

TRANSGENDER STUDENTS, FAIRNESS, AND THE PROTECTION OF FEMALE SCHOOL SPORTS

By: Rosalind S. Simson*

I. INTRODUCTION

The inclusion of transgender girls and young women on female school sports teams has become a political wedge issue in American society. Donald Trump and J.D. Vance made the controversy a centerpiece of their 2024 election campaign.¹ Typical of their rhetoric was Trump's promise at a rally in Madison Square Garden that "we will get . . . transgender insanity the hell out of our schools, and we will keep men out of women's sports."² Their message resonates with a majority of Americans. A January 2024 poll conducted by the National Opinion Research Center at the University of Chicago found that 66% of U.S. adults believe that transgender girls should "never or rarely be allowed to compete on girls' teams in sports," and 69% take this position on transgender women competing on women's sports teams.³

State approaches to this issue vary. Currently, twenty-seven states have total or near-total bans on including transgender students on school teams that align with their gender identities.⁴ Of the twenty-three states that lack such laws or regulations, a few require that trans students be allowed to compete on teams

*Associate Professor of Philosophy, affiliated faculty in Women's and Gender Studies, and former Adjunct Professor of Law at Mercer University. For very helpful comments on previous drafts of this article, the author thanks Mercer philosophy department faculty John P. Jolley and David Swigart and Gary J. Simson, Macon Chair in Law at Mercer University. The author also thanks Bailey Hotard for outstanding research assistance and the Mercer faculty and students who made helpful suggestions at the Global Ethics Day event where I presented a version of this paper.

¹ Bill Barrow, *Trump and Vance make anti transgender attacks central to their campaign's closing argument*, ASSOCIATED PRESS (Nov. 1, 2024), <https://apnews.com/article/trump-harris-transgender-politics-61cff97a64fac581ffc5f762be4c57d3> [<https://perma.cc/F3A9-LTVR>].

² *Id.*

³ *Increasing Understanding of LGBTQ+ Health Equity Issues*, NORC, 13, <https://www.norc.umd.edu/content/dam/norc-org/pdf2024/norc-lgbtq+-health-equity-topline-final.pdf> [<https://perma.cc/R56T-ESZC>].

⁴ *Equality Maps: Bans on Transgender Youth Participation in Sports*, MOVEMENT ADVANCEMENT PROJECT (Jan. 27, 2025), https://www.lgbtmap.org/equality-maps/youth/sports_participation_bans [<https://perma.cc/K5JQ-K5S8>].

The number of states with such bans is likely to rise. For example, the first bill of the new legislative session in the Republican-controlled Georgia Senate targets transgender student-athletes. Ross Williams, *First Georgia Senate bill of 2025 targets trans girls in school sports as LGBTQ allies vow fight*, GEORGIA RECORDER (Jan. 13, 2025), <https://georgiarecorder.com/briefs/first-georgia-senate-bill-of-2025-targets-trans-girls-in-school-sports-as-lgbtq-allies-vow-fight/> [<https://perma.cc/FU47-SFKB>].

that match their gender identities.⁵ Others allow school districts to set their own policies.⁶

Title IX,⁷ passed in 1972, is the only federal law that has been applied to trans student participation on school teams. It states that “[N]o person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance.”⁸ The right to equal opportunity in athletics regardless of sex has been part of Title IX since 1975.⁹ In 2021, the U.S. Department of Education’s Office of Civil Rights issued a “Notice of Interpretation” stating that Title IX’s prohibition of sex discrimination includes discrimination based on gender identity.¹⁰ It grounded this interpretation on the Supreme Court’s reasoning in *Bostock v. Clayton County*, which held that discrimination based on transgender status is encompassed by Title VII’s prohibition on sex discrimination in employment.¹¹ In April 2023, the Department of Education published and invited public comments on various proposed changes to the Title IX regulations, including ones that specified the meaning of gender identity discrimination in school athletics.¹² However, when the Department of Education released its final version of these changes in April 2024, the clarifications about transgender students on school athletic teams were omitted.¹³ All that was included was the

⁵ Katie Barnes, *Transgender athlete laws by state: Legislation, science, more*, ESPN (Aug. 24, 2023, 7:00 AM), https://www.espn.com/espn/story/_/id/38209262/transgender-athlete-laws-state-legislation-science [https://perma.cc/S6B6-PWYD].

⁶ *Id.*

⁷ 20 U.S.C. § 1681(a) (2024).

⁸ *Id.*

⁹ *FACT SHEET: U.S. Department of Education’s Proposed Change to its Title IX Regulations on Students’ Eligibility for Athletic Teams*, U.S. DEP’T. OF EDUC. (Apr. 6, 2023), <https://www.ed.gov/news/press-releases/fact-sheet-us-department-educations-proposed-change-its-title-ix-regulations-students-eligibility-athletic-teams> [https://perma.cc/7W29-G7A3].

¹⁰ *U.S. Department of Education Confirms Title IX Protects Students from Discrimination Based on Sexual Orientation and Gender Identity*, U.S. DEP’T. OF EDUC. (June 16, 2021), <https://www.ed.gov/news/press-releases/us-department-education-confirms-title-ix-protects-students-discrimination-based-sexual-orientation-and-gender-identity> [https://perma.cc/NUQ7-Q7RH].

¹¹ U.S. Dep’t of Just., *Title IX Legal Manual, Title IX Cover Addendum post-Bostock* (Sept. 14, 2023), <https://www.justice.gov/crt/title-ix#Bostock> [https://perma.cc/3LW6-RFDH] (referencing *Bostock v. Clayton County*, 590 U.S. 644 (2020)).

¹² *FACT SHEET: U.S. Department of Education’s Proposed Change to its Title IX Regulations on Students’ Eligibility for Athletic Teams*, *supra* note 9. The proposed regulations sought to prohibit categorical bans on transgender students’ participation on school-sponsored athletic teams but allow schools to limit their participation under various loosely specified circumstances. Restrictions on transgender students’ participation on a team would have to: “(i) be substantially related to the achievement of an important educational objective, and (ii) minimize harms to students whose opportunity to participate on a male or female team consistent with their gender identity would be limited or denied.” *Id.* The rules could vary depending “on the sport, level of competition, and grade or education level to which they apply.” H.R. 734, 118th Cong. (2023).

¹³ *Brief Overview of Key Provisions of the Department of Education’s 2024 Title IX Final Rule*, U.S. DEP’T. OF EDUC. (Aug. 25, 2024), <https://www2.ed.gov/about/offices/list/ocr/docs/t9-final-rule-summary.pdf> [https://perma.cc/5WX5-EALS]. To limit political fallout, the Biden

statement that “policies and practices that prevent a student from participating in a recipient’s education program or activity consistent with their gender identity” may not “impose more than de minimis harm on that student on the basis of sex.”¹⁴ The new regulations took effect on August 1, 2024, but only in twenty-four states.¹⁵ Legal challenges blocked their implementation in the remaining twenty-six.¹⁶

The start of 2025 brought a flurry of activity. In deciding one of the lawsuits challenging the new Title IX regulations, a federal district court judge in Kentucky ruled in early January that the U.S. Department of Education lacked constitutional authority to expand the definition of sex discrimination to include discrimination based on sexual identity.¹⁷ The court also held that its ruling has nationwide effect. Just a few days later, the U.S. House of Representatives went a step further and voted to amend Title IX to expressly bar transgender girls and young women of all ages from competing on female school athletic teams.¹⁸ Senate Democrats filibustered, and because supporters of the bill could not muster the sixty votes needed to overcome the filibuster, the legislation failed to pass.¹⁹ Rather than await the outcome of the Senate vote, President Trump in early February issued an executive order that reinterpreted Title IX as prohibiting transgender girls and young women from competing on female school sports teams. Schools that fail to comply would lose all federal funding.²⁰

administration decided to postpone issuing specific implementation rules until after the November election. Laura Meckler, *Biden Title IX rules for trans athletes set for election-year delay*, WASH. POST (Mar. 28, 2024), <https://www.washingtonpost.com/education/2024/03/28/title-ix-trans-athletes-biden/> [https://perma.cc/EA6U-9YVA].

¹⁴ Brief Overview of Key Provisions of the Department of Education’s 2024 Title IX Final Rule, *supra* note 13.

¹⁵ Laura Meckler, *Biden rules protecting trans students take effect—but not everywhere*, WASH. POST (Aug. 1, 2024, 1:18 PM), <https://www.washingtonpost.com/education/2024/08/01/biden-titleix-courts-gender-identity-discrimination/> [https://perma.cc/YM2K-8B6G].

¹⁶ Katherine Knott, *Title IX Legal Challenges Target LGBTQ+ Protections*, INSIDE HIGHER EDUC. (June 26, 2024), https://www.insidehighered.com/news/government/2024/06/26/title-ix-legal-challenges-target-lgbtq-protections?utm_source=Inside+Higher+Ed&utm_campaign=53ace861f7-DNU_2021_COPY_02&utm_medium=email&utm_term=0_1fc6c04421-53ace861f7-236665714&mc_cid=53ace861f7&mc_eid=71a9631b10# [https://perma.cc/3PR2-FKAS].

¹⁷ *Tennessee v. Cardona*, 737 F.Supp.3d 510, 521 (E.D. Ky. 2025).

¹⁸ Laura Meckler & Casey Parks, *House votes to ban transgender students from girls’ sports*, WASH. POST (Jan. 14, 2025), <https://www.washingtonpost.com/education/2025/01/14/transgender-students-sports-bill-house/> [https://perma.cc/7LFL-HQSS].

¹⁹ Laura Meckler, *Senate blocks ban on transgender athletes, as Trump pushes forward*, WASH. POST (Mar. 3, 2025), <https://www.washingtonpost.com/education/2025/03/03/senate-vote-transgender-athletes-womens-sports/> [https://perma.cc/HGX9-QSPS].

²⁰ Hannah Natanson & Laura Meckler, *Trump’s new ban on athletes is latest attack on transgender policies*, WASH. POST (Feb. 5, 2025), <https://www.washingtonpost.com/education/2025/02/05/transgender-students-trump-executive-order/> [https://perma.cc/L7G2-KNJK].

The NCAA immediately abandoned its long-time policy of allowing governing boards for each sport to set their own rules about transgender participation and announced that effective immediately, competition on women's teams would be restricted to those assigned female at birth.²¹ State athletic associations in California, Minnesota, and Maine—states with anti-discrimination laws prohibiting discrimination based on gender identity²²—made public their intention to ignore the president's executive order,²³ and supporters of trans inclusion in female sports wasted no time in filing legal challenges to its constitutionality.²⁴

In this Article, I push back against the groundswell of opposition to including transgender girls and young women on female school sports teams. I argue that, with a few possible exceptions, trans females should be allowed to compete on female school teams and that any obstacles that now or in the future bar them from doing so should be removed. My intended audience is those at the federal, state, and local levels with the authority to make laws and policies about student participation in school sports²⁵ as well as parents and other

²¹ Glynn A. Hill, *NCAA bans transgender athletes from women's sports after Trump's order*, WASH. POST (Feb. 6, 2025), <https://www.washingtonpost.com/sports/2025/02/06/ncaa-bans-transgender-athletes/> [https://perma.cc/K5HF-UAS6]. The National Association of Intercollegiate Athletics (NAIA), which is an association of mainly small colleges and universities, adopted a similarly restrictive approach in August 2024. *Transgender Participation Policy*, NAIA (Aug. 1, 2024), https://www.naia.org/transgender/files/TG_Policy_for_webpage_v2.pdf [https://perma.cc/R5Y5J-L7S6].

