitution and the CIAC By-Laws and Eligibility Rules. During school year 2018-2019, the CIAC authorized its member schools to participate in 14 boys' sports and 13 girls' sports. The CIAC By-Laws allow female athletes to participate on boys' teams, but do not permit male athletes to participate on girls' teams. The CIAC administers its athletics programs by way of the CAS Constitution, by-laws, and tournament regulations.⁶

The CIAC has 27 committees corresponding to each of the CIAC-sanctioned sports. Each committee includes representatives from member schools, including principals, coaches, and

⁵ See CIAC Handbook 2019-2020, Section 2.2 ("The CIAC is the only Association which governs interscholastic athletic programs for secondary schools in Connecticut.").

⁶ The by-laws constitute the general rules and policies for athletic administration and participation in the CIAC. Specific policies, such as the Revised Transgender Participation Policy, are contained within the by-laws. Further policies regarding sport-specific tournament participation ("tournament regulations") are published each season in a sports information packet.

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athletic directors, as well as former coaches. These committees coordinate the activities of the sports, including game rules, playing conditions, tournament policies, and sportsmanship initiatives. The by-laws, along with the CAS constitution, are published every year as part of the CIAC Handbook, which is available on the CIAC website.⁷ The Handbook includes detailed rules and regulations governing athletic administration, scheduling, and eligibility, among other topics. The CAS Legislative Body is authorized to make changes to the CAS Constitution and the by-laws. The principals of the CIAC member schools are the voting delegates to the Legislative Body. The CAS Constitution states that any voting member school may submit a proposed change to the by-laws/regulations through its representative. The CIAC Board of Control is the governing body for high school interscholastic sports in Connecticut and has 14 voting and 3 non-voting members; the Board of Control has representatives from large, medium, and small schools, urban and rural schools, as well as public, parochial, and technical schools.⁸ The by-laws require that the Board of Control consider any proposed change to a by-law/regulation, act upon it, and submit any proposed by-law/regulation change to member schools for a vote at the annual meeting of the Legislative Body. The by-laws, including the rules, regulations, and policies contained therein, as well as the tournament regulations are binding on its member schools,⁹ and the CIAC has the authority to penalize schools for violation of the by-laws.¹⁰

During interviews, district staff members confirmed that the districts regarded the by-laws, rules, and regulations, including the Revised Transgender Participation Policy, as binding. The witnesses further stated that they regarded the CIAC as the only athletic association in Connecticut that could provide sufficient competitive opportunities for their students.¹¹ Witnesses told OCR that if their schools were to withdraw from the CIAC, they likely would encounter difficulties scheduling games against other schools and would be unable to participate in statewide competitions. An Athletic Director for one of the Districts advised OCR that a CIAC member school would not benefit from playing against a nonmember school because it would not add to

⁷ http://www.casciac.org/pdfs/ciachandbook_1920.pdf (site last visited on April 24, 2020).

⁸ The CIAC Board of Control is elected each year by the Legislative Body at the Annual Meeting of the CAS. The CIAC Board of Control meets monthly during the school year.

⁹ See the CIAC Handbook 2019-2020, Section 2.4 (“Each member school has the responsibility of knowing and adhering to all CIAC rules and regulations and administering its athletic programs according to those rules.”).

¹⁰ See the CIAC Handbook 2019-2020, Section 3.0, CIAC By-Laws, Article III, Section C (“The Board of Control shall have the power to assess and to enforce such penalties, including fines, against member schools, principals, athletic directors, coaches and/or members of the coaching staff, as it deems suitable for violations of its Bylaws, Regulations, Rules, Standards of Courtesy, Fair Play and Sportsmanship, Code of Ethics, or any other standard of conduct or any other provision of this Handbook.”). Witnesses OCR interviewed, including the CIAC Executive Director and administrators of member schools, stated that, in general, member schools are responsible for ensuring their own compliance with the CIAC’s rules and for self-reporting any violations of those rules. Member schools can also report other schools for potential violations. The CIAC Executive Director informed OCR that, to date, no member school has self-reported or reported another member school for a violation of the Revised Transgender Participation Policy.

¹¹ The CIAC Executive Director stated that there are private schools within Connecticut, such as Taft, Choate, and Kent, that do not belong to the CIAC. These schools belong to the Founders League, whose website describes the league as comprising “highly selective college preparatory schools.” The Founders League includes ten schools from Connecticut and one school from New York. The Founders League holds its Championship in 13 boys’ sports and 12 girls’ sports separately, and the CIAC precludes any Founders League schools from competing in any post-season events hosted by the CIAC. Witnesses opined that they did not know if the Founders League was a feasible alternative for a public school in lieu of becoming a member of the CIAC.

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the school’s record for purposes of qualifying for the state championship. The same Athletic Director also stated that having a state-wide association makes all of the athletics programs stronger and more consistent with set rules for play and eligibility.

The CIAC’s Adoption of its Revised Transgender Participation Policy

The CIAC stated that its Board of Control began discussions regarding transgender participation in athletics during school year 2007-2008. During its 56th Annual Meeting, held on May 8, 2008, the CIAC membership adopted a by-law change concerning the eligibility of transgender athletes, adding new language to Article IX of the CIAC by-laws (the 2008 policy). Specifically, the 2008 policy allowed transgender student-athlete participation only in accordance with the gender stated on the student’s birth certificate unless the student had undergone “sex reassignment.”¹² The 2008 policy set forth specific requirements for post-pubescent sex reassignment, including surgery; legal recognition of the reassignment by proper governmental authorities; hormonal therapy; and a two-year waiting period post-surgical and anatomical changes.¹³ The 2008 policy also provided that a student-athlete seeking participation as a result of a sex reassignment would be able to appeal eligibility determinations through the CIAC’s eligibility appeal process. The stated rationale for the 2008 policy was that “[w]hile the eligibility of transgendered students has not yet been a ‘live’ issue in Connecticut, the CIAC Board felt that it should be pro-active and have a policy in place for any future eventualities.”¹⁴ The 2008 policy remained in effect until 2013. The CIAC advised OCR that, during that time period, the CIAC did not receive any requests for a student-athlete to participate on a team that was different from the student’s “assigned gender at birth.”

The CIAC stated that in 2012, after the Connecticut Legislature passed Public Act 11-55, expanding the scope of Connecticut’s anti-discrimination laws to prohibit discrimination on the basis of “gender identity or expression,”¹⁵ the CIAC decided to review and revise the 2008 policy.

¹² https://www.casciac.org/pdfs/ciachandbook_1213.pdf (site last visited on April 24, 2020)

¹³ Under the 2008 policy, a student-athlete who had undergone sex reassignment before puberty was not subject to the requirements detailed above.

¹⁴ The CIAC Annual Meeting minutes. https://www.casciac.org/pdfs/adopted_bylaw_changes_CIAC.pdf (site last visited on April 24, 2020).

¹⁵ P.A. 11-55, which became effective on October 1, 2011, defines “gender identity or expression” as follows:

“Gender identity or expression” means a person’s gender-related identity, appearance or behavior, whether or not that gender-related identity, appearance or behavior is different from that traditionally associated with the person’s physiology or assigned sex at birth, which gender-related identity can be shown by providing evidence including, but not limited to, medical history, care or treatment of the gender-related identity, consistent and uniform assertion of the gender-related identity or any other evidence that the gender-related identity is sincerely held, part of a person’s core identity or not being asserted for an improper purpose.

See Conn. Gen. Stat. § 46a-51. Specifically, with respect to the public schools, P.A. 11-55 amended § 10-15c of the Connecticut General Statutes to prohibit discrimination on the basis of gender identity or expression, among other bases. The legislative history of P.A. 11-55 indicates that the topic of athletics was briefly raised during the Connecticut House proceedings on May 19, 2011, in a discussion between Rep. Fox (the bill’s proponent) and Rep. Shaban. In response to Rep. Shaban’s question concerning whether, under the bill, a high school boy who wanted to play on the school’s girls’ basketball team could not be prohibited from doing so, Rep. Fox indicated that he believed, but was not certain, that in that context the intent of the bill was to apply only to a male athlete who had undertaken

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The CIAC did so at its Annual Meeting, held on May 9, 2013, when the current Revised Transgender Participation Policy was enacted. This Policy states, in relevant part:

[T]his policy addresses eligibility determinations for students who have a gender identity that is different from the gender listed on their official birth certificates. . . . Therefore, for purposes of sports participation, the CIAC shall defer to the determination of the student and his or her local school regarding gender identification. In this regard, the school district shall determine a student’s eligibility to participate in a CIAC gender specific sports team based on the gender identification of that student in current school records and daily life activities in the school and community at the time that sports eligibility is determined for a particular season. Accordingly, when a school district submits a roster to the CIAC it is verifying that it has determined that the students listed on a gender specific sports team are entitled to participate on that team due to their gender identity and that the school district has determined that the expression of the student’s gender identity is bona fide and not for the purpose of gaining an unfair advantage in competitive athletics. . . . The CIAC has concluded that [these] criteria [are] sufficient to preclude the likelihood that a student will claim a particular gender identity for the purpose of gaining a perceived advantage in athletic competition.¹⁶

Thus, the Revised Transgender Participation Policy eliminated any requirement that transgender student-athletes provide any medical information or documentation to the CIAC or its member schools.

The Connecticut State Department of Education (CSDE) issued a document entitled, “Guidance on Civil Rights Protections and Supports for Transgender Students – Frequently Asked Questions,” dated September 2017 (the 2017 FAQs).¹⁷ The 2017 FAQs state, in relevant part:

what Rep. Shaban had described as “affirmative physical changes.” Conn. Gen. Assembly House Proceedings 2011, Vol. 54, Part 12 (May 19, 2011) at 4017-4022.

¹⁶ The CIAC informed OCR that the Revised Transgender Participation Policy has been in effect since its adoption on May 9, 2013. The CIAC stated to OCR that the policy contained in the revised by-law no longer required student-athletes to undergo medical treatment or sex reassignment surgery in order to participate in athletics consistent with their gender identity, nor would a student-athlete be required to seek permission from the CIAC in order to participate under the policy in accordance with the student’s gender identity; rather, the policy required member schools to submit rosters that reflected the gender identities of their students. The CIAC further stated that this decision was based on “a determination that a member school is in the best position to identify and confirm that a student-athlete’s gender is consistent with the student’s gender identity at school and to place the student on the correct team roster.” Accordingly, the Board of Control determined that students would not be required to disclose their transgender status to the CIAC.

¹⁷ https://portal.ct.gov/-/media/SDE/Title-IX/transgender_guidance_faq.pdf?la=en (site last visited on April 24, 2020). This guidance indicates that the CIAC is responsible for establishing statewide policies for transgender participation in interscholastic competitive sports.

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For issues concerning participation in interscholastic competitive sports, schools and districts should consult their counsel and the Connecticut Interscholastic Athletic Association (“CIAC”).¹⁸

On October 11, 2018, the CAS Board of Directors requested that an ad hoc committee examine all the CIAC rules and regulations that relate to gender. The meeting minutes of the CIAC stated that the purpose of the review was to ensure that the regulations were in alignment with state law.¹⁹ The CIAC established a Gender By-Law Subcommittee in December 2018 to review all of the by-laws relating to gender in order to confirm the current policies and practices or make recommendations for improvements. In its report to the CIAC Board of Control, dated April 4, 2019, the Subcommittee concluded that the by-laws reviewed were “in alignment with Connecticut law and the CAS-CIAC mission.”²⁰

The CIAC’s and School Districts’ Implementation of the Revised Transgender Participation Policy

School district witnesses interviewed stated that none of the districts had a specific written procedure or practice in place to implement the Revised Transgender Participation Policy, but that they followed or would follow the plain language of the policy. Districts that had not had a transgender student request to participate in athletics stated that should they receive a request from a transgender student to participate in athletics, they would look at the gender identity listed in the student’s current school records and then whether the gender identity the student is expressing during the day is consistent with the gender identity listed in the student’s school records; e.g., whether the student has requested to use a name and pronouns consistent with that sex. Witnesses stated that often this process would involve the student’s parents, particularly if the student were a minor and school records needed to be changed; but that once the student had established his or her gender identity, the school would place the student on the roster of the team associated with that gender. Witnesses from districts that have had transgender students request to participate in athletics detailed a similar internal process; namely, that upon a request from a transgender student, they would review the student’s records, speak with the student’s teachers/counselors, meet with the student’s parents, and if all was consistent, thereafter, place the student on the team roster associated with the student’s gender identity.

Every district confirmed to OCR that it believed that no specific documentation, medical or otherwise, was required in order for the district to comply with the policy. District administrators

¹⁸ 2017 FAQs, p. 7. See https://portal.ct.gov/-/media/SDE/Title-IX/transgender_guidance_faq.pdf?la=en (site last visited on April 24, 2020).

¹⁹ https://portal.ct.gov/-/media/SDE/Title-IX/transgender_guidance.pdf?la=en (site last visited on April 24, 2020).

²⁰ The CAS mission statement is as follows: “The Connecticut Association of Schools provides exemplary programs and services that promote excellence in the education of all children.” The CIAC mission statement is as follows: “The CIAC believes that interscholastic athletic programs and competition are an integral part of a student’s academic, social, emotional and physical development. The CIAC promotes the academic mission of schools and honorable competition. As such, the CIAC serves as the regulatory agency for high school interscholastic athletic programs and exists to assure quality experiences that reflect high ethical standards and expectations for fairness, equity and sportsmanship for all student-athletes and coaches. The CIAC provides leadership and support for member schools through the voluntary services of dedicated school administrators, athletic directors, coaches and consultants.”

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reported that they had not received specific training regarding implementation of the Revised Transgender Participation Policy, although some stated that they had attended workshops or presentations on the topic of transgender athletes generally. Principals and athletics directors interviewed by OCR indicated that transgender student-athlete participation had been discussed either formally or informally at annual professional development conferences, as well as during professional association meetings, and through their respective regional conferences. Witnesses from the districts stated, and the CIAC confirmed to OCR, that the CIAC has not questioned any decisions made by a member school under the policy, nor has it investigated any rosters submitted by member schools with respect to the policy. Glastonbury noted that, in the past, when it had a transgender student wish to participate in athletics, the student's parent offered to provide medical documentation to support their request under the Revised Transgender Policy; however, the CIAC advised Glastonbury that the information was not required.

Additionally, multiple district witnesses stated to OCR that, according to their understanding of the Revised Transgender Participation Policy, it is not the school's or district's role to determine a student's gender. Witnesses from Bloomfield, Danbury, Glastonbury, and Hartford stated that the student initiates the process and informs the district of the student's gender identity; and the district's role is to review the current school records, speak with school staff regarding the student's current gender expression during the school day, and then place the student on the appropriate roster. Witnesses from Bloomfield and Cromwell also stated that if a student were to initially register with the school under a gender identity that differed from the student's biological sex, the school would place the student on the roster of the gender identified in the school registration records; i.e., the district and student would not need to have a discussion or review the student's participation under the Revised Transgender Participation Policy. Both Cromwell and Bloomfield have used this process in their districts.

Concerns Raised by Parents and Others to the CIAC Regarding the Policy and the Participation of Biologically Male Students in Track Events

In 2019, the CIAC received several emails from parents of Connecticut high school students, in which the parents expressed concerns about the policy and specifically about the participation in female track events of biologically male students.

From January 2019 to March 2019, the CIAC received four emails from the father of a female student-athlete at Glastonbury High School (Parent 3). On January 29, 2019, Parent 3 sent an email to the CIAC stating that he and many parents of other female track athletes, as well many of the athletes themselves, believed that the policy was unfair to female track athletes²¹ and that the policy raised safety concerns as well, particularly with respect to sports involving physical contact.²² With respect to track, he suggested that a compromise could be reached whereby a boy

²¹ In part, Parent 3 stated as follows: "Should a boy who identifies as a girl with all of the physiological and anatomical advantages of a boy be able to compete in Connecticut Girls Indoor Track, obtain medals over other girls who have trained hard and care deeply about the results, eradicate existing girls event and state track records and push what would have been the final girl qualifier out of selection for All-Conference and All-State honors?"

²² In part, Parent 3 stated as follows: "Should safety be compromised in girls high school track or other girls sports such as basketball, soccer or lacrosse to accommodate a boy who identifies as a girl with all of the physiological and anatomical advantages of a boy?"

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identifying as a girl would be able to compete but would not have the results used for purposes of conference or state records or for all-conference or all-state selection. Parent 3 requested a meeting with the CIAC officials to discuss the topic.²³

On February 17, 2019, Parent 3 sent an email to the CIAC stating that the transgender policy affected the outcome of the CIAC State Open Girls Indoor Track Championship held on February 16, 2019. Specifically, he stated that the performance of a transgender athlete “with all the physiological and anatomical attributes of a male athlete” in the Championship had enabled Bloomfield High School to win the team championship over Glastonbury. Parent 3 again urged the CIAC to change the policy. On February 25, 2019, the Executive Director of the CIAC responded to Parent 3, stating that Parent 3’s correspondence would be provided to a CIAC subcommittee reviewing the policy.

On March 3, 2019, Parent 3 sent an email to the CIAC again urging the CIAC to change the policy. He further stated that at the New England Regional Indoor Track Championship, held on March 2, 2019, a biologically male athlete finished first in the 55-meter and 300-meter sprints and had helped Bloomfield win first place over Glastonbury in the girls’ 4 x 400 meter relay. On March 10, 2019, Parent 3 sent an email to the CIAC stating that the National Scholastic Athletic Foundation, an organization that hosts the New Balance National high school track and field competition, had established a policy whereby female transgender athletes are required to meet applicable rules established by the National Scholastic Athletics Foundation, USA Track & Field, and International Olympic Committee, which required such athletes to demonstrate that they had undergone hormone treatment. Parent 3 stated that when Bloomfield’s girls’ 4 x 400 team recently competed in the New Balance Nationals, it did so without the participation of its biologically male athlete, and that this resulted in a slower time than Bloomfield’s team had achieved at the New England championships, when the biologically male athlete had competed.

From February 2019 to March 2019, the CIAC received three emails from a parent (Parent 4). On February 25, 2019, Parent 4 sent an email to the CIAC expressing concerns about the fairness of the policy.²⁴ He stated that as a result of the participation of transgender girl track athletes, seven cisgender girl athletes had been deprived of the opportunity to compete at the New England Regional Championship and to gain additional exposure to college coaches and recruiters. He stated that “[a]t the heart of the competitive fairness issue regarding competition between transgender girls and cisgender girls is the abundance of testosterone present in young biological males.”

²³ In addition, Parent 3 attached a copy of an email dated January 27, 2019, that he had sent to officials from the Glastonbury District. In this email, Parent 3 expressed his concerns about the policy’s fairness and safety, and he described several recent track meets in which a transgender athlete had finished ahead of other athletes. Parent 3 asked the Glastonbury officials to make efforts to have the policy changed.

²⁴ Specifically, he stated that “there are many, myself included, who cannot begin to fathom the policy of the CIAC that has allowed the competitive record of Connecticut Girls High School Track and Field Competitions to be altered by the tabulation and classification of results that include transgender athletes that has now spread its impact to not only athletes that have competed directly in these events, but now also their teammates, especially 75 members of the Glastonbury Girls Indoor Track Team, when team records and scoring are impacted.”

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Further, Parent 4 stated that the CIAC maintains different qualifying standards for girls' and boys' track, which he contended was an acknowledgment that there was a measurable difference in the performance capabilities between genders. He requested that the CIAC adjust the results of the 2019 State Girls Open Competition so as not to include the results of the transgender athletes, and he requested that the policy be changed going forward. He offered several suggestions for a new policy (e.g., establishing a new competitive category for transgender athletes).

The Executive Director of the CIAC responded the same day, stating that Parent 4's correspondence would be shared with the subcommittee reviewing the Revised Transgender Participation Policy. On March 1, 2019, Parent 4 sent an email to the CIAC, stating that he would like to arrange a meeting with the members of the subcommittee reviewing the policy. On March 5, 2019, Parent 4 sent an email to the CIAC stating that, during the New England Indoor Regional Championships on March 2, 2019, spectators from other states had expressed "surprise and concern" that Connecticut permitted transgender athletes to participate.

On June 20, 2019, the CIAC received an email from the mother of a rising female high school student in Connecticut (Parent 5). Parent 5 expressed her concern that the policy was unfair to female athletes because it would allow "genetic males (no matter how they identify themselves) to usurp genetically female athletes in competition."

In a letter to the CIAC, dated April 11, 2017, a head track coach at a Connecticut high school stated that Student B was at a great advantage unless or until the student began taking hormone blockers. He also referred to average high school testosterone levels according to the Mayo Clinic. He then argued that Student B had gender characteristics that females cannot compete with, and that Student B was taking advantage of the CIAC's policies and rules. He requested that the CIAC find a solution that allowed Students A and B to compete but also protected female athletes.

The CIAC's Rules for Girls' Indoor and Outdoor Track Competition

The CIAC is organized into various boards and committees, including one committee for each CIAC-sanctioned sport. Each year, the CIAC committee for the respective sport publishes a "Sports Packet/Information Sheet" for the season. The Sports Packet/Information Sheets for girls' indoor and outdoor track set forth, among other things, the procedures for entering student-athletes in events; how many events a student-athlete may participate in;²⁵ submitting qualifying performances; entrance fees; rules regarding electronic devices; protest procedures; scrimmages; and, regular season score reporting.

²⁵ For both girls' indoor and outdoor track, the sport packets state that a competitor shall not compete in more than three events including relays, and any athlete on the tournament roster shall not be entered in more than three events excluding relays; e.g., an athlete may be entered in the 4 x 800, 1600, 3200, and 4 x 400 events, but can only run or be a competitor in three events. A contestant becomes a competitor when the contestant reports to the clerk of course. The rules also state that a competitor who competes in three events at any of the class meets cannot enter any other event at the State Open Championship. The stated rationale is that class championship meets and the State Open are really one meet because advancing to the State Open Championship is predicated on class meet performance. Athletes listed as alternates for relay events may only run if they ran two events or fewer at the class meet; i.e., they are still limited to three events.

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The CIAC sets the rules for athletic eligibility and competition across the state. Each sport is divided into divisions/classes, based on the size of the school. The CIAC sports committees determine the tournament or championship class divisions for each sport based on the grade 9-12 enrollments of each school as of October 1 of the past school year. A school can have different classes for each of its sports, and a school's class/division can change depending on the year. The Sports Packet/Information Sheet for each sport sets forth the class/divisions for the current year. For example, during school year 2018-2019, for girls' indoor track, the CIAC had the following classes, from smallest school enrollment to largest: Class S, Class M, Class L, and Class LL. For girls' outdoor track, the CIAC had the following classes: Class S, Class M, Class MM, Class L, and Class LL.

There are eleven conferences/leagues²⁶ that are based mostly on geographic location, which can include schools from the different CIAC classes. The CIAC does not set regular season competitive schedules; these are set by the individual member schools, individually or through conferences/leagues.²⁷ However, the CIAC does mandate certain "season limitations," including when the opening day of practice occurs, the minimum number of required practice days prior to the first contest, the maximum number of games or meets played per week, and the maximum number of contests scheduled per season.²⁸

For post-season competition, if they met qualifying standards,²⁹ participants in girls' indoor and outdoor track can participate in a conference/league championship; a class statewide championship; the State Open Championship; and the New England Regional Championship. Each of the eleven conferences/leagues holds a conference/league championship at the end of the indoor and outdoor seasons; and each class holds a class statewide championship at the end of the indoor and outdoor seasons. A student-athlete's eligibility to compete at the indoor and outdoor track State Open Championships is determined by the finish order at the respective class statewide championships as set forth in the Sports Packet/Information Sheet.³⁰ For example, for indoor track for school year 2018-2019, the top 14 finishers in all events in class statewide championships for Classes LL, L, M, and S were eligible to compete in the indoor State Open Championship. For outdoor track for school year 2018-2019, the top 5 finishers in each of the class statewide championships automatically qualified for the outdoor State Open Championship, as well as all athletes who obtained the special (automatic) standard for their event at the class statewide championship.³¹

²⁶ http://ciacsports.com/site/?page_id=131 (site last visited on April 24, 2020).

²⁷ See CIAC Handbook, Section 5.0 ("The CIAC has no jurisdiction over regular season interscholastic scheduling problems except as these relate to violation of CIAC policies. Schedul[ing] of interscholastic contests within CIAC season limitations is the responsibility of individual schools and/or leagues.")

²⁸ See *id.* at page 47.

²⁹ Schools may only enter athletes who meet the minimum requirements for the event as established by the sports committee for that year, as set forth in the sports information packet.

³⁰ The Sports Packet/Information Sheet provides information about the Class/Division Championships and the State Open Championship; including qualifying distances and times for entry into the class championships, as well as eligibility to compete in the State Open Championship.

³¹ From at least school years 2012-2013 through 2016-2017, the outdoor sports packet set a CIAC State Open Championship qualifying standard for each event. For the 100-meter dash, the qualifying standard was 12.60 for all years and for the 200-meter dash, the qualifying standard was 26.70 for all years except 2016-2017, when it was lowered to 26.14. The sports packets during those years stated that the automatic standard approximated the 8th place

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The CIAC awards medals to the top 6 competitors based on the order of finish in events at the State Open Championships (both indoor and outdoor), and the top 6 competitors also qualify for the New England Regional Championships.³² Thereafter, a student may go on to compete at the national championships, held by the National Scholastic Athletics Foundation (the New Balance Indoor and Outdoor Championships), based on the student's qualifying time.³³

The CIAC uses a point system to award points by school to determine a school state champion for indoor and outdoor track. For indoor track, the CIAC uses team scoring based on six places (from first to sixth place, the CIAC awards 10, 8, 6, 4, 2 and 1 points, respectively) for all events. For outdoor track, the CIAC uses team scoring based on eight places (from first to eighth; 10, 8, 6, 5, 4, 3, 2 and 1 points) only when an eight lane track is used; otherwise the CIAC uses team scoring based on six places (from first to sixth; 10, 8, 6, 4, 2 and 1 points) for the event. The points earned by each school are then tallied, and the CIAC ranks schools in the order of points from highest to lowest to determine the state champion.³⁴

Complainant Students and Competition Against Students A and B

The complaint was filed on behalf of three high school female students competing in girls' track in the state of Connecticut: Student 1, attending Glastonbury High School (School 1); Student 2, attending Canton High School (School 2); and Student 3, attending Danbury High School (School 3). The Complainant specifically complained about two students who participated in girls' track in the state of Connecticut: Student A, who competed for Bulkeley High School in the Hartford School District (School A1) in the spring of school year 2017-2018, and Bloomfield High School (School A2) during school year 2018-2019 to the present; and Student B attending Cromwell High School (School B). The CIAC's list of sanctioned sports includes boys' track. Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury each maintained boys' track teams.

finish established in the prior year State Open. Starting in school year 2017-2018, and continuing in school year 2018-2019, per the Sports Packet, "The special standard will be set each year after the class meets have ended. The special standard will be determined by looking at the performance rankings for each event that includes the top five (5) qualifying performances from each of the class meets. The 12th place performance from the qualifiers will become the automatic standard for that year. All athletes who meet that standard during the current year's class championship will advance to the open."

³² For outdoor track, the 7th and 8th place finishers in the final for any event will be considered as alternates.

³³ The National Scholastic Athletics Foundation's Transgender Participation Policy & Procedure, updated December 2019, allows for a transgender student-athlete to submit a qualified entry into a National Scholastic Athletics Foundation competition or make a written request for participation, which the National Scholastic Athletics Foundation then evaluates on a case-by-case basis, including evaluation by an Eligibility Committee comprising at least one medical professional, event director, active age-appropriate coach, and lawyer. The Eligibility Committee can request any information it believes relevant to the application, including but not limited to interviews with the athlete and/or parents/guardians and coaches, and a review of relevant medical and legal records. The policy states that a male-to-female athlete who is not taking hormone treatments related to gender transition may not compete in female competitions, but that a female-to-male athlete not taking testosterone related to gender transition may compete in male competitions.

³⁴ In the outdoor State Open Championship, seeding is done electronically based on an athlete's performance at the Class meets. An athlete's seed determines the athlete's lane assignment; the athlete with the fastest projected time based on performance at the Class meets is assigned to a middle lane (usually lane 4) and athletes are then placed in lanes in order of seed, working towards the outside lanes.

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In order to determine the impact of the Revised Transgender Participation Policy on Students 1, 2, and 3, OCR reviewed the participation of Students 1, 2, 3, A, and B in post-season conference/league championships, class championships, State Open Championships, and the New England Regional Championships. OCR reviewed information for school years 2017-2018 and 2018-2019.

Student 1

OCR determined that Student 1 was enrolled at School 1 as a 10th grade student during school year 2017-2018, and as an 11th grade student during school year 2018-2019. Student 1 was a student-athlete on School 1's girls' varsity indoor and outdoor track teams. Regionally, School 1 participated in the Central Connecticut Conference (CCC). Statewide, School 1 participated in Class LL for indoor and outdoor track.

The Complainant asserted that pursuant to the Revised Transgender Participation Policy, and the resulting participation of Students A and B, the CIAC denied Student 1 opportunities to advance to the finals in an event, to advance to higher levels of competition, and/or win titles at events such as the CIAC Outdoor State Open Championship, held on June 4, 2018; the CIAC Indoor State Open Championship, held on February 16, 2019; and the Indoor New England Regional Championship, held on June 8, 2019.

During an interview with OCR, Student 1 stated that she and other female student-athletes with whom she had spoken found it very difficult to go into a race knowing that no matter what they do, they would never be good enough to win. In a video provided by the Complainant, Student 1 asserted that by permitting transgender athletes to participate in girls' track competitions, she and other athletes had lost opportunities to compete at track meets, to win titles, and to gain attention from college coaches. She further stated that women have fought hard for many years to have opportunities and a voice in sports; and that it is upsetting to realize that no matter how hard she and other female student-athletes train, they will never be good enough to compete against transgender athletes. Student 1 also stated: "I respect these transgender athletes, and I understand that they are just following CIAC policy. But at the same time, it is demoralizing and frustrating for me and for other girls."

The Athletic Director for School 1 acknowledged that some parents had complained that their children did not place at certain meets, but she stated that she was unaware of whether any female students had lost out on competitive opportunities, awards, or wins. School 1's Athletic Director denied that any of the female student-athletes on the girls' indoor or outdoor track teams were denied participation opportunities as a result of having transgender athletes participate in track events. She stated that student-athletes were eligible to participate in all meets that the District participated in if they met the requirements. School 1's Assistant Athletic Director stated that she is aware of Student 1's complaining that she felt she was deprived of an opportunity to advance to the New England Regional Championship due to the participation of transgender athletes.

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Student 2

Student 2 was enrolled at School 2 as a 10th grade student during school year 2017-2018, and as an 11th grade student during school year 2018-2019. During school years 2017-2018 and 2018-2019, Student 2 was a student-athlete on School 2's varsity girls' indoor and outdoor track teams. Regionally, School 2 participated in the North Central Connecticut Conference (NCCC). Statewide, School 2 participated in Class S for indoor and outdoor track.

The Complainant asserted that, pursuant to the Revised Transgender Participation Policy and the resulting participation of Students A and B, the CIAC denied Student 2 opportunities to advance to higher levels of competition and/or win titles at events such as the 2017 Outdoor State Open Championship, held on June 6, 2017; the New England Regional Championship, held on June 10, 2017; the Class S Indoor Championship held on February 10, 2018; the Outdoor State Open Championship, held on June 4, 2018; the Class S Indoor Championship, held on February 7, 2019; the Indoor State Open Championship, held on February 16, 2019; the Class S Outdoor Championship, held on May 30, 2019; and the Outdoor State Open Championship, held on June 3, 2019.

During an interview with OCR, Student 2 stated that, in addition to the impact the participation of Students A and B had on her and other female student-athletes' ability to win titles and awards, their participation also has had an impact on her and other female student-athletes' ability to obtain recognition from media and college coaches. Student 2's mother (Parent 1) noted that some biologically female track student-athletes had lost out on media recognition because the winner of an event at the state championships gets the opportunity to be interviewed by reporters, while the second and third place finishers do not. Specifically, Parent 1 stated that at the state championships there is a bank of reporters waiting to interview the winners and the winners' names are put in the local papers, and that student-athletes typically do not receive any media recognition when they come in second. Further, Student 2 stated that the participation of Student A, in particular, had an impact on her ability to set class records for the CIAC Class S 100-meter and 200-meter races.

School 2's principal stated that no student-athletes were prohibited from participating; student-athletes went to every meet that the school participated in, and all student-athletes who qualified for state tournaments had the opportunity to compete. However, the principal acknowledged that, at the state level, some people might argue that a transgender athlete defeated a District student (i.e., Student 2); therefore, that student lost out on an award.

Student 3

OCR determined that Student 3 was enrolled at School 3 as a 9th grade student during school year 2018-2019. Regionally, School 3 participated in the Fairfield County Interscholastic Athletic Conference (FCIAC). Statewide, School 3 participated in Class LL for indoor and outdoor track. During school year 2018-2019, Student 3 was a student-athlete on School 3's girls' varsity outdoor track team.

The Complainant asserted that, pursuant to the Revised Transgender Participation Policy and the resulting participation of Students A and B, the CIAC denied Student 3 opportunities to advance

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to higher levels of competition and/or win titles at events, such as the Outdoor State Open Championship, held on June 3, 2019. During an interview with OCR, Student 3 stated that when competing against transgender athletes, it was frustrating for her to know that she would not be able to do as well as she otherwise could do. In a video the Complainant provided, Student 3 asserted that even before she gets to the track, she already knows that she is not going to win first or second place if she races against transgender athletes; and that no matter how hard she works, she will not be able to win the top spot.

Competition Against Students A and B

Descriptions of some of the girls' track indoor and outdoor post-season events in which Students 1, 2, and/or 3 participated with Students A and/or B during school years 2017-2018 and 2018-2019 are set forth below.

1. During school year 2017-2018, in the Indoor State Open Championships, Student B participated in the 55-meter dash. In the preliminary for the 55-meter dash, Student B placed 2nd and Student 2 placed 16th. The top 8 finishers advanced to the finals; however, even though Student 2 would not have advanced to the finals even absent Student B's participation, Student B's finish in the top 8 in the preliminary denied an opportunity for the 9th place finisher to advance to the finals. See chart summarizing the results:

2017-2018 Indoor State Open Championships					
Girls 55-Meter Dash Preliminaries (Top 7 Advance to Finals)					
Place	Student	Time	School	Seed	Heat
1	*	7.26q	*	7.31	1
2	Student B	7.30q	School B	7.31	1
3	*	7.34q	*	7.39	3
4	*	7.35q	*	7.28	2
5	*	7.40q	*	7.39	3
6	*	7.42q	*	7.48	3
7	*	7.43q	*	7.38	2
8	*	7.44	*	7.44	1
9T	*	7.53	*	7.47	3
9T	*	7.53	*	7.40	2
...	
16	Student 2	7.78	School 2	7.46	2

2. During school year 2017-2018, in the Outdoor State Open Championships, Student A and Student B participated in the 100-meter dash. In the preliminary for the 100-meter dash, Student A placed 1st and Student B placed 4th. The top 8 finishers advanced to the finals, including Student 2 (who placed 2nd) and Student 1 (who placed 8th); however, Student A's and Student B's finishes in the top 8 in the preliminary denied an opportunity for two female student-athletes to advance to the finals. In the finals of the 100-meter dash, Student A placed 1st, Student B placed 2nd; Student 2 placed 4th;

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and Student 1 placed 6th. The top six finishers were awarded medals and advanced to the New England Regional Championships, including Student 1 and Student 2; however, Student A's and Student B's finishes in 1st and 2nd place, respectively, denied an opportunity for two female student-athletes to advance to the New England Regional Championships, along with the benefit of receiving a medal for the Outdoor State Open Championships.³⁵ Student A placed 1st at the preliminaries of the 100-meter dash at New England Regional Championships. The top 8 finishers advanced to the finals, including Student 2 (who placed 7th);³⁶ however, Student A's finish in the top 8 in the preliminary denied an opportunity for a female student-athlete to advance to the finals.³⁷ See charts summarizing the results below:

2017-2018 Outdoor State Open Championships Girls 100-Meter Dash Preliminaries (Top 8 Advance to Finals)					
Place	Student	Time	School	Seed	Heat
1	Student A	11.75q	School A1	11.77	3
2	Student 2	12.26q	School 2	12.61	2
3	*	12.38q	*	12.33	1
4	Student B	12.39q	School B	12.22	2
5	*	12.46q	*	12.57	3
6	*	12.52q	*	12.74	2
7	*	12.54q	*	12.34	1
8	Student 1	12.58q	School 1	12.91	3
9	*	12.63	*	12.73	3
10	*	12.64	*	12.68	2
...
25	*	13.17	*	12.98	

2017-2018 Outdoor State Open Championships Girls 100-Meter Dash Finals				
Place	Student	Time	School	Points
1	Student A	11.72#	School A1	10
2	Student B	12.29	School B	8
3	*	12.36	*	6
4	Student 2	12.39	School 2	5
5	*	12.47	*	4
6	Student 1	12.67	School 1	3
7	*	12.71	*	2
8	*	12.80	*	1

³⁵ Student A, Student B, and Student 2 also participated in the 200-meter dash, and finished 1st, 7th and 10th, respectively, in the final. Student A's 1st place finish denied an opportunity for one female student-athlete to advance to the New England Regional Championships in the 200-meter dash, along with the benefit of receiving a medal for the Outdoor State Open Championships.

³⁶ Student 1 placed 25th.

³⁷ In the finals of the 100-meter dash, Student A placed 1st, while Student 2 placed 7th.

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2017-2018 Outdoor New England Regional Championships Girls 100-Meter Dash Preliminaries (Top 8 Advance to Finals)						
Place	Student	Time	School	Heat	Tie-breaker	State
1	Student A	12.46q	School A1	5		CT
2	*	12.59q	*	4		MA
3	*	12.64q	*	3		MA
4	*	12.65q	*	1		MA
5	*	12.81q	*	1	12.805	CT
6	*	12.81q	*	2	2.809	CT
7	Student 2	12.82q	School 2	2		CT
8	*	12.92q	*	5		RI
9	*	12.94	*	3		MA
10	*	12.95	*	5		MA
...
25	Student 1	13.5010	School 1	3	13.497	CT
33	*	13.84	*	1		RI

2017-2018 Outdoor New England Regional Championships 100-Meter Dash Finals					
Place	Student	Time	School	Tie breaker	State
1	Student A	11.97	School A1		CT
2	*	12.26	*		MA
3	*	12.31	*		MA
4	*	12.50	*		MA
5	*	12.56	*	12.554	CT
6	*	12.56	*	12.559	CT
7	Student 2	12.58	School 2		CT
8	*	12.69	*		RI

3. During school year 2018-2019, in the Indoor Class S Statewide Championships, Student A and Student B participated in the 55-meter dash. In the preliminary for the 55-meter dash, Student A placed 1st and Student B placed 2nd. The top 7 finishers advanced to the finals, including Student 2 (who placed 3rd); however, Student A's and Student B's finishes in the top 7 in the preliminary denied an opportunity for two female student-athletes to advance to the finals. In the finals of the 55-meter dash, Student A placed 1st, Student 2 placed 2nd, and Student B placed 3rd. The top 14 finishers advanced to the State Open Championship. While all three student-athletes advanced to the State Open Championship, Student A's and Student B's participation denied an opportunity to two female student-athletes to participate in the State Open Championship for the 55-meter dash.³⁸ See charts summarizing results below:

³⁸ Student A also placed 1st in the finals of the 300-meter dash, which denied an opportunity to one girl to participate in the State Open Championship for the 300-meter dash.

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2018-2019 Indoor Class S Statewide Championships Girls 55-Meter Dash Preliminaries (Top 7 Advance to Finals)				
Place	Athlete	Time	High School	Heat
1	Student A	7.16q	School A2	8
2	Student B	7.30q	School B	6
3	Student 2	7.38q	School 2	7
4	*	7.61q	*	1
5	*	7.63q	School A2	1
6	*	7.63q	*	5
7	*	7.68q	*	3
8	*	7.70	*	5
9	*	7.71	*	2
10	*	7.74	*	4
....
48	*	8.37	*	3

2018-2019 Indoor Class S Statewide Championships Girls 55-Meter Dash Finals				
Place	Athlete	Time	High School	Points
1	Student A	7.03	School A2	10
2	Student 2	7.27	School 2	8
3	Student B	7.33	School B	6
4	*	7.48	*	4
5	*	7.51	School A2	2
6	*	7.53	*	1
7	*	7.54	*	-

4. During school year 2018-2019, in the Indoor State Open Championship, Student A and Student B participated in the 55-meter dash. In the preliminary for the 55-meter dash, Student A placed 1st and Student B placed 2nd. The top 7 finishers advanced to the finals, including Student 2 (who placed 4th); however, Student A's and Student B's finishes in the top 7 in the preliminary would have denied an opportunity for two female student-athletes to advance to the finals, including Student 1 (who placed 8th). In the finals of the 55-meter dash, Student A placed 1st, Student B placed 2nd, and Student 2 placed 3rd. The top six finishers are awarded medals and advance to the New England Regional Championships; however, Student A's and Student B's finishes in 1st and 2nd place, respectively, denied an opportunity for two female student-athletes to advance to the New England Regional Championships, along with the benefit of receiving a medal for the Outdoor State Open Championships.³⁹ Further, since Student 2 placed 3rd, Student A's and Student B's participation denied an opportunity to Student 2 to place 1st in the 55-meter dash and receive the benefit of a 1st place medal. In the Indoor

³⁹ Student A also placed 1st in the finals of the 300 meter dash in the Indoor State Open Championships, which denied an opportunity to a female student-athlete to advance to the New England Regional Championships, along with the benefit of receiving a medal for the Indoor State Open Championships.

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New England Regional Championship, in the preliminaries for the 55-meter dash, Student A placed 2nd, Student B placed 3rd, and Student 2 placed 8th. The top 8 finishers advanced to the finals. Although all three advanced to the finals, Student A's and Student B's 2nd and 3rd place finishes, respectively, denied an opportunity to two female student-athletes to advance to the finals. In the finals of the 55-meter dash, Student A placed 1st, Student B placed 3rd, and Student 2 placed 8th. See charts summarizing results below:

2018-2019 Indoor State Open Championships				
Girls 55-Meter Dash Preliminaries (Top 7 Advance to Finals)				
Place	Athlete	Time	High School	Heat
1	Student A	7.00q	School A2	3
2	Student B	7.07q	School B	3
3	*	7.24q	*	2
4	Student 2	7.27q	School 2	1
5	*	7.27q	*	1
6	*	7.29q	*	2
7	*	7.34q	*	3
8	Student 1	7.37	School 1	2
9	*	7.41	*	3
10	*	7.45	*	2
.....
16	*	7.85	School A2	2

2018-2019 Indoor State Open Championships				
Girls 55-Meter Dash Final				
Place	Athlete	Time	High School	Points
1	Student A	6.95	School A2	10
2	Student B	7.01	School B	8
3	Student 2	7.23	School 2	6
4	*	7.24	*	4
5	*	7.26	*	2
6	*	7.33	*	1
7	*	7.39	*	-

2018-2019 Indoor New England Regional Championships				
Girls 55-Meter Dash Preliminaries (Top 8 Advance to Finals)				
Place	Athlete	Time	High School	Heat
1	*	7.08q	* MA	2
2	Student A	7.09q	School A2- CT	4
3	Student B	7.24q	School B- CT	3
4	*	7.28q	*- MA	3
5	*	7.29q	*- MA	4
6	*	7.30q	* -CT	1

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2018-2019 Indoor New England Regional Championships Girls 55-Meter Dash Preliminaries (Top 8 Advance to Finals)				
Place	Athlete	Time	High School	Heat
7	*	7.30q	*- MA	1
8	Student 2	7.30q	School 2 - CT	1
9	*	7.39	*- MA	1
10	*	7.40	* - RI	4
....
30	*	7.92	* - VT	3

2018-2019 Indoor New England Regional Championships Girls 55-Meter Dash Finals			
Place	Athlete	Time	High School
1	Student A	6.94	School A2- CT
2	*	7.04	* - MA
3	Student B	7.17	School B- CT
4	*	7.23	* - MA
5	*	7.27	* - MA
6	*	7.27	* - CT
7	*	7.31	* - MA
8	Student 2	7.32	School 2 - CT

5. During school year 2018-2019, in the Outdoor Class S Statewide Championships, Student A participated in the 100-meter dash and the 200-meter dash; and Student B participated in the 100-meter dash. In the preliminary for the 100-meter dash, Student A placed 2nd and Student B placed 3rd. The top 8 finishers advanced to the finals, including Student 2 (who placed 1st); however, Student A's and Student B's finishes in the top 8 in the preliminary denied an opportunity for two female student-athletes to advance to the finals. In the finals of the 100-meter dash, Student A placed 1st, Student 2 placed 2nd, and Student B placed 3rd. While all three student-athletes advanced to the State Open Championship, Student A's participation denied Student 2 the benefit of a 1st place finish in the Class S Statewide Championship for the 100-meter dash. Similarly, in the finals of the 200-meter dash, Student A placed 1st and Student 2 placed 2nd.⁴⁰ While both students advanced to the State Open Championship, Student A's participation denied Student 2 the benefit of a 1st place finish in the Class S Statewide Championship for the 200-meter dash. See charts summarizing results below:

2018-2019 Outdoor Class S Statewide Championships Girls 100-Meter Dash Preliminaries (Top 8 Advance to Finals)				
Place	Student	Time	School	Heat
1	Student 2	12.14	School 2	4
2	Student A	12.18	School A2	5
3	Student B	12.50	School B	3

⁴⁰ Student B scratched.

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2018-2019 Outdoor Class S Statewide Championships Girls 100-Meter Dash Preliminaries (Top 8 Advance to Finals)				
Place	Student	Time	School	Heat
4	*	12.73	*	1
5	*	13.05	*	1
6	*	13.08	*	2
7	*	13.16	School A2	4
8	*	13.22	*	5
9	*	13.27	*	3
10	*	13.30	*	4
...
35	*	14.28	*	5

2018-2019 Outdoor Class S Statewide Championships Girls 100-Meter Dash Finals				
Place	Student	Time	School	Points
1	Student A	11.93#	School A2	10
2	Student 2	12.02	School 2	8
3	Student B	12.28	School B	6
4	*	12.82	*	5
5	*	12.86	*	4
6	*	13.13	*	3
7	*	13.14	*	2
8	*	13.31	School A2	1

2018-2019 Class S Statewide Championships Girls 200-Meter Dash Finals					
Place	Student	Time	School	Heat	Points
1	Student A	24.47#	School A2	6	10
2	Student 2	24.79	School 2	6	8
3	*	25.92	School A2	6	6
4	*	26.17	*	6	5
5	*	26.30	*	3	4
6	*	26.41	*	6	3
7	*	26.76	School A2	6	2
8	*	26.85	*	3	1
9	*	26.93	*	5	
10	*	27.02	*	6	
...
32	*	28.95	*	2	
...
--	Student B	SCR	School B		

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6. During school year 2018-2019, in the Outdoor State Open Championship, Student A and Student B participated in the 100-meter dash. In the preliminary for the 100-meter dash, Student A placed 1st and Student B placed 5th. The top 8 finishers advanced to the finals, including Student 2 (who placed 3rd) and Student 3 (who placed 4th)⁴¹; however, Student A's and Student B's finishes in the top 8 in the preliminary denied an opportunity for two female student-athletes to advance to the finals. In the finals of the 100-meter dash, Student 2 placed 1st, Student 3 placed 3rd, and Student B placed 4th.⁴² The top 6 finishers were awarded medals and advanced to the New England Regional Championships; however, Student B's finish in 4th place denied an opportunity for a female student-athlete to advance to the New England Regional Championships, along with the benefit of receiving a medal for the Outdoor State Open Championships. Student A, Student 2 and Student 3 also participated in the 200-meter dash and finished 1st, 4th, and 3rd, respectively, in the final. Student A's 1st place finish denied an opportunity for one female student-athlete to advance to the New England Regional Championships, along with the benefit of receiving a medal for the Outdoor State Open Championships. Student A placed 1st in the finals of the 200-meter dash at the Outdoor New England Regional Championships; Student 3 placed 3rd and Student 2 placed 5th. See charts summarizing results below:

2018-2019 Outdoor State Open Championships					
Girls 100-Meter Dash Preliminaries (Top 8 Advance to Finals)					
Place	Student	Time	School	Heat	Tie
1	Student A	11.64q	School A2	3	
2	*	11.98q	*	1	
3	Student 2	12.07q	School 2	2	
4	Student 3	12.11q	School 3	3	
5	Student B	12.20q	School B	1	
6	*	12.44q	*	2	12.433
7	*	12.44q	*	1	12.436
8	*	12.45q	*	3	
9	*	12.50	*	3	
10	*	12.56	*	1	

14	Student 1	12.79	School 1	3	

24	*	13.25	*	3	

2018-2019 Outdoor State Open Championships					
Girls 100-Meter Dash Finals					
Place	Student	Time	School	Points	Tie
1	Student 2	11.67	School 2	10	
2	*	11.92	*	8	

⁴¹ Student 1 placed 14th.

⁴² Student A had a false start and was disqualified.

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2018-2019 Outdoor State Open Championships					
Girls 100-Meter Dash Finals					
Place	Student	Time	School	Points	Tie
3	Student 3	12.04	School 3	6	
4	Student B	12.22	School B	5	
5	*	12.36	*	4	
6	*	12.38	*	3	12.375
7	*	12.38	*	2	12.378
--	Student A	FS	School A2		

2018-2019 Outdoor State Open Championships					
Girls 200 Meter Dash Finals					
Place	Student	Time	School	Heat	Points
1	Student A	24.33	School A2	3	10
2	*	24.75	*	3	8
3	Student 3	25.01	School 3	3	6
4	Student 2	25.24	School 2	3	5
5	*	25.38	*	3	4
6	*	25.55	*	3	3
7	*	25.63	*	2	2
8	*	25.79	*	2	1
9	*	26.28	*	2	
10	*	26.44	*	2	
...
--	Student 1	DNS	School 1	2	

Team School Championships Involving Students A and B

OCR reviewed the race results for the 2018-2019 Indoor State Open Championship and confirmed the following order of finish of schools for the state championship:

- School A2 – 54 points
- School 1 – 39 points
- School 3 – 34 points
- Hillhouse – 34 points
- Norwich Free Academy – 21 points

OCR further confirmed that School A2 earned 10 points for each of Student A's 1st place finishes. OCR determined that other School A2 student-athletes at the meet earned the team the following points:

- 2nd place in the 300-meter dash, earning School A2 8 points,
- 1st place in the 600-meter run, earning School A2 10 points;
- 5th place in the 4 x 200 relay, earning School A2 2 points; and

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- 3rd place in the shot put, earning School A2 6 points

OCR also reviewed the results for the 2018-2019 Outdoor State Open Championships, held on June 3, 2019. OCR determined that School A2 placed 3rd (38 points) in the team championship, a full 20 points behind School 2, which placed first (58 points) and Windsor, which placed 2nd (43 points). The top 5 finishers were as follows:

- School 3 – 58 points
- Windsor – 43 points
- School A2 – 38 points
- Norwich Free Academy – 32 points
- Immaculate – 30 points

Student A participated in the 100-meter dash, the 200-meter dash, and the 4 x 400 relay in the 2018-2019 Indoor State Open Championship, and earned 10 points for School A2 for Student A's first place finish in the 200-meter dash; and was also on School A2's 4 x 400 relay team, which placed 1st and also earned 10 points for School A2.

School Districts Investigated by OCR

Glastonbury:

Glastonbury advised OCR that as a CIAC member school, it must comply with all of the CIAC's by-laws, policies, rules, and regulations, including the Revised Transgender Participation Policy. Glastonbury reported that it does not currently have any transgender students of which it is aware participating in its athletics program. Glastonbury stated that it must allow students to participate on the athletics team consistent with their gender identity because of state law and the Revised Transgender Participation Policy. Glastonbury stated that it has not challenged the CIAC's Revised Transgender Participation Policy because it is consistent with the requirements of state law, with which Glastonbury already must comply.

Glastonbury's Athletic Director stated that no female athletes were denied participation on any of their athletic teams as a result of having transgender athletes participate, and that student-athletes were eligible to participate in all meets that the District participated in if they met the requirements (i.e., qualifying marks, selection for relay team which is a determination made at the coaching level). The Athletic Director stated that the complaint filed with OCR addresses what is perceived as an inability to win.

Glastonbury's Principal stated that some district parents complained that a female student was affected by having a transgender student from another team participate in track events. The principal advised OCR that she never verified the times or records brought to her attention, nor did she make a determination regarding the allegations.

In emails dated May 2-10, 2018, Parent 2 requested guidance from the Athletic Director regarding the participation of Student A in girls' track events and whether it was consistent with the CIAC's

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Revised Transgender Participation Policy. The Athletic Director stated that she had spoken with someone at the CIAC who indicated that Student A would have had to declare her gender identity prior to the start of the school year in August. Parent 2 stated that she informed the CIAC that Student A participated as a male during the indoor season and then as a female during the outdoor season in 2017-2018; and stated that the CIAC advised her that it would be following up with School A1. On May 10, 2018, the Athletic Director advised Parent 2 that she was following up and had placed a call to the CIAC. In an email dated May 11, 2018, the Athletic Director responded to Parent 2, advising her that based on her reading of the CIAC rule, as well as confirmation she received from the CIAC, Student A's participation was in compliance with the Revised Transgender Participation Policy. She noted that if Parent 2 had been told Student A had to declare prior to the start of the school year, that was misinformation, as that requirement is nowhere in the language of the policy. The Athletic Director advised Parent 2 that she also shared this information with the track coach.

On May 23, 2018, Parent 2 advised the Athletic Director via email that she had been discussing transgender eligibility with her legislative office and wanted to make the Athletic Director aware. In an email dated May 29, 2018, Parent 2 asked the Athletic Director if students declaring a gender identity are required to produce any supporting documentation, or if there is a waiting period. In an email dated June 6, 2018, Parent 2 advised the Athletic Director that she intended to request a meeting with the CIAC regarding the transgender policy; the Athletic Director acknowledged the email and stated that there had been articles and some troubling behavior around the issue, and advised that a letter to the CIAC was probably the best route for the parent to take.

In an email dated July 2, 2018, to the Athletic Director, Parent 2 stated that the CIAC had refused to entertain any policy changes in response to her correspondence with them; it was her understanding that member schools set policy; and she wanted to meet with the Athletic Director to share her research. The Athletic Director responded attempting to schedule a time to meet. Thereafter, in an email dated July 18, 2018, Parent 2 forwarded to the Athletic Director copies of responses she had received from the CIAC Executive Director. In the email, she stated that, although the CIAC stated that the state legislature needed to make a change, her state representatives informed her that athletics policies fall under the CIAC's jurisdiction.

In an email dated January 27, 2019, to School 1 administrators, Parent 3 alleged that Student A, whom Parent 3 identified as a boy who identifies as a girl, was participating in track and creating an unfair and unsafe environment in girls track. He provided, as an example, that during the 4 x 400 relay event on January 26, 2019, in the second leg, Student A "had physicality" with a runner from Windsor, resulting in a significant lead for Bloomfield. The student-athlete running the last leg of the relay for Windsor was unable to close the gap that Student A had created. He also provided an example that at the Yale Invitational held on January 12, 2019, a student-athlete came in second to Student A, despite having run a faster time than 182 other girls in the 300-meter sprint. He asked that the unsafe and unfair situation be addressed now before it affected other sports.

In response, on January 29, 2019, the District's school board chair emailed Parent 3 and thanked him for sharing his experiences and concerns; but noted that the CIAC handbook indicated that it would be contrary to state and federal law to preclude transgender students from participating. She

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stated that, accordingly, she did not believe that exclusion was an option; but advised that this was just her opinion.

In an email dated February 17, 2019, to School 1 administrators and the CIAC Executive Director, among others, Parent 3 asserted that the Revised Transgender Participation Policy directly affected the outcome of School 1's winning the 2018-2019 Indoor State Open Championship held on February 16, 2019. Specifically, Parent 3 stated that School A2 earned the highest number of points due to the participation of Student A, who earned 20 points for the team by herself. Parent 3 alleged that, but for Student A's participation, School 1 would have won the state title. Specifically, Parent 3 asserted that School A2 was only able to win because Student A placed first in two separate events, earning School A2's team 20 of its total 54 points. Parent 3 also noted that Student A participated on the 4 x 400 relay, which earned the school 8 points for second place. Parent 3 acknowledged in his email that it was possible that School A2 still would have placed 2nd in the 4 x 400 relay, even if another athlete had run in Student A's place.⁴³

In an email dated February 25, 2019, to School 1 administrators and the CIAC Executive Director, among others, Parent 4 questioned the inclusion of transgender athletes' competitive times in results, which he argued affected all of the other athletes competing. Parent 4 further stated that recognizing the transgender athletes' results insulted the current cisgender athlete record holders. Parent 4 also asserted that the potential to compete for a college scholarship was at stake because the participation of transgender athletes resulted in other athletes not being able to compete at the New England Regionals, expand their résumés, and gain additional exposure to college recruiters and coaches. Parent 4 alleged that the CIAC was violating its own rules by allowing transgender athletes to compete; and asked that the results of the State Open Championship be recalculated, and points redistributed, and that the Revised Transgender Participation Policy be changed for the outdoor 2019 season. Parent 4 also suggested potential solutions to continue to allow transgender athletes to compete but change the competitive categories or "which scores count."

In an email dated March 3, 2019, to School 1 administrators and the CIAC Executive Director, among others, Parent 3 followed up on his original request that the Revised Transgender Participation Policy be revised. Parent 3 alleged that the policy prevented deserving girls from qualifying for the New England Regionals. For example, Parent 3 stated that at the New England Regionals on March 2, 2019, a Bloomfield transgender athlete (Student A) placed first in the 55-meter and 300-meter dash events. He also stated that by participating in the 4 x 400-meter relay event, Student A provided Bloomfield with a .06 second lead over Glastonbury in the final results.

In an email dated March 5, 2019, to School 1 administrators and the CIAC Executive Director, among others, Parent 4 stated that no other states at the New England Regionals had transgender student-athletes participating, and many people were surprised and concerned that cisgender girls were forced to compete with transgender girls. In another email dated March 5, 2019, to School 1 administrators, Parent 4 requested a meeting to review the current policy regarding transgender

⁴³ Parent 3 further asked that the CIAC adopt the NCAA and IOC policy, whereby a transgender athlete must undergo hormone treatment for one year before being able to compete; allow transgender athletes to run in events as exhibition participants where their results do not count; or "another fair and safe solution."

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athletes and its impact on competitive fairness; and alleged that cisgender girls were being deprived of fair and equal opportunity.

In an email dated March 7, 2019, to the District Superintendent, a parent (Parent 5) stated her opinion that the CIAC should adopt NCAA standards regarding transgender participation. In an email dated March 10, 2019, to School 1 administrators and the CIAC Executive Director, Parent 3 advised that the National Scholastic Athletic Foundation (NSAF), which hosts the national championships, had released statements regarding its transgender policy, which required athletes to take gender affirming hormones. Parent 3 then stated that at the New England Regionals on March 2, 2019, Bloomfield beat Glastonbury in the 4 x 400 relay with Student A participating on Bloomfield's team. He then noted that at the New Balance National championships held over March 8-10, 2019, Glastonbury's 4 x 400 relay team came in 14th in the nation, while Bloomfield's came in 34th, running without Student A.

On March 15, 2019, Parent 2 and the Parent 4 met with the Athletic Director and the Principal. The Principal stated that Parent 2 wanted School 1 to put forth a request for the CIAC to change its policy, and she communicated to them that the school was comfortable with the CIAC's following the state law and was not willing to ask the CIAC to change their policy. The Athletic Director did not recall that Parent 2 and Parent 4 raised any specific concerns about the policy, other than that the policy set up an uneven playing field. The Athletic Director stated that it was difficult to keep Parent 2 focused on what was Parent 2's real issue, as Parent 2 had started talking about separate math classes. The Athletic Director stated that she did not leave the meeting with any clear understanding of what Parent 2 was saying. She noted that Parent 2 and Parent 4 also wanted to show them photos of other non-district students, which they refused to discuss due to Family and Educational Rights and Privacy Act of 1974 (FERPA). In an email dated March 18, 2019, following their meeting, Parent 2 summarized her continued concerns that the transgender policy may violate Title IX; included information from her state legislative office that there is no law to be changed and that any changes would be the responsibility of the CIAC and member schools; and provided examples of contradictions within the CIAC policies, relative to co-ed teams.

On March 18, 2019, Parent 3 requested a meeting with administrators at School 1 to discuss the transgender policy. In an email dated March 25, 2019, to School 1 administrators, Parent 3 stated that he learned that the CIAC had sent out a survey to member schools regarding the transgender policy. He included links to resources in his email and urged School 1 not to just "rubber stamp" the policy. In response to his request, on April 2, 2019, the principal and School 1's Athletic Director met with Parent 3. Both the principal and Athletic Director described the meeting as lasting thirty minutes, per Parent 3's request. The Athletic Director stated that, during the meeting, Parent 3 discussed biological differences and the challenges female athletes face, and what could happen when transgender athletes participate in other sports. The principal stated that Parent 3 was focused on the safety of his child with allowing a transgender student to participate in track. The principal stated that she communicated to Parent 3 that the district was not looking at asking the CIAC to change the transgender policy. On April 2, 2019, Parent 3 emailed the principal and Athletic Director thanking them for meeting with him; he emphasized two points relative to the fairness of the policy and the implications if an elite transgender athlete were ever to participate.

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He also included resources related to Oregon’s policy, as well as an NSAF’s press release regarding transgender participation.

In an email dated April 12, 2019 to the District Director of Health and Physical Education, K-12 (the Director), Parent 2 acknowledged their recent conversation regarding Title IX; asked the Director for clarification regarding why the principal, as a voting CIAC member, could set different athletic expectations for girls and boys teams; and questioned why that did not violate Title IX. Parent 2 also questioned why the CIAC had separate competitions for boys and girls if the CIAC’s purpose was just participation, and whether the concept of gender fluidity would satisfy Title IX when there was no distinction between the sexes.

Canton:

Canton advised OCR that it was required to comply with the CIAC’s Revised Transgender Participation Policy because the CIAC is the governing body for interscholastic athletics. Canton also noted that the Revised Transgender Participation Policy follows state law. Canton reported that it does not currently have any transgender students of which it is aware participating in its athletics program, nor has it challenged the CIAC’s Revised Transgender Participation Policy.

Danbury:

Danbury stated that it was required to follow the Revised Transgender Participation Policy because the CIAC is the governing body of athletics for the state and it is required to follow all of the CIAC rules, regulations, and policies. Danbury reported that it does not currently have any transgender students of which it is aware participating in its athletics program. Danbury stated that it has not expressed concerns about the policy to the CIAC.

Hartford (School A1):

Student A was a 10th grade student who participated on School A1’s athletics program during school year 2017-2018.⁴⁴ During the indoor track season of school year 2017-2018, Student A was a student-athlete on School A1’s boys’ indoor track team. During the outdoor track season of school year 2017-2018, Student A was a student-athlete on School A1’s girls’ outdoor track team. School A1 staff stated that as a CIAC member, School A1 is required to follow the CIAC policy and is also required to follow state law.

Bloomfield:

Student A was enrolled in School A2 in Bloomfield as an 11th grade student during school year 2018-2019. Bloomfield stated that as a member of the CIAC, it is required to follow the CIAC rules regarding participation, eligibility, and other matters, including the Revised Transgender

⁴⁴ During school year 2017-2018, Student A attended another school in Hartford that does not have a sports program; as a result, Student A participated in athletics through School A1’s program.

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Participation Policy.⁴⁵ Bloomfield denied that Student A's participation has had a negative impact on other female students in the district, as Bloomfield does not cut any students from the girls' indoor or outdoor track teams; therefore, anyone who wishes to participate can. Bloomfield staff opined that while a student may have lost to a transgender student, overall, everyone's performance has benefited from the participation of Student A; and that participation in athletics is not about winning.

Cromwell:

Student B was enrolled in School B in Cromwell as a 10th grade student during school year 2017-2018, and as an 11th grade student during school year 2018-2019. During school years 2017-2018 and 2018-2019, Student B was a student-athlete on School B's varsity girls' indoor and outdoor track teams.

Cromwell stated that it has one transgender student (Student B) participating in its interscholastic athletics program, and noted that Student B's records since her enrollment at School B in school year 2016-2017 have indicated that she was female; accordingly, Student B was placed on female rosters. Cromwell staff stated that they are required to follow the Revised Transgender Participation Policy as it is set by the CIAC, which is their governing body. Cromwell staff stated that none of their district students have been affected negatively by Student B's participation.

Legal Standards

Subpart D of the regulation implementing Title IX prohibits discrimination on the basis of sex in education programs and activities. 34 C.F.R. § 106.31(b)(7) of Subpart D states that in providing any aid, benefit, or service to a student, a recipient shall not, on the basis of sex, limit any person in the enjoyment of any right, privilege, advantage, or opportunity. 34 C.F.R. § 106.41 of Subpart D specifically applies to athletics. The regulation implementing Title IX, at 34 C.F.R. § 106.41(a), states that no person shall, on the basis of sex, be excluded from participation in, be denied the benefits of, be treated differently from another person, or otherwise be discriminated against, in any interscholastic athletics offered by a recipient, and no recipient shall provide any such athletics separately on such basis. The regulation implementing Title IX, at 34 C.F.R. § 106.41(b), states that, notwithstanding the requirements of § 106.41(a), a recipient may operate or sponsor separate teams for members of each sex where selection for such teams is based upon competitive skill or the activity involved is a contact sport.⁴⁶ The regulation implementing Title IX, at 34 C.F.R. § 106.6(c), states that the obligation to comply with the regulation is not obviated or alleviated by

⁴⁵ Bloomfield denied that it has received any requests from students to participate in its interscholastic athletics program pursuant to the Revised Transgender Participation Policy. Bloomfield stated that it currently has a transgender student participating on its girls track team (Student A), but noted that the student registered and enrolled at School A2 as a female, i.e., the student's school records indicated that she was female; therefore, Bloomfield was not required to make any determinations pursuant to the policy.

⁴⁶ Where a recipient operates or sponsors a team in a particular sport for members of one sex but operates or sponsors no such team for members of the other sex, and athletic opportunities for members of that sex have previously been limited, members of the excluded sex must be allowed to try out for the team offered unless the sport involved is a contact sport. 34 C.F.R. § 106.41(b).

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any rule or regulation of any athletic or other league, which would render any student ineligible to participate or limit the eligibility or participation of any student, on the basis of sex, in any education program or activity operated by a recipient.⁴⁷

Analysis and Conclusions

The Complainant alleged that the CIAC's Revised Transgender Participation Policy discriminated against female student-athletes competing in interscholastic girls' track in the state of Connecticut on the basis of their sex. Specifically, the Complainant alleged that as a result of the CIAC's Revised Transgender Participation Policy, Students A and B were permitted to compete in girls' track athletic competitions, which resulted in female student-athletes being denied opportunities to participate in higher level and/or post-season competitions.

The CIAC:

OCR determined that the CIAC, by permitting the participation of biologically male students in girls' interscholastic track in the state of Connecticut, pursuant to the Revised Transgender Participation Policy, denied female student-athletes benefits and opportunities, including to advance to the finals in events; to advance to higher level competitions, such as the State Open Championship or the New England Regional Championship; to win individual and team state championships, along with the benefit of receiving medals for these events; to place higher in any of the above events; to receive awards and other recognition; and possibly to obtain greater visibility to colleges and other benefits. For these same reasons, OCR also determined that the CIAC treated students differently based on sex, by denying opportunities and benefits to female student-athletes that were available to male student-athletes.

With respect to the three student-athletes on whose behalf the complaint was filed (Student 1, Student 2, and Student 3), Student A's and Student B's 1st and 2nd place finishes, respectively, in the preliminaries of the 2018-2019 Indoor State Open Championship for the 55-meter dash, denied Student 1, who placed 8th, the opportunity of advancing to the finals in this event, since only the top 7 finishers advanced to the finals. Student A's and Student B's participation in girls' interscholastic track in the state of Connecticut, pursuant to the Revised Transgender Participation Policy had the most significant impact on Student 2. Specifically, Student A's 1st place finish, in the finals of the 2018-2019 Outdoor Class S Statewide Championship for the 100-meter dash and the 200-meter dash, denied Student 2, who placed 2nd in both events, the benefit of a 1st place finish; and Student A's and Student B's 1st and 2nd place finishes, in the 2018-2019 Indoor State Open Championship for the 55-meter dash, denied an opportunity for Student 2, who placed 3rd, to place 1st in the event and receive the benefit of a 1st place medal. Denying a female student a chance to win a championship is inconsistent with Title IX's mandate of equal opportunity for both sexes.⁴⁸ Accordingly, OCR determined that the CIAC denied athletic benefits and

⁴⁷ OCR understands that the CIAC and the individual school districts maintain that the Revised Transgender Participation Policy is consistent with, and required by, Connecticut state law. OCR takes no view on the requirements of Connecticut law except to note that the duty to comply with Title IX and its implementing regulation is independent of any such requirements.