²² *How Non-Discrimination Protections Vary Across the US?*, FREEDOM FOR ALL AMERICANS, <https://freedomforallamericans.org/states/> [https://perma.cc/9Y9V-G2VS].

²³ Jackson Thompson, *California plans to continue allowing trans athletes to compete in girls' sports despite Trump executive order*, FOX NEWS (Feb. 7, 2025), <https://www.foxnews.com/sports/california-plans-continue-allowing-trans-athletes-compete-girls-sports-despite-trump-executive-order> [https://perma.cc/5RTC-8E3H]; Ben Hovland, *For high school sports, decisions loom: Follow Trump or state law on transgender athletes*, MPR NEWS (Feb. 8, 2025), <https://www.mprnews.org/story/2025/02/08/for-high-school-sports-decisions-loom-follow-trump-or-state-law-on-transgender-athletes> [https://perma.cc/PG4P-9FCW]; Abby Monteil, *Maine's Governor Stood Up to Trump's Anti-Trans Order. The State Is Now Under Investigation*, THEM (Feb. 24, 2025), <https://www.them.us/story/maine-governor-investigation-donald-trump-department-of-education> [https://perma.cc/4BUJ-4Y6Q].

²⁴ Glynn A. Hill, *High schoolers challenge Trump's executive order banning trans athletes*, WASH. POST (Feb. 13, 2025), <https://www.washingtonpost.com/sports/2025/02/13/transgender-high-school-athletes-challenge-trump/> [https://perma.cc/XP8G-PS3R]. Courts have struck down some state bans on transgender female participation on school teams under the Equal Protection Clause of the federal constitution. See, e.g., Nate Raymond, *US appeals court blocks Idaho's transgender student athlete ban*, REUTERS (Aug. 17, 2023), <https://www.reuters.com/legal/us-appeals-court-blocks-idahos-transgender-student-athlete-ban-2023-08-17/> [https://perma.cc/EXH8-ZBWU].

²⁵ As discussed above, there is currently controversy over who has the authority to make laws and policies about participation in school sports. If the courts strike down President Trump's executive order withholding federal funding from schools that allow transgender students to compete on sports teams that align with their gender identities, state and local decision-makers will determine participation policies. If courts uphold the executive order, future U.S. Congresses will retain the power to legislate policy change.

members of the general public upon whose votes and support these decision-makers ultimately depend.

Many who argue for trans exclusion from school sports are broadly dismissive of transgender rights.²⁶ But quite often supporters of transgender rights in other contexts resist allowing trans females to compete on teams that align with their gender identities.²⁷ A 2023 Gallup poll found that among self-described Democrats who both affirm the morality of gender change and say they support LGBTQ+ rights, only 47% express support for including trans athletes on sports teams that match their gender identities.²⁸ Among those who generally support transgender rights, opposition to trans inclusion in school sports centers on trans females because of a perception that they, unlike trans males, have genetically based athletic advantages over their cisgender counterparts.

These opponents of including trans females on female teams typically justify their position with one or both of two principal arguments.²⁹ The first asserts that trans inclusion on female teams is unfair to cisgender female athletes. I will call this the “fairness argument.” The second maintains that trans-female inclusion on female teams undermines Title IX’s goal of providing female students with athletic opportunities comparable to those of their male counterparts, jeopardizes the safety of cisgender female athletes, and threatens to reverse fifty years of hard-earned progress toward Title IX’s still unmet goal of parity in male and female school athletic participation. I will call this the

²⁶ Russell Contreras, *The forces behind anti-trans bills across the U.S.*, AXIOS (Mar. 31, 2023), <https://www.axios.com/2023/03/31/anti-trans-bills-2023-america> [https://perma.cc/76TM-WVTW] On his first day after returning to office, President Trump issued an executive order declaring that there are only two sexes – male and female – and that the federal government will not recognize “the false claim that males can identify as and thus become women and vice versa.” Exec. Order No. 14168, 90 Fed. Reg. 8615 (Jan. 20, 2025).

²⁷ See, e.g., Doriane Coleman, Martina Navratilova & Sanya Richards-Ross, *Opinion: Pass the Equality Act, but don’t abandon Title IX*, WASH. POST (Apr. 29, 2019, 3:49 PM), https://www.washingtonpost.com/opinions/pass-the-equality-act-but-dont-abandon-title-ix/2019/04/29/2dae7e58-65ed-11e9-a1b6-b29b90efa879_story.html [https://perma.cc/CT2D-BYHA].

²⁸ Lauren Camera, *More Americans Say Transgender Athletes Should Only Play for Teams that Match Gender at Birth*, U.S. NEWS & WORLD REPORT (June 13, 2023), <https://www.usnews.com/news/national-news/articles/2023-06-13/more-americans-say-transgender-athletes-should-only-play-for-teams-that-match-gender-at-birth> [https://perma.cc/XQ3W-T5KC].

²⁹ Jim Carr, president of the NAIA, offered both these arguments as support for the recently adopted NAIA policies. See Jessica Blake, *NAIA Bans Transgender Athletes From Women’s Sports*, INSIDE HIGHER EDUCATION (Apr. 10, 2024), <https://www.insidehighered.com/news/quick-takes/2024/04/10/naia-bans-transgender-athletes-womens-sports> [https://perma.cc/W4JA-BVZW].

“protection of female sports argument.”³⁰ I will argue that these two arguments do not make the case for excluding girls and young women who are transgender from female school sports teams. They typically ignore differences among types of gender transitions, fail to recognize the limitations of current research into the effects of gender transitions on athletic performance, and misunderstand the meaning of fairness in athletic competitions.

I underline at the outset that my discussion in this Article is limited to school athletics. Professional and Olympic sports differ in many ways from school sports. That we have a law—namely Title IX—that details athletic regulations specific to schools is an acknowledgment that school sports differ in important ways from professional and Olympic sports. Exploring the implications of these differences is beyond the scope of this Article. My discussion also focuses on sports widely offered in secondary schools and colleges in the U.S.—for example, basketball, football, soccer, swimming, and track. Because these sports greatly reward strength and speed—attributes more often associated with males than females—they are the ones that critics of trans inclusion typically target. I only briefly discuss sports like gymnastics which are rarely offered in American high schools³¹ and that reward some attributes associated with females at least as often as males. Finally, although many of the issues I discuss have implications for transgender male athletes as well as non-binary and intersex athletes, I limit my discussion to transgender female athletes—the group that has generated the most controversy. The principal audience I am seeking to reach in this Article is people who would like to treat transgender individuals justly but who believe that the interests of transgender and cisgender female student-athletes are incompatible.

Part II explains and evaluates the fairness argument. Section II.A examines the available evidence for the claim that transgender females have genetically grounded athletic advantages over cisgender females. Section II.B addresses the question of whether, based on this evidence, it's fair to exclude trans females from female school sports teams. Part III sets out and evaluates the protection of female sports argument. Part IV discusses the case of students who transition socially but undergo no medical intervention—the most difficult context in which to justify transgender inclusion on female teams. Finally, Part V considers the suggestion made by some commentators that the best approach to the issues raised by trans inclusion on female teams is to revamp the system of sex-segregated school sports.

³⁰ I include under the broad umbrella of “protection of female sports” the arguments that allowing trans females to compete on female teams is incompatible with cis-females’ need for locker room privacy and that it invites cheating by cis males posing as trans females.

³¹ Statista Research Department, *Number of participants in high school gymnastics in the United States from 2010/2011 to 2021/2022, by gender*, STATISTA (May 14, 2024), <https://www.statista.com/statistics/511355/participation-in-us-high-school-gymnastics/> [<https://perma.cc/T8YF-V7W4>].

II. THE FAIRNESS ARGUMENT

Here is how the fairness argument is typically explained. Across a wide array of sports, there is a sizable performance gap between cisgender males and cisgender females.³² The reasons for this performance gap are largely genetic. Compared to cisgender females, cisgender males on average are taller with longer limbs and broader shoulders and have larger hearts and lungs and more red blood cells.³³ When individuals who at birth were designated as male transition to female, their bodies inevitably retain some of the characteristics of their pre-transition sex.³⁴ This means that in sports that reward speed and strength—which includes nearly all school-sponsored sports—trans females have substantial genetically based athletic advantages over cis females. Allowing trans females to compete on female teams in these sports is therefore unfair to the cis-female athletes on these teams.

Advocates of this fairness argument often point to six-foot-one trans swimmer Lia Thomas, who in spring 2022 became the first transgender athlete to win a Division I NCAA championship. As a male swimmer before her transition, Thomas was ranked number sixty-five in the men's 500-yard freestyle—the event that earned her the title in women's competition.³⁵ Several weeks before the competition, sixteen of Thomas's thirty-nine teammates on the University of Pennsylvania swim team made this fairness argument for her exclusion in a letter to Ivy League officials.³⁶ In June 2024, the Court of

³² Lydia C. Hallam & Fabiano T. Amorim, *Expanding the Gap: An Updated Look Into Sex Differences in Running Performance*, 12 FRONTIERS IN PHYSIOLOGY 69 (2022); See also Doriane Lambelet Coleman, Michael J. Joyner, & Donna Lopiano, *Re-Affirming the Value of the Sports Exception to Title IX's General Non-Discrimination Rule*, 27 DUKE J. GENDER L. & POL'Y 69, 87–99 (2020) (examining data comparing the athletic performance of elite cisgender males and females).

³³ Alison K. Heather, *Transwoman Elite Athletes: Their Extra Percentage Relative to Female Physiology*, 19 INT'L J. ENV'T RES. PUB. HEALTH (2022).

³⁴ *Id.*

³⁵ Io Dodds, *Critics Accuse Trans Swimming Star Lia Thomas of Having an Unfair Advantage. The Data Tells a Different Story*, INDEP. (May 31, 2022, 16:27 BST), <https://www.independent.co.uk/news/world/americas/lia-thomas-trans-swimmer-ron-desantis-b2091218.html#Echobox=1648093545> [<https://perma.cc/WGV9-RUAX>].

³⁶ Mat Bonesteel, *Sixteen Penn swimmers say transgender teammate Lia Thomas should not be allowed to compete*, WASH. POST (Feb. 3, 2022, 4:11 PM), <https://www.washingtonpost.com/sports/2022/02/03/lia-thomas-penn-swimming-teammates/> [<https://perma.cc/DYD8-QVAL>] ("We fully support Lia Thomas in her decision to affirm her gender identity and to transition from a man to a woman. Lia has every right to live her life authentically. However, we also recognize that when it comes to sports competition, that the biology of sex is a separate issue from someone's gender identity. Biologically, Lia holds an unfair advantage over competition in the women's category. . . .").

Arbitration for Sport noted fairness concerns in upholding the decision by World Aquatics to ban Thomas from Olympic competitions.³⁷

The fairness argument for excluding girls and young women who are transgender from female school sports teams relies on two premises. The first is that trans females have substantial genetically based athletic advantages over cis females. The second is that these advantages render it unfair to include them on female school sports teams. Section II.A evaluates the first of these premises. Section II.B evaluates the second.

A. How strong is the evidence that transgender females have substantial genetically based athletic advantages over cisgender females?

There are two issues to consider in answering this question: To what extent are the athletic performance gaps between cisgender male and cisgender female athletes the result of sex-linked genetic factors? How much does transitioning from male to female reduce genetically based athletic advantages associated with cisgender males? I'll address these questions in turn.