⁴⁸ See *McCormick v. School District of Mamaroneck*, 370 F.3d 275, 294-95 (2d Cir. 2004) ("A primary purpose of competitive athletics is to strive to be the best. . . . Treating girls differently regarding a matter so fundamental to the

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opportunities to female student-athletes competing in interscholastic girls' track in the state of Connecticut through the Revised Transgender Participation Policy, in violation of the regulation implementing Title IX, at 34 C.F.R. § 106.41(a). OCR also has concerns that additional violations may have resulted from the Policy and from Student A's and B's participation in girls' track, including but not limited to losses or lowered placement in regular season meets; losses or lowered placement in conference championships; and an inability for some female student-athletes to participate generally in a race at any level (not just championship level).

With respect to the Team Championships for the 2018-2019 Indoor State Open Championship, absent Student A's participation, School A2 earned 26 points in 4 different events. Adding the 8 points for the 4 x 200 relay, in which School A2 may have placed and earned points even without Student A, School A2 would have earned 34 points, behind School 1, which had 39 points. Subtracting the 8 relay points would have also placed School A behind School 3. Thus, Student A's participation may have denied School 1 and its female student-athletes the benefit of a team championship, and may have denied School 3, and other schools, the benefit of a higher placement.⁴⁹

Glastonbury:

OCR determined that the participation of Glastonbury in athletic events sponsored by the CIAC, consistent with the CIAC's Revised Transgender Participation Policy, which resulted in Student 1, and other female student-athletes competing against Students A and B, denied athletic benefits and opportunities to Student 1 and other female student-athletes, in violation of the regulation implementing Title IX, at 34 C.F.R. Section 106.41(a). Glastonbury placed female student-athletes in athletic events against male student-athletes, resulting in competitive disadvantages for female student-athletes. The athletic events in which the female student-athletes competed were coeducational; female student athletes were denied the opportunity to compete in events that were exclusively female, whereas male students were able to compete in events that were exclusively male. Accordingly, the districts' participation in the athletic events sponsored by the CIAC denied female student-athletes athletic opportunities that were provided to male student-athletes. Glastonbury's obligation to comply with the regulation implementing Title IX is not obviated or alleviated by any rule or regulation of the CIAC. 34 C.F.R § 106.6(c).

The participation of Glastonbury in athletic events sponsored by the CIAC, consistent with the CIAC's Revised Transgender Participation Policy, which resulted in Student 1, and other female student-athletes competing against Students A and B, denied Student 1 the opportunity to place higher in events, such as the 100-meter dash at the 2017-2018 Outdoor State Championship and New England Regional Championship; the 55-meter dash at the 2018-2019 Indoor CCC Regional Championship; and the 200-meter dash at the 2018-2019 Outdoor State Championship. Student A's and Student B's 1st and 2nd place finishes, respectively, in the preliminaries of the 2018-2019

experience of sports—the chance to be champions—is inconsistent with Title IX's mandate of equal opportunity for both sexes.”).

⁴⁹ With respect to the 2018-2019 Outdoor State Open Championships, held on June 3, 2019. The top five finishers were as follows: School 3: 58 points; Windsor: 43 points; School A2: 38 points; Norwich Free Academy: 32 points; Immaculate: 30 points. Student A's participation earned school A2 an additional 10 to 20 points and a third-place finish when School A2 might otherwise have finished no better than 5th.

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Indoor State Open Championship for the 55-meter dash, denied Student 1, who placed 8th, the opportunity of advancing to the final in this event, since only the top 7 finishers advanced to the finals.

Canton:

OCR determined that the participation of Canton in athletic events sponsored by the CIAC, consistent with the CIAC's Revised Transgender Participation Policy, which resulted in Student 2, and other female student-athletes, competing against Students A and B, denied athletic benefits and opportunities to Student 2, and other female student-athletes, in violation of the regulation implementing Title IX, at 34 C.F.R. Section 106.41(a). Canton placed female student-athletes in athletic events against male student-athletes, resulting in competitive disadvantages for female student-athletes. The athletic events in which the female student-athletes competed were coeducational; female student athletes were denied the opportunity to compete in events that were exclusively female, whereas male students were able to compete in events that were exclusively male. Accordingly, the districts' participation in the athletic events sponsored by the CIAC denied female student-athletes athletic opportunities that were provided to male student-athletes. Canton's obligation to comply with the regulation implementing Title IX is not obviated or alleviated by any rule or regulation of the CIAC. 34 C.F.R § 106.6(c).

The participation of Canton in athletic events sponsored by the CIAC, consistent with the CIAC's Revised Transgender Participation Policy, which resulted in Student 2, and other female student-athletes competing against Students A and B, denied Student 2 the opportunity to place higher in events, such as the Class S Outdoor Championships; the Indoor and Outdoor State Open Championships; and the New England Regional Championships. Specifically, Student A's and Student B's 1st and 2nd place finishes respectively, in the 2018-2019 Indoor State Open Championship for the 55-meter dash, denied an opportunity for Student 2, who placed 3rd, to place 1st in the event and receive the benefit of a 1st place medal. Student A's 1st place finish, in the finals of the 2018-2019 Outdoor Class S Statewide Championship for the 100-meter dash and the 200-meter dash, denied Student 2, who placed 2nd in both events, the benefit of a 1st place finish. Student A's 1st place finish in the finals of the State Open Championship in the 200-meter dash denied Student 2, who finished 4th, the benefit of a top-three finish.

Danbury:

OCR determined that the participation of Danbury in athletic events sponsored by the CIAC, consistent with the CIAC's Revised Transgender Participation Policy, which resulted in Student 3, and other female student-athletes, competing against Students A and B, denied athletic benefits and opportunities to Student 3, and other female student-athletes, in violation of the regulation implementing Title IX, at 34 C.F.R. Section 106.41(a). Danbury placed female student-athletes in athletic events against male student-athletes, resulting in competitive disadvantages for female student-athletes. The athletic events in which the female student-athletes competed were coeducational; female student athletes were denied the opportunity to compete in events that were exclusively female, whereas male students were able to compete in events that were exclusively male. Accordingly, the districts' participation in the athletic events sponsored by the CIAC denied female student-athletes athletic opportunities that were provided to male student-athletes.

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Danbury's obligation to comply with the regulation implementing Title IX is not obviated or alleviated by any rule or regulation of the CIAC. 34 C.F.R. § 106.6(c).

The participation of Danbury in athletic events sponsored by the CIAC, consistent with the CIAC's Revised Transgender Participation Policy, which resulted in Student 3, and other female student-athletes competing against Students A and B, denied Student 3 the opportunity to place higher in events, such as at the Outdoor State Open Championships and the New England Regional Championships. Specifically, Student A's 1st place finish in the finals of the State Open Championship in the 200-meter dash denied Student 3, who finished 3rd, the benefit of placing 2nd in the event; and Student A's 1st place finish in the finals of the 200-meter dash at the Outdoor New England Regional Championships denied Student 3, who finished 3rd the benefit of placing 2nd in the event.

Hartford (School A1):

Student A participated in girls' outdoor track on School A1's team in Hartford during school year 2017-2018. OCR determined that the participation of School A1 in athletic events sponsored by the CIAC, consistent with the CIAC's Revised Transgender Participation Policy, which resulted in Student A's participating in events against Students 1, 2, and 3, and against other female student-athletes, denied athletic benefits and opportunities to Students 1, 2, and 3, and other female student-athletes, in violation of the regulation implementing Title IX, at 34 C.F.R. Section 106.41(a). Hartford's obligation to comply with the regulation implementing Title IX is not obviated or alleviated by any rule or regulation of the CIAC. 34 C.F.R. § 106.6(c).

Bloomfield:

Student A participated in girls' indoor and outdoor track for Bloomfield during school year 2018-2019. OCR determined that the participation of Bloomfield in athletic events sponsored by the CIAC, consistent with the CIAC's Revised Transgender Participation Policy, which resulted in Student A's participating in events against Students 1, 2, and 3, and against other female student-athletes, denied athletic benefits and opportunities to Students 1, 2, and 3, and other female student-athletes, in violation of the regulation implementing Title IX, at 34 C.F.R. Section 106.41(a). Bloomfield's obligation to comply with the regulation implementing Title IX is not obviated or alleviated by any rule or regulation of the CIAC. 34 C.F.R. § 106.6(c).

Cromwell:

Student B participated in girls' indoor and outdoor track for Cromwell during school years 2017-2018 and 2018-2019. OCR determined that the participation of Cromwell in athletic events sponsored by the CIAC, consistent with the CIAC's Revised Transgender Participation Policy, which resulted in Student B's participating in events against Students 1, 2, and 3, and against other female student-athletes, denied athletic benefits and opportunities to Students 1, 2, and 3, and other female student-athletes, in violation of the regulation implementing Title IX, at 34 C.F.R. Section 106.41(a). Cromwell's obligation to comply with the regulation implementing Title IX is not obviated or alleviated by any rule or regulation of the CIAC. 34 C.F.R. § 106.6(c).

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For the aforementioned reasons, OCR also determined that the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury treated student-athletes differently based on sex, by denying opportunities and benefits to female student-athletes that were available to male student-athletes.

II. RETALIATION

The Complainant also alleged that (1) the CIAC retaliated against Parent 1, after Parent 1 complained about the Revised Transgender Participation Policy, by informing Parent 1, in March 2019, that the CIAC’s Executive Director would no longer accept communications from her; and (2) that Glastonbury’s track coach retaliated against Student 1, for her and Parent 2’s advocacy against the Revised Transgender Participation Policy, by (a) replacing Student 1 on the sprint medley relay team in February 2019; (b) telling Student 1 and her parents that he could not give a good report to college coaches about her in March and May 2019; (c) denying Student 1 a position as a team captain in March 2019; and (d) suggesting that Student 1 should leave the outdoor track team due to her schedule, in March and May 2019.

Findings of Fact

1. Allegation Regarding the CIAC’s Retaliation

OCR determined that the CIAC Handbook in effect during school year 2018-2019 sets forth the CIAC’s “Communication Protocol Rules, Regulations and Interpretations” (Communication Protocol). According to the Communication Protocol, the CIAC Board of Control is the official body charged with the responsibility of interpreting the CIAC’s rules and regulations. The Communication Protocol provides, in pertinent part, that “[i]nquiries to the CIAC office from parents, student-athletes, coaches and the public requesting an interpretation of the rules and regulations will be referred back to the member school principal or his/her designee.” In addition, Section 4.21 of the CIAC Handbook, “Regulation Interpretation/CIAC Protocol in Providing Decisions to School Personnel and Public (Effective July 1, 2006),” provides, in pertinent part, “The CIAC staff will not discuss CIAC rules and regulations with anyone other than school administrators and athletic directors. Telephone inquiries from parents and coaches will not be honored. **All calls from anyone other than the athletic director or school administrator will be referred back to the school.**” (Emphasis in original.)

OCR determined that Parent 1 initially contacted the CIAC about the policy when she sent a letter dated February 21, 2018, to the CIAC’s former Executive Director, in which she requested that the CIAC establish a rule to address transgender athletes’ participating in the girls’ state championship track competitions. In an email dated March 10, 2018, the former Executive Director responded by acknowledging that issues surrounding transgender student-athlete participation are complicated; advising Parent 1 that the CIAC’s policy is directly aligned with state anti-discrimination law, including the state’s definition of gender to include gender identity; and reminding Parent 1 that most high school athletes are minors and are therefore afforded a unique level of legal protection regarding their right to privacy.

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On January 24, 2019, Parent 1 sent an email to the CIAC's current Executive Director, attaching a letter in which she again requested that the CIAC establish a rule for transgender athletes' participating in state championship track competitions and setting forth her own proposal for the placement and scoring of transgender female athletes participating in state championships.⁵⁰ The Executive Director responded by email the same day, advising Parent 1 that the appropriate process for addressing her proposal would be to speak with the athletic director or principal at her child's school, as policy or rule proposals "may be submitted through member leagues, sport committees, member principals, [the Connecticut Association of Athletic Directors], or the Connecticut High School Coaches Association." Parent 1 replied to the director's email that same day, January 24, 2019, stating that she would follow up with the principal and athletic director at her child's school to see if they would be willing to submit her proposal.

OCR determined that on February 1, 2019, the principal and the Executive Director spoke by telephone, regarding Parent 1's letter and proposal. The Executive Director memorialized the call in an email to the principal that same day, in which he stated that the CIAC would be convening a gender subcommittee meeting on February 7, 2019, with the task of reviewing all the CIAC bylaws, processes, procedures in which gender plays a role, including the Revised Transgender Participation Policy; and that he would share a redacted copy of Parent 1's letter with the subcommittee members, in order "to provide all points of view to ensure a rich discussion among committee members."

OCR determined that in response to Parent 1's request, made through her building principal, for an in-person meeting with a CIAC representative, the Executive Director attended a meeting at the school with Parent 1 and the principal on February 28, 2019. The Executive Director stated that, at the meeting, he explained to Parent 1 why the CIAC believed that the Revised Transgender Participation Policy was in alignment with Title IX and Connecticut state law, and advised Parent 1 that he believed that Title IX did not apply to the parent's concerns because Title IX does not address winning. Following the meeting, that same day, Parent 1 sent an email to the Executive Director, in which she thanked him for visiting the school and wrote that "[i]t was helpful to hear from you directly regarding the transgender policy and to understand what the CIAC process will be for reviewing this issue."

OCR determined that on March 28, 2019, Parent 1 sent an email to the Executive Director, in which she attached a letter and included links to several websites concerning issues related to the Revised Transgender Participation Policy. The Executive Director responded by email that same day, stating that he had read her email, and cordially reminded her that any further correspondence to the CIAC should come through her principal. The Complainant did not provide, nor did OCR find, evidence of any further communications between Parent 1 and the Executive Director.

⁵⁰ Specifically, Parent 1 proposed the following: "Male-to-female transgender athletes who have not yet undergone hormone therapy should compete as exhibition athletes, with results not included for scoring and placing. This would ensure that the needs of both of these protected classes are met. The transgender athletes would still be able to **participate** on the team in which they identify and the female-born athletes would be afforded the opportunity to **compete** in a race that is not clouded by questions of unfair advantage." (Emphasis in original.)

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The Executive Director denied that he banned Parent 1 from sending communications to him. Rather, the Executive Director stated that he treated Parent 1 in a manner consistent with how he treated other individuals in similar situations, by reminding her of the CIAC's policy that communications must go through the member school's representative. OCR determined that the Executive Director has responded in a similar manner to other parents who sought to communicate directly with him in a similar fashion. OCR determined that none of the similarly situated parents had engaged in protected activities.

2. Allegations Regarding Glastonbury Track Coach Retaliation

The Complainant also alleged that a Glastonbury track coach retaliated against Student 1, for her and Parent 2's advocacy against the Revised Transgender Participation Policy, by (a) replacing Student 1 on the sprint medley relay team in February 2019; (b) telling Student 1 and her parents that he could not give a good report to college coaches about her in March and May 2019; (c) denying Student 1 a position as a team captain in March 2019; and (d) suggesting that Student 1 should leave the outdoor track team due to her schedule, in March and May 2019.

Allegation (a):

OCR determined that a team made up of students from Glastonbury's girls' indoor track team competed at the 2019 New Balance Nationals Track and Field championships ("Nationals"). The track coach stated that the meet is not a CIAC or school-sanctioned meet; therefore, any student who participates does so on an individual basis, not on behalf of Glastonbury. The track coach stated that, accordingly, the Glastonbury coaches do not choose who may attend the meet or choose which athletes will participate in which events. Rather, the individual students choose, on their own, whether to compete in the meet, and who will compete in the events, including relays. The track coach further stated that it was his understanding that Student 1 was not selected to run in a relay at the meet, but he denied that he played a role in this decision. He further stated that his understanding was that the other athletes decided that Student 1 would not compete in the relay, but he did not know why they had made that decision.

Student 1 confirmed that it is each individual student-athlete's decision whether to attend Nationals, if she qualifies; however, she stated that for relay events, a track coach was responsible for signing up the various teams. Parent 2 indicated that this is to prevent students from different schools entering themselves as a single "power team." Student 1 stated that although she had a qualifying time for the sprint medley relay in December 2018,⁵¹ she was not asked to join the sprint medley relay team for Nationals in March 2019. Student 1 stated that, during the regular season, coaches pick the best athletes that are capable of running times that they would like to see for an overall split in the event, but that she was not fully aware of how the coaches make those determinations. Student 1 acknowledged that she was not sure which coach picked the sprint medley relay team for Nationals, but she assumed that a coach picked the team because that was what was done for all other meets during the season.

⁵¹ The records Glastonbury provided indicate that Student 1 participated on a sprint medley relay team during a meet held on December 22, 2018.

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Allegation (b):

The Complainant stated that at the first practice of the outdoor season on March 16, 2019, the track coach told Parent 4 that he had nothing good to say about Student 1 to a college coach; and on or about May 1, 2019, the track coach told Student 1 that he could not give a good report of her to college coaches.

The track coach denied that he told either Student 1 or her parents that he could not give a good report to college coaches about Student 1. The track coach stated that it is his practice to be completely honest with college coaches, to ensure that college coaches continue to trust and rely on his recommendations of athletes. The track coach stated that because of this, on or about March 16, 2019, in the course of a discussion with Parent 4 about the Student 1's workouts and her college future, he told Parent 4 that he is "100% honest with a college coach when asked any questions about any of the athletes."⁵² The track coach stated that he had also told Student 1 that he would be 100% honest with college coaches, although he did not recall the date of this conversation or the specific context in which the subject was raised. The track coach also advised OCR that Student 1 has not requested that he give a recommendation or report to any college coach on her behalf, nor has any college coach requested information about Student 1.

Student 1 denied that the track coach told her that he would be honest with any college coaches, and instead maintained that the track coach told her, and Parent 4, that he did not have anything good to say about her and could not give a good report about her. Student 1 stated that the track coach made this statement to her one day when she was letting him know that she was leaving practice for work. Student 1 confirmed that she has not asked the track coach to speak with any coaches on her behalf.

Allegation (c):

The Complainant stated that the track coach told Student 1 that he did not select her as team captain because she departed early from practice on Fridays for work, despite her having served as team captain during the indoor season and not receiving any complaints about her as a captain. The track coach stated that students who wish to be considered for a team captain position are required to submit a written statement concerning their interest at the beginning of each season, indoor and outdoor. All of the coaches then select the team captains as a group. If there are any disagreements among the coaches, the track coach makes the final decision regarding the selection. The track coach stated that the qualifications for team captain are hard work, dedication, leadership, sportsmanship, and appropriately representing the high school. The track coach stated that the number of captains for the team typically ranges from three to seven for each season, depending on the size of the team and the number of qualified athletes who apply.

The track coach stated that in December 2018, Student 1 was selected as a captain for the indoor season 2018-2019; but that the decision was not unanimous because at least two coaches questioned Student 1's qualifications for a captain position, stating that they believed that she had

⁵² The track coach stated that in reply to his remark, Parent 4 stated that he understood.

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not shown enough leadership, dedication and maturity.⁵³ The track coach stated that despite the concerns raised by other coaches, he chose Student 1 to be a captain for that season because he had observed her helping new athletes on the team and he believed that she would step up to the challenge.

The track coach stated that in March 2019, Student 1 applied to be a captain for the outdoor season 2018-2019. He stated that after speaking with all of the coaches, it was unanimous that they would not select Student 1 to be a captain for a number of reasons. He stated that the main reason was that during the indoor season (December 2018 – January 2019), Student 1 had, on several occasions, displayed poor sportsmanship at meets by ripping off her headband and storming away at the conclusion of her race. In addition, the track coach stated, and another coach confirmed, that during the indoor season, Student 1 often skipped her sprint workouts in favor of spending more time doing her long jump workouts; or claimed that she had an injury and could not do her sprint workouts, despite being able to do her long jump workouts and being cleared by the trainer. An assistant coach confirmed that during the indoor season, Student 1 failed to follow his instructions during practice, often did not complete her workouts, and exhibited poor sportsmanship at meets. Both the assistant coach and another coach agreed that Student 1 should not be selected as a captain for the outdoor season. The track coach stated that during a prior school year, he declined to select a student as team captain because she similarly failed to demonstrate leadership qualities/maturity. Glastonbury stated that this student had not engaged in protected activities.

Allegation (d):

The Complainant alleged that on or about March 25, 2019, the track coach told Student 1 that she should consider leaving the team if she did not attend full practice every day. The Complainant alleged that the track coach had not asked other student-athletes to leave the team due to missing practices for work commitments. The Complainant also alleged that on or about May 1, 2019, the track coach complained to Student 1 about her missing Friday practices.

The track coach denied that he had an issue with Student 1's leaving practice early on Fridays and denied that he specifically told her that she should leave the team. The track coach stated that he and the other coaches emphasized the importance of practice during meetings held at the beginning of the season with the student-athletes and their parents; but he denied having told any students recently, including Student 1, that they should consider leaving the team if they did not attend full practice every day. The track coach further stated that he was aware that Student 1 left practice early on Fridays for work; and stated that he did not object to this, particularly because the team often ends practice early on Fridays during the winter when the gym is used for high school basketball games and because Friday practices are typically lighter prior to the track team competitions on the weekends.

⁵³ Specifically, an assistant track coach stated that he had concerns about Student 1's being selected as captain because he did not believe that Student 1 had the maturity to be a captain.

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Legal Standards

The regulation implementing Title IX, at 34 C.F.R. § 106.71, incorporates by reference 34 C.F.R. § 100.7(e) of the regulation implementing Title VI of the Civil Rights Act of 1964, 42 U.S.C. § 2000d *et seq.*, which provides that no recipient or other person shall intimidate, threaten, coerce or discriminate against any individual for the purpose of interfering with any right or privilege secured by regulations enforced by OCR or because one has made a complaint, testified, assisted or participated in any manner in an investigation, proceeding, or hearing held in connection with a complaint. The following three elements must be satisfied to establish a prima facie case of retaliation: (1) an individual engaged in a protected activity; (2) an individual experienced an adverse action caused by the recipient; and (3) there is some evidence of a causal connection between the adverse action and the protected activity. When a prima facie case of retaliation has been established, OCR then determines whether there is a facially legitimate, non-retaliatory reason for the adverse action; and if so, whether the facially legitimate, non-retaliatory reason is a pretext for retaliation.

Analysis and Conclusions

1. Allegation Regarding the CIAC's Retaliation

The Complainant alleged that the CIAC retaliated against Parent 1, after Parent 1 complained about the Revised Transgender Participation Policy, by informing Parent 1, in March 2019, that the CIAC's Executive Director would no longer accept communications from her. OCR determined that Parent 1 engaged in protected activity on February 22, 2018, January 24, 2019, and March 28, 2019, when she sent emails expressing concern regarding the Revised Transgender Participation Policy to the CIAC's Executive Director;⁵⁴ and on February 28, 2019, when Parent 1 met with the Executive Director in person to discuss her concerns about the policy. OCR determined that the CIAC was aware of Parent 1's protected activity.

OCR determined, however, that the CIAC proffered a legitimate, non-retaliatory reason for the Executive Director's statement to Parent 1 that "further correspondence to CIAC has to come through your principal"; namely, that the CIAC staff typically did not communicate directly with parents and Parent 1 should have communicated her concerns with the athletic director or school administrator. OCR determined that the proffered reason was not a pretext for retaliation, as the Executive Director's instruction was consistent with the CIAC policy and the Executive Director's directives to other parents who had not engaged in protected activities. Therefore, OCR determined that there was insufficient evidence to substantiate the Complainant's allegation that the CIAC retaliated against Parent 1, after Parent 1 complained about the Revised Transgender Participation Policy, by informing Parent 1, in March 2019, that the Executive Director would no longer accept communications from her. Accordingly, OCR will take no further action with respect to this allegation.

⁵⁴ As discussed previously, Parent 1 communicated with the former the Executive Director in her email on February 22, 2018; and with the current Executive Director from January 24, 2019, onward.

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2. Allegations Regarding Glastonbury Track Coach Retaliation

OCR determined that Parent 2 engaged in protected activity by sending emails to the Athletic Director in May, June, and July 2018, expressing her concerns that the Revised Transgender Participation Policy was unfair to cisgender female athletes; meeting with the Athletic Director, the principal, and the superintendent, on or about August 1, 2018, to discuss these concerns; meeting with the Athletic Director and Parent 4, on or about March 15, 2019, to again discuss these concerns; and telephoning and sending an email to the School's Title IX Coordinator in March and April 2019. OCR determined that Parent 2 also engaged in protected activity in May and June 2018, and in March 2019, when she sent emails to the track coach regarding her objections to the policy and a petition that she had initiated in opposition to the policy. OCR determined that the Glastonbury track coach was aware of the Parent 2's protected activity.

With respect to Allegation (a), OCR determined that neither the track coach nor any other Glastonbury employee denied Student 1 an opportunity to participate on a sprint medley relay team at the New Balance Nationals. Rather, the students themselves chose who would participate. Accordingly, OCR could not substantiate that the track coach or other Glastonbury employee subjected Student 1 to an adverse action. Absent an adverse action, OCR does not proceed further with retaliation analysis. Accordingly, OCR will take no further action regarding Allegation (a).

With respect to Allegation (b), OCR must often weigh conflicting evidence in light of the facts and circumstances of each case and determine whether the preponderance of evidence supports the allegation. Here, OCR did not find that the preponderance of the evidence supported the Complainant's assertion that the track coach told Parent 2 or Student 1 that he would not give a good report about Student 1 to college coaches. Based on the foregoing, OCR determined that there was insufficient evidence to substantiate that the track coach subjected Student 1 to the alleged adverse action. Absent an adverse action, OCR does not proceed further with a retaliation analysis. Accordingly, OCR will take no further action regarding Allegation (b).

With respect to Allegation (c), OCR determined that the Glastonbury proffered a legitimate, non-retaliatory reason for not selecting Student 1 as a captain for the spring 2019 outdoor season; namely, that track coaches had concerns about Student 1's maturity and dedication after the winter 2018 indoor season. Even assuming that the track coach also told Student 1 that the decision had to do with her leaving practice early on Fridays, OCR determined that would still be a legitimate, non-retaliatory reason for not selecting her. OCR determined that the proffered reasons were not a pretext for retaliation, as other coaches corroborated the reasons for the decision and the track coach gave an example of another student who had not been re-selected as captain based on similar behaviors, who had not engaged in protected activities. Additionally, OCR determined that there was no causal connection between the protected activity and the alleged adverse action, as the track coach selected Student 1 as a captain for the indoor season after she and Parent 2 had engaged in protected activities in 2018 and prior to their again engaging in protected activities in 2019. Therefore, OCR determined that there was insufficient evidence to substantiate the Complainant's allegation that the Glastonbury track coach retaliated against Student 1, for her and Parent 2's advocacy against the Revised Transgender Participation Policy, by denying Student 1 a position as a team captain in March 2019. Accordingly, OCR will take no further action regarding Allegation (c).

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With respect to Allegation (d), OCR must often weigh conflicting evidence in light of the facts and circumstances of each case and determine whether the preponderance of evidence supports the allegation. Here, OCR did not find that the preponderance of the evidence supported the Complainant's assertion that the track coach told Student 1 in March 2019 and May 2019, that she should consider leaving the team if she had to leave practice early. Based on the foregoing, OCR determined that there was insufficient evidence to substantiate that the track coach subjected Student 1 to the alleged adverse action. Absent an adverse action, OCR does not proceed further with a retaliation analysis. Accordingly, OCR will take no further action regarding Allegation (d).

Attempts to Resolve the Complaint

Via e-mail on February 12, 2020, OCR notified the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury that it had determined that the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury violated Title IX, and provided a proposed resolution agreement (the Agreement) to each that would resolve OCR's compliance concerns. During subsequent telephone calls with counsel for the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury, held during the period of February 13, 2020, through March 13, 2020, OCR informed counsel for the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury of the specific violation, and explained the nature of the violations and the basis of its findings. On multiple occasions during these communications, OCR informed counsel for the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury of the 90-calendar day timeframe for negotiations as set forth in Section 303(f) of the *Manual*. OCR also informed counsel for the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury that the *Manual* states that OCR may end the negotiation period at any time prior to the expiration of the 90-calendar day period when it is clear that agreement will not be reached. On March 12, 2020, counsel for Bloomfield, Hartford, and Cromwell, and on March 13, 2020, counsel for the CIAC, Glastonbury, Canton and Danbury, informed OCR that their clients would not sign the Agreements.

On March 17, 2020, OCR issued impasse letters to the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury notifying the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury that the negotiations had reached an impasse and a final agreement had not been reached. Further, the letter informed the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury that in accordance with the *Manual*, Section 303(g), if an agreement was not reached within 10 calendar days of the date of the letter, i.e., by March 30, 2020, OCR would issue a Letter of Impending Enforcement Action indicating that the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury are in violation of Title IX. OCR also referred the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury to the *Manual*, at <https://www2.ed.gov/about/offices/list/ocr/docs/ocrcpm.pdf>, in particular, Sections 303-305 and 601-602, for more information.

In emails dated March 27, 2020, OCR informed the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury that in view of their COVID-19-related duties and responsibilities, OCR was extending the ten-calendar day-deadline to respond to OCR's proposed resolution agreements for a period of 30 days, to April 27, 2020; and that if agreement was not reached by that date, OCR would issue a Letter of Impending Enforcement Action on April 28,

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2020, pursuant to Section 305 of the *Manual*. To date, the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury have not entered into resolution agreements with OCR to remedy the violations.

Based on the failure of the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury to resolve the identified areas of noncompliance, OCR will either initiate administrative proceedings to suspend, terminate, or refuse to grant or continue and defer financial assistance to the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury, or refer the cases to the U.S. Department of Justice for judicial proceedings to enforce any rights of the United States under its laws. OCR will take further enforcement action after no fewer than 20 calendar days from the date of this letter if resolution of these complaints has not yet been reached.

This Letter of Impending Enforcement Action is not intended and should not be interpreted to address the compliance of the CIAC, Glastonbury, Bloomfield, Hartford, Cromwell, Canton, and Danbury with any other regulatory provision or to address any issues other than those addressed in this letter. This letter sets forth OCR's determination in these individual OCR cases; it is not a formal statement of OCR policy and should not be relied upon, cited, or construed as such. OCR's formal policy statements are approved by a duly authorized OCR official and made available to the public. The complainant may file a private suit in federal court whether or not OCR finds a violation.

Under the Freedom of Information Act, it may be necessary to release this document and related correspondence and records upon request. In the event that OCR receives such a request, it will seek to protect, to the extent provided by law, personally identifiable information that, if released, could reasonably be expected to constitute an unwarranted invasion of personal privacy.

If you have any questions, please contact Nadja Allen Gill, Compliance Team Leader, at (646) 428-3801, or nadja.r.allen.gill@ed.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'Timothy C. J. Blanchard'. The signature is stylized with a large, sweeping initial 'T' and a horizontal line extending to the right.

Timothy C. J. Blanchard

cc: Glenn Lungarini, CIAC Executive Director, via email only
Alan B. Bookman, Glastonbury Superintendent, via email only
Kevin D. Case, Canton Superintendent, via email only
Dr. Enza Macri, Cromwell Superintendent, via email only
Dr. Sal V. Pascarella, Danbury Superintendent, via email only
Dr. James Thompson, Jr., Bloomfield Superintendent, via email only
Dr. Leslie Torres-Rodriguez, Hartford Superintendent, via email only
Roger G. Brooks, Alliance Defending Freedom, Complainant, via email only

APPENDIX 2
RESPONSE TO MOTION FOR
PRELIMINARY INJUNCTION (Dkt. 22)
Hecox, et al. v. Little, et al.
Case No. 1:20-cv-00184-DCN



HEALTH EXAMINATION *and* CONSENT FORM

It is required all students complete a history and physical examination prior to his/her first 9th and 11th grade practice in the interscholastic (9-12) athletic program in the State of Idaho. The exam is at the expense of the student and may not be taken prior to May 1 of the 8th and 10th grade years. This examination is to be done by a licensed physician, physician's assistant or nurse practitioner under optimal conditions. Interim history forms are required during the 10th and 12th grade years and must be submitted to the school administration prior to the first practice.

Name: _____ Sex: M / F Date of birth: _____ Age: _____
 Address: _____ Phone: _____
 School: _____ Sports: _____ Participation Grade: _____

MEDICAL HISTORY

- | | Yes | No | | Yes | No |
|---|--------------------------|--------------------------|--|--------------------------|--------------------------|
| Fill in details of "YES" answers in space below: | | | | | |
| 1. Have you ever been hospitalized? | <input type="checkbox"/> | <input type="checkbox"/> | 6. Have you ever had a head injury? | <input type="checkbox"/> | <input type="checkbox"/> |
| Have you ever had surgery? | <input type="checkbox"/> | <input type="checkbox"/> | Have you ever been knocked out or unconscious? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Are you presently taking any medication or pills? | <input type="checkbox"/> | <input type="checkbox"/> | Have you ever been diagnosed with a concussion? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Do you have any allergies (medicine, bees, other insects)? | <input type="checkbox"/> | <input type="checkbox"/> | Have you ever had a seizure? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Have you ever passed out during or after exercise? | <input type="checkbox"/> | <input type="checkbox"/> | Have you ever had a stinger, burned or pinched nerve? | <input type="checkbox"/> | <input type="checkbox"/> |
| Have you ever been dizzy during or after exercise? | <input type="checkbox"/> | <input type="checkbox"/> | 7. Have you ever had heat or muscle cramps? | <input type="checkbox"/> | <input type="checkbox"/> |
| Have you ever had chest pain during or after exercise? | <input type="checkbox"/> | <input type="checkbox"/> | Have you ever been dizzy or passed out in the heat? | <input type="checkbox"/> | <input type="checkbox"/> |
| Do you tire more quickly than your friends during exercise? | <input type="checkbox"/> | <input type="checkbox"/> | 8. Do you have trouble breathing or do you cough during or after exercise? | <input type="checkbox"/> | <input type="checkbox"/> |
| Have you ever had high blood pressure? | <input type="checkbox"/> | <input type="checkbox"/> | 9. Do you use special equipment (pads, braces, neck rolls, mouth guard or eye guards, etc.)? | <input type="checkbox"/> | <input type="checkbox"/> |
| Have you been told you have a heart murmur? | <input type="checkbox"/> | <input type="checkbox"/> | 10. Have you ever had problems with your eyes or vision? | <input type="checkbox"/> | <input type="checkbox"/> |
| Have you ever had racing of your heart or skipped heartbeats? | <input type="checkbox"/> | <input type="checkbox"/> | Do you wear glasses, contacts or protective eyewear? | <input type="checkbox"/> | <input type="checkbox"/> |
| Has anyone in your family died of heart problems or a sudden death before age 50? | <input type="checkbox"/> | <input type="checkbox"/> | 11. Have you had any other medical problems (infectious mononucleosis, diabetes, ect.)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Do you have any skin problems (itching, rash, acne)? | <input type="checkbox"/> | <input type="checkbox"/> | | | |

12. Have you had a medical problem or injury since your last evaluation? Yes No

13. Have you ever sprained/strained, dislocated, fractured, broken or had repeated swelling or other injuries of any of bones or joints?
 head back shoulder forearm hand hip knee ankle
 neck chest elbow wrist finger thigh shin foot

14. Were you born without a kidney, testicle, or any other organ? Yes No

15. When was your first menstrual period? _____
 When was your last menstrual period? _____
 What was the longest time between your periods last year? _____

Explain "YES" answers: _____

CONSENT FORM

(Parent or guardian and student permission and approval)

I hereby consent to the above named student participating in the interscholastic athletic program at his/her school of attendance. This consent includes travel to and from athletic contests and practice sessions. I further consent to treatment deemed necessary by physicians designated school authorities for any illness or injury resulting from his/her athletic participation. I also consent to release of any information contained in this form to carry out treatment and healthcare operations for the above named student.

If the health care provider's exam will be performed without compensation as part of the school's health examination program for participation in high school activities, I agree to the waiver provisions as set forth in Idaho Code Section 39-7703 and agree that the health care provider shall be immune from liability as specified in said section.

PARENT OR GUARDIAN SIGNATURE _____ DATE: _____

This application to compete in interscholastic athletics for the above school is entirely voluntary on my part and is made with the understanding that I have not violated any of the eligibility rules and regulation of the State Association.

SIGNATURE OF STUDENT _____ DATE: _____

Idaho High School Activities Association Physical Examination Form

Name: _____ Date of Birth: _____

Height _____	Weight _____	BP _____ / _____	Pulse _____
Vision R 20 / _____ L 20 / _____		Corrected: Y N	
	Normal	Abnormal findings	
Medical			
Pulses			
Heart			
Lungs			
Skin			
Ears, nose, throat			
Pupils			
Abdomen			
Genitalia (males)			
Musculoskeletal			
Neck			
Shoulder			
Elbow			
Wrist			
Hand			
Back			
Knee			
Ankle			
Foot			
Other			

CLEARANCE / RECOMMENDATIONS

Clearance:

- A. Cleared for all sports and other school-sponsored activities.
- B. Cleared after completing evaluation/rehabilitation for:

- C. NOT cleared to participate in the following IHSAA sponsored sports /activities:
 baseball basketball cheer/dance cross country football golf
 soccer softball swimming tennis track volleyball wrestling
NOT cleared for other school-sponsored activities (*example: lacrosse*):

- D. Student is NOT permitted to participate in high school athletics.

Reason: _____

Recommendation:

Name of physician:

Address: _____ Phone: _____

Signature of physician/medical provider: _____ Date: _____

(This Physical Examination Form MUST be signed by a licensed physician, physician assistant or nurse practitioner)

LAWRENCE G. WASDEN
ATTORNEY GENERAL

STEVEN L. OLSEN, ISB #3586
W. SCOTT ZANZIG, ISB #9361
DAYTON P. REED, ISB #10775
Deputy Attorneys General
954 W Jefferson, 2nd Floor
P. O. Box 83720
Boise, ID 83720-0010
Telephone: (208) 334-2400
Facsimile: (208) 854-8073
steven.olsen@ag.idaho.gov
scott.zanzig@ag.idaho.gov
dayton.reed@ag.idaho.gov

Attorneys for Defendants

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

LINDSAY HECOX, and JANE DOE with
her next friends JEAN DOE and JOHN
DOE,

Plaintiffs,

v.

BRADLEY LITTLE, in his official
capacity as Governor of the State of Idaho,
et al.,

Defendants.

Case No. 1:20-cv-00184-DCN

**EXPERT DECLARATION OF
GREGORY A. BROWN, Ph.D. FACSM**

I, Dr. Gregory A. Brown, declare as follows:

Qualifications

1. I serve as Professor of Exercise Science in the Department of Kinesiology and Sport Sciences at the University of Nebraska Kearney. I have served as a tenured (and non-tenured) professor at universities since 2002.

2. I teach classes in Exercise Physiology and in Research Methods. I have previously taught courses in Human Anatomy & Physiology and in Sports Nutrition.

3. In August 2002, I received a Doctor of Philosophy degree from Iowa State University, where I majored in Health and Human Performance, with an emphasis in the Biological Bases of Physical Activity. In May 1999, I received a Master of Science degree from Iowa State University, where I majored in Exercise and Sport Science, with an emphasis in Exercise Physiology.

4. I have received many awards over the years, including the Mortar Board Faculty Excellence Honors Award, College of Education Outstanding Scholarship / Research Award, and the College of Education Award for Faculty Mentoring of Undergraduate Student Research.

5. I have authored more than 40 refereed publications and more than 50 refereed presentations in the field of Exercise Science. And I have served as a peer reviewer for over 25 professional journals, including The American Journal of Physiology, the International Journal of Exercise Science, the Journal of Strength and Conditioning Research, and The Journal of Applied Physiology.

6. My areas of research have included the endocrine response to testosterone prohormone supplements in men and women, the effects of testosterone prohormone supplements on health and the adaptations to strength training in men, the effects of energy drinks on the physiological response to exercise, and assessment of various athletic training modes in males and females. Articles that I have published that are closely related to topics that I discuss in this declaration, and to articles by other researchers that I cite and discuss in this declaration, include:

a. Studies of the effect of ingestion of a testosterone precursor on circulating testosterone levels in young men. Douglas S. King, Rick L. Sharp, Matthew D. Vukovich, Gregory A. Brown, et al., *Effect of Oral Androstenedione on Serum Testosterone and Adaptations to Resistance Training in Young Men: A Randomized Controlled Trial*, JAMA 281: 2020-2028 (1999); G. A. Brown, M. A. Vukovich, et al., *Effects of Anabolic Precursors on Serum Testosterone Concentrations and Adaptations to Resistance Training in Young Men*, INT J SPORT NUTR EXERC METAB 10: 340-359 (2000).

b. A study of the effect of ingestion of that same testosterone precursor on circulating testosterone levels in young women. G. A. Brown, J. C. Dewey, et al., *Changes in Serum Testosterone and Estradiol Concentrations Following Acute Androstenedione Ingestion in Young Women*, HORM METAB RES 36: 62-66 (2004).

c. A study finding (among other things) that body height, body mass, vertical jump height, maximal oxygen consumption, and leg press maximal strength were higher in a group of physically active men than comparably active women, while the women had higher percent body fat. G. A. Brown, Michael W. Ray, et al., *Oxygen Consumption, Heart Rate, and Blood Lactate Responses to an Acute Bout of Plyometric Depth Jumps in College-Aged Men And Women*, J. STRENGTH COND RES 24: 2475-2482 (2010).

d. A study finding (among other things) that height, body mass, and maximal oxygen consumption were higher in a group of male NCAA Division 2 distance runners, while women NCAA Division 2 distance runners had higher percent body fat. Furthermore, these male athletes had a faster mean competitive running speed (~3.44 min/km) than women (~3.88 km/min), even though the men ran 10 km while the women ran 6 km. Katherine Semin, Alvah C. Stahlnecker, Kate A. Heelan, G. A. Brown, et al,

Discrepancy Between Training, Competition and Laboratory Measures of Maximum Heart Rate in NCAA Division 2 Distance Runners, JOURNAL OF SPORTS SCIENCE AND MEDICINE 7: 455-460 (2008).

7. I attach a copy of my current Professional Vita, which lists my education, appointments, publications, research, and other professional experience. I am also currently providing expert information on a case similar to this one in the state of Connecticut.

8. I have been asked by counsel for defendants in the matter of *Hecox et al. v. Little et al.* to offer my opinions about whether males have inherent advantages in athletic performance over females, and if so the scale and physiological basis of those advantages, to the extent currently understood by science. I have also been asked to offer my opinion as to whether the sex-based performance advantage enjoyed by males is eliminated if feminizing hormones are administered to male athletes who identify as transgender.

9. The opinions in this declaration are my own, and do not necessarily reflect the opinions of my employer, the University of Nebraska.

10. I have been compensated for my time spent in preparing this declaration at the rate of \$150 per hour, and may be further compensated for time spent in subsequent testimony in this action.

Overview

11. Based on my professional familiarity with exercise physiology and my review of the currently available science, including that contained in the sources I cite in this declaration, and the competition results and records presented here, I offer three primary professional opinions:

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

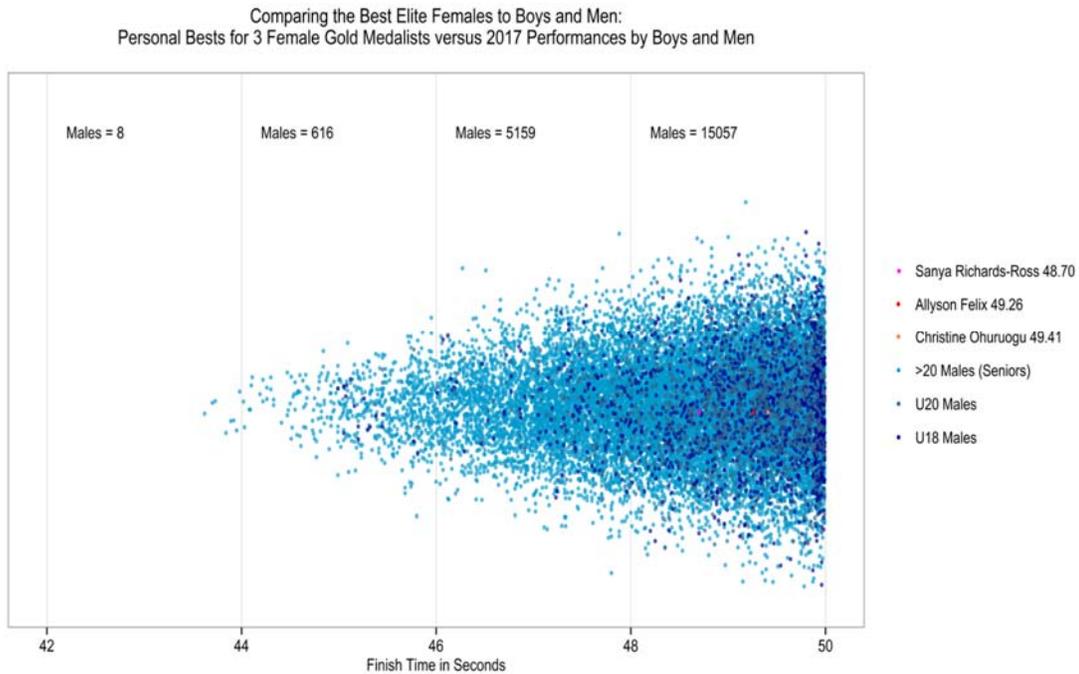
c. Administration of androgen inhibitors and cross-sex hormones to men, or adolescent boys, after male puberty, and administration of testosterone to women or adolescent girls, after female puberty, does not eliminate the performance advantage of men or adolescent boys over women or adolescent girls in almost all athletic contests.

In this declaration, I also provide supporting details, facts, and opinions relating to each of these primary opinions. Each of these opinions is based on my general professional expertise and experience, as well as on particular academic articles, and the competition results and records, that I refer to herein.

12. In short summary, men, and adolescent boys, perform better in almost all sports than women, and adolescent girls, because of their inherent physiological advantages that develop during male puberty. In general, men, and adolescent boys, can run faster, output more physical power, jump higher, and exercise greater physical endurance than women, and adolescent girls.

13. Indeed, while after the onset of puberty males are on average taller and heavier than females, a male performance advantage over females has been measured in weightlifting competitions even between males and females matched for body mass.

14. These performance advantages are also very substantial, such that large numbers of men and even adolescent boys are able to outperform the very top-performing women. To illustrate, Doriane Coleman, Jeff Wald, Wickliffe Shreve, and Richard Clark created the figure below (last accessed on Monday, December 23, 2019 at <https://bit.ly/35yOyS4>), which shows that the *lifetime best performances* of three female Olympic champions in the 400m event—including Team USA’s Sanya Richards-Ross and Allyson Felix—would not match the performances of literally thousands of boys and men, *just in 2017 alone*, including many who would not be considered top tier male performers:



15. Coleman and Shreve also created the table below (last accessed on Monday, December 23, 2019 at <https://bit.ly/37E1s2X>), which “compares the number of boys—males under the age of 18—whose results in each event in 2017 would rank them above the single very best elite [adult] woman that year:”

Event	Best Women’s Result	Best Boys’ Result	# of Boys Outperforming
100 Meters	10.71	10.15	124 ⁺
200 Meters	21.77	20.51	182
400 Meters	49.46	45.38	285
800 Meters	1:55.16*	1:46.3	201+
1500 Meters	3:56.14	3:37.43	101+
3000 Meters	8:23.14	7:38.90	30
5000 Meters	14:18.37	12:55.58	15
High Jump	2.06 meters	2.25 meters	28
Pole Vault	4.91 meters	5.31 meters	10
Long Jump	7.13 meters	7.88 meters	74
Triple Jump	14.96 meters	17.30 meters	47

16. Coleman and Shreve also created the table below (last accessed on Monday, December 23, 2019 at <https://bit.ly/37E1s2X>), which compares the number of men—males over 18—whose results in each event in 2017 would have ranked them above the very best elite woman that year.

Event	Best Women’s Result	Best Men’s Result	# of Men Outperforming
100 Meters	10.71	9.69	2,474
200 Meters	21.77	19.77	2,920
400 Meters	49.46	43.62	4,341
800 Meters	1:55.16*	1:43.10	3,992+
1500 Meters	3:56.14	3:28.80	3,216+
3000 Meters	8:23.14	7:28.73	1307+
5000 Meters	14:18.37	12:55.23	1,243
High Jump	2.06 meters	2.40 meters	777
Pole Vault	4.91 meters	6.00 meters	684
Long Jump	7.13 meters	8.65 meters	1,652
Triple Jump	14.96 meters	18.11 meters	969

17. These advantages result, in large part (but not exclusively), from higher testosterone concentrations in men, and adolescent boys, after the onset of male puberty. Higher testosterone levels cause men, and adolescent boys, to develop more muscle mass, greater muscle strength, less body fat, higher bone mineral density, greater bone strength, higher hemoglobin concentrations, larger hearts and larger coronary blood vessels, and larger overall statures than women, and adolescent girls. In addition, maximal oxygen consumption ($VO_2\text{max}$), which correlates to ~30-40% of success in endurance sports, is higher in both elite and average men and boys than in comparable women and girls when measured in regards to absolute volume of oxygen consumed and when measured relative to body mass. Testosterone is also associated with increased aggressiveness, which may offer competitive advantages for men over women.

18. Although androgen deprivation may modestly decrease some physiological advantages that men and adolescent boys have over women and adolescent girls, it cannot fully eliminate those physiological advantages once an individual has passed through male puberty. For example, androgen deprivation does not reduce bone size, does not alter bone structure, and does not decrease lung volume or heart size. Nor does androgen deprivation in adult men completely reverse the increased muscle mass acquired during male puberty.

19. In this declaration, I present, in the headings marked with Roman numerals, certain of my opinions about sex-based differences in human physiology and the impact of those differences on the athletic performance of men and women. For each of these opinions, I then provide a brief overview, and a non-exhaustive summary of studies published in science journals or other respected sources that support and provide in part the basis of my opinion, also quoting relevant findings of each article.

20. In particular, in addition to the article by Coleman and Schreve that I discuss above, I cite twenty-two articles published in scientific journals. I provide capsule summaries of those articles below. These studies form part of the basis of the opinions I set forth in this declaration, which are also informed by my general professional expertise and experience. In support of the opinions I offer, I expect to explain and testify concerning the findings and conclusions of these articles that I detail in this declaration. I expect to use any or all of the tables and charts that I have reproduced in this declaration, as well as any other tables or charts contained in the articles I reference, to present and explain my opinions to the court.

a. The first resource I cite is David J. Handelsman, Angelica L. Hirschberg, et al., *Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance*, 39:5 ENDOCRINE REVIEWS 803 (2018). This article correlates data about performance differences between males and females with data from over 15 liquid chromatography-mass spectrometry studies of circulating testosterone in adults, as a function of age. The authors conclude, among other things, that “[f]rom male puberty onward, the sex difference in athletic performance emerges as circulating concentrations rise as the testes produce 30 times more testosterone than before puberty, resulting in men having 15- to 20-fold greater circulating testosterone than children or women at any age.” (804)

b. The second resource I cite is Valérie Thibault, Marion Guillaume, et al., *Women & Men in Sport Performance: The Gender Gap Has Not Evolved Since 1983*, 9 J. OF SPORTS SCIENCE & MEDICINE 214 (2010). This article analyzes results from 82 athletic events since the beginning of the modern Olympic era, and concludes in part that while a wide sex-based performance gap existed before 1983, due to a likely combination

of physiological and non-physiological reasons, the sex-based performance gap stabilized in 1983, at a mean difference of $10.0\% \pm 2.94$ between men and women for all events.

(214)

c. The third resource I cite is Beat Knechtle, Pantelis T. Nikolaidis, et al., *World Single Age Records in Running from 5 km to Marathon*, 9 FRONTIERS IN PSYCHOLOGY 1 (2013). This article analyzes results from a study of the relationship between performance and age in races of several lengths, and reports in part that “[i]n all races [studied], women were significantly slower than men.” (7)

d. The fourth resource I cite is Romuald Lepers, Beat Knechtle, et al., *Trends in Triathlon Performance: Effects of Sex & Age*, 43 SPORTS MED 851 (2013). This article analyzes results from various triathlon events over the course of about 15 years, and reports in part a sex-based performance gap between the sexes of no less than 10% in every component event, with this sex-based performance gap increasing with age.

e. The fifth resource I cite is Espen Tønnessen, Ida Siobhan Svendsen, et al., *Performance Development in Adolescent Track & Field Athletes According to Age, Sex, and Sport Discipline*, 10:6 PLOS ONE 1 (2015). This article analyzes the 100 all-time best Norwegian male and female track and field results (in persons aged 11 to 18) from the 60m and 800m races, and the long jump and high jump events. The results show that sex-specific differences that arise during puberty significantly affect event results, with males regularly outperforming females after age 12.

f. The sixth resource I cite is David J. Handelsman, *Sex Differences in Athletic Performance Emerge Coinciding with the Onset of Male Puberty*, 87 CLINICAL ENDOCRINOLOGY 68 (2017). This article analyzes results from a secondary quantitative

analysis of four published sources that report performance measures in swimming meets, track and field events, and hand-grip strength. The results show in part that the onset and tempo of sex-based performance divergence were very similar for all performance measures, and that this divergence closely paralleled the rise of circulating testosterone in adolescent boys.

g. The seventh article I cite is Moran Gershoni & Shmuel Pietrokovski, *The landscape of sex-differential transcriptome and its consequent selection in human adults*, 15 BMC BIOL 7 (2017). This article details the results of an evaluation of the differences in genetic expression between men and women. The results show that in humans, out of 18,670 protein coding genes that were evaluated, over 6,500 are differentially expressed based on the sex of the person. The main relevance of this article to the case at hand is to help illustrate that the differences between males and females cannot be eliminated by reducing testosterone and increasing estrogen concentrations in a biological male.

h. The eighth article I cite is K. M. Haizlip, et al., *Sex-based differences in skeletal muscle kinetics and fiber-type composition*, 30 PHYSIOLOGY (BETHESDA) 30 (2015). This is a review article summarizing the findings of 56 other articles evaluating the differential expression of genes in skeletal muscles in males and females and how these differences in gene expression influence (among many things) muscle mass, muscle fiber type, and muscle function. The main relevance of this article to the case at hand is to help illustrate that the current scientific evidence indicates that the genetic differences in skeletal muscle size and function between males and females that give males an

athletic performance advantage cannot be eliminated by reducing testosterone and increasing estrogen concentrations in a biological male.

i. The ninth, tenth, and eleventh resources I cite are Konstantinos D. Tambalis, et al., *Physical fitness normative values for 6-18-year-old Greek boys and girls, using the empirical distribution and the lambda, mu, and sigma statistical method*, 16 EUR J SPORT SCI 736 (2016). Mark J. Catley & G. R. Tomkinson, *Normative health-related fitness values for children: analysis of 85347 test results on 9-17-year-old Australians since 1985*, 47 BR J SPORTS MED 98 (2013). Grant R. Tomkinson, et al., *European normative values for physical fitness in children and adolescents aged 9-17 years: results from 2 779 165 Eurofit performances representing 30 countries*, 52 BR J SPORTS MED 1445 (2018). Individually and combined these articles illustrate that boys as young as six years old perform better than comparable age matched girls in health related measures of physical fitness including strength, speed, endurance, and jumping ability. These advantages in health related measures of fitness translate to improved athletic performance in boys when compared to girls likely before and certainly during and after puberty.

j. The twelfth and thirteenth resources I cite are Daniel M. Fessler, et al., *Sexual dimorphism in foot length proportionate to stature*, 32 ANN HUM BIOL 44 (2005). Roshna E. Wunderlich & P. R. Cavanagh, *Gender differences in adult foot shape: implications for shoe design*, 33 MED SCI SPORTS EXERC 605 (2001). These articles evaluate and describe the differences in the feet of men and women, particularly noting that the differences between the sexes are not just a matter of stature but also include morphological traits that can influence runner performance.

k. The fourteenth, fifteenth, and sixteenth resources I cite are Daichi Tomita, et al., *A pilot study on the importance of forefoot bone length in male 400-m sprinters: is there a key morphological factor for superior long sprint performance?*, 11 BMC RES NOTES 583 (2018). Hiromasa Ueno, et al., *The Potential Relationship Between Leg Bone Length and Running Performance in Well-Trained Endurance Runners*, 70 J HUM KINET 165 (2019). Hiromasa Ueno, et al., *Association between Forefoot Bone Length and Performance in Male Endurance Runners*, 39 INT J SPORTS MED 275 (2018). Building upon the information from Fessler (2005) and Wunderlich (2001), these studies collectively illustrate that the length of the bones in the foot and lower leg can contribute to successful competitive running performance, which likely gives men a performance advantage over women in running due to the differences in lower limb sizes described by Fessler et al. (2005) and Wunderlich and Cavanaugh (2001).

l. The seventeenth resource I cite is Louis Gooren, *The Significance of Testosterone for Fair Participation of the Female Sex in Competitive Sports*, 13 ASIAN J. OF ANDROLOGY 653 (2011). This article highlights specific research that indicates pubertal testosterone increases result in significant physiological advantages for men and adolescent boys, compared to women and adolescent girls, after the onset of male puberty.

m. The eighteenth resource I cite is Taryn Knox, Lynley C. Anderson, et al., *Transwomen in Elite Sport: Scientific & Ethical Considerations*, 45 J. MED ETHICS 395 (2019). This article confirms from available science that higher testosterone levels provide an all-purpose benefit in sport, and that the current International Olympic Guidelines rule requiring males who identify as transgender to keep testosterone levels

under 10 nmol/L for one year does not eliminate (or even come close to eliminating) the performance advantage of their male physiology.

n. The nineteenth resource I cite is Louis J. G. Gooren & Mathijs C. M. Bunck, *Transsexuals & Competitive Sports*, 151 EUROPEAN J. OF ENDOCRINOLOGY 425 (2004). This article analyzes results from a study that compared pretreatment physiological measurements in 17 female-to-male transsexuals with the measurements after one year of cross-sexual treatment in 19 male-to-female transsexuals undergoing sex reassignment therapy. The results in part confirmed that androgen deprivation in male-to-female transsexuals decreases muscle mass to some extent but does not eliminate the male muscular advantage and does not reverse certain other effects of androgenization that had occurred during male puberty.

o. The twentieth resource I cite is Anna Wiik et al., *Muscle Strength, Size, and Composition Following 12 Months of Gender-affirming Treatment in Transgender Individuals*, J. CLIN. METAB., 105(3):e805-e813 (2020). This article analyzes the impact of (a) suppression of endogenous hormones and (b) hormone replacement therapy on metrics of transgender individuals including strength, muscle size, and radiological density. After 12 months, strength in male-to-female subjects did not decrease, and muscle volume remained higher in male-to-female subjects than in female-to-male subjects after the latter subjects had undergone 12 months of testosterone injections.

p. The twenty-first resource I cite is Miranda Scharff et al., *Change in Grip Strength in Trans People and Its Association with Lean Body Mass and Bone Density*, ENDOCRINE CONNECTIONS (2019) 8, 1020-1028. This article measured grip strength and multiple parameters of lean body mass and bone density in both male-to-female and

female-to-male populations across their first year of hormone therapy. After 12 months, “the median grip strength in [male-to-female] subjects still [fell] into the 95th percentile for age-matched females.”

q. The twenty-second resource I cite is Johanna Harper. *Race Times for Transgender Athletes*. *J Sporting Cultures and Identities* 6 (2019) 1. This article is oft cited as evidence supporting a lack of performance advantage for male-to-female transgender athletes. Herein I provide a critique of the methodological shortcomings of this study for the purpose of demonstrating the extreme lack of scientific validity or reliability of the results.

21. I explain my opinions and the results of these studies in more detail below.

Opinions

I. Biological men or boys have an advantage over women or girls, in almost all athletic contests.

22. As one team of researchers has recently written, “Virtually all elite sports are segregated into male and female competitions. The main justification is to allow women a chance to win, as women have major disadvantages against men who are, on average, taller, stronger, and faster and have greater endurance due to their larger, stronger, muscles and bones as well as a higher circulating hemoglobin level.” David J. Handelsman, Angelic L. Hirschberg, et al., *Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance*, 39:5 *ENDOCRINE REVIEWS* 803 (2018).

23. In fact, biological men, and adolescent boys, substantially outperform comparably aged women, and adolescent girls, in competitions involving running speed, swimming speed, cycling speed, jumping height, jumping distance, and strength (to name a few, but not all, of the

performance differences). These performance advantages for men, and adolescent boys, are inherent to the biological differences between the sexes and are not due to social or cultural factors, as evidenced by minimal to no change in the percentage differences between males and females in world class and record setting performances in the past 40 years. In addition, 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.

24. I highlight below key findings about male performance advantages from eighteen studies or datasets.

A. David J. Handelsman, Angelica L. Hirschberg, et al., *Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance*, 39:5 ENDOCRINE REVIEWS 803 (2018):

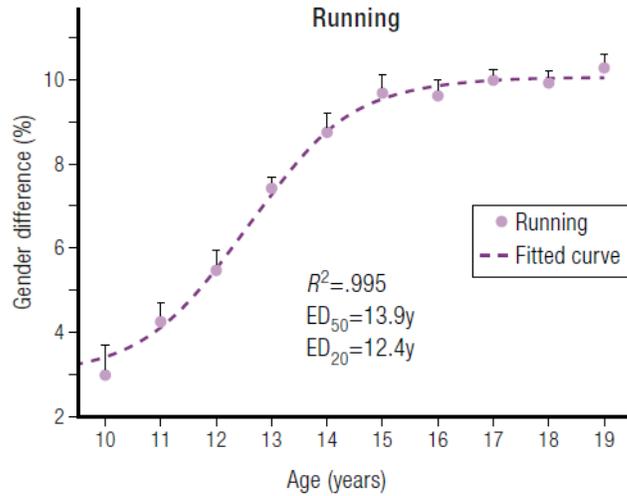
25. The Handelsman et al. (2018) authors demonstrate a consistent pattern of divergence of athletic performance, in favor of males, across the years of puberty and strongly correlating to increasing testosterone levels in adolescent males. The pattern is observed in events exercising a variety of muscle systems. In sum, the Handelsman et al. (2018) authors report: "Corresponding to the endogenous circulating testosterone increasing in males after puberty to 15 to 20 nmol/L (sharply diverging from the circulating levels that remain <2 nmol/L in females), male athletic performances go from being equal on average to those of age-matched females to 10% to 20% better in running and swimming events, and 20% better in jumping events." (812)

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26. Taken from Handelsman’s Figure 1, the chart below indicates “sex differences in performance (in percentage) according to age (in years) in running events, including 50m to 2 miles.” (813)



27. Taken from Handelsman’s Figure 1, the chart below indicates “sex differences in performance (in percentage) according to age (in years) ... in jumping events, including high jump, pole vault, triple jump, long jump, and standing jump.” (813)

28. Taken from Handelsman’s Figure 1, the chart below indicates “a fitted sigmoidal curve plot of sex differences in performance (in percentage) according to age (in years) in running, jumping, and swimming events, as well as the rising serum testosterone concentrations from a large dataset of serum testosterone of males. Note that in the same dataset, female serum testosterone concentrations did not change over those ages, remaining the same as in prepubertal

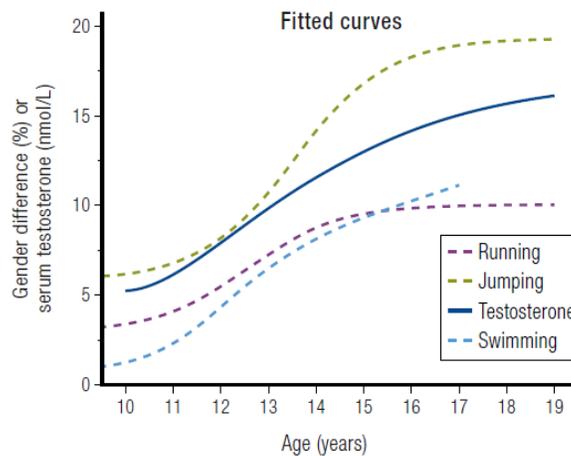
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boys and girls. Data are shown as mean and SEM of the pooled sex differences by age.” (813)



29. These authors also note the significance, for athletic competition, of the subjective nature of “gender identity” in current understanding: “Prompted by biological, personal, and societal factors, volitional expression of gender can take on virtually any form limited only by the imagination, with some individuals asserting they have not just a single natal gender but two genders, none, a distinct third gender, or gender that varies (fluidly) from time to time....” For this reason, the authors conclude: “[I]f gender identity were the basis for eligibility for female sports, an athlete could conceivably be eligible to compete at the same Olympics in both female and male events. These features render the unassailable personal assertion of gender identity incapable of forming a fair, consistent sex classification in elite sports.” (804)

B. Valérie Thibault, Marion Guillaume, et al., *Women & Men in Sport Performance: The Gender Gap has not Evolved Since 1983*, 9 J. OF SPORTS SCIENCE & MEDICINE 214 (2010):

30. The Thibault et al. (2010) authors note that there was a large but narrowing sex-based performance gap between men’s and women’s Olympic athletic performances before 1983, which could hypothetically be attributed to a combination of social, political, or other non-physiological reasons, in addition to physiological reasons. However, “the gender gap in

Olympic sport performance has been stable since 1983” (219) “at a mean difference of $10.0\% \pm 2.94$ between men and women for all [Olympic] events.” (222)

31. Since then, even when performances improve, the “progressions are proportional for each gender.” (219-20)

32. The results of this study “suggest that women’s performances at the high level will never match those of men” (219) and that “women will not run, jump, swim or ride as fast as men.” (222) The authors conclude that this gap, now stable for 30+ years, is likely attributable to physiology, and thus that “[s]ex is a major factor influencing best performances and world records.” (222)

33. Breaking these performance advantages out by event, the authors report the following sex-based performance gaps in Olympic sport competitions since 1983:

a. “The gender gap ranges from 5.5% (800-m freestyle, swimming) to 36.8% (weightlifting).” (222)

b. Olympic world records in running events indicate that men perform “10.7% (± 1.85)” better than women since gender gap stabilization. (217)

c. Olympic world records in jumping events indicate that men perform “17.5% (± 1.11)” better than women since gender gap stabilization. (217)

d. Olympic world records in swimming events indicate that men perform “8.9 % (± 1.54)” better than women since gender gap stabilization. (218)

e. Olympic world records in cycling sprint events indicate that men perform “6.95% (± 0.16)” better than women since gender gap stabilization. (219)

f. Olympic world records in weightlifting events indicate that men perform “36.8% (± 6.2)” better than women since gender gap stabilization. Note that the

Olympics first introduced women’s weightlifting events in 1998, and “no breakpoint date has been detected yet.” (219)

34. “The top ten performers’ analysis reveals a similar gender gap trend with a stabilization in 1982 at 11.7%” when averaged across all events. (222)

C. Beat Knechtle, Pantelis T. Nikolaidis, et al., *World Single Age Records in Running from 5 km to Marathon*, 9 FRONTIERS IN PSYCHOLOGY 1 (2013):

35. A comparison of performances in races of a variety of distances showed that “[i]n all races, women were significantly slower than men. The estimated sex differences ... were increasing” as race distances increased from 8 km.¹

D. Romuald Lepers, Beat Knechtle, et al., *Trends in Triathlon Performance: Effects of Sex & Age*, 43 SPORTS MED 851 (2013):

36. Based on data from a variety of elite triathlon and ultra-triathlon events spanning 22 years, the Lepers et al. (2013) authors reported that “elite males appear to run approximately 10–12 % faster than elite females across all endurance running race distances up to marathon, with the sex difference narrowing as the race distance increases. However, at distances greater than 100 km, such as the 161-km ultramarathon, the difference seems even larger, with females 20–30 % slower than males.” (853)

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¹ Throughout this declaration, in the interest of readability I have omitted internal citations from my quotations from the articles I cite. The sources cited by these authors may of course be found by reference to those articles.