1. Performance gaps between cisgender male and cisgender female athletes

In the many sports that reward strength and speed, sizable performance gaps between elite cis-male and cis-female athletes clearly exist. For example, in Olympic competitions, the average differences across a variety of events are 10.7% in distance running, 17.5% in jumps, 8.9% in swimming, and 8.7% in sprint cycling.³⁸ To some extent, these gaps undoubtedly are explained by genetically determined average physiological differences between the sexes. For example, having a long body is a definite advantage in swimming.³⁹ It's no surprise that Olympic swimmers tend to be tall. A case in point is six-foot Katie Ledecky, who has won nine individual Olympic gold medals.⁴⁰ Moreover, height tends to be sex-linked. Globally, men on average are five inches taller

³⁷ Sean Ingle, *Transgender swimmer Lia Thomas out of Olympics after losing legal battle*, THE GUARDIAN (June 12, 2024, 12:00 PM), <https://www.theguardian.com/sport/article/2024/jun/12/transgender-swimmer-lia-thomas-out-of-olympics-after-losing-legal-battle-swimming> [https://perma.cc/2BQX-M6D3]. Although the court's explanation of its decision referenced the fairness concerns, it based its ruling on a determination that Thomas was not eligible to swim in World Aquatics competitions because she was no longer a member of U.S. swimming.

³⁸ Hallam & Amorim, *supra* note 32.

³⁹ Roman Trussov, *HERE IS WHY SWIMMERS ARE SO TALL, AND WHAT TO DO IF YOU ARE NOT*, A3 PERFORMANCE (Nov. 16, 2020), <https://www.a3performance.com/blogs/a3-performance/swimmers-tall-and-short> [https://perma.cc/SS9J-L95C].

⁴⁰ *Katie Ledecky*, TEAM USA, <https://www.teamusa.com/profiles/katie-ledecky-851377> [https://perma.cc/SVF4-SB8K].

than women: five feet eight inches versus five feet three inches.⁴¹ These differentials are roughly the same for Olympic swimming finalists: in this group, males average six feet two inches and females five feet nine inches.⁴²

But tall stature isn't essential for being an elite swimmer. Five-foot eight-inch Tomoru Honda of Japan won the silver medal in the 200-meter butterfly event at the 2021 Summer Olympics.⁴³ Even more remarkably, Brad Cooper won Olympic gold in the 400-meter freestyle in 1972 despite standing just five foot three.⁴⁴ A wide variety of physiological traits in addition to stature influence athletic performance. Some, like height, tend to be linked genetically to sex. One example is an individual's "aerobic capacity," which is the maximum amount of oxygen the body can deliver to its tissues.⁴⁵ Another is the strength of an individual's skeletal muscles and the type of fibers—"slow-twitch" or "fast-twitch"—that predominantly compose them. Slow-twitch muscle fibers are important for endurance activities; fast-twitch muscle fibers are important for activities that require bursts of power, such as sprinting.⁴⁶ However, other determinants of athletic performance do not appear to be genetically sex-linked. Some are physiological traits, such as the flexibility of an individual's muscles and joints⁴⁷ and an individual's coordination, balance, and agility.⁴⁸ Others are personality traits. Examples are ambition, determination, discipline, confidence, and resilience.

Social advantage also has a major impact on athletic success. It affects such critical factors as the quality of the training, coaching, and competition individuals can access and the amount of time individuals can devote to improving fitness and honing skills. That performance gaps between cis-male and cis-female athletes are considerably wider for non-elite than for elite athletes⁴⁹ is an indication of the role social influences play.

⁴¹ Melinda Ratini, *Average Male Height*, MEDICINET (Aug. 23, 2024), https://www.medicinenet.com/height_men/article.htm [<https://perma.cc/B3CK-W5BK>]; Melinda Ratini, *Average Height for Women*, MEDICINET (Aug. 9, 2024), https://www.medicinenet.com/height_women/article.htm [<https://perma.cc/KF73-GYTG>].

⁴² Trussov, *supra* note 39.

⁴³ Daniel Takata, *The Shortest Male Swimming Medalist*, SWIMSWAM (Oct. 14, 2021), <https://swimswam.com/the-shortest-male-olympic-swimming-medalists/#:~:text=Australian%20Brad%20Cooper%20is%20the,freestyle%20at%20the%201972%20Olympics> [<https://perma.cc/C4CC-ZZ6W>].

⁴⁴ *Id.*

⁴⁵ MedlinePlus, *Is athletic performance determined by genetics?*, NAT'L LIB. OF MED. (July 8, 2022), <https://medlineplus.gov/genetics/understanding/traits/athleticperformance/> [<https://perma.cc/M7S4-VQZV>]; Hanjabam Barun Sharma & Jyotsna Kailashiya, *Gender Difference in Aerobic Capacity and the Contribution by Body Composition and Haemoglobin Concentration: A Study in Young Indian National Hockey Players*, 10 J. OF CLINICAL AND DIAGNOSTIC RSCH. 12 (2016).

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ Hallam & Amorim, *supra* note 32, at 2.

Many of the determinants of performance are almost certainly linked to the gendered ways in which children and adults in our society experience athletics. Consider that before puberty, the athletic performances of the very best male and female athletes across a range of individual events in different sports are very comparable.⁵⁰ For example, swimming records for the top fifty place girls and boys under age ten are virtually identical.⁵¹ Still, it's very common for young children to participate in athletics on a sex-segregated basis. For example, organized softball is largely a female sport,⁵² and girls who play usually begin between the ages of five and seven.⁵³ Even in the same sport—e.g., soccer—elementary school boys and girls often play on separate teams.⁵⁴ And as any observer of grade school sports knows, the level of play on boys' teams is almost always higher than on girls' teams. Male children's typically superior play is partly explained by differences in the ways many families and schools socialize boys and girls. Studies have shown that between the ages of two and eight—an important window for developing fundamental motor skills—girls tend to receive less encouragement than boys to be physically active and are usually afforded fewer opportunities than boys to learn such skills as catching, throwing, and kicking balls.⁵⁵

Another part of the explanation is the role models that children see, both within their own communities and in the culture more generally. In most American school districts, the sport that commands the most interest is football—a sport that embodies societal notions of masculinity and from which girls are almost universally excluded.⁵⁶ The professional sports leagues that garner the most attention in the U.S. —i.e., the NFL, the NBA, and MLB—are all male. The entrance of Caitlin Clark and Angel Reese into the WNBA has greatly lifted the profile of the league, but on measures from attendance at games

⁵⁰ David J. Handelsman, *Sex differences in athletic performance emerge coinciding with the onset of male puberty*, 87 CLINICAL ENDOCRINOLOGY 68 (2017).

⁵¹ In fact, the top five swimming records for girls under the age of ten are three percent faster than for the top five boys. Jonathan W. Senefeld, Andrew J. Clayburn, Sarah E. Baker, Rickey E. Carter, Patrick W. Johnson & Michael J. Joyner, *Sex differences in youth elite swimming*, 14 PLOS ONE (Nov. 22, 2019).

⁵² Alexis Peltzer-Harding, *College Softball: A Brief History of one of the NCAA's Female-Only Sports*, GMTM (Sept. 8, 2021), <https://gmtm.com/articles/where-it-started-the-history-of-collegiate-softball> [<https://perma.cc/JTW6-2UE6>].

⁵³ *When Should My Child Start Playing Softball?*, JUSTBATS (Dec. 15, 2023), <https://www.justbats.com/blog/post/when-should-my-child-start-playing-softball> [<https://perma.cc/U7D8-4MV3>].

⁵⁴ Sheila Mulrooney Eldred, *Why Do Nine-Year-Old Girls and Boys Play Sports on Separate Teams?*, MPLS ST PAUL (July 23, 2019), <https://mspmag.com/health-and-fitness/single-sex-sports-teams/> [<https://perma.cc/MX5C-H9XG>].

⁵⁵ ROBIN VEALEY & MELISSA CHASE, BEST PRACTICE FOR YOUTH SPORT (2016), reprinted in *Reasons for Gender Differences in Youth Sport*, HUM. KINETICS, <https://us.humankinetics.com/blogs/excerpt/reasons-for-gender-differences-in-youth-sport> [<https://perma.cc/P27E-AJQA>].

⁵⁶ In 2022-23, only .35% of high school football players in the U.S. were female. See NFHS, *High School Sports Participation Continues Rebound Toward Pre-Pandemic Levels*, NFHS (Sept. 21, 2023), <https://www.nfhs.org/articles/high-school-sports-participation-continues-rebound-toward-pre-pandemic-levels> [<https://perma.cc/9DTZ-9BLM>] (finding that out of 1,032,415 participants in eleven-player football, 3,654 were girls and 1,028,761 were boys).

to player salaries to team revenues, the WNBA still lags far behind the NBA.⁵⁷ The situation is the same for youth sports. In 2023, viewership for the televised all-girls Little League Softball World Series averaged 340,000,⁵⁸ compared to 1,081,000 for the Little League Baseball World Series.⁵⁹ When children play sports on single-sex teams in a society that clearly values boys' sports more than girls' sports and where the caliber of play on girls' teams is almost always lower than it is on comparably aged boys' teams, girls' athletic skills tend to lag behind those of boys. Even the best female athletes are less likely to perform up to their potential because they usually aren't challenged as much as they would be on a co-ed team. In this environment, fewer girls than boys develop the ambition, determination, discipline, confidence, and resilience to maximize their talents.⁶⁰

Training and coaching also reflect the historical male dominance in sports. Most training methods were developed for male athletes. Research on best practices in athletic training still typically focuses primarily on males.⁶¹ For example, a recent literature survey found that, despite the interest in girls' and women's soccer, studies of female athletes comprise only about 20% of all the published soccer research.⁶² Even the athletic footwear that girls and women wear has traditionally been designed for male feet.⁶³

⁵⁷ Christian Jope, *NBA vs WNBA : Revenue, Salaries, Viewership, Attendance and Ratings*, WSN (June 27, 2024), <https://www.wsn.com/nba/nba-vs-wnba/> [https://perma.cc/G5J3-GK5K].

⁵⁸ Ronce Rajan, *Second Most-Watched Little League Softball World Series Championship Game Ever on ESPN Platforms*, ESPN PRESS ROOM (Aug. 16, 2023), <https://espnpressroom.com/us/press-releases/2023/08/second-most-watched-little-league-softball-world-series-championship-game-ever-on-espn-platforms/> [https://perma.cc/P8EF-7RFW].

⁵⁹ Andrew Cohen, *Little League World Series Sees Highest Viewership Since 2015*, FRONT OFF. SPORTS (May 29, 2024, 1:33 PM), <https://frontofficesports.com/little-league-world-series-sees-highest-viewership-since-2015/#:~:text=The%202023%20Little%20League%20Baseball,year's%20LLWS%20on%20ESPN%20platforms> [https://perma.cc/2SZ2-VRRT].

⁶⁰ Hallam & Amorim, *supra* note 32, at 2; Allison Torres Burtka, *Girls Play Sports Less Than Boys, Miss Out on Crucial Benefits*, GLOBAL SPORT MATTERS (Oct. 11, 2019), <https://globalsportmatters.com/youth/2019/10/11/girls-play-sports-less-than-boys-miss-out-on-crucial-benefits/#:~:text=That%20was%20something%20that%20came,sports%20experiences%2C%E2%80%9D%20she%20said> [https://perma.cc/FU6K-J5CB].

⁶¹ Christine Yu, *The Gender Gap*, AM. PHYSIOLOGICAL SOC'Y (July 2021), <https://www.physiology.org/publications/news/the-physiologist-magazine/2021/july/the-gender-gap?SSO=Y> [https://perma.cc/YS7F-CM6J].

⁶² Donald T. Kirkendall & Peter Krstrup, *Studying professional and recreational female footballers: A bibliometric exercise*, 32 SCANDINAVIAN J. MED. & SCI. SPORTS 12, 12 (2022).

⁶³ Molly Longman, *What If More Women Designed Running Shoes?*, REFINERY29 (Mar. 26, 2020, 6:00 AM), <https://www.refinery29.com/en-us/women-vs-men-running-shoe-lasts-feet-difference> [https://perma.cc/85CX-594W].

An example of how the paucity of female-centered research has harmed female athletes is long-distance running.⁶⁴ Puberty is a critical time in athletic development. Male puberty is associated with a dramatic increase in muscle strength and a decrease in the percentage of body fat.⁶⁵ By contrast, female puberty is associated with only a modest increase in muscle strength and an increase in the percentage of body fat.⁶⁶ Male running times therefore tend to improve considerably at puberty, whereas female times tend to plateau or even worsen.⁶⁷ To reduce the toll that puberty takes on female running times, coaches often encourage girls to reduce their body fat by restricting their calorie intake.⁶⁸

In the short run, this strategy often works. Girls who minimize puberty weight gain or even lose weight often see improvements in their running times.⁶⁹ The problem, though, is that caloric restriction to counteract the effects of female puberty is harmful to long-term health. Many female distance runners develop RED-S (Relative Energy Deficiency in Sport).⁷⁰ The symptoms include menstrual disturbance (i.e., irregular periods or failure to menstruate entirely), bone density loss, and disordered eating, which is associated with low energy availability. RED-S greatly increases susceptibility to injury and threatens mental well-being. It leads many promising high school and college female runners to abandon the sport.⁷¹ Elite runners who persevere often devote enormous time and energy to injury rehabilitation and frequently miss opportunities to participate in—and perhaps set records in—prestigious competitions.⁷² Recent research suggests that left to develop at their natural rates, girls' bodies typically take some time after puberty to find a new

⁶⁴ Lauren Fleshman, *Sports Were Never Designed Around the Female Body*, TIME (Mar. 10, 2023, 7:00 AM), <https://time.com/6261404/sports-female-body-inclusivity/> [<https://perma.cc/3SWP-SQZN>].

⁶⁵ Nelson Gord, *Running Against the Clock: Female Athletes Often Slowed by Puberty*, NCSA (June 2, 2023), <https://discover.sportsengineplay.com/article/track-field-running-cross-country-running/running-against-clock-female-athletes-often> [<https://perma.cc/3CGH-ZLZ6>].

⁶⁶ Kelly A. Brown, Dilip R. Patel, & Daphne Darmawan, *Participation in Sports in Relation to Adolescent Growth and Development*, 6 TRANSLATIONAL PEDIATRICS 150, 152 (2017).

⁶⁷ Fleshman, *supra* note 64.

⁶⁸ Mary Cain, *I Was the Fastest Girl in America, Until I Joined Nike*, N.Y. TIMES (Nov. 7, 2019), <https://www.nytimes.com/2019/11/07/opinion/nike-running-mary-cain.html> [<https://perma.cc/9P7K-JRG5>].

⁶⁹ Fresh Air, *The sports world is still built for men. This elite runner wants to change that*, NPR (Jan. 10, 2023, 1:09 PM), <https://www.npr.org/transcripts/1147816860> [<https://perma.cc/LF3Q-D5RE>].

⁷⁰ *Relative Energy Deficiency in Sports (REDs)*, BOS. CHILD.'S HOSP., <https://www.childrenshospital.org/conditions/red-s> [<https://perma.cc/UV4K-LSRB>].

⁷¹ A similar dynamic around puberty also affects many female swimmers. Rhiannon Myhre & Michael Kid, *Diving Into the Topic of Puberty: Encouraging Conversations between Swimmers, Parents, and Coaches*, SWIMMING WORLD (June 2, 2023, 5:15 AM), <https://www.swimmingworldmagazine.com/news/diving-into-the-topic-of-puberty-encouraging-conversations-between-swimmers-parents-and-coaches/> [<https://perma.cc/DEQ9-NMMU>].

⁷² In her recent book, *Good For A Girl: A Woman Running in a Man's World*, Lauren Fleshman, winner of five NCAA championships and two national championships as a professional, describes the heartbreak of missing out on both the 2004 and 2008 Olympics because of injuries related to RED-S. LAUREN FLESHMAN, *GOOD FOR A GIRL: A WOMAN RUNNING IN A MAN'S WORLD* (2024).

equilibrium, after which girls' running times usually once again begin to improve.⁷³ Female distance runners on average reach their prime a couple of years later than male runners do.⁷⁴ Nevertheless, female athletes and those who coach and train them often feel pressure to conform to a developmental timeline suited to males. Too often, training, injury prevention, and injury recovery protocols continue to be based on studies of males.⁷⁵

I've only discussed a few of the many ways in which our society privileges cis-male over cis-female athletes, but I believe I've said enough to demonstrate that social factors figure prominently in creating and maintaining athletic performance gaps between these groups. Again, I'm not denying that genetic factors play a significant role. My point is rather that documented performance gaps between cis-male and cis-female athletes are certainly not entirely attributable to genetics and we don't know what portion is due to genetics and what portion to social factors.

It's also unlikely that we will know anytime soon. One challenge is that until very recently, a very disproportionate number of research subjects were male, so there's only limited comparative data to draw on.⁷⁶ A greater challenge is sorting out and controlling for the large number of relevant variables.⁷⁷ A further complication is that environmental factors can cause genetic changes. For example, exercise can activate genes that increase muscle growth.⁷⁸ This means that even effects caused by genetic factors are sometimes alterable by social forces.

2. *The effect of male-to-female gender transitions on athletic performance*

I'll turn now to the second issue pertinent to the claim that transgender females have substantial genetically based athletic advantages over cisgender females: To what extent does transitioning from male to female reduce any genetically based athletic advantages associated with cisgender males? The first step in answering this question is to differentiate among types of gender

⁷³ Fleshman, *supra* note 64.

⁷⁴ Frank Horwill, *At what age an athlete is likely to achieve peak performance is a big help in planning a training programme*, BRIAN MAC SPORTS COACH (2003), <https://www.brianmac.co.uk/articles/scni3a2.htm> [<https://perma.cc/5M3D-X5JF>].

⁷⁵ Yu, *supra* note 61.

⁷⁶ Kelsey Santisteban, Andrew Lovering, John Halliwill & Christopher Minson, *Sex Difference in VO2max and the Impact on Endurance-Exercise Performance*, 19 INT'L J. ENV'T RES. PUB. HEALTH 1, 2 (2022).

⁷⁷ MedlinePlus, *supra* note 4.

⁷⁸ *What is an Environmental Factor?*, LEARN.GENETICS, <https://learn.genetics.utah.edu/content/genetics/environmental#:~:text=Environmental%20Factors%20Interact%20with%20Genes&text=Environmental%20factors%20often%20influnece%20traits,which%20in%20turn%20affects%20traits> [<https://perma.cc/UHS9-2D89>].

transitions. As reflected in the polls cited earlier of Americans' attitudes toward trans inclusion in sports,⁷⁹ popular culture tends to treat gender transitions as a monolith, ignoring important ways in which the process differs among individuals.

Some people transition only socially.⁸⁰ This means that they take steps such as adopting a name, using pronouns, and wearing hairstyles and clothing societally associated with their gender identities, but they don't undergo any medical interventions. Social transitions are quite common among trans-identifying students in the age groups eligible to play on school teams.

The reasons for transitioning only socially are varied. For some, social transition is an opportunity to explore gender identity. Supporting social transition is almost always the recommended medical care for prepubescent children who identify as trans.⁸¹ Some people who transition only socially would like to transition medically but face barriers such as a lack of the needed financial resources,⁸² unsupportive families,⁸³ or, increasingly, legal prohibitions on accessing care.⁸⁴ Finally, some individuals have no desire to change their bodies.

⁷⁹ *Increasing Understanding of LGBTQ+ Health Equity Issues*, *supra* note 3; Camera, *supra* note 28.

⁸⁰ Orion Rummier & Kate Sosin, *The 19th Explains: Everything you need to know about gender-affirming care*, THE 19TH (June 21, 2023, 6:00 AM), https://19thenews.org/2023/06/everything-to-know-about-gender-affirming-care/?utm_source=google&utm_medium=paidsearch&utm_campaign=19th-marketing&utm_content=traffic&utm_term=genderaffirming&gad_source=1&gclid=EAIaIQobChMI8JSw1ZDjhgMVUux_AB3rEgEGEAAYAiAAEgI_bPD_BwE [https://perma.cc/QJM8-XYH8].

⁸¹ *Get the Facts on Gender-Affirming Care*, HUM. RIGHTS CAMP, <https://www.hrc.org/resources/get-the-facts-on-gender-affirming-care#:~:text=If%20so%2C%20the%20care%20recommended,pronouns%2C%20clothing%2C%20and%20hairstyles> [https://perma.cc/H5RJ-DB2W].

⁸² *Study Reveals Significant Barriers for TGNC Adults Accessing Healthcare in the U.S.*, JOHN HOPKINS BLOOMBERG SCHOOL OF PUB. HEALTH (2024), <https://publichealth.jhu.edu/2024/study-reveals-significant-barriers-for-tgnc-adults-accessing-healthcare-in-the-us> [https://perma.cc/4D28-NJLY].

⁸³ Chaya Mangel Pflugeisen, Aytch A. Denaro, & Anna Boomgaarden, *The Impact of Parent Support on Patient Empowerment in Trans and Gender Diverse Youth*, 19 LGBTQ+ FAMILY: AN INTERDISCIPLINARY J. 300 (2023).

⁸⁴ HRC Found., *Map: Attacks on Gender Affirming Care by State*, HUM. RIGHTS CAMP., <https://www.hrc.org/resources/attacks-on-gender-affirming-care-by-state-map> [https://perma.cc/7AJH-Y2YR].

In December 2024, the U.S. Supreme Court heard oral arguments in a case involving a challenge to Tennessee's ban on gender-affirming care for transgender youth. Molly Callahan, *Supreme Court to Hear Case about Bans on Gender-Affirming Care for Transgender Youth*, BU TODAY (Dec. 3, 2024), <https://www.bu.edu/articles/2024/supreme-court-gender-affirming-care-case/> [https://perma.cc/ME6X-BCCQ].

The case appears to be proceeding, despite the Justice Department's decision to withdraw its challenge to the ban. John Fritze, *Trump administration withdraws from gender-affirming care dispute at the Supreme Court*, CNN (Feb. 7, 2025), <https://www.cnn.com/2025/02/07/politics/supreme-court-lgbtq-skrmetti-switch/index.html> [https://perma.cc/9XEG-VVW5].