37. Lepers and Knechtle Table 1 below shows the “[m]ean sex differences in time performance for swimming, cycling, running and total time at different national and international triathlons.” (854)

Event	Sex difference in time performance (%)			
	Swim	Cycle	Run	Total
Short distance (1.5–40–10 km): [30, 79]				
Zurich (Switzerland) from 2000 to 2010				
Top five elite overall	15.2	13.4	17.1	14.8
Top five AG, from 18 to 54 years	18.5	15.5	18.5	17.1
World Championship from 2009 to 2011				
Top ten AG, from 18 to 64 years	13.3	10.7	7.5	12.0
Half Ironman (1.9–90–21 km): [31, 79]				
Rapperswil (Switzerland) from 2007 to 2010				
Top five elite overall	14.1	12.3	12.5	12.6
Top five AG, from 18 to 54 years	22.3	16.4	19.2	17.6
World Championship from 2009 to 2011				
Top ten AG, from 18 to 64 years	12.4	11.2	14.5	12.6
Off-road triathlon (1.5–30–10 km): [9]				
World championship (Maui, USA) from 2007 to 2009				
Top ten elite overall	12.4	19.6	18.4	18.2
Ironman (3.8–180–42 km): [2, 32, 34]				
World championship (Kona, Hawaii, USA) from 1988 to 2007				
Top ten elite overall	9.8	12.7	13.3	12.6
Top ten AG, from 18 to 64 years	12.1	15.4	18.2	15.8
Zurich (Switzerland) from 1995 to 2010				
Top ten elite overall	14.0	13.2	18.2	14.9

38. “[F]or ultratriathlons, it has been shown that with increasing length of the event, the best females became relatively slower compared with the best males. Indeed, if the world’s best performances are considered, males were 19 % faster than the females in both Double and Triple Ironman distance, and 30 % faster in the Deca-Ironman distance.” (854)

39. “The average sex difference in swimming performance during triathlon for race distances between 1.5 and 3.8 km ranged between approximately 10 and 15 % for elite triathletes.” (854)

40. Lepers and Knechtle Table 2 below shows the “[m]ean percentage differences in times for swimming, cycling, running and total event between the top ten females and males ... in 2012 at four international triathlons:” (855)

Event	Sex difference in performance in top ten athletes in 2012 (mean \pm SD)			
	Swim	Cycle	Run	Total
Hawaii Ironman Triathlon (3.8–180–42 km)	14.1 \pm 7.9	13.1 \pm 2.3	7.3 \pm 2.9	11.3 \pm 0.5
Olympics Triathlon (1.5–40–10 km) with drafting	11.8 \pm 2.0	11.3 \pm 0.6	14.7 \pm 0.8	14.1 \pm 7.9
Hy-Vee Triathlon (1.5–40–10 km) without drafting	8.6 \pm 4.8	10.2 \pm 3.5	8.6 \pm 4.4	9.3 \pm 0.5
World Championship Off-Road Triathlon (1.5–30–10 km)	15.2 \pm 15.5	22.6 \pm 4.4	15.1 \pm 6.7	17.3 \pm 2.9

41. “[T]he sex difference in performance between the best male and female ultraswimmers is more generally close to 11–12 %, which corresponds to values observed for swimming in triathlon.” (855)

42. “Sex differences in triathlon cycling vary from 12 to 16% according to the level of expertise of participating triathletes for road-based triathlons.” (855)

43. “In track cycling, where females are generally weaker than males in terms of power/weight ratios, the performance gap between males and females appears to be constant (<11 %) and independent of the race distance from 200 to 1,000 m.” (855)

44. “In ultra-cycling events, such as the ‘Race Across America,’ sex difference in performance was around 15 % among top competitors. Greater muscle mass and aerobic capacity in males, even expressed relative to the lean body mass, may represent an advantage during long-distance cycling, especially on a relatively flat course such as Ironman cycling, where cycling approximates to a non-weight-bearing sport. Indeed, it has been shown that absolute power output (which is greater for males than for females) is associated with successful cycling

endurance performance because the primary force inhibiting forward motion on a flat course is air resistance.” (855-56)

45. “Interestingly, for elite triathletes, the sex difference in mountain bike cycling during off-road triathlon (<20 %) is greater than cycling sex differences in conventional road-based events. Mountain biking differs in many ways from road cycling. Factors other than aerobic power and capacity, such as off-road cycling economy, anaerobic power and capacity, and technical ability might influence off-road cycling performance. Bouts of high-intensity exercise frequently encountered during the mountain biking leg of off-road triathlon (lasting <1 h 30 min for elite males and <2 h for elite females) can result from (1) having to overcome the constraints of gravity associated with steep climbs, (2) variable terrain necessitating wider tires and thus greater rolling resistance, and (3) isometric muscle contractions associated with the needs of more skilled bike-handling skills, not so often encountered in road cycling. However, in particular, lower power-to-weight ratios for female than for male triathletes inevitably leave them at a disadvantage during steep climbs.” (856)

46. “During the 1988–2007 period, the top ten elite males have run the Hawaii Ironman marathon on average 13.3 % faster than the top ten females.” (856)

E. Espen Tønnessen, Ida Siobhan Svendsen, et al., *Performance Development in Adolescent Track & Field Athletes According to Age, Sex & Sport Discipline*, 10:6 PLoS ONE 1 (2015):

47. While both sexes increase performance across the teen years, the Tønnessen et al. (2015) authors found performance advantages for male athletes associated with the onset of puberty and becoming increasingly larger across the years of puberty, in a chronological progression that was closely similar across diverse track and field events.

48. “The current results indicate that the sex difference evolves from < 5% to 10–18% in all the analyzed disciplines from age 11 to 18 yr. The gap widens considerably during early adolescence before gradually stabilizing when approaching the age of 18. This evolution is practically identical for the running and jumping disciplines. The observed sex differences at the age of 18 are in line with previous studies of world-class athletes where a sex difference of 10–12% for running events and ~19% for jumping events has been reported.” (8)

49. “Male and female athletes perform almost equally in running and jumping events up to the age of 12. Beyond this age, males outperform females. Relative annual performance development in females gradually decreases throughout the analyzed age period. In males, annual relative performance development accelerates up to the age of 13 (for running events) or 14 (for jumping events) and then gradually declines when approaching 18 years of age. The relative improvement from age 11 to 18 was twice as high in jumping events compared to running events. For all of the analyzed disciplines, overall improvement rates were >50% higher for males than for females. The performance sex difference evolves from < 5% to 10-18% in all the analyzed disciplines from age 11 to 18 yr.” (1)

50. “Recent studies of world-class athletes indicate that the sex difference is 10–12% for running events and ~19% for jumping events.” (2)

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51. Tønnessen and Svendsen’s Table 1 below shows the “[e]xpected progressions in running and jumping performance for 11-18 [year] old males and females,” as deduced from “[t]he 100 all-time best Norwegian male and female 60-m, 800-m, long jump and high jump athletes in each age category” (1, 4)

Table 1. Expected progressions in running and jumping performance for 11–18 yr old males and females.

Age (yr)	60 m		800 m		Long Jump		High Jump	
	Boys Progression (s and %)	Girls Progression (s and %)	Boys Progression (s and %)	Girls Progression (s and %)	Boys Progression m (%)	Girls Progression m (%)	Boys Progression m (%)	Girls Progression m (%)
11–12	-0.35 (4.1)	-0.35 (4.0)	-6.4 (4.4)	-7.3 (4.8)	+0.35 (7.4)	+0.36 (7.9)	+0.11 (7.4)	+0.10 (7.2)
12–13	-0.48 (5.8)	-0.25 (2.9)	-8.7 (6.2)	-5.5 (3.8)	+0.43 (8.6)	+0.30 (6.0)	+0.12 (7.9)	+0.09 (6.3)
13–14	-0.29 (3.7)	-0.16 (2.0)	-5.9 (4.5)	-3.6 (2.6)	+0.50 (9.0)	+0.21 (4.1)	+0.13 (8.1)	+0.06 (3.6)
14–15	-0.10 (1.3)	-0.02 (0.2)	-5.2 (4.1)	-2.2 (1.6)	+0.34 (5.6)	+0.13 (2.4)	+0.08 (4.3)	+0.04 (2.4)
15–16	-0.17 (2.3)	-0.08 (1.0)	-3.2 (2.7)	-1.6 (1.2)	+0.28 (4.4)	+0.10 (1.8)	+0.07 (3.6)	+0.03 (1.8)
16–17	-0.10 (1.4)	-0.07 (0.8)	-2.3 (1.9)	-1.5 (1.2)	+0.19 (2.9)	+0.06 (1.1)	+0.05 (2.5)	+0.01 (0.6)
17–18	-0.05 (0.7)	-0.02 (0.2)	-1.5 (1.4)	-0.6 (0.4)	+0.17 (2.5)	+0.02 (0.4)	+0.04 (1.9)	+0.01 (0.5)

Data are mean (standard deviation) for top 100 Norwegian male and female performers in each discipline.

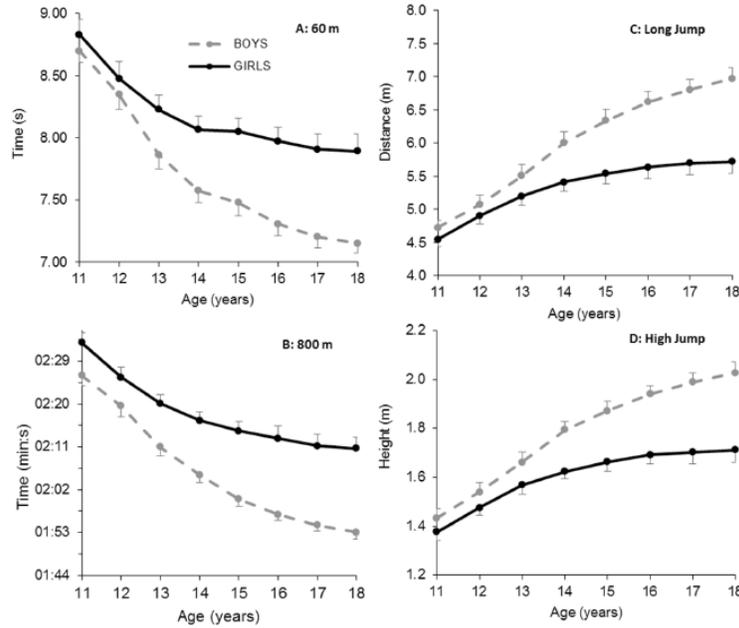
52. Tønnessen and Svendsen’s Table 2 below shows the “[s]ex ratio in running and jumping performance for 11-18 [year] old males and females,” as deduced from “[t]he 100 all-time best Norwegian male and female 60-m, 800-m, long jump and high jump athletes in each age category” (1, 6)

Table 2. Sex ratio in running and jumping performance for 11–18 yr old males and females.

	60 m	800 m	Long Jump	High Jump
11	0.99	0.95	0.96	0.97
12	0.98	0.96	0.97	0.96
13	0.96	0.93	0.94	0.95
14	0.94	0.92	0.90	0.90
15	0.93	0.89	0.87	0.89
16	0.92	0.88	0.85	0.87
17	0.91	0.87	0.84	0.85
18	0.91	0.86	0.82	0.84

Data are calculated from mean results of top 100 Norwegian male and female performers in each discipline.

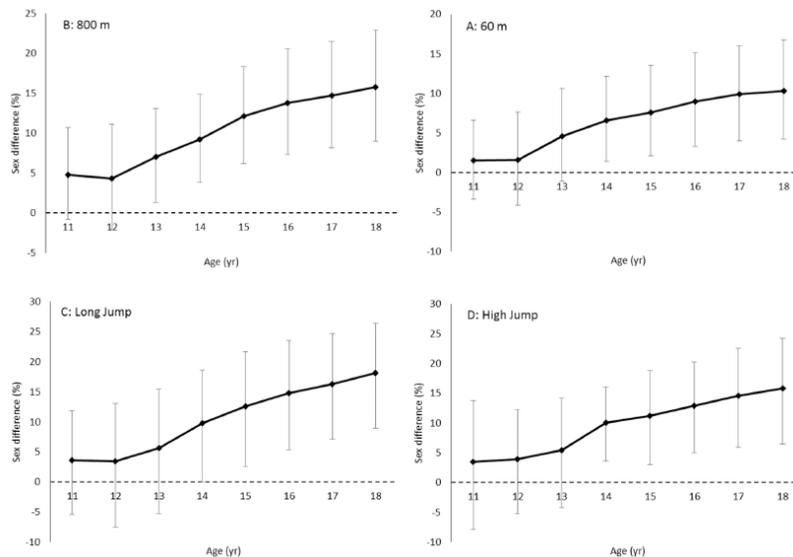
53. Tønnessen and Svendsen’s Figure 1 below shows “[p]erformance development from age 11 to 18 in running and jumping disciplines. Data are mean ± [standard deviation] for 60 m, 600 m, long jump, and high jump for top 100 Norwegian male and female performers in



each discipline:” (4)

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54. Tønnessen and Svendsen’s Figure 3 below shows the “[s]ex difference for performance in running and jumping disciplines from age 11 to 18. Data are mean and 95% [confidence intervals] for 60 m, 600 m, long jump, and high jump for top 100 Norwegian male and female performers in each discipline.” (6)



55. As for the 60m race, the tables and charts above illustrate:

a. “[B]oys improve 0.3–0.5 [seconds] over 60 m sprint each year up to the age of 14 [years] (very large to nearly perfect annual effect), 0.1–0.2 [seconds] annually from 14 to 17 [years] (moderate to large annual effect), and 0.05 [seconds] from age 17 to 18 [years] (moderate effect). Relative annual improvement peaks between 12 and 13 [years] (5.8%; nearly perfect effect), and then gradually declines to 0.7% between age 17 and 18 [years] (moderate effect).” (3)

b. “On average, boys improve their 60 m performance by 18% from age 11 to 18 [years]. Girls improve 0.35 [seconds] over 60 m from age 11 to 12 [years] (4%; very large effect). Then, absolute and relative annual improvement gradually slows and almost plateaus between age 14 and 15 (0.02 s; 0.2%; trivial effect). From age 15 to 17,

annual improvement increases somewhat to 0.07–0.08 [seconds] (~1%; moderate effect) before plateauing again between age 17 and 18 (0.02 s; 0.2%; trivial effect). In total, girls improve their 60-m performance by 11% from age 11 to 18 [years].... [T]he sex difference for 60 m sprint evolves from 1.5% at age 11 to 10.3% at the age of 18.... [T]he sex ratio for 60 m running performance develops from 0.99 at age 11 to 0.91 at age 18.” (4-5)

56. As for the 800m race, the tables and charts above illustrate:

a. “[B]oys improve 6–9 [seconds] over 800 m each year up to age 14 [years] (very large to nearly perfect annual effect). Relative annual improvement peaks between age 12 and 13 (6.2%; nearly perfect effect), then gradually decreases to 1.5 [seconds] between age 17 and 18 (1.4%; moderate effect).” (5)

b. “On average, boys enhance their 800-m performance by 23% from age 11 to 18. For girls, both absolute and relative annual performance development gradually decreases across the analysed age stages. The improvement is slightly above 7 [seconds] between age 11 and 12 [years] (4.8%: very large effect), decreasing to only 0.6 [seconds] from age 17 to 18 (0.4%; small effect).... [G]irls enhance their 800-m performance by 15% from age 11 to 18. The 800 m performance sex difference evolves from 4.8% at the age of 11 to 15.7% at the age of 18.... [T]he sex ratio for 800 m running performance develops from 0.95 at age 11 to 0.86 at age 18.” (5)

57. As for the long jump, the tables and charts above illustrate:

a. “[A]nnual long jump improvement among boys gradually increases from 35 cm between age 11 and 12 [years] (7.4%; very large effect) to 50 cm between age 13

and 14 (9%; very large effect). Both absolute and relative annual development then gradually falls to 17 cm between age 17 and 18 (2.5%; moderate effect).” (5)

b. “[B]oys, on average, improve their long jump performance by 48% from age 11 to 18 yr. For girls, both absolute and relative annual performance enhancement gradually falls from age 11 to 12 [years] (36 cm; 7.9%; very large effect) until nearly plateauing between 17 and 18 [years] (2 cm; 0.4%; trivial effect). Overall, girls typically improve their long jump performance by 26% throughout the analysed age stages. The sex difference in long jump evolves from 3.6% at the age of 11 to 18% at the age of 18.... [T]he sex ratio for long jump performance develops from 0.96 at age 11 to 0.82 at age 18.” (5)

58. As for the high jump, the tables and charts above illustrate:

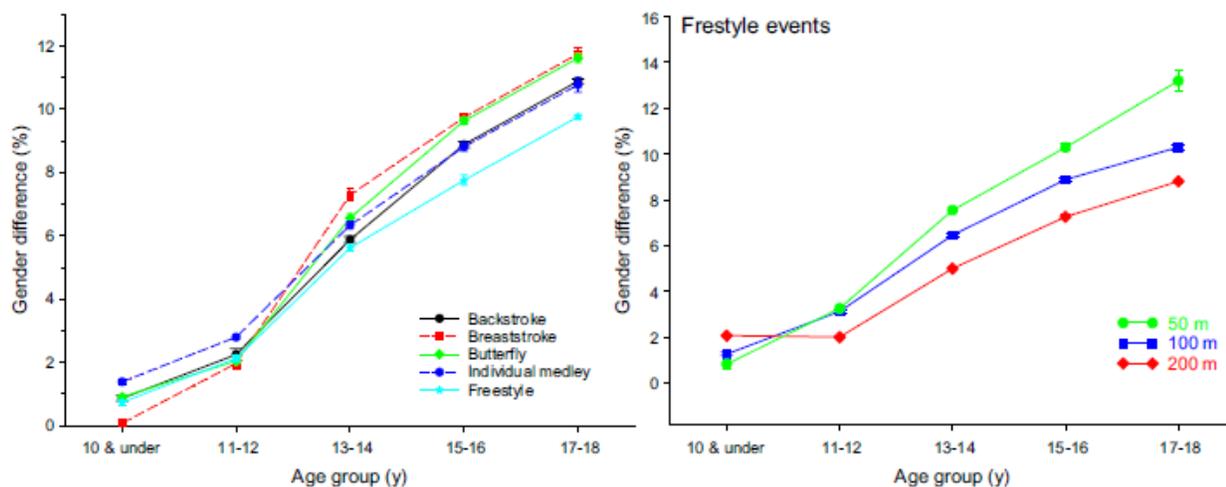
a. “[B]oys improve their high jump performance by 11–13 cm each year up to the age of 14 (7–8%; very large annual effects). Both absolute and relative annual improvement peaks between age 13 and 14 (13 cm; 8.1%; very large effect), then gradually decreases to 4 cm from age 17 to 18 (1.9%; moderate annual effect).” (6)

b. “Overall, boys improve their high jump performance by, on average, 41% from age 11 to 18. For girls, both absolute and relative annual improvement decreases from 10 cm from age 11 to 12 [years] (7.2%; very large effect) until it plateaus from age 16 (1 cm; ~0.5%; small annual effects). Overall, girls typically improve their high jump performance by 24% from age 11 to 18. The sex difference in high jump performance evolves from 3.5% at the age of 11 to 16% at the age of 18.... [T]he sex ratio for high jump performance develops from 0.97 at age 11 to 0.84 at age 18.” (6-7)

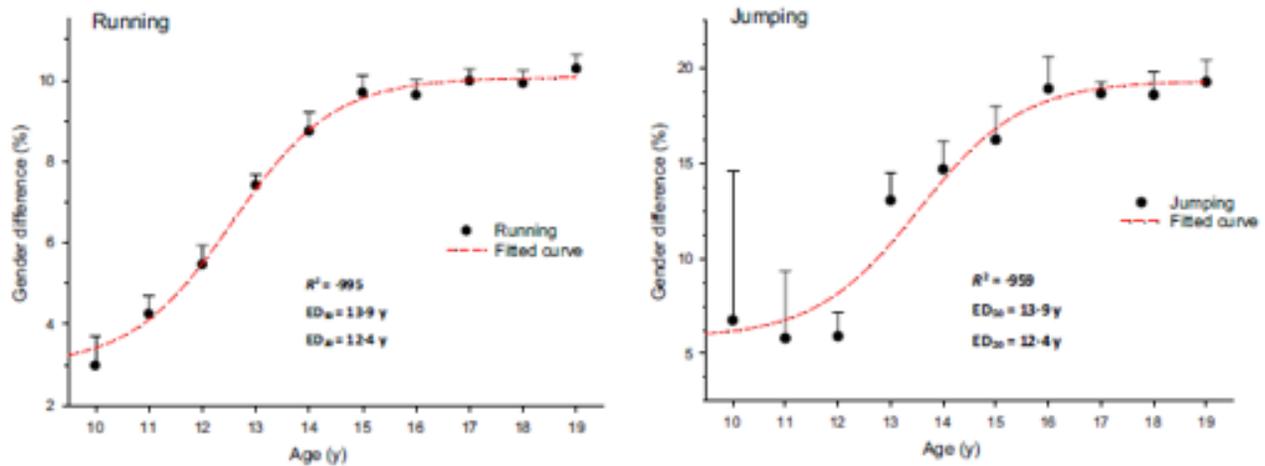
F. David J. Handelsman, *Sex Differences in Athletic Performance Emerge Coinciding with the Onset of Male Puberty*, 87 CLINICAL ENDOCRINOLOGY 68 (2017):

59. Analyzing four separate studies, Handelsman (2017) found very closely similar trajectories of divergence of athletic performance between the sexes across the adolescent years, in all measured events.

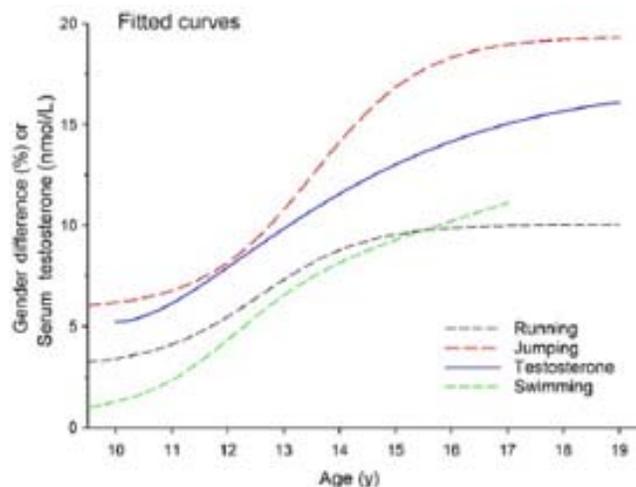
60. As illustrated by Figure 1 of Handelsman (2017) below, study results showed that “[i]n swimming performance, the overall gender differences were highly significant” (69)



61. As illustrated by Figure 2 of Handelsman (2017) below, “[i]n track and field athletics, the effects of age on running performance showed that the prepubertal differences of 3.0% increased to a plateau of 10.1% with an onset (ED₂₀) at 12.4 years and reaching midway (ED₅₀) at 13.9 years. For jumping, the prepubertal difference of 5.8% increased to 19.4% starting at 12.4 years and reaching midway at 13.9 years.” (70)



62. As also illustrated in Figure 2 of Handelsman (2017), the author found a strong correlation between the increasing male performance advantage and blood serum testosterone levels, and reported: “The timing of the male advantage in running, jumping and swimming was similar [across events] and corresponded to the increases in serum testosterone in males.” (70)



G. Moran Gershoni & Shmuel Pietrokovski, *The landscape of sex-differential transcriptome and its consequent selection in human adults*, 15 BMC BIOL 7 (2017):

63. The authors of this article evaluated “18,670 out of 19,644 informative protein-coding genes in men versus women” (2) and reported that “there are over 6500 protein-coding

genes with significant S[ex-]D[ifferential]E[xpression] in at least one tissue. Most of these genes have SDE in just one tissue, but about 650 have SDE in two or more tissues, 31 have SDE in more than five tissues, and 22 have SDE in nine or more tissues.” (2) Some examples of tissues identified by these authors that have SDE genes include breast mammary tissue, skeletal muscle, skin, thyroid gland, pituitary gland, subcutaneous adipose, lung, and heart left ventricle. Based on these observations the authors state “As expected, Y-linked genes that are normally carried only by men show SDE in many tissues.” (3) This evaluation of SDE in protein coding genes helps illustrate that the differences between men and women are intrinsically part of the chromosomal and genetic makeup of humans which can influence many tissues that are inherent to the athletic competitive advantages of men compared to women.

H. K. M. Haizlip, et al., Sex-based differences in skeletal muscle kinetics and fiber-type composition, 30 PHYSIOLOGY (BETHESDA) 30 (2015):

64. In a review of 56 articles on the topic of sex-based differences in skeletal muscle, the authors state that “More than 3,000 genes have been identified as being differentially expressed between male and female skeletal muscle [.]” (30) Furthermore, the authors state that “Overall, evidence to date suggests that skeletal muscle fiber-type composition is dependent on species, anatomical location/function, and sex.” (30) The differences in genetic expression between males and females influence the skeletal muscle fiber composition (i.e. fast twitch and fast twitch sub-type and slow twitch), the skeletal muscle fiber size, the muscle contractile rate, and other aspects of muscle function that influence athletic performance. As the authors review the differences in skeletal muscle between males and females they conclude “Additionally, all of the fibers measured in men have significantly larger cross-sectional areas (CSA) compared with women [.]” (31) The authors also explore the effects of thyroid hormone, estrogen, and

testosterone on gene expression and skeletal muscle function in males and females. One major conclusion by the authors is that “The complexity of skeletal muscle and the role of sex adding to that complexity cannot be overlooked.” (37).

- I. **Konstantinos D. Tambalis, et al., Physical fitness normative values for 6-18-year-old Greek boys and girls, using the empirical distribution and the lambda, mu, and sigma statistical method, 16 EUR J SPORT SCI 736 (2016). Mark J. Catley & G. R. Tomkinson, Normative health-related fitness values for children: analysis of 85347 test results on 9-17-year-old Australians since 1985, 47 BR J SPORTS MED 98 (2013). Grant R. Tomkinson, et al., *European normative values for physical fitness in children and adolescents aged 9-17 years: results from 2 779 165 Eurofit performances representing 30 countries.* 52 Br J Sports Med. 1445 (2018):**

65. The purpose in citing these sources is to illustrate that males possess physical fitness traits that likely provide an advantage in athletic performance, that these male advantages may be apparent in children starting as young as six years of age, and in agreement with previously cited sources the differences become more apparent at the onset of puberty.

66. Tambalis et al. (2016) states that “based on a large data set comprising 424,328 test performances” (736) using standing long jump to measure lower body explosive power, sit and reach to measure flexibility, timed 30 second sit ups to measure abdominal and hip flexor muscle endurance, 10 X 5 meter shuttle run to evaluate speed and agility, and multi-stage 20 meter shuttle run test to estimate aerobic performance (738) “For each of the fitness tests, performance was better in boys compared with girls ($p < 0.001$), except for the S[it and] R[each] test ($p < 0.001$).” (739) In order to illustrate that the findings of Tambalis (2016) are not unique to children in Greece, the authors state “Our findings are in accordance with recent studies from Latvia [] Portugal [] and Australia [Catley & Tomkinson (2013)].(744)

67. Catley & Tomkinson (2013) observed that “Boys consistently scored higher than girls on health-related fitness tests, except on the sit-and-reach test, with the magnitude of the

differences typically increasing with age and often accelerating from about 12 years of age.

Overall, the magnitude of differences between boys and girls was large for the 1.6 km run, 20 m shuttle run, basketball throw and push-ups; moderate for the 50-m sprint, standing broad jump and sit-and-reach; and small for sit-ups and hand-grip strength.” (106)

68. Evaluating performance on the “Eurofit tests (measuring balance, muscular strength, muscular endurance, muscular power, flexibility, speed, speed-agility and cardiorespiratory fitness)” in “2,779,165 results on children and adolescents [ages 9-17 years] from 30 European countries” Tomkinson et al. (2018) observed that “On average, boys performed substantially better than girls at each age group on muscular strength (E[ffect]S[ize]: large), muscular power (E[ffect]S[ize]: large), muscular endurance (E[ffect]S[ize]: moderate to large), speed-agility (E[ffect]S[ize]: moderate) and C[ardio]R[espiratory]F[itness] (E[ffect]S[ize]: large) tests, with the magnitude of the sex-specific differences increasing with age and accelerating from about 12 years” (1451). Given the number of subjects analyzed and that the data represent 30 different European countries, these findings particularly highlight the sex related differences in athletic performance potential between boys and girls both before and during adolescence.

J. Daniel M. Fessler, et al., *Sexual dimorphism in foot length proportionate to stature*, 32 ANN HUM BIOL 44 (2005). Roshna E. Wunderlich & P. R. Cavanagh, *Gender differences in adult foot shape: implications for shoe design*, 33 MED SCI SPORTS EXERC (2001):

69. Combined, these two articles evaluate and demonstrate clear differences in the foot length and structure of men and women. Of relevance to the case at hand is that to the best of my knowledge, no data are available demonstrating that male-to-female transgender hormone or surgical treatment alters the inherent sex related difference in foot structure.

70. Fessler et al. (2005) observes that “female foot length is consistently smaller than male foot length” (44) and conclude that “proportionate foot length is smaller in women”(51) with an overall conclusion that “Our analyses of genetically disparate populations reveal a clear pattern of sexual dimorphism, with women consistently having smaller feet proportionate to stature than men.” (53)

71. Wunderlich & Cavanaugh (2001) observe that “a foot length of 257 mm represents a value that is ... approximately the 20th percentile men’s foot lengths and the 80th percentile women’s foot lengths.” (607) and “For a man and a woman, both with statures of 170 cm (5 feet 7 inches), the man would have a foot that was approximately 5 mm longer and 2 mm wider than the woman” (608). Based on these, and other analyses, they conclude that “female feet and legs are not simply scaled-down versions of male feet but rather differ in a number of shape characteristics, particularly at the arch, the lateral side of the foot, the first toe, and the ball of the foot.” (605)

K. Daichi. Tomita, et al., *A pilot study on the importance of forefoot bone length in male 400-m sprinters: is there a key morphological factor for superior long sprint performance?*, 11 BMC RES NOTES 583 (2018). Hiromasa Ueno, et al., *The Potential Relationship Between Leg Bone Length and Running Performance in Well-Trained Endurance Runners*, 70 J HUM KINET 165 (2019). Hiromasa Ueno, et al., *Association between Forefoot Bone Length and Performance in Male Endurance Runners*, 39 INT J SPORTS MED 275 (2018):

72. As men have longer feet and legs than women as part of their overall larger body stature, collectively these articles build upon the work of Fessler et al. (2005) and Wunderlich & Cavanaugh (2001) by providing some evidence that “morphological factors such as long forefoot bones may play an important role in achieving superior long sprinting performance” (Tomito, 583), “longer forefoot bones may be advantageous for achieving higher running performance in

endurance runners” (Ueno 2018, 275)” and “the leg bone length, especially of the tibia, may be a potential morphological factor for achieving superior running performance in well-trained endurance runners.” (Ueno 2019, 165)

L. International Weightlifting Federation “World Records”

73. I accessed weightlifting records as posted by the International Weightlifting Federation at <https://www.iwf.net/results/world-records/>. The records collected below are as of November 1, 2019.

74. As the chart below illustrates, junior men’s and women’s world records (age 15-20) for clean and jerk lifts indicate that boys or men perform better than girls or women even when they are matched for body mass. Similar sex differences can be found for the snatch event on the International Weightlifting Federation website.

Junior Men’s and Women’s World Records (ages 15-20) for Clean and Jerk			
Men’s weight (kg)	Record (kg)	Women’s weight (kg)	Record (kg)
56	171	58	142
62	183	63	147
69	198	69	157
77	214	75	164
85	220	90	160
94	233	+90	193

M. Selected Results from the 2019 NCAA Division 1 and Division 2 Track & Field Championships

75. I accessed the results for the NCAA 2019 Division 1 Track and Field Championships at <https://www.flotrack.org/results/6515701-2019-D1-ncaa-outdoor-championships/26635> on May 14, 2020. I also accessed the results for the NCAA Divisions 2 Track and Field Championships at <http://leonetiming.com/2019/Outdoor/NCAAD2/Results.htm> on May 14, 2020.

76. As shown in the table below, in this small sampling of Track & Field events at the elite collegiate level of Division 1, the men's eighth place finisher and often all 24 men's qualifiers, outperformed the first place women's athlete in the same event. Furthermore, at the Division 2 level, which is arguably a less elite level of performance than Division 1, in most (if not all) events, the top eight men's finishers outperformed the first place division 1 woman in the same event.

Comparison of selected performance in Men's and Women's events in the 2019 NCAA Division 1 and Division 2 Track and Field Championships.		
100 meter run (seconds)		
D1 Women	D1 Men	D2 Men
10.75	9.86	10.17
10.95	9.93	10.22
10.98	9.97	10.32
11.00	10.01	10.38
11.02	10.06	10.47
11.04	10.06	10.48
11.12	10.12	10.53
11.65	10.12	FS
D1 Men's slowest time in 100 m prelims: 10.67 (23 rd place; 24 th place DNS)		
D1 Women's fastest time in 100 m prelims: 10.99		
1500 m run (minutes: seconds)		
D1 Women	D1 Men	D2 Men
4:05.98	3:41.39	3:58.24
4:06.27	3:41.39	3:58.74
4:11.96	3:42.14	3:58.90
4:13.02	3:42.29	3:59.02
4:13.57	3:42.32	3:59.47
4:13.62	3:42.73	3:59.55
4:14.30	3:42.77	3:59.65
4:14.73	3:42.81	3:59.93
D1 Men's slowest time in 1500 m prelims: 3:53.53 (24 th place)		
D1 Women's fastest time in 1500 m prelims: 4:12.02		
10,000 m run (minutes: Seconds)		
D1 Women	D1 Men	D2 Men
33:10.84	29:16.60	30:12.3
33:11.56	29:18.10	30:59.78

33:17.81	29:19.85	31:05.87
33:20.68	29:19.93	31:07.37
33:20.70	29:20.73	31:11.07
33:25.91	29:25.35	31:13.39
33:32.80	29:26.34	31:14.69
33:34.20	29:30.88	31:18.75
D1 Men's slowest time in 10,000 m prelims: 31:20.16 (24 th place)		
Long Jump (meters)		
D1 Women	D1 Men	DII Men
6.84	8.2	8.16
6.71	8.18	8.08
6.63	8.12	7.96
6.55	8.05	7.86
6.49	8.00	7.79
6.44	7.88	7.72
6.43	7.87	7.72
6.40	7.83	7.71
D1 Men's 21 st place longest jump 7.38 m (22 nd foul, 23 rd & 24 th DNS)		
Shot Put (meters)		
Note that men use 7.26 kg (16 lbs.) shot, women use 4 kg (8.82 lbs.) shot		
D1 Women	D1 Men	D II Men
18.14	21.11	21.47
18.11	20.77	19.58
17.88	20.31	18.71
17.67	19.89	18.62
17.46	19.73	18.43
17.24	19.65	18.34
17.13	19.65	18.30
16.94	19.52	18.03
D1 Men's 23 rd place longest put 16.90 m (24 th Foul)		

II. Biological male physiology is the basis for the performance advantage that men, or adolescent boys, have over women, or adolescent girls, in almost all athletic contests.