A federal judge has temporarily blocked a January 2025 executive order by President Trump that withholds federal funding from medical providers who provide gender-affirming care to anyone

Contrary to popular belief, not all individuals who identify as trans have gender dysphoria.⁸⁵

Some adolescents who identify as trans begin taking puberty blockers at the onset of puberty. Puberty blockers suppress the production of the hormones responsible for the development of secondary sex characteristics. By suppressing testosterone production in those transitioning to female, these medications prevent the voice from deepening, slow the growth of facial and body hair, and limit the growth of the penis and testicles.⁸⁶ Puberty blockers may be taken for several years, but they can be stopped at any point and puberty will resume.⁸⁷ For some who identify as trans, going through puberty in the sex they were assigned at birth can trigger a mental health crisis.⁸⁸ These medications give adolescents more time to explore their gender identities⁸⁹ and to consider their options.⁹⁰

Some people who identify as trans take gender-affirming hormones to develop secondary sex characteristics that align with their gender identities.⁹¹ Some effects of feminizing hormones are reversible—for example, redistribution of body fat—whereas others are not—for example, breast tissue

under nineteen. Nate Raymond, *US judge further blocks Trump's order curbing youth gender-affirming care*, REUTERS

(Mar. 3, 2025), <https://www.reuters.com/en/us-judge-further-blocks-trumps-order-curbing-youth-gender-affirming-care-2025-03-01/> [<https://perma.cc/K2FQ-U85J>].

⁸⁵ GenderGP, *Not All Transgender People Experience Gender Dysphoria*, GENDERGP (July 31, 2024), <https://www.gendergp.com/not-all-trans-people-experience-gender-dysphoria/> [<https://perma.cc/4ZYF-VVLR>].

⁸⁶ Mayo Clinic Staff, *Puberty blockers for transgender and gender-diverse youth*, MAYO CLINIC (June 14, 2023), <https://www.mayoclinic.org/diseases-conditions/gender-dysphoria/in-depth/pubertal-blockers/art-20459075> [<https://perma.cc/L67N-NHUQ>].

⁸⁷ *Id.* Although the use of puberty blockers for children who identify as trans is relatively recent, these medications have been used for decades to treat “precocious puberty,” which is puberty that begins before the age of eight in girls and nine in boys. See *Precocious Puberty*, STANFORD MED., <https://www.stanfordchildrens.org/en/topic/default?id=precocious-puberty-early-puberty-90-P01973> [<https://perma.cc/AZY3-W737>].

⁸⁸ Allison Parshall, *What Are Puberty Blockers, and How Do They Work?*, SCI. AM. (May 1, 2023), <https://www.scientificamerican.com/article/what-are-puberty-blockers-and-how-do-they-work/> [<https://perma.cc/F4KS-Q64S>].

⁸⁹ A recent study that followed 317 trans-identifying children whose median age at the outset of the study was 6.5 years found that five years after transitioning socially 94% still identified as trans, 3.5% identified as nonbinary, and 2.5% identified as the sex they were assigned at birth. Azeen Ghorayshi, *Few Transgender Children Change Their Minds After 5 Years, Study Finds*, N.Y. TIMES, (May 4, 2022), <https://www.nytimes.com/2022/05/04/health/transgender-children-identity.html> [<https://perma.cc/9GN3-8QJA>].

⁹⁰ Mayo Clinic Staff, *Feminizing hormone therapy*, MAYO CLINIC (July 12, 2024), <https://www.mayoclinic.org/tests-procedures/feminizing-hormone-therapy/about/pac-20385096> [<https://perma.cc/Z5BK-HHTQ>].

⁹¹ Trans males take testosterone; trans females take both testosterone blockers and estrogen. See *Gender-Affirming Hormones*, TEMPLE HEALTH, <https://www.templehealth.org/services/treatments/gender-affirming-hormones> [<https://perma.cc/3K5T-Q55P>].

growth.⁹² Young people who proceed directly from taking puberty blockers to taking gender-affirming hormones avoid going through puberty in the sex they were assigned at birth and instead go through it in the sex that matches their gender identities.⁹³ Those who begin taking gender-affirming hormones after going through puberty in the sex they were assigned at birth essentially go through a second puberty.⁹⁴

Lastly, some older teens and adults undergo one or more types of sex-reassignment surgeries—for example, surgeries to increase or decrease breast size or to transform and reconstruct genitalia.⁹⁵ People younger than eighteen very rarely undergo surgical interventions. Because the effects of these surgeries are irreversible and often dramatic, many doctors—including ones who are supportive of gender-affirming hormone treatment for trans youth—are very slow to make them available to people under eighteen, even in states where it is legal to do so.⁹⁶

What we know about the effects of transitioning on trans females' athletic performance varies with the type of transition. There's no published research comparing the athletic performance of trans females before and after social transitions, but the research on cis-male and cis-female performance provides a good basis for drawing inferences. Since there don't appear to be sex-linked genetically based differences in athletic performance prior to puberty, it's highly unlikely that prepubescent trans girls have athletic advantages over prepubescent cis girls.⁹⁷ If it were discovered that on average prepubescent trans girls outperform their cis counterparts, the explanation would almost certainly be societal. Individuals who socially transition from male to female after puberty retain any genetically based athletic advantages they previously had. Of course, those who participated in sports as males before socially transitioning probably reaped some athletic benefits from these experiences, so we shouldn't assume that any athletic superiority they might exhibit stems solely from biology.

There has been very little research on the effects of puberty blockers on the athletic performance of transgender girls. However, we can draw inferences about these effects from the research on how puberty ordinarily affects athletic

⁹² Soren Hodshire, *How Does HRT Change Your Body During Transition?*, HEATHLINE (June 5, 2023), <https://www.healthline.com/health/transgender/hrt-effects-on-body#results-of-estrogen-hrt> [https://perma.cc/666Y-3CQ9].

⁹³ Of course, this second puberty does not include menstruation. See Mayo Clinic Staff, *supra* note 90.

⁹⁴ Maddie Deutsch, *Overview of Feminizing Hormone Therapy*, UCSF TRANSGENDER CARE (July 2020), <https://transcare.ucsf.edu/guidelines/feminizing-hormone-therapy> [https://perma.cc/C768-T5T8]. Of course, for trans girls, this puberty will not include menstruation.

⁹⁵ *Gender Affirmation Surgery*, CLEVELAND CLINIC (Dec. 13, 2023), <https://my.clevelandclinic.org/health/treatments/21526-gender-affirmation-confirmation-or-sex-reassignment-surgery> [https://perma.cc/ZQM3-SHY7].

⁹⁶ Aryn Fields, *ICYMI: AP Debunks Extremist Claims About Gender Affirming Care*, HUM. RIGHTS CAMP. (Apr. 25, 2023), <https://www.hrc.org/press-releases/icymi-ap-debunks-extremist-claims-about-gender-affirming-care> [https://perma.cc/W8CL-M8Q2].

⁹⁷ Joshua D. Safer, *Fairness for Transgender People in Sport*, 6 J. ENDOCRINE SOC. 1, 1 (2022).

performance. As noted earlier,⁹⁸ in sports that rely on speed and strength, significant differences in the performances of elite cis male and cis female athletes begin to emerge at puberty. Researchers have identified increased testosterone levels as the driver of these changes.⁹⁹ Since puberty blockers prevent increases in testosterone in trans girls, it stands to reason that they also prevent testosterone-related changes in their athletic performance.¹⁰⁰ Whether trans girls on puberty blockers tend to have biologically based athletic advantages over similarly aged cis girls who have gone through puberty may depend on the sport. They might have some temporary advantage in long-distance running but their delayed growth spurt would almost certainly be a disadvantage in basketball. There has also been very little research on the athletic performance of transgender girls who proceed directly from puberty blockers to gender-affirming hormone therapy. However, since these girls were never exposed to the high levels of testosterone associated with male puberty, there's no reason to expect that they would have significant athletic advantages over cisgender girls.¹⁰¹

Almost all the research on the effects of male-to-female transitions on athletic performance examines the impact of gender-affirming hormones on trans girls and young women who begin hormone therapies after going through male puberty. Recent reviews of the literature on this issue cite studies that have shown that trans individuals who undergo feminizing hormone treatment experience very significant decreases in lean body mass, muscular strength, and blood concentration of red blood cells.¹⁰² These bodily changes correlate with decreased performance on fitness tests. For example, a 2020 study of forty-six members of the U.S. Air Force who began medically transitioning to female while in the Air Force found that taking gender-affirming hormones for two years resulted in substantially slower running times and reduced numbers of sit-ups and push-ups performed per minute. The study also compared the performance data of the trans women to that of the average cis women in the Air

⁹⁸ See Handelsman, *supra* note 50, at 68.

⁹⁹ See David J. Handelsman, Angelica L. Hirschberg & Stephane Berman, *Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance*, 39 ENDOCRINE REV. 803, 805 (2018); Senefeld et al., *supra* note 51.

¹⁰⁰ See Safer, *supra* note 97. I am not addressing here the prohibited use of puberty blockers by cisgender female ice skaters to forestall the negative effects of female puberty on performance; See, e.g., Sarah McKenna Barry, *The problems with women's Olympic figure skating go much deeper than doping*, HER (Feb. 18, 2022), <https://her.ie/sport/problems-womens-olympic-figure-skating-go-much-deeper-doping-548956> [<https://perma.cc/G9Z7-5EZN>].

¹⁰¹ See Safer, *supra* note 97, at 2.

¹⁰² See Ethan Moreland, Ada S. Cheung, Danielle Hiam, Brendan J. Nolan, Shanie Landen, Macsue, Nir Enyon & Patrice Jones, *Implications of Gender-Affirming Endocrine Care for Sports Participation*, 14 THERAPEUTIC ADV. ENDOCRINOLOGY AND METABOLISM 1, 5 (2023); D. J. Oberlin, *Sex differences and athletic performance. Where do trans individuals fit into sports and athletics based on current research?*, 5 FRONTIERS SPORTS AND ACTIVE LIVING (2023) (reviewing recent literature and its limitations).

Force. It found that after two years of hormones, the trans women's push-up and sit-up performance was no different from the cis women's, but the trans women were still 12% faster—down from 21% before the start of hormone therapy.¹⁰³ A study funded by the International Olympic Committee published in April 2024 compared the strength, lower-body power, and lung function of twenty-one cis women to twenty-three trans women who had undergone hormone therapy for at least a year. All study participants were either actively engaged in a competitive sport or reported undergoing physical training at least three times a week. The study found that the trans women had higher handgrip strength—a measure of overall muscle strength—but actually performed worse on tests measuring jumping ability and overall cardiovascular fitness.¹⁰⁴

We need to be cautious, however, about the conclusions we draw from studies like these. There's a great deal that remains unknown about the size of the effects of gender-affirming hormones on the performance of trans-female student-athletes and the length of time needed for the effects to manifest fully.¹⁰⁵ One factor complicating research is that hormone therapy is tailored to the individual. Personal and family medical history and personal treatment goals affect the types and doses of the drugs that are used.¹⁰⁶ Moreover, age and genetics influence the nature and timing of individuals' responses to the drugs. The subjects in the studies described were on average significantly older than student-athletes.¹⁰⁷ We also need to remember that gender-affirming hormones cause a person to go through puberty—a process whose progress varies substantially among individuals.¹⁰⁸ Finally, the before-and-after performance data used in studies is generally not specific to athletes. Both of the studies described drew inferences about athletic performance from data about fitness, speed, and strength.¹⁰⁹ However, these are only a few of the characteristics that determine athletic performance. Those who perform the best on assessments of fitness, speed, and strength don't always win sports competitions.¹¹⁰

¹⁰³ Timothy A. Roberts, Joshua Smalley & Dale Ahrendt, *Effect of gender affirming hormones on athletic performance in transwomen and transmen: implications for sporting organizations and legislators*, 55 BR. J. SPORTS MED. 577, 580 (2020).

¹⁰⁴ Blair Hamilton, Andrew Brown, Stephanie Montagner-Moraes, Cristina Comeras-Chueca, Peter G. Bush, Fergus M. Guppy & Yannis P. Pitsiladis, *Strength, power and aerobic capacity of transgender athletes: a cross-sectional study*, 58 BR. J. SPORTS MED. 586, 586, 596 (2024).