77. Common observation and knowledge tell us that, across the years of puberty, boys experience distinctive physical developments that largely explain the performance advantages I have detailed above. These well-known physical developments have now also been the subject of scientific measurement and study.

78. At the onset of male puberty the testes begin to secrete greatly increased amounts of testosterone. Testosterone is the primary “androgenic” hormone. It causes the physical traits associated with males such as facial and body hair growth, deepening of the voice, enlargement of the genitalia, increased bone mineral density, increased bone length in the long bones, and enhanced muscle growth (to name just a few of testosterone’s effects). The enhanced muscle growth caused by testosterone is the “anabolic” effect often discussed when testosterone is called an anabolic steroid.

79. Women lack testes and instead have ovaries, so they do not experience similar increases in testosterone secretion. Instead, puberty in women is associated with the onset of menstruation and increased secretion of “estrogens.” Estrogens, most notably estradiol, cause the feminizing effects associated with puberty in women which include increased fat tissue growth in the hips, thighs, and buttocks, development of the mammary glands, and closure of the growth plates in long bones. The smaller amount of muscle growth typically seen in women during puberty explains in part the athletic performance gap between men, and boys after the onset of puberty, and women and girls.

A. Handelsman, Hirschberg, et al. (2018):

80. In addition to documenting objective performance advantages enjoyed by males as I have reviewed above, Handelsman and his co-authors also detail physiological differences caused by male puberty—and by developments during puberty under the influence of male levels of testosterone in particular—that account for those advantages. These authors state: “The striking male postpubertal increase in circulating testosterone provides a major, ongoing, cumulative, and durable physical advantage in sporting contests by creating larger and stronger bones, greater muscle mass and strength, and higher circulating hemoglobin as well as possible

psychological (behavioral) differences. In concert, these render women, on average, unable to compete effectively against men in power-based or endurance-based sports.” (805)

81. First, Handelsman et al. explain that all of these physiological differences appear to be driven by male levels of circulating testosterone. “The available, albeit incomplete, 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. This is based on the dose-response effects of circulating testosterone to increase muscle mass and strength, bone size and strength (density), and circulating hemoglobin, each of which alone increases athletic capacity, as well as other possible sex dichotomous, androgen-sensitive contributors such as mental effects (mood, motivation, aggression) and muscle myoglobin content. These facts explain the clear sex difference in athletic performance in most sports, on which basis it is commonly accepted that competition has to be divided into male and female categories.” (823)

82. “Prior to puberty, levels of circulating testosterone as determined by LC-MS are the same in boys and girls They remain lower than 2 nmol/L in women of all ages. However, from the onset of male puberty the testes secrete 20 times more testosterone resulting in circulating testosterone levels that are 15 times greater in healthy young men than in age-similar women.” (806) “[T]he circulating testosterone of most women never reaches consistently >5 nmol/L, a level that boys must sustain for some time to exhibit the masculinizing effects of male puberty.” (808)

83. “The characteristic clinical features of masculinization (e.g., muscle growth, increased height, increased hemoglobin, body hair distribution, voice change) appear only if and when circulating testosterone concentrations rise into the range of males at mid-puberty, which

are higher than in women at any age even after the rise in circulating testosterone in female puberty.” (810)

84. “[The] order-of-magnitude difference in circulating testosterone concentrations is the key factor in the sex difference in athletic performance due to androgen effects principally on muscle, bone, and hemoglobin.” (811)

85. “Modern knowledge of the molecular and cellular basis for androgen effects on skeletal muscle involves effects due to androgen (testosterone, DHT) binding to the AR that then releases chaperone proteins, dimerizes, and translocates into the nucleus to bind to androgen response elements in the promoter DNA of androgen-sensitive genes. This leads to increases in (1) muscle fiber numbers and size, (2) muscle satellite cell numbers, (3) numbers of myonuclei, and (4) size of motor neurons. Additionally, there is experimental evidence that testosterone increases skeletal muscle myostatin expression, mitochondrial biogenesis, myoglobin expression, and IGF-1 content, which may augment energetic and power generation of skeletal muscular activity.” (811)

86. **Muscle mass** is perhaps the most obvious driver of male athletic advantage. “On average, women have 50% to 60% of men’s upper arm muscle cross-sectional area and 65% to 70% of men’s thigh muscle cross-sectional area, and women have 50% to 60% of men’s upper limb strength and 60% to 80% of men’s leg strength. Young men have on average a skeletal muscle mass of >12 kg greater than age-matched women at any given body weight. Whereas numerous genes and environmental factors (including genetics, physical activity, and diet) may contribute to muscle mass, the major cause of the sex difference in muscle mass and strength is the sex difference in circulating testosterone.” (812)

87. “Dose-response studies show that in men whose endogenous testosterone is fully suppressed, add-back administration of increasing doses of testosterone that produce graded increases in circulating testosterone causes a dose-dependent (whether expressed according to testosterone dose or circulating levels) increase in muscle mass (measured as lean body mass) and strength. Taken together, these studies prove that testosterone doses leading to circulating concentrations from well below to well above the normal male range have unequivocal dose-dependent effects on muscle mass and strength. These data strongly and consistently suggest that the sex difference in lean body mass (muscle) is largely, if not exclusively, due to the differences in circulating testosterone between men and women. These findings have strong implications for power dependent sport performance and largely explain the potent efficacy of androgen doping in sports.” (813)

88. “Muscle growth, as well as the increase in strength and power it brings, has an obvious performance enhancing effect, in particular in sports that depend on strength and (explosive) power, such as track and field events. There is convincing evidence that the sex differences in muscle mass and strength are sufficient to account for the increased strength and aerobic performance of men compared with women and is in keeping with the differences in world records between the sexes.” (816)

89. Men and adolescent boys also have distinct athletic advantages in **bone size, strength, and configuration.**

90. “Sex differences in height have been the most thoroughly investigated measure of bone size, as adult height is a stable, easily quantified measure in large population samples. Extensive twin studies show that adult height is highly heritable with predominantly additive genetic effects that diverge in a sex-specific manner from the age of puberty onwards, the effects

of which are likely to be due to sex differences in adult circulating testosterone concentrations.”
“Men have distinctively greater bone size, strength, and density than do women of the same age. As with muscle, sex differences in bone are absent prior to puberty but then accrue progressively from the onset of male puberty due to the sex difference in exposure to adult male circulating testosterone concentrations.” (818)

91. “The earlier onset of puberty and the related growth spurt in girls as well as earlier estrogen-dependent epiphyseal fusion explains shorter stature of girls than boys. As a result, on average men are 7% to 8% taller with longer, denser, and stronger bones, whereas women have shorter humerus and femur cross-sectional areas being 65% to 75% and 85%, respectively, those of men. These changes create an advantage of greater bone strength and stronger fulcrum power from longer bones.” (818)

92. **Male bone geometry** also provides mechanical advantages. “The major effects of men’s larger and stronger bones would be manifest via their taller stature as well as the larger fulcrum with greater leverage for muscular limb power exerted in jumping, throwing, or other explosive power activities.” (818) Further, “the widening of the female pelvis during puberty, balancing the evolutionary demands of obstetrics and locomotion, retards the improvement in female physical performance, possibly driven by ovarian hormones rather than the absence of testosterone.” (818)

93. Beyond simple performance, the greater density and strength of male bones provides higher protection against stresses associated with extreme physical effort: “[S]tress fractures in athletes, mostly involving the legs, are more frequent in females with the male protection attributable to their larger and thicker bones.” (818)

94. In addition to advantages in muscle mass and strength, and bone size and strength, men and adolescent boys have **greater hemoglobin levels** in their blood as compared to women and girls, and thus a greater capability to transport oxygen within the blood, which then provides bioenergetic benefits. “It is well known that levels of circulating hemoglobin are androgen-dependent and consequently higher in men than in women by 12% on average.... Increasing the amount of hemoglobin in the blood has the biological effect of increasing oxygen transport from lungs to tissues, where the increased availability of oxygen enhances aerobic energy expenditure.” (816) “It may be estimated that as a result the average maximal oxygen transfer will be ~10% greater in men than in women, which has a direct impact on their respective athletic capacities.” (816)

B. Louis Gooren, *The Significance of Testosterone for Fair Participation of the Female Sex in Competitive Sports*, 13 Asian J. of Andrology 653 (2011):

95. Gooren et al. like Handelsman et al., link male advantages in height, bone size, muscle mass, strength, and oxygen carrying capacity to exposure to male testosterone levels: “Before puberty, boys and girls hardly differ in height, muscle and bone mass. Pubertal testosterone exposure leads to an ultimate average greater height in men of 12–15 centimeters, larger bones, greater muscle mass, increased strength and higher hemoglobin levels.” (653)

C. Thibault, Guillaume, et al. (2010):

96. In addition to the testosterone-linked advantages examined by Handelsman et al. (2018), Thibault et al. note sex-linked differences in body fat as impacting athletic performance: “Sex has been identified as a major determinant of athletic performance through the impact of height, weight, body fat, muscle mass, aerobic capacity or anaerobic threshold as a result of genetic and hormonal differences [].” (214)

D. Taryn Knox, Lynley C. Anderson, et al., *Transwomen in Elite Sport: Scientific & Ethical Considerations*, 45 J. MED ETHICS 395 (2019):

97. Knox et al. analyze specific testosterone-linked physiological differences between men and women that provide advantages in athletic capability, and conclude that “[E]lite male athletes have a performance advantage over their female counterparts due to physiological differences.” (395) “Combining all of this information, testosterone has profound effects on key physiological parameters that underlie athletic performance in men. There is substantial evidence regarding the effects on muscle gain, bone strength, and the cardiovascular and respiratory system, all of which drive enhanced strength, speed and recovery. Together the scientific data point to testosterone providing an all-purpose benefit across a range of body systems that contribute to athletic performance for almost all sports.” (397-98)

98. “It is well recognised that testosterone contributes to physiological factors including body composition, skeletal structure, and the cardiovascular and respiratory systems across the life span, with significant influence during the pubertal period. These physiological factors underpin strength, speed and recovery with all three elements required to be competitive in almost all sports. An exception is equestrian, and for this reason, elite equestrian competition is not gender-segregated. As testosterone underpins strength, speed and recovery, it follows that testosterone benefits athletic performance.” (397)

99. “High testosterone levels and prior male physiology provide an all-purpose benefit, and a substantial advantage. As the IAAF says, ‘To the best of our knowledge, there is no other genetic or biological trait encountered in female athletics that confers such a huge performance advantage.’” (399)

100. These authors, like others, describe sex-linked advantages relating to **bone size and muscle mass**. “Testosterone also has a strong influence on bone structure and strength. From puberty onwards, men have, on average, 10% more bone providing more surface area. The larger surface area of bone accommodates more skeletal muscle so, for example, men have broader shoulders allowing more muscle to build. This translates into 44% less upper body strength for women, providing men an advantage for sports like boxing, weightlifting and skiing. In similar fashion, muscle mass differences lead to decreased trunk and lower body strength by 64% and 72%, respectively in women. These differences in body strength can have a significant impact on athletic performance, and largely underwrite the significant differences in world record times and distances set by men and women.” (397)

101. Knox et al. also identify the relatively higher percentage of **body fat** in women as both inherently sex-linked, and a disadvantage with respect to athletic performance. “Oestrogens also affect body composition by influencing fat deposition. Women, on average, have higher percentage body fat, and this holds true even for highly trained healthy athletes (men 5%–10%, women 8%–15%). Fat is needed in women for normal reproduction and fertility, but it is not performance enhancing. This means men with higher muscle mass and less body fat will normally be stronger kilogram for kilogram than women.” (397)

102. Knox et al. detail the relative performance disadvantage arising from the oestrogen-linked **female pelvis shape**: “[T]he major female hormones, oestrogens, can have effects that disadvantage female athletic performance. For example, women have a wider pelvis changing the hip structure significantly between the sexes. Pelvis shape is established during puberty and is driven by oestrogen. The different angles resulting from the female pelvis leads to decreased joint rotation and muscle recruitment ultimately making them slower.” (397)

103. “In short, higher testosterone levels lead to larger and stronger bones as well as more muscle mass providing a body composition-related performance advantage for men for almost all sports. In contrast, higher oestrogen levels lead to changes in skeletal structure and more fat mass that can disadvantage female athletes, in sports in which speed, strength and recovery are important.” (397)

104. Knox et al. break out multiple sex-linked contributions to a male advantage in **oxygen intake and delivery**, and thus to energy delivery to muscles. “Testosterone also influences the cardiovascular and respiratory systems such that men have a more efficient system for delivering oxygen to active skeletal muscle. Three key components required for oxygen delivery include lungs, heart and blood haemoglobin levels. Inherent sex differences in the lung are apparent from early in life and throughout the life span with lung capacity larger in men because of a lower diaphragm placement due to Y-chromosome genetic determinants. The greater lung volume is complemented by testosterone-driven **enhanced alveolar multiplication rate** during the early years of life.” (397)

105. “Oxygen exchange takes place between the air we breathe and the bloodstream at the alveoli, so more alveoli allows more oxygen to pass into the bloodstream. Therefore, the greater lung capacity allows more air to be inhaled with each breath. This is coupled with an improved uptake system allowing men to absorb more oxygen. Once in the blood, oxygen is carried by haemoglobin. Haemoglobin concentrations are directly modulated by testosterone so men have higher levels and can carry more oxygen than women. Oxygenated blood is pumped to the active skeletal muscle by the heart. The left ventricle chamber of the heart is the reservoir from which blood is pumped to the body. The larger the left ventricle, the more blood it can hold, and therefore, the more blood can be pumped to the body with each heartbeat, a

physiological parameter called ‘stroke volume’. The female heart size is, on average, 85% that of a male resulting in the stroke volume of women being around 33% less. Putting all of this together, men have a much more efficient cardiovascular and respiratory system, with testosterone being a major driver of enhanced aerobic capacity.” (397)

E. Lepers, Knechtle, et al. (2013):

106. Lepers et al. point to some of these same physiological differences as explaining the large performance advantage they found for men in triathlon performance. “Current explanations for sex differences in [maximal oxygen uptake] among elite athletes, when expressed relative to body mass, provide two major findings. First, elite females have more (<13 vs. <5 %) body fat than males. Indeed, much of the difference in [maximal oxygen uptake] between males and females disappears when it is expressed relative to lean body mass. Second, the hemoglobin concentration of elite athletes is 5–10 % lower in females than in males.” (853)

107. “Males possess on average 7–9 % less percent body fat than females, which is likely an advantage for males. Therefore, it appears that sex differences in percentage body fat, oxygen-carrying capacity and muscle mass may be major factors for sex differences in overall triathlon performance. Menstrual cycle, and possibly pregnancy, may also impact training and racing in female athletes, factors that do not affect males.” (853)

F. Tønnessen, Svendsen, et al. (2015):

108. Tønnessen et al. likewise point to some of the same puberty and testosterone-triggered physiological differences discussed above to explain the increasing performance advantage of boys across the adolescent years, noting that “[T]here appears to be a strong mechanistic connection between the observed sex-specific performance developments and hormone-dependent changes in body composition during puberty.” (7) “Beyond [age 12], males

outperform females because maturation results in a shift in body composition. Our results are in line with previous investigations exploring physical capacities such as [maximal oxygen uptake] and isometric strength in non-competitive or non-specialized adolescents.” (7)

109. “[S]ex differences in physical capacities (assessed as [maximal oxygen uptake] or isometric strength in the majority of cases) are negligible prior to the onset of puberty. During the adolescent growth spurt, however, marked sex differences develop. This can primarily be explained by hormone dependent changes in body composition and increased red blood cell mass in boys.” (2)

110. “Sexual dimorphism during puberty is highly relevant for understanding sex-specific performance developments in sports. The initiation of the growth spurt in well-nourished girls occurs at about 9–10 yrs of age. Age at peak height velocity (PHV) and peak weight velocity (PWV) in girls is 11–12 and 12–13 yrs, respectively, with an average 7–9 cm and 6–9 kg annual increase. The growth spurt and PHV in girls occurs approximately 2 years earlier than for boys. However, the magnitude of the growth spurt is typically greater in boys, as they on average gain 8–10 cm and 9–10 kg annually at PHV and PWV, respectively. Girls experience an escalation in fat mass compared to boys. Fat free mass (FFM) (also termed lean muscle mass) is nearly identical in males and females up to the age of 12–13 yrs. FFM plateaus in females at 15–16 years of age, but continues increasing in males up to the age of 19–20 yrs. On average, boys and girls increase their FFM by 7.2 and 3.5 kg/year⁻¹, respectively, during the interval near peak height velocity. Corresponding estimates for changes in absolute fat mass are 0.7 and 1.4 kg/year⁻¹, while estimates for relative fatness are -0.5% and +0.9%/year⁻¹ in boys and girls, respectively.” (2)

111. “During puberty, boys begin to produce higher levels of circulating testosterone. This affects the production of muscle fibers through direct stimulation of protein synthesis. Higher testosterone levels result in more muscle mass, which in turn facilitates greater power production and more advantageous ground reaction forces during running and jumping. Adolescent weight gain in boys is principally due to increased height (skeletal tissue) and muscle mass, while fat mass remains relatively stable. In contrast, during puberty girls begin to produce higher levels of circulating estrogen and other female sex hormones. Compared to their male counterparts, they experience a less pronounced growth spurt and a smaller increase in muscle mass, but a continuous increase in fat mass, thereby lowering the critical ratio between muscular power and total body mass.” (7)

112. “The relatively greater progress in jumping exercises can also be explained by growth and increased body height during puberty. The increase in body height means that the center of gravity will be higher, providing better mechanical conditions for performance in jumping events.” (8)

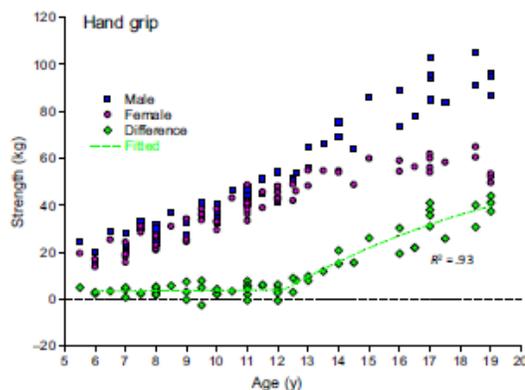
G. Louis J. G. Gooren & Mathijs C. M. Bunck, *Transsexuals & Competitive Sports*, 151 EUROPEAN J. OF ENDOCRINOLOGY 425 (2004):

113. In their study of performance of transsexual athletes, Louis et al. note that “[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.” (425) “Testosterone exposure during puberty leads ultimately to an average greater height in men of 12–15 cm, larger bones and muscle mass, and greater strength.” (425)

H. Handelsman (2017):

114. Handelsman (2017) notes the existence of a “stable and robust” performance gap between males and females, with no narrowing “over more than three decades” (71), observing that “[i]t is well known that men’s athletic performance exceeds that of women especially in power sports because of men’s greater strength, speed and endurance. This biological physical advantage of mature males forms the basis for gender segregation in many competitive sports to allow females a realistic chance of winning events. This physical advantage in performance arises during early adolescence when male puberty commences after which men acquire larger muscle mass and greater strength, larger and stronger bones, higher circulating haemoglobin as well as mental and/or psychological differences. After completion of male puberty, circulating testosterone levels in men are consistently 10-15 times higher than in children or women at any age.” (68)

115. To illustrate, Figure 3 of Handelsman (2017) below indicates, “the age trends in hand-grip strength showed a difference in hand-grip strength commencing from the age of 12.8 years onwards (Figure 3). Prior to the age of 13 years, boys had a marginally significant greater grip strength than girls ($n=45$, $t=2.0$, $P=.026$), but after the age of 13 years, there was a strong significant relationship between age and difference in grip strength ($n=18$, $r=.89$, $P<.001$).” (70)



116. Handelsman (2017) in particular focuses on the correlation between the development of this performance gap and the progress of male adolescence and circulating testosterone levels in boys. “The strength of the present study is that it includes a wide range of swimming as well as track and field running and jumping events as well as strength for nonathletes for males and females across the ages spanning the onset of male puberty. The similar timing of the gender divergence in each of these settings to that of the rise in circulating testosterone to adult male levels strongly suggests that they all reflect the increase in muscular size and strength although the impact of other androgen-dependent effects on bone, haemoglobin and psychology may also contribute.” (71-72)

117. “In this study, the timing and tempo of male puberty effects on running and jumping performance were virtually identical and very similar to those in swimming events. Furthermore, these coincided with the timing of the rise in circulating testosterone due to male puberty. In addition to the strikingly similar timing and tempo, the magnitude of the effects on performance by the end of this study was 10.0% for running and 19.3% for jumping, both consistent with the gender differences in performance of adult athletes previously reported to be 10%-12% for running and 19% for jumping.” (71)

118. “In the swimming events, despite the continued progressive improvements in individual male and female event records, the stability of the gender difference over 35 years shown in this study suggests that the gender differences in performance are stable and robust.” (71)

119. “The similar time course of the rise in circulating testosterone with that of the gender divergences in swimming and track and field sports is strongly suggestive that these effects arise from the increase in circulating testosterone from the start of male puberty.” (71) “It

is concluded that the gender divergence in athletic performance begins at the age of 12-13 years and reaches adult plateau in the late teenage years. Although the magnitude of the divergence varies between athletic skills, the timing and tempo are closely parallel with each other and with the rise in circulating testosterone in boys during puberty to reach adult male levels.” (72)

120. Handelsman (2017) notes several specific physiological effects of male levels of circulating testosterone that are relevant to athletic performance:

a. “Adult male circulating testosterone also has marked effects on bone development leading to longer, stronger and denser bone than in age-matched females.” (71)

b. “A further biological advantage of adult male circulating testosterone concentrations is the increased circulating haemoglobin. Men have ~10 g/L greater haemoglobin than women with the gender differences also evident from the age of 13-14 years.” (71)

121. Handelsman (2017) also observes that “exposure to adult male testosterone concentrations is likely to produce some mental or psychological effects. However, the precise nature of these remains controversial and it is not clear whether, or to what extent, this contributes to the superior elite sporting performance of men in power sports compared with the predominant effects on muscle mass and function.” (71)

I. Centers for Disease Control & Prevention, “National Health Statistics Reports Number 122,” CDC (2018):

122. To obtain data on height, weight, and body mass differences between men and women, I accessed the “National Health Statistics Reports Number 122” published by the

Centers for Disease Control & Prevention, at <https://www.cdc.gov/nchs/data/nhsr/nhsr122-508.pdf>, which is based on data through 2016.

123. The average height for a U.S. adult man is 5 feet 9 inches and for a U.S. adult woman the average height is 5 feet 4 inches. (3)

124. The average weight for a U.S. adult man is 197.8 lbs. and for a U.S. adult woman the average weight is 170.5 lbs. (6)

125. The average body mass index for a U.S. adult man is 29.1 kg/m², and the average body mass index for a U.S. adult woman is 29.6 kg/m². (3)

III. Administration of cross-sex hormones to men, or adolescent boys, after male puberty does not eliminate their performance advantage over women, or adolescent girls, in almost all athletic contests.

126. At the collegiate level, the “NCAA Policy on Transgender Student-Athlete Participation” requires only that such males be on unspecified and unquantified “testosterone suppression treatment” for “one calendar year” prior to competing in women’s events.

127. Studies have demonstrated that hormone administration of testosterone suppression does not eliminate the physical advantages males have over females in athletics. Although such studies have not focused specifically on elite athletes, there is no scientific evidence or principle suggesting that the effects of hormone administration of testosterone suppression on elite athletes should be different than they are in the general population.

128. It 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.

129. In addition, some studies have now determined that other physiological advantages conferred by male puberty are also not fully reversed by later hormonal treatments

associated with gender transition. Specifically, studies have shown that the effects of puberty in males including increased muscle mass, increased bone mineral density, increased lung size, and increased heart size, are not completely reversed by suppressing testosterone secretion and administering estrogen during gender transition procedures in males.

130. For example, suppressing testosterone secretion and administering estrogen in post pubescent males does not shrink body height to that of a comparably aged female, nor does it reduce lung size or heart size. Indeed, while testosterone suppression and estrogen administration reduce the size and density of skeletal muscles, the muscles remain larger than would be expected in a typical female even when matched for body height or mass. A general tenet of exercise science is that larger muscles are stronger muscles due to larger muscles containing more contractile proteins. Thus, while gender transition procedures may impair a male's athletic potential, in my opinion it is still highly unlikely to be reduced to that of a comparably aged and trained female due to these physiological factors.

131. Supporting my opinion in this regard, at least two recent prospective studies involving substantial numbers of subjects have found that measured strength did not decrease, or decreased very little, in male-to-female subjects after a full year of hormone therapy including testosterone suppression, leaving these populations with a large strength advantage over baseline female strength.

132. I review relevant findings in more detail below.

A. Handelsman, Hirschberg, et al. (2018):

133. Handelsman et al. (2018) note that in "transgender individuals, the developmental effects of adult male circulating testosterone concentrations will have established the sex difference in muscle, hemoglobin, and bone, some of which is fixed and irreversible

(bone size) and some of which is maintained by the male circulating testosterone concentrations (muscle, hemoglobin).” (824)

134. “[D]evelopmental bone effects of androgens are likely to be irreversible.” (818)

135. With respect to muscle mass and strength, Handelsman et al. (2018) observe that suppression of testosterone in males to levels currently accepted for transgender qualification to compete in women’s events will still leave those males with a large strength advantage. “Based on the established dose-response relationships, suppression of circulating testosterone to <10 nmol/L would not eliminate all ergogenic benefits of testosterone for athletes competing in female events. For example, according to the Huang *et al.* [] study, reducing circulating testosterone to a mean of 7.3 nmol/L would still deliver a 4.4% increase in muscle size and a 12% to 26% increase in muscle strength compared with circulating testosterone at the normal female mean value of 0.9 nmol/L. Similarly, according to the Karunasena *et al.* [] study, reducing circulating testosterone concentration to 7 nmol/L would still deliver 7.8% more circulating hemoglobin than the normal female mean value. Hence, the magnitude of the athletic performance advantage in DSD athletes, which depends on the magnitude of elevated circulating testosterone concentrations, is considerably greater than the 5% to 9% difference observed in reducing levels to <10 nmol/L.” (821)

B. Gooren (2011):

136. In addition to noting that the length and diameter of bones is unchanged by post-pubertal suppression of androgens (including testosterone) (653), Gooren found that “[i]n spite of muscle surface area reduction induced by androgen deprivation, after 1 year the mean muscle surface area in male-to- female transsexuals remained significantly greater than in untreated

female-to-male transsexuals.” (653) “Untreated female-to-male transsexuals” refers to biological females, who will have hormonal levels ordinarily associated with women.

137. As I have explained above, greater muscle surface area translates into greater strength assuming comparable levels of fitness.

C. Knox, Anderson, et al. (2019):

138. In their recent article, Knox et al. reviewed the physiological effects of reducing circulating testosterone levels below 10nmol/L, the level current accepted by the International Olympic Committee (IOC) (2015) guidelines as adequate to permit males to enter as women in Olympic competition.

139. Knox et al. note the unarguable fact that 10nmol/L is a far higher level of circulating testosterone than occurs in women, including elite women athletes. “Transwomen [meet IOC guidelines] to compete with testosterone levels just under 10 nmol/L. This is more than five times the upper testosterone level (1.7 nmol/L) of healthy, premenopausal elite cis-women athletes. Given that testosterone (as well as other elements stemming from Y-chromosome-dependent male physiology) provides an all-purpose benefit in sport, suggests that transwomen have a performance advantage.” (398)

140. As to **bone strength**, Knox et al. report that a “recent meta-analysis shows that hormone therapy provided to transwomen over 2 years maintains bone density so bone strength is unlikely to fall to levels of cis-women, especially in an elite athlete competing and training at high intensity. Increased bone strength also translates into protection against trauma, helping with recovery and prevention of injury.” (398)

141. Based on a review of multiple studies, Knox et al. report that, in addition to bone size, configuration, and strength, “hormone therapy will not alter ... **lung volume or heart size**

of the transwoman athlete, especially if [that athlete] transitions postpuberty, so natural advantages including joint articulation, stroke volume and maximal oxygen uptake will be maintained.” (398)

142. With respect to **muscle mass and strength**, Knox et al. found that “healthy young men did not lose significant muscle mass (or power) when their circulating testosterone levels were reduced to 8.8 nmol/L (lower than the IOC guideline of 10 nmol/L) for 20 weeks. Moreover, retention of muscle mass could be compensated for by training or other ergogenic methods. In addition, the phenomenon of muscle memory means muscle mass and strength can be rebuilt with previous strength exercise making it easier to regain muscle mass later in life even after long intervening periods of inactivity and mass loss.” (398)

143. Indeed, Knox et al. observe that oestradiol—routinely administered as part of hormone therapy for transwomen—is actually known to *increase* muscle mass, potentially providing an *additional* advantage for these athletes over women. “While testosterone is the well-recognised stimulator of muscle mass gain, administration of oestradiol has also been shown to activate muscle gain via oestrogen receptor- β activation. The combination of oestradiol therapy and a baseline testosterone of 10 nmol/L arguably provides transwomen athletes with an added advantage of increased muscle mass, and therefore power.” (398)

144. Summing up these facts, Knox et al. observe: “A transwoman athlete with testosterone levels under 10 nmol/L for 1 year will retain at least some of the physiological parameters that underpin athletic performance. This, coupled with the fact that [under IOC rules] transwomen athletes are allowed to compete with more than five times the testosterone level of a cis-woman, suggests transwomen have a performance advantage.” (398) Indeed, considering the magnitude of the advantages involved, Knox et al. conclude that the physiological advantages

resulting from male puberty that are not negated by post-pubertal hormonal therapy “provide a strong argument that transwomen have an intolerable advantage over cis-women.” (399)

D. Gooren & Bunck (2004):

145. Measuring the concrete significance of the fact that bone size and configuration cannot be changed after puberty, Gooren and Bunck reported that “[Male-to-female transsexuals] were on average 10.7 cm taller (95% CI 5.4–16.0 cm) than [female-to-male transsexuals] (7).” (427)

146. With respect to muscle mass, Gooren and Bunck reported what other authors have since described in more detail: “After 1 year of androgen deprivation, mean muscle area in [male-to-female transsexuals] had decreased significantly but remained significantly greater than in [female-to-male transsexuals] before testosterone treatment.” (427) To be clear, female-to-male transsexuals “before testosterone treatment” are biological females with natural female hormone levels.

“The conclusion is that androgen deprivation in [male-to-female transsexuals] increases the overlap in muscle mass with women but does not reverse it, statistically.” (425) In other words, for the overall sample of 19 male-to female transsexuals, before (“ $306.9 \pm 46.5 \text{ cm}^2$ ”) and after (“ $277.8 \pm 37.0 \text{ cm}^2$ ”) 1 year of cross-sex hormone administration these subjects had statistically significantly more muscle mass than the 17 untreated females (“ $238.8 \pm 33.1 \text{ cm}^2$ ”) (427). Before treatment, an unstated number of male-to-female transsexuals on the low end of the range for muscle mass in this sample were similar to an unstated number of untreated females on the high end of the range for muscle mass. As the muscle mass decreased in male-to-female transsexuals due to cross-sex hormone treatment there were an unstated number of male-to-female subjects whose

muscle mass was similar to the untreated women on the high end of the range for muscle mass. But, the overlap in muscle mass between male-to-female and untreated female subjects was insufficient to alter the statistical analysis.

147. Gooren and Bunk provide an insightful conclusion regarding whether it is fair for male-to-female transgender individuals to compete with biological females “The question of whether reassigned M–F can fairly compete with [biological] women depends on what degree of arbitrariness one wishes to accept”. (425)

E. Wiik et al. (2020):

148. Taking measurements one month after start of testosterone-suppression in male-to-female subjects, and again 3 and 11 months after start of feminizing hormone replacement therapy in these subjects, Wiik et al. found that total lean tissue (i.e. primarily muscle) did not decrease significantly across the entire period. And even though they observed a small decrease in thigh muscle mass, they found that isometric strength levels measured at the knee “were maintained over the [study period].” (e808) “At T12 [the conclusion of the one-year study], the absolute levels of strength and muscle volume were greater in [male-to-female subjects] than in [female-to-male subjects] and CW [women who had not undergone any hormonal therapy].” (e808)

149. While female-to-male subjects “experienced robust changes in lower-limb muscle mass and strength” after 11 months of testosterone injection (e812), even after the female-to-male subjects had undergone testosterone injection, and the male-to-female subjects had undergone testosterone suppression and feminizing hormone replacement therapy, the male-to-female subjects “still had larger muscle volumes and quadriceps area” (e811).

150. In other words, biologically male subjects remained stronger than biologically female subjects after undergoing a year of testosterone suppression, and even remained stronger than biologically female subjects who had undergone 11 months of testosterone-driven “robust” increases in muscle mass and strength. I note that outside the context of transgender athletes, the testosterone-driven increase in strength enjoyed by these female-to-male subjects would constitute a disqualifying doping violation under all league anti-doping rules with which I am familiar.

F. Scharff et al. (2019):

151. Scharff et al. measured grip strength in a large cohort of male-to-female subjects from before the start of hormone therapy through one year of hormone therapy. The hormone therapy included suppression of testosterone to less than 2 nml/L “in the majority of the transwomen,” (1024), as well as administration of estradiol (1021). These researchers observed a small decrease in grip strength in these subjects over that time, but mean grip strength of this group remained far higher than mean grip strength of females—specifically, “After 12 months, the median grip strength of transwomen [male-to-female subjects] still falls in the 95th percentile for age-matched females.” (1026)

152. As further evidence that male-to-female transgender treatment does not negate the inherent athletic performance advantages of a post-pubertal male, I present race times for the well-publicized sports performance of Cece Telfer. In 2016 and 2017 Cece Telfer competed as Craig Telfer on the Franklin Pierce University men’s track team being ranked 200th and 390th (respectively) against other NCAA Division 2 men and did not qualify for the National Championships in any events. Cece Telfer did not compete in the 2018 season while undergoing male-to-female transgender treatment (per NCAA policy). In 2019 Cece Telfer competed on the

Franklin Pierce University women's team, qualified for the NCAA Division 2 Track and Field National Championships, and placed 1st in the women's 400 meter hurdles and placed third in the women's 100 meter hurdles. (for examples of the media coverage of this please see

<https://www.washingtontimes.com/news/2019/jun/3/cece-telfer-franklin-pierce-transgender-hurdler-wi/> last accessed May 29, 2020.