¹⁰⁵ *Id.* at 596. The section labeled "Study Limitations" in the Olympic Committee report underlines the many limitations of this recent study.

¹⁰⁶ Deutsch, *supra* note 94, at 2.

¹⁰⁷ The mean age of the Air Force research study participants referenced above was 26.2. Roberts et al., *supra* note 103, at 577. The mean ages of participants in the Olympic Committee studies were 30 for ciswomen and 34 for transwomen. Hamilton et al., *supra* note 104, at 586.

¹⁰⁸ Deutsch, *supra* note 94, at 2.

¹⁰⁹ Hamilton et al., *supra* note 104, at 587; Roberts et al., *supra* note 103, at 577.

¹¹⁰ See Theresa Gaffney, *Physicians Say Transgender Sports Bans are a Health Issue*, STAT (Sept. 19, 2023), <https://www.statnews.com/2023/09/19/transgender-sports-debate-consider-health-of-trans-youth/> [https://perma.cc/657M-5TD8]. As an indication of the uncertain significance of data based on fitness, speed, and strength for performance in sports competitions, consider that the Air Force study found that before taking gender-affirming hormones, trans females' distance running times were 21% faster than those of cis females. *Id.* One might have expected this differential to be

All the studies of the effects of gender-affirming hormones on trans-female athletic performance are based on small numbers of subjects. The primary reason is the paucity of possible research subjects. The athletic participation rates for transgender girls and young women are very low.¹¹¹ Of those who do participate, many haven't undergone hormone therapy, and some participate for the first time only after transitioning. Even among those who satisfy all the criteria—i.e., trans female athletes who have undergone hormone therapy after going through male puberty and who participated in sports both before and after their transitions—there are very few whose athletic performance both before and after the transition has been closely monitored and documented. Since male and female teams often play by different rules—e.g., men's basketball uses a bigger ball than women's basketball does—it's often impossible to make meaningful before and after comparisons.

But doesn't it stand to reason that trans females who transition after puberty would retain an athletic advantage over cis females simply by virtue of their larger skeletal structures, which are unaffected by hormone therapies? Once again, we know less than might initially appear. Feminizing hormones reduce muscle mass, and it's unclear how having a larger stature powered by reduced muscle affects athletic performance.¹¹²

Lastly, even in the few cases of athletes for whom there is performance data before and after undergoing hormone therapy, there are confounding variables that make it difficult to draw reliable conclusions. One such variable is the time gap between the before-and-after data. During required waiting periods while their bodies respond to hormone therapy, trans athletes have time to work on their technique and strategies and to mature both mentally and physically. On average, swimmers reach their peak performance levels during their early- to mid-twenties.¹¹³ In thinking about Lia Thomas's far higher ranking as a female than as a male swimmer, for example, we need to remember that she won her NCAA women's trophy as a twenty-three-year-old college senior and was ranked number sixty-five among men in the same event as a nineteen-year-old freshman. Another variable is psychological well-being. Before transitioning, transgender people often experience depression and anxiety, and many see dramatic reductions in symptoms after beginning gender-

comparable to the differential between cis-male and cis-female athletes in competitive meets. However, the study discussed earlier comparing the distance running times of cis-male and cis-female elite athletes in actual competitions found the latter differential to be only 10.7%. See Hallam & Amorim, *supra* note 32.

¹¹¹ *Play to Win, Improving the Lives of LGBTQ Youth in Sports*, HUM. RIGHTS CAMP. 20, <https://assets2.hrc.org/files/assets/resources/PlayToWin-FINAL.pdf> [https://perma.cc/JRY7-FQJC].

¹¹² See Safer, *supra* note 97, at 3.

¹¹³ Denis-Peter Born, Ina Stacker, Michael Romann & Thomas Stoggl, *Competition age: does it matter for swimmers?*, 15 BMC RSCH. NOTES 1, 1 (2022).

affirming hormones.¹¹⁴ Improved mindset can to some extent compensate for the negative physiological effects of hormone therapy on strength and speed. Lia Thomas, for one, has recounted the mental health benefits she experienced that were a factor in her post-transition success.¹¹⁵

Research on the effects of gender transitions on athletic performance has largely ignored sex-reassignment surgeries. The tiny pool of potential research subjects makes statistically reliable studies virtually impossible. According to estimates, only about 28% of trans females undergo any sort of gender-affirming surgery,¹¹⁶ and there is great variation in the nature of these surgeries and the ages at which people undergo them.¹¹⁷ Furthermore, only a small percentage of those who undergo the surgeries are athletes, and an even smaller percentage are athletes for whom there is pre- and post-surgery performance data.

The fairness argument for the exclusion of girls and young women who are trans from school sports teams rests on the premise that transgender females have sizable genetically based athletic advantages over cisgender females. I have argued that there's a great deal we don't know about the truth value of this premise but that what we do know strongly suggests that any such advantages that trans females might have are considerably smaller than advocates for their exclusion claim. Although postpubescent cis males on average have some genetically based advantages in strength and speed over postpubescent cis females, these advantages only partially explain the disparities in athletic performance between these groups. The further question of whether trans females retain any of the genetically based athletic advantages they enjoyed before transitioning requires a nuanced answer. Those who never experienced male puberty almost certainly lack such advantages, whereas those who transition only socially after undergoing male puberty no doubt retain significant advantages. Whether trans females who undergo hormone-affirming therapies after experiencing male puberty retain any pre-transition genetically based athletic advantages is still uncertain, but the evidence strongly suggests that any advantages that might exist are small and diminish over time.

¹¹⁴ Ann & Robert H. Lurie Children's Hospital of Chicago, *Gender-Affirming Hormones Improve Mental Health in Transgender and Nonbinary Youth*, NORTHWESTERN UNIV. FEINBERG SCH. MED. (Feb. 2, 2023), <https://news.feinberg.northwestern.edu/2023/02/02/gender-affirming-hormones-improve-mental-health-in-transgender-and-nonbinary-youth/#:~:text=They%20found%20that%20overall%2C%20appearance,during%20the%20follow%20Dup%20period> [https://perma.cc/PW6G-THCD].

¹¹⁵ Katherine Fung, *Swimmer Lia Thomas Felt Weaker, Slower in Competition After Transitioning*, NEWSWEEK (May 31, 2022, 4:10 PM), <https://www.newsweek.com/swimmer-lia-thomas-felt-weaker-slower-after-transitioning-1711673> [https://perma.cc/PRN4-P48L].

¹¹⁶ *Transgender Surgery FAQs*, UVA HEALTH, <https://uvahealth.com/services/transgender/transgender-surgery-faqs> [https://perma.cc/H9HJ-26HF].

¹¹⁷ Jason D. Wright, Ling Chen, Yukio Suzuki, Koji Matsuo & Dawn L. Hershman, *National Estimates of Gender-Affirming Surgery in the US*, JAMA NETWORK OPEN (Aug. 23, 2023), <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2808707> [https://perma.cc/C8KF-WKG5].

Obviously, it would be desirable to have more reliable data about the effects of gender transitions on trans females' athletic performance. However, taking no position pending more investigation is not a viable option. As I've noted, research on the effects of gender transitions on athletic performance poses so many challenges that definitive answers will almost certainly remain elusive for a long time to come. States and athletics associations have been enacting regulations about trans inclusion in school sports, and the federal government has entered the fray. In trying to inject reason into laws and policies, we have no choice but to make decisions based on the most reliable information we currently have.

B. Given what we know about how transitioning from male to female affects athletic performance, is it fair to include trans girls and young women on female school sports teams?

To answer this question, we must address an issue that the societal debate often overlooks: How do our educational institutions typically understand and apply the concept of fairness in athletic competitions? Most obviously, it's considered fair for some participants in school sports to have large genetically based advantages over others. For example, very few female basketball players—no matter how talented, hard-working, and well-coached—can compete with ten-time WNBA all-star Brittney Griner,¹¹⁸ who at six foot nine holds the all-time NCAA record for blocked shots.¹¹⁹

Some athletes who excel have very unusual—even aberrational—body proportions. For example, many standout basketball players have disproportionately long arm spans, which is the distance between the tips of their middle fingers when both arms are stretched horizontally. The typical person's arm span is roughly the same as their height,¹²⁰ but perennial NBA all-star Kevin Durant, who was named College Naismith Player of the Year as a freshman, is

¹¹⁸ *Atlanta Dream Sign Brittney Griner in Historic Free Agent Acquisition*, WNBA (Feb. 1, 2025, 1:09 PM), <https://www.wnba.com/news/atlanta-dream-acquire-brittney-griner> [https://perma.cc/9JK3-P563].

¹¹⁹ *Brittney Griner*, USA BASKETBALL (Aug. 20, 2024), <https://www.usab.com/players/brittney-griner> [https://perma.cc/YS39-KXX7].

¹²⁰ Da Vinci's famous drawing of the Vitruvian man dramatizes this 1:1 ratio. See Leonardo da Vinci, *The Vitruvian Man*, LEONARDODIVINCI.NET, <https://www.leonardodavinci.net/the-vitruvian-man.jsp> [https://perma.cc/DD4E-7XA]. For typical ratios, see Calculator Academy Team, APE Index (Wingspan to Height Ratio) Calculator, Calculator Academy, <https://calculator.academy/a-pe-index-wingspan-to-height-ratio-calculator/> [https://perma.cc/9733-3E6T].

six foot ten with an arm span of seven foot five.¹²¹ Swimmer Michael Phelps, the all-time most successful Olympian in any sport with twenty-three gold medals, has several genetically based anomalies. Not only is his arm span three inches longer than his height,¹²² but the joints in his ankles have 15% more mobility than average,¹²³ which gives his kick unusual range. Moreover, his body produces only half the lactic acid of the typical athlete, which enables him to swim for longer periods without feeling tired.¹²⁴ Phelps was ineligible to compete in college, but the reason was not his genetic anomalies. It was his endorsement contract with Speedo, which at the time violated NCAA rules.¹²⁵

Handedness is an interesting example of a genetically based advantage in some sports. Baseball is a prime example. Although lefties are only 10% of the population, they are 25% of major league baseball players¹²⁶ and pitch 28% of major league innings.¹²⁷ One advantage enjoyed by left-handed batters in both school and professional competition is that swinging the bat from the left side of the plate creates momentum in the direction in which they need to run. Another is that they have a shorter distance to run to first base. Left-handed pitchers have an advantage because the small percentage of lefties in the population means that most batters have far less experience hitting left-handed than right-handed pitching.¹²⁸

Genetic factors have an outsized effect on performance in secondary school sports because they greatly influence the variable ages at which children enter and complete puberty. On average, the stages of puberty span four years and begin for girls between the ages of eight and thirteen and for boys between the ages of nine and fourteen.¹²⁹ Some adolescents gain a substantial athletic advantage over others because of the timelines on which their bodies mature.

¹²¹ Asmir Pekmic, *What is Kevin Durant's wingspan? Here are all the details about the Nets superstar's physical attributes*, SPORTSKEEDA (Nov. 8, 2022, 11:44 AM), <https://www.sportskeeda.com/basketball/what-kevin-durant-s-wingspan-here-details-nets-superstar-s-physical-attributes#:~:text=Standing%20at%206%2Dfoot%2D10,one%20of%20the%20best%20scorers> [https://perma.cc/LL3E-CYP5].

¹²² Ishan Daftardar, *Scientific Analysis of Michael Phelps's Body Structure*, SCI. ABC (Jan. 18, 2024), <https://www.scienceabc.com/sports/michael-phelps-height-arms-torso-arm-span-feet-swimming.html> [https://perma.cc/XV94-U372].