<https://www.newshub.co.nz/home/sport/2019/06/athletics-transgender-woman-cece-telfer-who-previously-competed-as-a-man-wins-ncaa-track-championship.html> last accessed May 29, 2020.)

153. The table below shows the best collegiate performance times from the combined 2015 and 2016 seasons for Cece Telfer when competing as a man (Craig Telfer) in men's events, and the best collegiate performance times from the 2019 season when competing as a woman in women's event. Comparing the times for the running events (in which male and female athletes run the same distance) using a two tailed paired sample test there is no statistical difference (P=0.51) between the times. Calculating the difference in time between the male and female times for the best performances in the same running events and dividing that difference by the male performance times, as a female Cece Telfer performed an average of 0.22% *faster* as a female. (Comparing the performance for the hurdle events (marked with H) is of questionable validity due to differences between men's and women's events in hurdle heights and spacing, and distance for the 110m vs. 100 m.) While this is simply one example, and does not represent a controlled experimental analysis, this information provides some evidence that male-to-female transgender treatment does not negate the inherent athletic performance advantages of a post-pubertal male. (these times were obtained from

https://www.tfrs.org/athletes/6994616/Franklin_Pierce/CeCe_Telfer.html and <https://www.tfrs.org/athletes/5108308.html>, last accessed May 29, 2020)

As Craig Telfer (male athlete)		As Cece Telfer (female athlete)	
Event	Time (seconds)	Event	Time (seconds)
55	7.01	55	7.02
60	7.67	60	7.63
100	12.17	100	12.24
200	24.03	200	24.30
400	55.77	400	54.41
55 H †	7.98	55 H †	7.91
60 H †	8.52	60 H †	8.33
110 H †	15.17	100 H †	13.41*
400 H ‡	57.34	400 H ‡	57.53**

* women's 3rd place, NCAA Division 2 National Championships

** women's 1st place, NCAA Division I2 National Championships

† men's hurdle height is 42 inches with differences in hurdle spacing between men and women

‡ men's hurdle height is 36 inches, women's height is 30 inches with the same spacing between hurdles

G. Johanna Harper. (2015):

154. This article is oft cited as evidence supporting a lack of performance advantage for male-to-female transgender athletes (*for an example see the Expert Declaration by Joshua D. Safer, MD, FACP, FACE. Case 1:20-cv-00184-CWD Document 22-9, point 51*). This article purports to show that male-to-female transgender distance runners do not retain post-pubertal athletic advantages over biological females. However, this paper has numerous methodical shortcomings rendering the data and conclusions to be of little to no scientific validity. Herein I provide a detailed critique of a number of the methodical shortcomings of this paper.

155. Of major concern is that the paper does not mention any type of approval from a research ethics committee, documentation of informed consent from the participants, or otherwise state that the study was conducted in accordance with the ethical principles of the World Medical Association Declaration of Helsinki, which raises the specter of overall ethical concerns with this paper (This may simply be an oversight on the part of the journal in not

requiring such a statement, but such an oversight is very unusual given the publication date of 2015). As the data were gathered with the intent of contributing to the scientific knowledge, and there was interaction between the researcher and the subjects with exchange of identifiable and sensitive information, Institutional Review Board approval and documentation of consent are necessary for this type of project.

156. The author states that “The first problem is how to formulate a study to create a meaningful measurement of athletic performance, both before and after testosterone suppression. No methodology has been previously devised to make meaningful measurements.” (2) This statement is not correct as there are innumerable publications with validated methodology for comparing physical fitness and/or athletic performance between people of different ages, sexes (some of which have previously been discussed), medical conditions, and before and after medical treatment, any of which could easily have been used with minimal or no adaptation for the purposes of this study (many even before the initiation of the Harper study, which apparently started in 2006).

157. The overall methods as explained within the manuscript are of limited scientific validity and reliability, starting with subject recruitment. The author states “The collection process consisted of seeking out female transgender distance runners, mostly online, and then asking them to submit race times. Even in 2014 few people are open about being transgender, so the submission of race times represented a large leap of faith for the participants.” (3) There is no further information regarding how the subjects were recruited (i.e. sampling techniques). Furthermore, based on this description of sampling techniques there is no way to know if these 8 subjects are in any way representative of any population of men, women, or transgender individuals, and especially the overall transgender distance running population. For example,

what websites were used to identify possible subjects? How were the subjects solicited to participate? Was any compensation or coercion offered to the subjects? What inclusion or exclusion criteria were used in subject selection? How were the subjects who were not recruited online identified and enrolled into the research? How many were recruited online vs. not online? Furthermore, no indication is given if the subjects have undergone only hormone treatment, surgical treatment, or both. Furthermore, there is no indication of any verification of testosterone concentrations, compliance with hormone treatments, or other relevant endocrine or transgender treatment information. Lastly, no descriptive data are provided for the subjects' body height, body mass, or other relevant anthropometric characteristics.

158. Similar to the sampling techniques the methods for collecting race times are lacking in validity, reliability, or detailed description. The author states "Race times from eight transgender women runners were collected over a period of seven years and, when possible, verified." And "When possible, race times were then verified using online services listing race results. For six of the eight runners, online checking made it possible to verify approximately half of the submitted times. Two of the subjects, runners three and four, would only participate anonymously, creating an ethical dilemma over the use of their times, versus respect their privacy." (3) No further information regarding which race times were verified is presented, thus the verified race times could be only pre-transition, only post transition, all coming from 3 of the subjects, or some combination thereof. The validity and reliability of self-reported data are overall very questionable, which the author acknowledges by stating "The times submitted by the eight runners were self-selected and self-reported. The self-reporting by the subjects certainly affects the strength of the findings. As mentioned previously, almost half of the race times were double checked by the author for accuracy. None of the subjects incorrectly reported any result"

(6). However, verifying “almost half” of the race times does not validate the other “almost half.” The author does not state which race times the runners were asked to self-report (i.e. these could have been the slowest times as a man and the fastest times as a woman, or vice versa. Or the reported races time could be some form of non-representative sample of the subjects’ race times). As some of the data represent a span of 29 years between reported race times, and the mean time between reported race times is 7.3 ± 8.4 years the accuracy of the non-verified self-reported race times are very questionable [The means \pm sd are not presented in the paper; they were calculated by the author of this declaration]. The author further states that only three of the pairs of race times “were run over the same course within three years’ time and represent the best comparison points” (5) (i.e. Runner No. 4 provided one pair of pre-post transition 5K times, Runner No. 6 provided one pair of pre-post transition 10K times, and Runner No 6 provided one pair of pre-post transition Half-marathon times). Runner No 4 was one of the previously described “ethical dilemma” (3) subjects with no verified race times. Once again, it is not stated if any of “the best comparison points” (5) represents verified data. Furthermore, while the race may have been run over the same course, no mention of environmental conditions for the comparison performance is made. To put this in perspective, the 2018 Boston Marathon was run in rain and headwinds resulting in a men’s winning time of 2:15:54 (the slowest time since 1976) and a women’s winning time of 2:39:54 (the slowest time for a women's winner since 1978). To help further illustrate the challenges in year to year comparison of race time that may be exacerbated by weather, in 2017 the men’s winning time for the Boston Marathon was 2:09:37 and the women’s winning time was 2:21:52.

159. The author notes that “both runner two and runner six reported stable training patterns over this time range” (5), but once again, there is no indication of how these data were

collected or verified. Furthermore, what does a “stable training pattern mean”? Is it mileage, or pace, or combination of training techniques? This also further illustrates the methodological weaknesses in the study as runner two did not provide times for the “same course within three years’ time”, which, to quote the author “represent the best comparison points”.

160. There is no experimental control for, or mention of, habitual nutrition, pre-event or during-event nutrition, any which (especially hydration and carbohydrate intake) can have a major impact on the outcome of endurance competition.

161. The description of the statistical analysis is insufficient. The author states that “Two tailed t tests were run on both the mean and peak AGs.” (5) This is an ambiguous statement. Typically an author would report what kind of t-test was performed. Were these paired sample t-tests, independent sample t-tests, or one-sample t-tests?

162. Despite these methodological shortcomings, the author makes some insightful statements in the discussion. In the discussion section of the paper the author states “Transgender women are taller and larger, on average, than 46,XX women [], and these differences probably would result in performance advantages in events in which height and strength are obvious precursors to success” (7). The author further reasonably states that “It should be noted that this conclusion only applies to distance running and the author makes no claims as to the equality of performances, pre and post gender transition, in any other sport. As such, the study cannot, unequivocally, state that it is fair to allow transgender women to compete against 46,XX women in all sports...” to which the author adds “...although the study does make a powerful statement in favor of such a position.”(8) This latter statement cannot be supported based on the data contained in this paper or any presently known research.

Conclusion

163. Once again, based on my professional familiarity with exercise physiology and my review of the currently available science, including that contained in the sources I cite and summarize in this declaration, and the competition results and records presented here, I offer three primary professional opinions:

a. At the level of elite, sub elite, 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.

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

Executed this 3rd day of June, 2020.

/s/ Gregory A. Brown
Professor Gregory A. Brown, Ph.D.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on June 4, 2020, I electronically filed the foregoing with the Clerk of the Court using the CM/ECF system which sent a Notice of Electronic Filing to the following persons:

Richard Eppink
AMERICAN CIVIL LIBERTIES UNION
OF IDAHO FOUNDATION
REppink@acluidaho.org

Gabriel Arkles
James Esseks
Chase Strangio
AMERICAN CIVIL LIBERTIES FOUNDATION
garkles@aclu.org
jesseks@aclu.org
cstrangio@aclu.org

Kathleen Hartnett
Elizabeth Prelogar
Andrew Barr
COOLEY LLP
khartnett@cooley.com
eprelogar@cooley.com
abarr@cooley.com

Catherine West
LEGAL VOICE
cwest@legalvoice.org

Attorneys for Plaintiffs

Matthew K. Wilde
BOISE STATE UNIVERSITY
OFFICE OF GENERAL COUNSEL
mattwilde@boisestae.edu

*Attorney for Defendants Boise State
University and Marlene Tromp*

Bruce D. Skaug
Raul R. Labrador
bruce@skauglaw.com
raul@skauglaw.com

Roger G. Brooks
Jeffrey A. Shafer
ALLIANCE DEFENDING FREEDOM
rbrooks@ADFlegal.org
jshafer@ADFlegal.org

Kristen K. Waggoner
Parker Douglas
Christiana M. Holcomb
ALLIANCE DEFENDING FREEDOM
kwaggoner@ADFlegal.org
pdouglas@ADFlegal.org
cholcomb@ADFlegal.org

Attorneys for Proposed Intervenors

/s/ W. Scott Zanzig

W. SCOTT ZANZIG
Deputy Attorney General

ATTACHMENT
EXPERT DECLARATION OF
GREGORY A. BROWN, Ph.D. FACSM
Hecox, et al. v. Little, et al.
Case No. 1:20-cv-00184-DCN

Gregory Allen Brown, Ph.D. FACSM

Wellness Center 221, Cushing Building
Department of Kinesiology & Sport Sciences
University of Nebraska Kearney
1410 W 26th St
Kearney, NE 68849
(308) 865 - 8333
brownnga@unk.edu

Academic Preparation

Doctor of Philosophy, Iowa State University. August 2002 -- Major in Health and Human Performance, Emphasis in the Biological Bases of Physical Activity, dissertation title: "Androgenic supplementation in men: Effects of age, herbal extracts, and mode of delivery."

Master of Science, Iowa State University, May 1999 -- Major in Exercise and Sport Science, Emphasis in Exercise Physiology, thesis title: "Oral anabolic-androgenic supplements during resistance training: Effects on glucose tolerance, insulin action, and blood lipids."

Bachelor of Science, Utah State University, June 1997 -- Major in Physical Education, Emphasis in Pre-physical Therapy.

Awards

College of Education Outstanding Faculty Teaching Award. University of Nebraska at Kearney 2019

Mortar Board Faculty Excellence Honors. Xi Phi Chapter, University of Nebraska at Kearney, Honored in 2006, 2007, 2008, 2012, 2013, 2015, and 2019

Profiled in New Frontiers, the University of Nebraska Kearney annual publication highlighting excellence in research, scholarship, and creative activity. 2009, 2017

College of Education Outstanding Scholarship / Research Award. University of Nebraska at Kearney 2009, 2014

College of Education Award for Faculty Mentoring of Undergraduate Student Research University of Nebraska at Kearney, 2007, 2010, & 2013

"Pink Tie" award from the Susan G. Komen Nebraska Affiliate, for outstanding service to the Central Nebraska Race for the Cure, 2013

Star Reviewer for the American Physiological Society and Advances in Physiology Education. 2010.

Fellow of the American College of Sports Medicine. Awarded April 23, 2008

UNK Senior Appreciation Program honoree, the University of Nebraska at Kearney

Iowa State University Research Excellence Award, Iowa State University, 2002

The Zaffarano Prize for Graduate Student Research, Iowa State University, 2002

Helen Hilton Lebaron Excellence in Research Award, Dept. of Health and Human Performance, Iowa State University, 2002

Best Paper Award, 2nd Annual Education Research Exchange. Iowa State University Education Research Exchange, 2001

Helen Hilton Lebaron Excellence in Research Award, Dept. of Health and Human Performance, Iowa State University, 2000

Professional Experience

Professor: University of Nebraska Kearney, Dept. of Kinesiology and Sport Sciences (2012-)

Associate Professor: University of Nebraska Kearney, HPERLS Dept. (2007-2012)

Assistant Professor: University of Nebraska Kearney, HPERLS Dept. (2004- 2007) Full Graduate Faculty status awarded on hire, 2004

Assistant Professor: Georgia Southern University, Jiann-Ping Hsu School of Public Health. (2002-2004) Full Graduate Faculty status awarded Nov. 26, 2002

Laboratory Director: Human Performance Laboratory, Georgia Southern University, Jiann-Ping Hsu School of Public Health. (2002-2004)

Research Assistant: Exercise Biochemistry and Physiology Laboratory, Iowa State University, Department of Health and Human Performance. (1997-2002)

Graduate Teaching Assistant: Iowa State University, Department of Health and Human Performance. (1997-2002)

Temporary Instructor: Iowa State University, Department of Health and Human Performance. (1999-2002)

Temporary Adjunct Faculty: Des Moines Area Community College. (2000)

Undergraduate Teaching Intern: Department of Biology, Utah State University. (1995-1996)

Refereed Publications

1. Schneider KM and Brown GA (as Faculty Mentor). What's at Stake: Is it a Vampire or a Virus? International Journal of Undergraduate Research and Creative Activities. 11, Article 4. 2019.
2. Christner C and Brown GA (as Faculty Mentor). Explaining the Vampire Legend through Disease. UNK Undergraduate Research Journal. 23(1), 2019. *this is an on campus publication
3. Schneckloth B and Brown GA. Comparison of Physical Activity during Zumba with a Human or Video Game Instructor. 11(4):1019-1030. International Journal of Exercise Science, 2018.
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5. Shaw I, Shaw BS, Brown GA, and Shariat A. Review of the Role of Resistance Training and Musculoskeletal Injury Prevention and Rehabilitation. *Gavin Journal of Orthopedic Research and Therapy*. 1: 5-9, 2016
6. Kahle A, Brown GA, Shaw I, & Shaw BS. Mechanical and Physiological Analysis of Minimalist versus Traditionally Shod Running. *J Sports Med Phys Fitness*. 56(9):974-9, 2016
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11. Botha DM, Shaw BS, Shaw I & Brown GA. Role of hyperbaric oxygen therapy in the promotion of cardiopulmonary health and rehabilitation. *African Journal for Physical, Health Education, Recreation and Dance (AJPHERD)*. Supplement 2 (September), 20: 62-73, 2014
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17. Brown GA, Krueger RD, Cook CM, Heelan KA, Shaw BS & Shaw I. A prediction equation for the estimation of cardiorespiratory fitness using an elliptical motion trainer. *West Indian Medical Journal*. 61: 114-117, 2013.

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2. Paulsen SM, Brown GA. Neither Coffee Nor A Stimulant Containing “Pre-workout” Drink Alter Cardiovascular Drift During Walking In Young Men. *Med Sci Sport Exerc.* 50(5), 2409. 65th Annual Meeting of the American College of Sports Medicine. Minneapolis, MN. June 2018.
3. Adkins M, Bice M, Bickford N, Brown GA. Farm to Fresh! A Multidisciplinary Approach to Teaching Health and Physical Activity. 2018 spring SHAPE America central district conference. Sioux Falls, SD. January 2018.

4. Shaw I, Kinsey JE, Richards R, Shaw BS, and Brown GA. Effect Of Resistance Training During Nebulization In Adults With Cystic Fibrosis. *International Journal of Arts & Sciences' (IJAS)*. International Conference for Physical, Life and Health Sciences which will be held at FHWien University of Applied Sciences of WKW, at Währinger Gürtel 97, Vienna, Austria, from 25-29 June 2017.
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7. Brown GA, Shaw BS, and Shaw I. Effects of a 6 Week Conditioning Program on Jumping, Sprinting, and Agility Performance In Youth. *Med Sci Sport Exerc.* 48(5), 3730. 63rd Annual Meeting of the American College of Sports Medicine. Boston, MA. June 2016.
8. Shaw I, Shaw BS, Boshoff VE, Coetzee S, and Brown GA. Kinanthropometric Responses To Callisthenic Strength Training In Children. *Med Sci Sport Exerc.* 48(5), 3221. 63rd Annual Meeting of the American College of Sports Medicine. Boston, MA. June 2016.
9. Shaw BS, Shaw I, Gouveia M, McIntyre S, and Brown GA. Kinanthropometric Responses To Moderate-intensity Resistance Training In Postmenopausal Women. *Med Sci Sport Exerc.* 48(5), 2127. 63rd Annual Meeting of the American College of Sports Medicine. Boston, MA. June 2016.
10. Bice MR, Cary JD, Brown GA, Adkins M, and Ball JW. The use of mobile applications to enhance introductory anatomy & physiology student performance on topic specific in-class tests. National Association for Kinesiology in Higher Education National Conference. January 8, 2016.
11. Shaw I, Shaw BS, Lawrence KE, Brown GA, and Shariat A. Concurrent Resistance and Aerobic Exercise Training Improves Hemodynamics in Normotensive Overweight and Obese Individuals. *Med Sci Sport Exerc.* 47(5), 559. 62nd Annual Meeting of the American College of Sports Medicine. San Diego, CA. May 2015.
12. Shaw BS, Shaw I, McCrorie C, Turner S., Schnetler A, and Brown GA. Concurrent Resistance and Aerobic Training in the Prevention of Overweight and Obesity in Young Adults. *Med Sci Sport Exerc.* 47(5), 223. 62nd Annual Meeting of the American College of Sports Medicine. San Diego, CA. May 2015.
13. Schneekloth B, Shaw I, Shaw BS, and Brown GA. Physical Activity Levels Using Kinect™ Zumba Fitness versus Zumba Fitness with a Human Instructor. *Med Sci Sport Exerc.* 46(5), 326. 61st Annual Meeting of the American College of Sports Medicine. Orlando, FL. June 2014.
14. Shaw I, Lawrence KE, Shaw BS, and Brown GA. Callisthenic Exercise-related Changes in Body Composition in Overweight and Obese Adults. *Med Sci Sport Exerc.* 46(5), 394. 61st Annual Meeting of the American College of Sports Medicine. Orlando, FL June 2014.

15. Shaw BS, Shaw I, Fourie M, Gildenhuis M, and Brown GA. Variances In The Body Composition Of Elderly Woman Following Progressive Mat Pilates. *Med Sci Sport Exerc.* 46(5), 558. 61st Annual Meeting of the American College of Sports Medicine. Orlando, FL June 2014.
16. Brown GA, Shaw I, Shaw BS, and Bice M. Online Quizzes Enhance Introductory Anatomy & Physiology Performance on Subsequent Tests, But Not Examinations. *Med Sci Sport Exerc.* 46(5), 1655. 61st Annual Meeting of the American College of Sports Medicine. Orlando, FL June 2014.
17. Kahle, A. and Brown, G.A. Electromyography in the Gastrocnemius and Tibialis Anterior, and Oxygen Consumption, Ventilation, and Heart Rate During Minimalist versus Traditionally Shod Running. 27th National Conference on Undergraduate Research (NCUR). La Crosse, Wisconsin USA. April 11-13, 2013
18. Shaw, I., Shaw, B.S., and Brown, G.A. Resistive Breathing Effects on Pulmonary Function, Aerobic Capacity and Medication Usage in Adult Asthmatics *Med Sci Sports Exerc* 45 (5). S1602 2013. 60th Annual Meeting of the American College of Sports Medicine, Indianapolis, IN USA, May 26-30 2013
19. Shaw, B.S. Gildenhuis, G.A., Fourie, M. Shaw I, and Brown, G.A. Function Changes In The Aged Following Pilates Exercise Training. *Med Sci Sports Exerc* 45 (5). S1566 60th Annual Meeting of the American College of Sports Medicine, Indianapolis, IN USA, May 26-30 2013
20. Brown, G.A., Abbey, B.M., Ray, M.W., Shaw B.S., & Shaw, I. Changes in Plasma Free Testosterone and Cortisol Concentrations During Plyometric Depth Jumps. *Med Sci Sports Exerc* 44 (5). S598, 2012. 59th Annual Meeting of the American College of Sports Medicine. May 29 - June 2, 2012; San Francisco, California
21. Shaw, I., Fourie, M., Gildenhuis, G.M., Shaw B.S., & Brown, G.A. Group Pilates Program and Muscular Strength and Endurance Among Elderly Woman. *Med Sci Sports Exerc* 44 (5). S1426. 59th Annual Meeting of the American College of Sports Medicine. May 29 - June 2, 2012; San Francisco, California
22. Shaw B.S., Shaw, I., & Brown, G.A. Concurrent Inspiratory-Expiratory and Aerobic Training Effects On Respiratory Muscle Strength In Asthmatics. *Med Sci Sports Exerc* 44 (5). S2163. 59th Annual Meeting of the American College of Sports Medicine. May 29 - June 2, 2012; San Francisco, California
23. Scheer, K., Siebrandt, S., Brown, G.A, Shaw B.S., & Shaw, I. Heart Rate, Oxygen Consumption, and Ventilation due to Different Physically Active Video Game Systems. *Med Sci Sports Exerc* 44 (5). S1763. 59th Annual Meeting of the American College of Sports Medicine. May 29 - June 2, 2012; San Francisco, California
24. Jarvi M.B., Shaw B.S., Shaw, I., & Brown, G.A. (2012) Paintball Is A Blast, But Is It Exercise? Heart Rate and Accelerometry In Boys Playing Paintball. *Med Sci Sports Exerc* 44 (5). S3503. 59th Annual Meeting of the American College of Sports Medicine. May 29 - June 2, 2012; San Francisco, California
25. Shaw, I., Shaw, B.S., and Brown G.A. Effort-dependent Pulmonary Variable Improvements Following A Novel Breathing Retraining Technique In Asthmatics. *Med Sci Sports Exerc*

- 43 (5). S617, 2011. 58th Annual Meeting of the American College of Sports Medicine. May 31-June 4, 2011 Denver, Colorado
26. Brown G.A. Shaw, B.S., and Shaw, I. Exercise and a Low Carbohydrate Diet Reduce Body Fat but Not PYY and Leptin Concentrations. *Med Sci Sports Exerc* 43 (5). S4627, 2011. 58th Annual Meeting of the American College of Sports Medicine. May 31-June 4, 2011 Denver, Colorado
27. Shaw, B.S., Shaw, I, and Brown G.A. Pulmonary Function Changes In Response To Combined Aerobic And Resistance Training In Sedentary Male Smokers. *Med Sci Sports Exerc* 43 (5). S492, 2011. 58th Annual Meeting of the American College of Sports Medicine. May 31-June 4, 2011 Denver, Colorado
28. Heiserman, K., Brown G.A., Shaw, I., and Shaw, B.S. Seated Weighted Abdominal Exercise Activates the Hip Flexors, But Not Abdominals, More Than Unweighted Crunches. *A Med Sci Sports Exerc* 43 (5). S277, 2011 58th Annual Meeting of the American College of Sports Medicine. May 31-June 4, 2011 Denver, Colorado
29. Brown, G.A., Nienhueser, J., Shaw, I., and Shaw, B.S. Energy Drinks Alter Metabolism at Rest but not During Submaximal Exercise in College Age Males. *Med Sci Sports Exerc.* 42 (5): S1930. 57th Annual Meeting American College of Sports Medicine, June 1-5, 2010. Baltimore, MD
30. Shaw, I, Shaw, B.S., and Brown G.A. Abdominal and Chest Wall Compliance in Asthmatics: Effects of Different Training Modes. *Med Sci Sports Exerc.* 42 (5): S1588. 57th Annual Meeting American College of Sports Medicine, June 1-5, 2010. Baltimore, MD.
31. Shaw, B.S., Shaw, I, and Brown G.A. Exercise Effects on Lipoprotein Lipids in the Prevention of Cardiovascular Disease in Sedentary Males Smokers. *Med Sci Sports Exerc.* 42 (5): S1586. 57th Annual Meeting American College of Sports Medicine, June 1-5, 2010. Baltimore, MD.
32. Brown, G.A. Collaborative Research at a Primarily Undergraduate University. *Med Sci Sports Exerc.* 42 (5): S424. 57th Annual Meeting American College of Sports Medicine, June 1-5, 2010. Baltimore, MD.
33. Nienhueser, J., Brown, G.A., Effects of Energy Drinks on Resting and Submaximal Metabolism in College Age Males. NCUR 24 (24th National Conference on Undergraduate Research). Missoula, MT. April 15-17, 2010
34. Brown, G.A., N. Dickmeyer, A. Glidden, C. Smith, M. Beckman, B. Malicky, B.S. Shaw and I. Shaw. Relationship of Regional Adipose Tissue Distribution to Fasting Plasma PYY Concentrations in College Aged Females. 56th Annual Meeting American College of Sports Medicine, May 27-30, 2009. Seattle, WA. *Med Sci Sports Exerc.* 41 (5): S1333
35. Shaw, B.S., I. Shaw, and G.A. Brown. Contrasting Effects Of Exercise On Total And Intra-abdominal Visceral Fat. 56th Annual Meeting American College of Sports Medicine, May 27-30, 2009. Seattle, WA. *Med Sci Sports Exerc.* 41 (5): S1718
36. Shaw, I., B.S. Shaw, and G.A. Brown. Role of Endurance and Inspiratory Resistive Diaphragmatic Breathing Training In Improving Asthmatic Symptomology. 56th Annual

- Meeting American College of Sports Medicine, May 27-30, 2009. Seattle, WA. *Med Sci Sports Exerc.* 41 (5): S2713
37. McWha, J., S. Horst, G.A. Brown, B.S. Shaw, and I. Shaw. Energy Cost of Physically Active Video Gaming Against a Human or Computer Opponent. 56th Annual Meeting American College of Sports Medicine, May 27-30, 2009. Seattle, WA. *Med Sci Sports Exerc.* 41 (5): S3069
 38. Horst, S., J. McWha, G.A. Brown, B.S. Shaw, and I. Shaw. Salivary Cortisol and Blood Lactate Responses to Physically Active Video Gaming in Young Adults. 56th Annual Meeting American College of Sports Medicine, May 27-30, 2009. Seattle, WA. *Med Sci Sports Exerc.* 41 (5): S3070
 39. Glidden A., M. Beckman, B. Malciky, C. Smith, and G.A. Brown. Peptide YY Levels in Young Women: Correlations with Dietary Macronutrient Intake and Blood Glucose Levels. 55th Annual Meeting American College of Sports Medicine, May 28-31, 2008. Indianapolis, IN. *Med Sci Sports Exerc.* 40 (5): S741
 40. Smith C., Glidden A. M. Beckman, B. Malciky, and G.A. Brown. Peptide YY Levels in Young Women: Correlations with Aerobic Fitness & Resting Metabolic Rate. 55th Annual Meeting American College of Sports Medicine, May 28-31, 2008. Indianapolis, IN. *Med Sci Sports Exerc.* 40 (5): S742
 41. Brown, G.A. M. Holoubeck, B. Nylander, N. Watanabe, P. Janulewicz, M. Costello, K.A. Heelan, and B. Abbey. Energy Costs of Physically Active Video Gaming in Children: Wii Boxing, Wii tennis, and Dance Dance Revolution. 55th Annual Meeting American College of Sports Medicine, May 28-31, 2008. Indianapolis, IN. *Med Sci Sports Exerc.* 40 (5): S2243
 42. McFarland, S.P. and G.A. Brown. One Session of Brisk Walking Does Not Alter Blood Glucose Homeostasis In Overweight Young Men. 53rd annual meeting of the American College of Sports Medicine, Denver, CO. *Med Sci Sports Exerc* 38: S205, 2006
 43. Stahlnecker IV, A.C. and G.A. Brown Acute Effects of a Weight Loss Supplement on Resting Metabolic Rate and Anaerobic Exercise Performance. 53rd annual meeting of the American College of Sports Medicine, Denver, CO. *Med Sci Sports Exerc* 38: S403, 2006
 44. Brown, G.A. and A. Swendener. Effects of Exercise and a Low Carbohydrate Diet on Serum PYY Concentrations 53rd annual meeting of the American College of Sports Medicine, Denver, CO.. *Med Sci Sports Exerc* 38: s461, 2006
 45. Swendener, A.M. and G.A. Brown. Effects of Exercise Combined with a Low Carbohydrate Diet on Health. 53rd annual meeting of the American College of Sports Medicine, Denver, CO. *Med Sci Sports Exerc* 38: s460, 2006
 46. Swendener, A.M. and G.A. Brown. Effects Of Exercise Combined With A Low Carbohydrate Diet On Health. *NCUR®* 20, 2006
 47. Stahlnecker IV, A.C. and G.A. Brown. Acute Effects Of A Weight Loss Supplement On Resting Metabolic Rate And Anaerobic Exercise. *NCUR®* 20, 2006

48. Eck, L. M. and G.A. Brown. Preliminary Analysis of Physical Fitness Levels in Kinesiology Students. Southern Regional Undergraduate Honors Conference. March 31, 2005.
49. Brown, G.A., J.N. Drouin, and D. MacKenzie. Resistance Exercise Does Not Change The Hormonal Response To Sublingual Androstenediol. 52nd Annual Meeting of the American College of Sports Medicine, June 1-4, 2005, Nashville, TN. Med Sci Sports Exerc 37(5): S40, 2005
50. Brown, G.A., M.P. Rebok, M.L. Scott, M.K. Colaluca, and J Harris III. Economy of Jogging Stroller Use During Running. 51st Annual Meeting of the American College of Sports Medicine, June 2-5, 2004, Indianapolis, IN. Med Sci Sports Exerc 36(5): S1714, 2004
51. M.P. Rebok, M.L. Scott, J. Harris III, M.K. Colaluca, and G.A. Brown. Economy of Jogging Stroller use During Running. Georgia Southern University Legislative Wild Game Supper, 2004.
52. M.P. Rebok, M.L. Scott, J. Harris III, M.K. Colaluca, and G.A. Brown. Energy cost of jogging stroller use during running. Annual Meeting of the Southeastern Chapter of the American College of Sports Medicine, 2004.
53. Brown, G.A., Effect of 8 weeks androstenedione supplementation and weight training on glucose tolerance and isokinetic strength. Annual Meeting of the Southeastern Chapter of the American College of Sports Medicine, 2004.
54. Brown, G.A., Vukovich, M.D., Kohut, M.L., Franke, W.D., Jackson, D.A., King, D.S., and Bowers, L.D. Urinary excretion of steroid metabolites following chronic androstenedione ingestion. 50th Annual Meeting of the American College of Sports Medicine, May 27-31 2003, San Francisco, CA. Med Sci Sports Exerc 35(5): S1835
55. Brown, G.A., E.R. Martini, B.S. Roberts, M.D. Vukovich, and D.S. King. Effects of Sublingual androstenediol-cyclodextrin on serum sex hormones in young men. 48th Annual Meeting American College of Sports Medicine, May 30 – June 2, 2001. Baltimore, MD. Med Sci Sports Exerc. 33(5): S1650
56. Kohut, M.L., J.R. Thompson, J. Campbell, G.A. Brown, and D.S. King. Ingestion of a dietary supplement containing androstenedione and dehydroepiandrosterone (DHEA) has a minimal effect on immune response. International Society of Exercise and Immunology, 3rd Annual Convention May 29-30, 2001. Baltimore, MD. Med. Sci. Sports Exerc. 33(5): SISE112
57. Brown, G.A., E.R. Martini, B.S. Roberts, and D.S. King. Effects of Sublingual androstenediol-cyclodextrin on serum sex hormones in young men. Iowa State University Educational Research Exchange, March 24, 2001. Ames, IA.
58. Martini, E.R., G.A. Brown, M.D. Vukovich, M.L. Kohut, W.D. Franke, D.A. Jackson, and D.S. King. Effects of androstenedione-herbal supplementation on serum sex hormone concentrations in 30-59 year old men. Iowa State University Educational Research Exchange, March 24, 2001. Ames, IA.

59. King, D.S., G.A. Brown, M.D. Vukovich, M.L. Kohut, W.D. Franke, and D.A. Jackson. Effects of Chronic Oral Androstenedione Intake in 30-58 year Old Men. 11th International Conference on the Biochemistry of Exercise. June 4-7, 2000. Little Rock, Arkansas
60. Brown, G.A., M.L. Kohut, W.D. Franke, D. Jackson, M.D. Vukovich, and D.S. King. Serum Hormonal and Lipid Responses to Androgenic supplementation in 30 –59 year old men. 47TH Annual Meeting American College of Sports Medicine, May 31-June 3, 2000. Indianapolis, IN. Med Sci Sports Exerc. 32(5): S486
61. Brown, G.A., T.A. Reifernath, N.L. Uhl, R.L. Sharp, and D.S. King. Oral anabolic-androgenic supplements during resistance training: Effects on glucose tolerance, insulin action, and blood lipids. 1999 Annual Meeting American College of Sports Medicine, Seattle, WA. Med Sci Sports Exerc. 31(5): S1293
62. Reifernath, T.A., R.L. Sharp, G.A. Brown, N.L. Uhl, and D.S. King. Oral anabolic-androgenic supplements during resistance training: Effects on body composition and muscle strength. 1999 Annual Meeting American College of Sports Medicine, Seattle, WA. Med Sci Sports Exerc. 31(5): S1292
63. King, D.S., R.L. Sharp, G.A. Brown, T.A. Reifernath, and N.L. Uhl. Oral anabolic-androgenic supplements during resistance training: Effects on serum testosterone and estrogen concentrations. 1999 Annual Meeting American College of Sports Medicine, Seattle, WA. Med Sci Sports Exerc. 31(5): S1291
64. Parsons, K.A., R.L. Sharp, G.A. Brown, T.A. Reifernath, N.L. Uhl, and D.S. King. Acute effects of oral anabolic-androgenic supplements on blood androgen and estrogen levels in man. 1999 Annual Meeting American College of Sports Medicine, Seattle, WA. Med Sci Sports Exerc. 31(5): S1290

Book Chapters

Brown, G.A. Chapters on Androstenedione and DHEA. In: Nutritional Supplements in Sport, Exercise and Health an A-Z Guide. edited by Linda M. Castell, Samantha J. Stear, Louise M. Burke. Routledge 2015.

Brown, G.A. Evaluating a Nutritional Supplement with SOAP Notes to Develop Critical Thinking Skills. In: Teaching Critical Thinking and Clinical Reasoning in the Health Sciences, edited by Facione NC and Facione PA. Millbrae, CA: California Academic Press 2008

Non Refereed Publications

Brown, G.A. and King, D.S. Sport Dietary Supplement Update on DHEA supplementation. Human Kinetics Publishers, Inc. October, 2000.

Brown, G.A. Getting in Shape for Paintball in the Winter. Paintball Sports International, January, 1999

Invited Presentations

Brown G.A. Collaborative experiences with researchers in South Africa. Africa Summit 2019 (March 28, 2019). Presented by the University of Nebraska and the University of Nebraska Medical Center.

Peer Reviewer for the Following Journals

Advances in Physiology Education. <http://www.the-aps.org/publications/advan/>

African Journal For Physical, Health Education, Recreation and Dance (AJPHERD). ISSN: 1117-4315 http://www.ajol.info/journal_index.php?jid=153

Anatomical Sciences Education. <http://www.asejournal.com>

Asian Journal of Sports Medicine. <http://asjasm.tums.ac.ir/index.php/asjasm>

CardioVascular Journal of Africa. <http://www.cvjsa.co.za/>

Complementary Therapies in Medicine. <http://ees.elsevier.com/ctim/>

European Journal of Sport Science. <http://www.tandf.co.uk/journals/titles/17461391.asp>

Games for Health Journal. <http://www.liebertpub.com/overview/games-for-health-journal/588/>

Global Journal of Health and Physical Education Pedagogy. <http://js.sagamorepub.com/gjhpep>

Interactive Learning Environments. <https://www.tandfonline.com/toc/nile20/current>

International Journal of Exercise Science. <http://digitalcommons.wku.edu/ijes/>

Journal of Sports Sciences. <http://www.tandf.co.uk/journals/titles/02640414.html>

Journal of Strength and Conditioning Research. <http://journals.lww.com/nsca-jscr/pages/default.aspx>

Lung. <http://www.springer.com/medicine/internal/journal/408>

Pediatrics. <http://pediatrics.aappublications.org/>

Scandinavian Journal of Medicine and Science in Sports.
<http://www.blackwellpublishing.com/journal.asp?ref=0905-7188>

South African Journal of Diabetes and Vascular Disease <http://www.diabetesjournal.co.za/>

The American Journal of Physiology - Endocrinology and Metabolism.
<http://ajpendo.physiology.org/>

The American Journal of Physiology - Heart and Circulatory Physiology.
<http://ajpheart.physiology.org/>

The American Journal of Physiology - Regulatory, Integrative and Comparative Physiology.
<http://ajpregu.physiology.org/>

The International Journal of Sport Nutrition & Exercise Metabolism.
<http://www.humankinetics.com/IJSNEM/journalAbout.cfm>

The Journal of Sports Science and Medicine (JSSM) <http://www.jssm.org/>

The International Journal of Nutrition and Metabolism www.academicjournals.org/IJNAM

The Open Sports Sciences Journal. <http://benthamscience.com/open/tossj/index.htm>

The Journal of Applied Physiology. <http://jap.physiology.org/>

African Health Sciences. <http://www.ajol.info/index.php/ahs>

Menopause. <http://journals.lww.com/menopausejournal/pages/default.aspx>

Membership in Professional Organizations

American College of Sports Medicine

American Physiological Society

National Strength and Conditioning Association

Graduate Student Advisement/Mentoring

Kourtney Woracek. MAEd Thesis Committee. in progress

Marissa Bongers. MAEd Thesis Committee Director. Dietary Habits and Nutrition Knowledge in Female Collegiate Distance Runners. Degree Awarded Spring 2016.

Justin Thiel. MAEd Advisor. Degree Awarded Spring 2016.

Mitchell Sasek. MAEd Advisor. Degree Awarded Summer 2015

Chad Keller. MAEd Advisor. Degree Awarded Summer 2014

Faron Klingehoffer. MAEd Advisor. Degree Awarded Summer 2014

Joe Scharfenkamp. MAEd Internship Advisor. Degree Awarded Summer 2014

Andrew Hudson. MAEd Thesis Committee. Thesis Title. valuation of Weight Loss in Parents Participating in a Pediatric Obesity Treatment Intervention Degree Awarded Fall 2012

Megan Adkins. Doctoral Dissertation Committee. An Examination of Changes in Sedentary Time with the Integration of Technology for Children Participating in a Morning Fitness Program. Degree Awarded Summer 2011

Christopher Campbell. MAEd Advisor. Degree Awarded Spring 2011

Logan Brodine. MAEd Advisor. Degree Awarded Spring 2010

Megan Costello. MAEd Thesis Committee. Changes in the Prevalence of at risk of overweight or overweight in children. Degree Awarded Spring 2009

Pamela Janulewicz, MAEd Thesis Committee. Effects of Exercise Balls as Chair Replacements in a Fourth Grade Classroom. Degree Awarded Spring 2008

Melissa Shelden. MAEd Advisor.

Michael Bell. MAEd Advisor.

Karen DeDonder. MAEd Thesis Committee. Confidence Levels of Certified Athletic Trainers Regarding Female Athlete Triad Syndrome. Degree Awarded Spring 2008

Benjamin Nylander. MAEd Comprehensive Project Director. Degree Awarded Summer 2007

Eme Ferro. MAEd advisor. Degree Awarded Summer 2007

Julie McAlpin. MAEd Thesis Committee. Children Escorted to School; effect on Parental Physical Activity Degree awarded fall 2006

Michael Ray. MAEd Comprehensive Project Director. Degree Awarded Summer 2006

Seth McFarland. MAEd Thesis Committee Director. The Effects of Exercise Duration on Glucose Tolerance and Insulin Sensitivity in Mildly Overweight Men. Degree Awarded Summer 2005

Drew McKenzie. MS Academic Advisor. Degree Awarded Spring 2005

Matthew Luckie. MS Academic Advisor. Degree Awarded Spring 2005

Todd Lane. MS Academic Advisor

Leilani Lowery. MS Internship committee, Degree Awarded Spring 2003

Johnna Ware. MS Internship committee, Degree Awarded Spring 2003

David Bass. MS Internship committee, Degree Awarded Spring 2003

Crystal Smith. MS Internship committee, Degree Awarded Summer 2003

Undergraduate Student Research Mentoring

Cassidy Johnson. Project to be determined. Undergraduate Research Fellowship (Fall 2019 -)

Taylor Wilson. A comparison of High Intensity Interval Exercise on a bicycle ergometer to a treadmill on Resting Metabolic Rate the next day. Undergraduate Research Fellowship (Fall 2018 -)

Dakota Waddell. The effect of yoga versus mindful meditation on stress in physically active and non-physically active female college-aged students Undergraduate Research Fellowship (Fall 2018 -)

Dakota Waddell. A case study of the effects of the *osteostrom* program on bone mineral density and lean body mass in a paraplegic male. Undergraduate Research Fellowship (Fall 2017 – Spring 2018)

Andrew Fields. The effects of retraining running cadence on oxygen consumption in experienced runners. Undergraduate Research Fellowship. (Fall 2017 – Spring 2019)

Logan Engel. The effects of Tart Cherry Juice on Delayed Onset Muscle Soreness following Eccentric Exercise. Undergraduate Research Fellowship. Fall 2017 -

Stephanie Paulsen. Comparing the effects of coffee to a pre-workout drink on cardiovascular drift. Summer Student Research Program. University of Nebraska Kearney. Summer 2017.

Stephanie Paulsen. Comparing the effects of coffee to a pre-workout drink on resting and exercise metabolic rate. Undergraduate Research Fellowship. Spring 2017 - .

Rachael Ernest. Comparing the effects of coffee to a pre-workout drink on resting and exercise metabolic rate. Undergraduate Research Fellowship. Fall 2016 - Spring 2017.

Aleesha Olena. Evaluating the role of body composition on abdominal muscle definition. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2016 - Spring 2017.

Marco Escalera. Evaluating the role of body composition on abdominal muscle definition. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2015 - Spring 2017.

Trevor Schramm. Effects of “pre-workout” drinks on 400 m sprint performance and salivary cortisol concentrations. Undergraduate Research Fellowship. University of Nebraska Kearney. Spring 2016.

Taylor Turek. Evaluating the role of body composition on abdominal muscle definition. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2015 - Spring 2016.

Brian Szekely. Effects of “pre-workout” drinks on Wingate test performance and blood lactate concentrations. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2014 - Spring 2016.

Brianna Jackson. Effects of “pre-workout” drinks on 400 m sprint performance and salivary cortisol concentrations. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2014 – Fall 2015.

Ashley Pearson. Changes in resting metabolic rate over a semester in undergraduate students. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2013 - Spring 2015.

Tricia Young. Changes in resting metabolic rate over a semester in undergraduate students. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2013 - Spring 2014.

Gavin Schneider. Effects of “pre-workout” drinks on resistance training performance. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2013 - Spring 2014.

Bridgette Schneekloth. Physical Activity while engaging in a Zumba dance class or Microsoft Kinect Zumba. Summer Student Research Program. University of Nebraska Kearney. Summer 2013.

Bridgette Schneekloth. Physical Activity while engaging in Microsoft Kinect Track & Field running vs. free running on an indoor track. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2012 - Spring 2014.

Adam Kahle. Evaluating changes in running mechanics with “barefoot” footwear. Summer Student Research Program. University of Nebraska Kearney. Summer 2012

Michelle Jarvi. Quantifying paintball as a form of physical activity in Boys. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2011 - Spring 2012.

Benjamin Lentz, Krista Scheer, & Sarah Siebrandt. Wii, Kinect, and Move for Physical Activity: Analysis of Energy Expenditure, Heart Rate, and Ventilation. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2010 - Spring 2012.

Katlyn Heiserman. Comparison of EMG activity in the rectus abdominis and rectus femoris during supine un-weighted abdominal crunch exercise and a seated abdominal crunch exercise weight machine. Summer Student Research Program. University of Nebraska Kearney. Summer 2010

Janae Nienhueser. Effects of Energy drink on resting and submaximal exercise metabolism in college age men. Summer Student Research Program. University of Nebraska Kearney. Summer 2009

Jessica McWha. Metabolic changes while playing active video gaming against a human and computer opponent. Summer Student Research Program and Undergraduate Research Fellowship. University of Nebraska Kearney. Summer 2008 – Spring 2009

Sarah Horst. Changes in blood lactate and salivary cortisol concentrations while “exergaming” against a human or computer opponent. Summer Student Research Program. University of Nebraska Kearney. Summer 2008

Craig Carstensen. Differences in the Physiological Response to Treadmill versus Freely Paced Walking. Summer Student Research Program. University of Nebraska Kearney. Summer 2006

Alvah Stahlnecker. Acute effects of a weight loss supplement on resting metabolic rate and anaerobic exercise performance. Summer Student Research Program. University of Nebraska Kearney. Summer 2005

Allison Swendener. Effects of exercise combined with a low carbohydrate diet on health. Summer Student Research Program. University of Nebraska Kearney. Summer 2005

Kamilah Whipple. A measurement of the physical activity and fitness of undergraduate Georgia Southern University students. Ronald E. McNair Post-Baccalaureate Achievement Program. Georgia Southern University. Summer 2004.

Lindsey Eck. Preliminary Analysis of Physical Fitness Levels in Kinesiology Students. Independent undergraduate research project. Georgia Southern University. Summer 2004.

Description of Graduate Courses Taught

PE 870: Advanced Exercise Physiology Course presumes a student has had a basic course in exercise physiology. The content of cardiorespiratory fitness, body composition, muscular strength/flexibility, body fluids and metabolism is presented beyond the introductory level. (University of Nebraska at Kearney)

PE 866P: Nutrition for Health and Sport. (Dual listed/taught with PE 469) Metabolism and metabolic regulation, the influence of dietary practices on health and human performance, and mechanisms and consequences of weight loss and gain.. (University of Nebraska Kearney)

PE 861P: Physiology of Exercise. (Dual listed/taught with PE 461) Physiological processes of body as pertain to physical activity. How trained and untrained individuals differ, and importance of training. (University of Nebraska at Kearney)

TE 800: Education Research. This introductory web-based course in educational research focuses on evaluating and interpreting educational research and applying its findings to educational practice. (University of Nebraska at Kearney)

KINS 7230: Exercise Physiology. Focuses on the study of the effects of exercise on the physiological functions of the human organism with emphasis on theoretical orientations. (Georgia Southern University)

KINS 7231: Laboratory Techniques in Exercise Physiology. Acquaints the student with the use of typical laboratory equipment used in exercise physiology. (Georgia Southern University)

KINS 7238: Human Performance and Nutrition. Examines the interaction between nutrition and physical activity, including exercise and athletic performance. (Georgia Southern University)

KINS 7431: Applied Sport Physiology. Focuses on the study of exercise physiology principles applied to developing training and conditioning programs for enhancing health related fitness and performance (Georgia Southern University)

KINS 7899: Directed Independent Study. Provides the student with an opportunity to investigate an area of interest under the direction of faculty mentor (Georgia Southern University)

EXSP 551: Advanced Exercise Physiology 2. Analysis of factors affecting work capacity and performance. Human energy metabolism concepts and measurement. (Iowa State University)

Description of Undergraduate Courses Taught

PE 498: Special Topics. (University of Nebraska at Kearney)

PE 475: Research Methods in Exercise Science. This course is designed to introduce advanced undergraduate students to the processes of research in the field of Exercise Science including the processes of finding, reading and understanding Exercise Science research; data collection; data analysis; and data interpretation. (University of Nebraska at Kearney)

PE 469: Sports Nutrition. Metabolism and metabolic regulation, the influence of dietary practices on human performance. (University of Nebraska at Kearney)

PE 461: Physiology of Exercise. Physiological processes of body as pertain to physical activity. How trained and untrained individuals differ, and importance of training. (University of Nebraska at Kearney)

PE 388: General Studies Capstone - The Living Dead in Fact & Fiction. The Living Dead, such as Zombies and Vampires, are pervasive in fictional literature, television, and movies. During this course, novels, television episodes, and movies will be used to identify disease symptoms displayed by the living dead, and these symptoms will then be evaluated regarding what type of medical condition might cause the symptoms.

PE 310: Introduction to Exercise Physiology. Provides a foundation of scientific basis for understanding the body's anatomical structures and physiologic responses to acute exercise, as well as its adaptations to chronic exercise. (University of Nebraska at Kearney)

PE 107. This course is designed to introduce students to the field of Exercise Science as an area of academic study and as a professional career. Students majoring in Exercise Science should take this course in their first year. (University of Nebraska at Kearney)

KINS 4231: Fitness Evaluation and Exercise Prescription. Provides the student with an in-depth study of fitness appraisal and exercise prescription and the development, interpretation, implementation and management of fitness programs (with laboratory). (Georgia Southern University)

KINS 3133: Physiological Aspects of Exercise. Provides an in-depth perspective of physiological and biochemical responses of the human body when subjected to exercise (with laboratory). (Georgia Southern University)

GSU 1210: University Orientation 1. Designed to help first year students understand the purpose of a college education, learn about college requirements, explore values and interests, learn to make decisions and realistic choices, explore career objectives and programs of study, and establish supportive relationships with faculty and staff. Required of all new students during their first semester. (Georgia Southern University)

EX SP 462: Medical Aspect of Exercise. The role of exercise in preventive medicine. Impact of exercise on various diseases, and the effect of various medical conditions on the ability to participate in vigorous exercise and competitive sports. Principles of exercise testing and prescription for individuals with these conditions. Environmental and nutritional aspects of exercise. (Iowa State University)

EX SP 458: Principles of Exercise Testing and Prescription. Physiological principles of physical fitness; design and administration of fitness programs; testing, evaluation, and prescription; cardiac risk factor modification. (Iowa State University)

EX SP 455 (Renumbered as EX SP 358 for Fall 2001). Physiology of Exercise. Physiological basis of human performance; effects of physical activity on body functions (with laboratory). (Iowa State University)

EX SP 355: Biomechanics (Laboratory). Mechanical basis of human performance; application of mechanical principles to exercise, sport and other physical activities. (Iowa State University)

EX SP 258: Physical Fitness and Conditioning. Development of personal fitness using a variety of conditioning and exercise techniques such as aerobics, weight training, and aquatic fitness. Introduction to acute and chronic responses to exercise, and the role of exercise in health promotion and weight management. (Iowa State University)

EX SP 236: Fundamentals of Archery, Badminton, Bowling (Archery Segment). (Iowa State University)

EX SP 119: Archery 1. (Iowa State University)

EX SP 220: Physical Fitness and Conditioning. Development of personal fitness using a variety of conditioning and exercise techniques such as aerobics, weight training, and aquatic fitness. Introduction to acute and chronic responses to exercise, and the role of exercise in health promotion and weight management. (Des Moines Area Community College)

PE 157: Introduction to Athletic training. Introduction to methods of prevention and immediate care of athletic injuries. Basic information concerning health supervision of athletes, and some basic wrapping and strapping techniques for common injuries. (Des Moines Area Community College)

PE 144: Introduction to Physical Education. History and development of physical education as an academic discipline. Principles and current practices of teaching physical education. (Des Moines Area Community College)

PHYSL 130: Human Physiology. Principles of the regulation and maintenance of human physiology. (Utah State University; Volunteer Undergraduate TA)

PHYSL 103 Human Anatomy. Introduction to the structure and location of bones, muscles, and organs in the human body. (Utah State University; Volunteer Undergraduate TA)

Service

Service to the Profession

Associate Editor, Asian Journal of Sports Medicine (2019-).

Director, North American Chapter, International Physical Activity Projects (IPAP) (2009-)

Fellow, American College of Sports Medicine (2008-)

National Research Foundation (South Africa) peer evaluator for grant applicants

National Research Foundation (South Africa) evaluator of applications for funding in Thuthuka Programme

External Evaluator for Master's Theses and Doctoral Dissertations, University of Johannesburg, Johannesburg South Africa.

Grant proposal reviewer for NASPE/ING Run for Something Better School Awards Program.

Session Chair. Special Event. Undergraduate Research Experiences in Exercise Science. ACSM Annual Meeting, 2010

Session Chair. 2nd Annual Education Research Exchange. Iowa State University Education Research Exchange, 2001

Current Service at the University of Nebraska at Kearney

University Wide

Faculty Senate Parliamentarian (April 2019 – April 2022)

Faculty Senate Oversight Committee Chair (April 2019 – April 2022)

Faculty Senate Executive Committee (April 2019 – April 2022)

Faculty Senate, At Large representative (Fall 2018-)

University Student Conduct Appeals Board (Fall 2019 - May 2020)

General Studies Council (fall 2013-)

University Safety Committee (Fall 2018 -)

University Student Travel Policy Committee (Fall 2019-)

University Retention Council (Fall 2019 -)

External Evaluator, Promotion Committee, Department of Social Work & Criminal Justice (Fall 2019-)

College of Education Dean Search Committee Member (Fall 2019 -)

College of Education

College of Education Promotion and Tenure Committee, Chair (Fall 2012 – present) Member (fall 2008 – spring 2012)

Department of Kinesiology and Sport Sciences

Kinesiology Lecturer Search Committee Member (Fall 2019 -)

Nebraska Kids Fitness and Nutrition Day, volunteer educator and student coordinator. (fall 2005-present)

Academic Advisor for Undergraduate exercise Science Students (Fall 2005 - present)

Previous Service at the University of Nebraska at Kearney

Recreation Faculty Search Committee Member (Spring 2019)

University Student Conduct Board (Fall 2016- May 2017, Fall 2018 – May 2019)

Faculty Senate Athletic Committee (Fall 2018-May 2019)

External Evaluator, Promotion & Tenure, Department of Social Work & Criminal Justice (Fall 2018)

External Evaluator, Faculty Annual Performance Reviews, Department of Social Work & Criminal Justice (Spring 2018)

University Graduate Council. (Fall 2014 – spring 2017)

University Graduate Council Standing Committee I: Policy & Planning Committee (fall 2014 – spring 2017)

Faculty Senate (April 2012- April 2016)

Faculty Senate Executive Council, (April 2014 – April 2016)

Faculty Senate representative to the Oversight Committee (September 2014 – April 2016)

Faculty Senate representative to the Grievance Committee (September 2014 – April 2016)

Faculty Senate representative to the Professional Conduct committee (September 2013 - April 2016)

Youth Agility Speed & Quickness program director (2011-2015)

Faculty Senate ad-hoc committee on best practices in peer evaluation (2013-2014)

Director of General Studies search committee, committee member (2013-2014)

Director of the Office of Sponsored Programs search committee member (2012-2013; 2013-2014)

College peer mentor for implementing Critical Thinking in the classroom (2013-2014)

Chair, Ad-hoc committee for the evaluation of a new Student Evaluation of Instruction survey (2012-2014 academic years)

Ad-hoc committee to enhance communication effectiveness within department faculty and staff (2013-2014)

Exercise Science faculty search (2012-2013)

Undergraduate Research and Creative Activity program review team (2011-2012)

Institutional Review Board for the protection of Human Research Subjects. (Service period 2006 - 2011)

Undergraduate Research Committee (Service fall 2008 – spring 2011)

University Graduate Council. (Service period 2006 - 2010)

Homecoming Hustle (HPERLS Fun Run) Race Director and Coordinator (Service period beginning Fall 2007 – fall 2009)

Ad-hoc Committee on Enhancing Enrollment and Course Offerings in PE 110 Dept. of HPERLS (Service period beginning fall 2006)

Graduate Council Standing Committee 1: Policy and Planning Committee. (Service period beginning fall 2006; Chair in 2007 – 2008 and 2009-2010)

General Studies Roundtable 2 (spring 2006-spring 2007)

Academic Affairs Committee on Teaching Continuity (Service period beginning fall 2006)

Health Science Program Assistant Director Search Committee, University of Nebraska at Kearney. (Service period summer 2006)

Graduate Program Chair, HPERLS Department, University of Nebraska at Kearney (Service period beginning summer 2006 - 2010)

Graduate Dean Search Committee. University of Nebraska at Kearney (Service period 2005 – 2006 academic year)

Assistant HPERLS Department Graduate Coordinator. (Service period 2005 – 2006 academic year)

University of Nebraska at Kearney Centennial Run committee. (Service period fall 2005)

Senior College of Central Nebraska, Fit after 50 course coordinator. (Service period 2005 – 2006 academic year)

Health Science Program Assistant Advisor Search Committee. (Service period summer 2005)

HPERLS Furniture Committee (Service period spring 2005)

Academic Advisor for Undergraduate exercise Science Students (Service period Beginning Fall 2005 academic year; ongoing)

Other Prior University Service

Institutional Review Board, Georgia Southern University (2003- 2004)

GSU Exercise Science undergraduate student advisor (2002 – 2004)

GSU Jiann-Ping Hsu School of Public Health extramural funding task force (2003-2004)

GSU Jiann-Ping Hsu School of Public Health Curriculum Committee (2003-2004)

GSU Jiann-Ping Hsu School of Public Health Assistant Graduate program director (2003-2004)

GSU Jiann-Ping Hsu School of Public Health Laboratory Director's Committee (2002-2004)

GSU Jiann-Ping Hsu School of Public Health Exercise Science Graduate program coordinator (2003-2004)

GSU Recreation and Athletic Center advisor to the personal training program (2003-2004)

Institutional Biosafety Committee, Georgia Southern University (2003-2004)

Kinesiology Cluster Area, Georgia Southern University, Jiann-Ping Hsu School of Public Health (2002-2004)

Biostatistics Faculty Search Committee. Georgia Southern University, Jiann-Ping Hsu School of Public Health (2002-2003, 2003-2004)

Computer Advisory Committee, Iowa State University, University-Wide, College of Education, and Dept. of Health and Human Performance (2000-2002)

Computer Fee Allocation Committee, Iowa State University (2000-2001)

Dept. of Health and Human Performance Graduate Student Association (Founding Officer and 1st President; 2001-2002)

Sport Management Faculty Search Committee, Iowa State University Dept. of Health and Human Performance (2001-2002)

Previous Community Involvement

Race Director, Central Nebraska Susan G. Komen Race for the Cure (2011, 2012, 2013 events)

Webelos Den Leader, Boy Scouts of America Pack 132, Kearney, NE. Chartered to the Church of Jesus Christ of Latter Day Saints

Scoutmaster, Boy Scouts of America Troop 132, Kearney, NE. Chartered to the Church of Jesus Christ of Latter Day Saints

Tiger Den Coach, Boy Scouts of America Pack 135, Kearney, NE. Chartered to Faith United Methodist Church.

Personal Fitness Merit Badge Counselor. Boy Scouts of America, Overland Trails Council Covered wagon District.

Certifications

American College of Sports Medicine: ACSM Certified Exercise Physiologist (05/21/1998 - 12/31/2021)

USA Track and Field: Level One Coach

American Red Cross: Community First Aid and CPR

Funding

Research Funding

Brown GA, Bice MR, Abbey BM, Shaw I, Shaw BS. Effects of aerobic exercise, resistance exercise, and combined aerobic & resistance exercise on food choices and endocrine signals of satiety in middle aged adults. Submitted 6/26/2017 to National Institutes of Health [PA16-200] - Academic Research Enhancement Award (Parent R15) (Application #1R15DK117436-01). Total Amount Requested: \$367,708. (Resubmission of revised proposal; Pending Review.)

Brown GA, Bice MR, Abbey BM, Shaw I, Shaw BS. Effects of aerobic exercise, resistance exercise, and combined aerobic & resistance exercise on food choices and endocrine signals of satiety in middle aged adults. Submitted 6/26/2017 to National Institutes of Health [PA16-200] - Academic Research Enhancement Award (Parent R15) (Application #1R15DK117436-01). Total Amount Requested: \$351,708. Pending Review.

Brown GA, Bice MR, Adkins MM, Hollman A, Bickford S, Bickford N, Ranglack D. HEAT it up (Health, Exercise, Aquaponics, Technology) summer camps to grow future health professionals in Rural Nebraska. Submitted 5/25/2017 to National Institutes of Health [PAR17-183] - NICHD Research Education Programs (R25) (Application # 1R25 HD094673-01) Total Amount Requested: \$777,006. Pending Review.

Brown GA, Bice MR, Adkins MM, Hollman A, Bickford S, Bickford N, Ranglack D. Teaching Health, Exercise, Technology, & Aquaponics (THETA) Day Camps to Grow Future Health Professionals. University of Nebraska Rural Futures Institutes (RFI) \$20,000 – Funded (July 1, 2017 – June 30, 2019)

Brown GA, Bice MR, Adkins MM, Hollman A, Bickford S, Bickford N, Ranglack D. Teaching Health, Exercise, Technology, & Aquaponics (THETA) Day Camps to Grow Future Health Professionals. University of Nebraska Rural Futures Institutes (RFI) and McCook Economic Development Council \$11,400 – Funded (May 1, 2017 – August 30, 2017)

Brown GA, Abbey BM, Bice MR. “Is milk an effective rehydration beverage during repeated days of dehydrating exercise?” to the Dairy Research Institute® (DRI) \$125,560 – Not funded.

Brown GA & Steele J. “Biochemistry Laboratory Experiences for Exercise Science Students” to the Kelly Fund, University of Nebraska. \$23,947. Funded. August 2014- June 2016

Brown GA. “Horizon After School Quickness Program” to Blue Cross & Blue Shield of Nebraska for a Community Wellness grant. \$14,106. Not funded

Brown GA. “Effects of chocolate milk taken immediately post exercise on the adaptations to strength training in men” to the Dairy Research Institute® (DRI) \$123,192 – not funded.

Brown GA., Heelan KA, Bartee RT, & Maughan S. “Active Video Games as an Alternative to Traditional Group Exercise Classes” to the Robert Wood Johnson Health Games Research program. \$297,201 – not funded

Brown GA., Nylander B, Heelan KA. Energy Expenditure for Active Video Game Systems: Dance Dance Revolution and Nintendo Wii. University of Nebraska at Kearney Research Services Council. \$3,432. Funded

Brown G.A. Effects of green tea extract on fasting plasma insulin, glucose, leptin, and PYY concentrations in humans. University of Nebraska at Kearney Research Services Council. \$3,822. Funded

Brown G.A. Dose response relationship between resistance exercise and changes in the hormonal regulation of blood glucose homeostasis. American Diabetes Association Junior faculty Award. \$443,293. Not Funded.

Brown G.A., and K. Heelan. Health benefits of green tea extract in women. NIH NCCAM Exploratory/Developmental Grant for Clinical Studies (R21), PAR-03-153. \$485,163. Not Funded.

Brown, G.A. Changes In Biomarkers Of Satiety, Aerobic Fitness, And Body Composition While On A Low Fat Or Low Carbohydrate Diet. University of Nebraska at Kearney Research Services Council. \$3,750. Funded

Lynott, F., **Brown, G.A.**, and K. Heelan. Health and Fitness of HPERLS Students. University of Nebraska at Kearney Research Services Council. \$4,000. Funded

Brown G.A., K. Heelan and D.S. King. Pharmacokinetics & Efficacy of Sublingual Androstenediol for Treating Andropause. NIH NCCAM Exploratory/Developmental Grant for Clinical Studies (R21), PAR-03-153. \$477,000. Not Funded.

Maughan S.L., D.P.Snider, and **G.A. Brown**, Physical Health and Social Factors Influencing Educational Success Among Hispanic Immigrant Children, University of Nebraska at Kearney Research Services Council. \$4,214.60. Funded

McFarland S.P. and **G.A. Brown**, Effects of Exercise Duration on Glucose Tolerance In Mildly Overweight Men, University of Nebraska at Kearney Research Services Council. \$750. Funded

Brown, G.A. Effects of Exercise Duration on Insulin Sensitivity In Mildly Overweight Men, University of Nebraska at Kearney Research Services Council. \$2,000. Funded

McFarland S.P. and **G.A. Brown**, Effects of Exercise Duration on Glucose Tolerance In Mildly Overweight Men, Gatorade Sports Sciences Institute. \$1,500. Not Funded

Brown, G.A. Effects of Exercise Duration on Glucose Tolerance and Insulin Sensitivity in Mildly Overweight Men. Life fitness Academy. \$5,000. not funded

Brown, G.A. American College of Sports Medicine Foundation Grant. Endocrinology of weight lifting & androgen supplementation, \$10,000. Not Funded.

Brown, G.A. and J.L. McMillan. Experimental and Applied Sciences. Effects of Green Tea Extract on Insulin Sensitivity and Adaptations to Exercise. \$71,075. Not Funded.

Brown, G.A. American College of Sports Medicine Foundation Grant. Endocrinology of weight training & androgen supplementation, \$10,000. Not Funded.

Brown, G.A. and J. Drouin. Georgia Southern University Faculty Research Grant. Effects of Resistance Training on the Hormonal response to Sublingual Androstenediol Intake. \$5,000. Funded

King D.S. and **G.A. Brown**. *World Anti Doping Agency*. Effects of Testosterone Precursors on the Muscular and Hormonal Response to Resistance Training in Men. \$464,634. Not Funded.

Brown, G.A. *American College of Sports Medicine* Foundation Grant. Effect of Raisin Ingestion on Substrate Use During Exercise. \$5,000. Not Funded.

King D.S. and **G.A. Brown**. *California Raisin Marketing Board*. The Glycemic Index Of Raisins Fed To Normal People And Non-Insulin Dependent Diabetics. \$110,869. Not Funded.

King D.S. and **G.A. Brown**. *California Raisin Marketing Board*. The Effects Of Raisin Ingestion On Substrate Utilization and Endurance Exercise Performance In Trained Cyclists. \$84,258. Not Funded.

Brown, G.A., E.R. Martini, and B.S. Roberts. Effect of Androstenediol on Serum Sex Hormone Concentrations. Iowa State University Professional Advancement Grant. Graduate Student Senate and Iowa State University Dept. of Health and Human Performance. \$700. Funded

Instructional Development Funding

Brown G.A. and K.A. Heelan. University of Nebraska at Kearney. Proposal for the purchase of upgraded resistance exercise equipment in the Human Performance Laboratory. \$21,100. Funded.

Brown G.A. and K.A. Heelan. University of Nebraska at Kearney. Proposal for the purchase of a new metabolic cart for the Human Performance Laboratory. \$24,560. Funded

Brown, G.A. Georgia Southern University, Center for Excellence in Teaching Instructional Development Grant. Proposal for purchase of heart rate monitors, manual sphygmomanometers, and automated sphygmomanometers. \$2,820. Funded.

Brown, G.A. Georgia Southern University, Center for Excellence in Teaching Innovative Teaching Strategies Retreat. Provides \$2,000 in instructional technology funds to the participant. Funded.

Brown, G.A. Georgia Southern University, Center for Excellence in Teaching Travel Grant. \$750. Funded.

Brown, G.A. Georgia Southern University student technology fee proposal. Proposal for purchase of Molecular Devices SpectraMax 250 plate reader. \$17,000. Funded

Brown, G.A. Georgia Southern University student technology fee proposal. Proposal for purchase of Lode Excalibur Sport Bicycle Ergometer and Physiodyne Max 2 Metabolic Cart. \$29,577. Funded

Brown, G.A. Georgia Southern University student technology fee proposal. Proposal for purchase of Packard Cobra 2 Automated Gamma Counter. \$14,000. Not funded

References

Dr. Ina Shaw
+27 12 671 8810
ina.shaw@momentum.co.za
MMI Client Engagement Solutions
Visiting Professor - University of Johannesburg
Adjunct Professor - University of Venda
President: International Physical Activity Projects (IPAP)

Dr. Kenya Taylor
(308) 865-8843
taylorks@unk.edu
Dean, Graduate Studies & Research
University of Nebraska Kearney

Dr. Matthew R. Bice
(308) 865-8052
bicemr@unk.edu
Assistant Professor, Dept of Kinesiology & Sports Sciences
University of Nebraska Kearney