¹²³ *The Right To Compete*, GENDER JUST., https://www.genderjustice.us/wp-content/uploads/2021/01/Trans-Equity-in-Sports_Fact-Sheet-Jan-2021.pdf [https://perma.cc/H3ZY-BRB2].

¹²⁴ See Daftardar, *supra* note 122.

¹²⁵ Riley Overend, *Michael Phelps to Serve as Honorary Captain For Michigan Football vs. Penn State*, SWIMSWAM (Oct. 10, 2022), <https://swimswam.com/michael-phelps-to-serve-as-honorary-captain-for-michigan-football-vs-penn-> [https://perma.cc/G4XD-9SUL].

¹²⁶ Josh Levitt, *Baseball Analysis: Why Lefties Rule*, BLEACHER REP. (July 2, 2009), <https://bleacherreport.com/articles/210701-lefties-rule> [https://perma.cc/6SYU-HW6C].

¹²⁷ Guy Molyneaux & Phil Birnbaum, *The Southpaw Advantage*, FANGRAPHS (Sept. 8, 2020), <https://blogs.fangraphs.com/the-southpaw-advantage/> [https://perma.cc/4ESP-4XHQ].

¹²⁸ David Adler, *Why Being a Lefty Matters in Baseball*, MLB (June 1, 2019), <https://www.mlb.com/news/why-left-handed-pitching-matters-in-baseball> [https://perma.cc/KG37-R6Z6].

¹²⁹ *Puberty*, CLEVELAND CLINIC (Aug. 26, 2024), <https://my.clevelandclinic.org/health/articles/22192-puberty> [https://perma.cc/X9AL-K8TB].

Some students derive significant athletic advantages from the timing of their births. Across a variety of sports, those born in the first three months of the age cohort in their grade are overrepresented on school teams.¹³⁰ The reason is that a year is a substantial amount of time in a child's physical development. Being just a few months older often confers enough of an advantage to increase the chances of being picked for the team. Because teams provide their players with coaching, practice time, and experience in game situations, those who make teams tend to progress as athletes more quickly than those who don't. Small initial differences in skill level tend to become magnified as time goes on. It's therefore hardly surprising that players born in the first quarter of their selection year are disproportionately represented in professional sports.¹³¹

Birth order also plays a role in athletic achievement. Highly successful athletes are likelier to have older siblings than to be the firstborn in their families or an only child.¹³² One explanation is that children lower in their family's birth order tend to develop their athletic skills at earlier ages because they strive to keep up with their older siblings. Another explanation is that they tend to spend time in informal play with their older siblings and benefit from the extra practice as well as from the instruction their siblings sometimes provide.

Lastly, and probably most importantly, wealth is a huge source of advantage to many young athletes. The best performers on secondary school teams often hone their skills on "travel teams," which are selective youth teams that travel substantial distances to find high-level competition.¹³³ Many of these same players also attend residential summer sports programs—often led by top college and university coaches.¹³⁴ Promising athletes from low- and even middle-income families are typically excluded from these opportunities because the costs are prohibitive. High schools in affluent areas frequently augment the advantages many students derive from travel teams and summer programs by allocating large sums to athletic equipment, facilities, and salaries for

¹³⁰ Tim Wigmore, *Why Athletes' Birthdays Affect Who Goes Pro—And Who Becomes A Star*, FIVETHIRTYEIGHT (Feb. 22, 2021, 10:01 AM), <https://fivethirtyeight.com/features/why-athletes-birthdays-affect-who-goes-pro-and-who-becomes-a-star/#:~:text=In%20basketball%2C%20baseball%20and%20ice,in%20youth%20and%20professional%20sports> [https://perma.cc/SB8J-ADJS].

¹³¹ *Id.*

¹³² Tim Wigmore, *Why Are Great Athletes More Likely To Be Younger Siblings?*, FIVETHIRTYEIGHT (Dec. 1, 2020, 5:58 AM), https://fivethirtyeight.com/features/why-are-great-athletes-more-likely-to-be-the-younger-siblings/?cid=_inlinerelated [https://perma.cc/2NPE-AX6P].

¹³³ Kayla Witman, *Are Club/Travel Teams Ruining High School Sports Teams?*, MEDIUM (Nov. 18, 2022), <https://medium.com/@Kwitbook/are-club-travel-teams-ruining-high-school-sports-teams-f6bc00361d73> [https://perma.cc/PHW5-GV45].

¹³⁴ See, e.g., *IMG Academy*, <https://www.imgacademy.com/> [https://perma.cc/SHD5-35ZN].

experienced trainers and coaches.¹³⁵ As a result, far more wealthy schools than poor ones win championships, which enable students to showcase their abilities to college recruiters.¹³⁶ Some high school athletes even bypass their school teams in favor of year-round travel teams because of these teams' proven records of helping students receive college athletic scholarships.¹³⁷ Due to these various factors, students from affluent families disproportionately fill the rosters of college teams.¹³⁸

The fairness of including trans females on female school teams must be evaluated in the context of the accepted standards of fairness in school athletics. How do the advantages of trans females over cis females in school sports compare to other athletic advantages that are generally considered fair? Some might wonder whether this is the right question. After all, various widely accepted advantages in school sports don't seem very fair, so why should common practice be used as the standard? My answer is that to evaluate the fairness of policies that exclude trans-female students from female sports teams, it is not necessary to formulate a general theory of fairness in athletic competition. The latter would be a daunting project. After all, inequality is endemic to athletic competition. Winners inevitably have physiological, psychological, or other advantages over losers. Not only is it impossible to neutralize all these advantages,¹³⁹ but it's unclear what competition would look like if all advantages were eliminated. Regardless of how we ultimately understand the concept of fair competition, however, it seems evident that applying more stringent standards for athletic participation to trans than to cis students would be unfair.

Do male-to-female transitions confer larger athletic advantages than those widely accepted in school sports? It's impossible to answer this question with anything resembling precision, because of the difficulty of measuring the many types of athletic advantages and because the effects of multiple advantages often intersect. For example, someone with more genetically based physical assets may benefit from playing on a travel team more than someone with fewer. Moreover, there has been comparatively little interest in trying to quantify the degree of advantage conferred by factors other than transgender status.

¹³⁵ Alex Putterman, *Uneven playing field: Rich towns dominate CT high school sports amid deep inequalities*, CT INSIDER (Sept. 23, 2022, 10:47 PM), <https://www.ctinsider.com/sports/article/ct-high-school-sports-ciacc-inequality-17442595.php> [<https://perma.cc/3EG2-ADX5>].

¹³⁶ *Id.*

¹³⁷ *High school vs. club sports: Understanding the benefits*, NCSA COLLEGE RECRUITING, <https://www.ncsasports.org/recruiting/how-to-get-recruited/club-sports> [<https://perma.cc/DS8J-K8VC>].

¹³⁸ James Tompsett and Chris Knoester, *The Making of a College Athlete: High School Experiences, Socioeconomic Advantages, and the Likelihood of Playing College Sports*, 39 SOCIO. AND SPORT J. 129, 135–36 (2022).

¹³⁹ See Dennis L. Weisman, *Transgender Athletes, Fair Competition, and Public Policy*, REGULATION 18, 19–21 (2022) (suggesting that truly fair competition would require compensating for these advantages); See also J. Savulescu, B. Foddy & M. Clayton, *Why we should allow performance enhancing drugs in sport*, 38 BRITISH J. SPORTS MED. 666, 666–670 (2004) (controversially suggesting that to level the genetic playing field some athletes should be permitted to take performance-enhancing drugs).

Nevertheless, the available evidence discussed above strongly suggests that for the great majority of male-to-female transitions the answer to this question is no.

During the period before puberty, trans girls have no biologically based athletic advantages over cis girls. Trans girls who take puberty blockers postpone the athletic advantages associated with male puberty. Compared to comparably aged cis girls who have gone through female puberty, they may temporarily be advantaged in running and swimming but are disadvantaged in most other school sports. Once they cease taking puberty blockers, at most a few years after the onset of puberty, they have no lingering advantages. Controversies about the fairness of trans-female inclusion on school teams usually center on students who take gender-affirming hormones after undergoing male puberty. The evidence clearly indicates that after a year or more of hormone therapy, any remaining advantages are very small—far smaller than many others widely accepted as fair in school sports. As noted earlier, there is scant evidence about the effects of adding gender-affirming surgery to gender-affirming hormones, but there's no reason to think that such surgeries make much difference in athletic performance. If anything, they would be likely to reduce further any advantages trans-female athletes might have.

The only gender transitions that arguably confer advantages as great as or greater than those widely accepted in school sports are post-puberty social transitions. Of course, even after puberty, many cis-female athletes outperform their cis-male counterparts, so we can't assume that athletes who socially transition to female after puberty always prevail over their cis-female opponents. Furthermore, there's more variation in athletic performance among cis females than between cis females and cis males.¹⁴⁰ The same no doubt is true of the performance of cis females and trans females who socially transition after puberty. Nevertheless, in sports that reward speed and strength, those at the high end of athletic performance as males who socially transition after going through male puberty would very likely outperform their cis-female counterparts. Moreover, the average trans female who socially transitions after male puberty would probably perform significantly better than the average cis female of the same age. As discussed in Section II.A, these performance gaps are not entirely the result of genetics, but genetics undoubtedly play a substantial role.

Except for those who transition only socially after puberty, the preceding analysis makes a strong argument for the unfairness of excluding trans girls and young women from female school sports teams. Post-puberty social transitions are a special case. Although the degree of athletic advantage experienced by those in this category may support the judgment that they may be fairly excluded, there are some additional factors to consider before reaching

¹⁴⁰ *Single-Sex Physical Education Classes: The Foundation Position*, WOMEN'S SPORTS FOUND., 3 (July 20, 2011), <https://www.womenssportsfoundation.org/advocacy/single-sex-physical-education-classes-foundation-position> [<https://perma.cc/LKN5-UCDV>].

this conclusion. I address those factors in Section IV below after discussing the second principal argument typically made by those opposed to trans-female inclusion: that excluding trans-females is necessary to protect the integrity of female sports.

III. THE PROTECTION OF FEMALE SPORTS ARGUMENT

This argument has several components, all based on the rationale for Title IX's sex-segregated approach to athletic participation. Athletics is included within the purview of Title IX because of its educational value. Sports participation builds confidence and self-esteem, provides leadership opportunities, and teaches teamwork, sportsmanship, self-discipline, and concepts of fairness.¹⁴¹ It helps students learn to manage stress, develop a sense of their identities, and improve their ability to see things from others' perspectives.¹⁴² Additionally, it prepares students for life in a multicultural society by helping them recognize and overcome the implicit biases and stereotypes that can interfere with the cohesiveness needed for team success.¹⁴³

Recent research suggests that athletic participation has further benefits for girls and young women.¹⁴⁴ Compared to girls who don't play sports, high school girls who play on teams tend to have more positive body images, fewer unintended pregnancies, better grades, and higher graduation rates.¹⁴⁵ The benefits of school sports are especially important for girls and young women of color who often have few other avenues for accessing these benefits.¹⁴⁶

¹⁴¹ EILEEN McDONAGH & LAURA PAPPANO, PLAYING WITH THE BOYS: WHY SEPARATE IS NOT EQUAL IN SPORTS 228 (2008); *See also* Dr. Steve Amaro, *Participation in High School Athletics Has Long-lasting Benefits*, NFHS (Jan. 22, 2020), <https://www.nfhs.org/articles/participation-in-high-school-athletics-has-long-lasting-benefits/> [<https://perma.cc/6TF7-VCWU>].

¹⁴² *See* Amaro, *supra* note 141; David A. Grenardo, *It's Worth a Shot: Can Sports Combat Racism in the United States?*, 12 HARV. J SPORTS & ENT. L. 237, 280 (2021).

¹⁴³ Grenardo, *supra* note 142.

¹⁴⁴ E. J. Staurowsky, M. J. DeSousa, K. E. Miller, D. Sabo, S. Shakib, N. Theberge, P. Veliz, A. Weaver & N. Williams, *HER LIFE DEPENDS ON IT III: Sport, Physical Activity, and the Health and Well-Being of American Girls and Women*, WOMEN'S SPORTS FOUND. (May 2015), <https://www.womenssportsfoundation.org/wp-content/uploads/2017/06/hldoi-iii-report-executive-summary.pdf> [<https://perma.cc/44YC-8H5E>].

¹⁴⁵ *Benefits—Why Sports Participation for Girls and Women*, WOMEN'S SPORTS FOUND. (Aug. 30, 2016), <https://www.womenssportsfoundation.org/advocacy/benefits-sports-participation-girls-women/#:~:text=Girls%20and%20women%20who%20play,who%20do%20not%20play%20sports> [<https://perma.cc/QC38-E6HG>].

¹⁴⁶ *The Women's Sports Foundation Announces its 2023 Sports 4 Life Grant Recipients—Using the Power of Sport for Girls of Color to Play and Thrive*, WOMEN'S SPORTS FOUND. (Dec. 13, 2023), https://www.womenssportsfoundation.org/press_release/the-womens-sports-foundation-announces-its-2023-sports-4-life-grant-recipients-using-the-power-of-sport-for-girls-of-color-to-play-and-thrive/#:~:text=According%20to%20WSF's%20Communities%20at,of%20participation%2C%20they%20were%20far [<https://perma.cc/7R27-BQPA>].

Before the passage of Title IX in 1972, almost all school sports teams were limited to males.¹⁴⁷ To make the educational benefits of school athletics equally available to females, Title IX regulations mandate that schools work toward offering athletic participation slots for male and female students in numbers “substantially proportionate” to the numbers of males and females in their student bodies.¹⁴⁸ At the time the regulations were being debated, it was clear that little progress toward this goal would be made any time soon if girls and young women were simply allowed to try out for existing male teams. Responses to a solicitation by the Office of Civil Rights for public input on the proposed regulations indicated considerable support for a single-sex model that provided girls and young women with a protected, sex-segregated space in which to develop and showcase their athletic skills and talents.¹⁴⁹ Some defended this position by arguing that longstanding practices of excluding females from sports participation had depressed both their athletic skill levels and their interest in joining teams.¹⁵⁰ Others attributed the need for a single-sex approach to genetically based differences in athletic capabilities between the sexes.¹⁵¹

The Title IX athletic regulations on sex-segregated sports provide that schools may offer different sports to males and females—for example, football for boys and field hockey for girls.¹⁵² In contact sports or whenever team participation is based on skill level, schools that offer the same sport to males and females may require participants to play on teams that align with their sex.¹⁵³ The only mandated exception to this sex-segregated approach is that a school that offers only a male team in a non-contact sport must allow females to try out

¹⁴⁷ Maria Cramer, *How Women’s Sports Teams Got Their Start*, N.Y. TIMES (May 5, 2022), <https://www.nytimes.com/2022/04/28/sports/title-ix-anniversary-womens-sports.html#:~:text=In%20the%20late%2019th%20century,and%20sexuality%20in%20women's%20sports> [https://perma.cc/9ES7-CPVS].

¹⁴⁸ Nondiscrimination on the Basis of Sex in Education Programs or Activities Receiving Federal Financial Assistance, 44 Fed. Reg. 71418 (Dec. 11, 1979) (codified at 45 C.F.R. pt. 86). These regulations allow schools that fail to meet this goal to avoid sanction under Title IX if they can demonstrate “a history and continuing practice of program expansion which is demonstrably responsive to the developing interests and abilities of” their female students, or if this is not possible, to demonstrate “that the interests and abilities” of their female students “have been fully and effectively accommodated by the present program.”

¹⁴⁹ Erin Buzuvis, *Title IX: Separate but Equal for Girls and Women in Athletics*, SSRN, 4, 11 (2020).

¹⁵⁰ *Id.* at 5-6.

¹⁵¹ *Id.* at 5. This view is still popular among many commentators today. See, e.g., Steve Magness, *There’s Good Reason for Sports to be Separated by Sex*, THE ATLANTIC (Sept. 29, 2022), <https://www.theatlantic.com/culture/archive/2022/09/why-elite-sports-should-remain-separated-by-sex/671594/> [perma.cc/5P2P-YGWL].

¹⁵² 44 Fed. Reg. 71418 (Dec. 11, 1979) (codified at 45 C.F.R. pt. 86).

¹⁵³ 34 C.F.R. § 106.41(b) (2020).

for it.¹⁵⁴ There is no comparable exception for males who wish to play a sport that their school offers only to females.

The passage of Title IX led to enormous increases in the number of girls and young women on school athletic teams. Over the years, female participation on high school teams has increased by over 1000% and on college teams by over 600%.¹⁵⁵ Despite these successes, however, most schools today still fail to meet Title IX's participation goals. 75% of boys but only 60% of girls currently play high school sports.¹⁵⁶ Similarly, women are 60% of college students, but only 44% of college athletes.¹⁵⁷

A common argument for excluding trans females from female school teams is that they pose a significant injury risk to cisgender players and so don't belong in the protected female spaces created by Title IX. President Trump articulated this view when he asserted after signing his executive order withholding federal funds from schools that allow trans-female participation, "we will not allow men to beat up, injure and cheat our women and our girls."¹⁵⁸ Similarly, co-captain of the San Jose State women's volleyball team, Brooke Slusser, cited fear for her own and others' safety as a major impetus for a lawsuit she filed in November 2024 protesting the inclusion of a trans student on her team.¹⁵⁹

Although trans players have occasionally caused injury to cis players,¹⁶⁰ there is no data showing they do so disproportionately. Injuries are endemic to sports. Since those who transition to female after puberty retain their pre-transition bone structure even if they undergo hormone therapy, they're on

¹⁵⁴ 34 C.F.R. § 106.41(b) (2020). Although this rule doesn't apply to contact sports, some scholars have argued that constitutional equal protection guarantees require that girls be allowed to try out for male teams even in contact sports. See Dana Robinson, *A League of Their Own: Do Women Want Segregated Sports?* 9 J. CONTEMP. LEGAL ISSUES 321, 353–355 (1998). Some courts have agreed. See *Beattie v. Line Mountain Sch. Dist.*, 992 F. Supp.2d 384 (M.D. Pa. 2014) (ruling that a seventh-grade girl must be allowed to participate on her school's all-male wrestling team); *Adams v. Baker*, 919 F. Supp. 1496 (D. Kan. 1996) (ruling that a girl must be allowed to wrestle on her high school's all-male wrestling team).

¹⁵⁵ *TITLE IX*, BILLIE JEAN KING, <https://www.billiejeanking.com/equality/title-ix/> [https://perma.cc/3UWB-2VS6].

¹⁵⁶ *50 Years of Title IX*, WOMEN'S SPORTS FOUND., https://www.womenssportsfoundation.org/wp-content/uploads/2022/04/FINAL6_WSF-Title-IX-Infographic-2022.pdf [https://perma.cc/2NTM-7844].

¹⁵⁷ *Id.*

¹⁵⁸ Will Steakin, Rachel Scott & Julia Reinstein, *Trump signs executive order banning transgender athletes from women's sports, directing DOJ to enforce*, ABC NEWS (Feb. 5, 2025), <https://abcnews.go.com/Politics/trump-sign-executive-order-banning-transgender-athletes-womens/story?id=118468478> [https://perma.cc/PG2S-G4VP].

¹⁵⁹ Bailey O'Carroll, *San Jose State volleyball player on why she outed her transgender teammate*, FOX 10 PHOENIX (Nov. 23, 2024), <https://www.fox10phoenix.com/news/why-san-jose-state-volleyball-player-outed-her-transgender-teammate> [https://perma.cc/5C6L-N85B].

¹⁶⁰ E.g. Chris Nesi, *Volleyball player hurt by trans opponent – and honored by Trump – calls out Democrats for 'failing women'*, NEW YORK POST (Mar. 5, 2025, 5:29 PM), <https://nypost.com/2025/03/05/us-news/volleyball-star-hurt-by-trans-opponent-say-dems-are-failing-women/> [https://perma.cc/TAK9-FUX5].

average somewhat taller and heavier than cis females.¹⁶¹ As discussed in section II.A, however, except for those who transition only socially after puberty, any residual strength advantages are at most very small. Moreover, many cis females are physically larger and stronger than many trans females. Variations in size and strength larger than these are typical in school sports. Nowhere is this more evident than in secondary school where players are often still growing, and some participants are several years older than others. If safety issues are serious concerns, there are far more effective ways to address them than excluding all trans girls and young women. One strategy would be to exclude any players—cis or trans—deemed too big, small, strong, or weak to participate safely. Another solution would be to take account of players' sizes and strengths when assigning them to teams.

Another female-protective argument for trans exclusion rooted in Title IX's embrace of sex-segregated sports is that allowing transgender girls and young women to play on female school teams will reverse years of progress toward achieving Title IX's athletic goals. This argument typically goes like this. Since trans females have substantial genetically based athletic advantages over cis females, there's a good chance they will dominate the competition if they're included on female teams. Cis females will therefore have fewer opportunities than they currently do to develop and showcase their athletic abilities. Some cis females will fail to make teams that they otherwise would have made. The best cis-female athletes will have fewer chances than they currently have—and that their cis-male counterparts have—to shine as stars, win trophies, and, as high schoolers, receive athletic scholarships to colleges and universities.¹⁶² A likely result is that some cisgender girls and young women will become discouraged

¹⁶¹ Ada S Cheung, Sav Zwickl, Kirsti Miller, Brendan J Nolan, Alex Fang Qi Wong, Patrice Jones & Nir Eynon, *The Impact of Gender-Affirming Hormone Therapy on Physical Performance*, 109 J. CLINICAL ENDOCRINOLOGY & METABOLISM 455, 461 (Feb. 2024).

¹⁶² See David French, *The Legal Foundation of Women's Sports is Under Fire*, N.Y. TIMES (June 25, 2023), <https://www.nytimes.com/2023/06/25/opinion/womens-sports-under-fire.html> [<https://perma.cc/L4TR-JA8X>]. Former University of Kentucky swimmer Riley Gaines has spoken out repeatedly about this issue: "From my experience competing against Lia Thomas at the national championships, I watched first-hand women lose out on opportunities. I watched women not become All-Americans, missing that eighth and 16th place because they were displaced by a male."; Joseph Kiran, *"Replace that word 'woman'"—Riley Gaines slams Lia Thomas over trans swimmer's 'heartbreaking' comments*, SPORTSKEEDA (Mar. 13, 2024), <https://www.sportskeeda.com/swimming/news-replace-word-woman-riley-gaines-slams-lia-thomas-trans-swimmer-s-heartbreaking-comments> [<https://perma.cc/M3FA-A8HX>]. She and more than a dozen athletes made arguments along these lines in the suit they filed against the NCAA in March 2024; Mark Puleo & Tess DeMeyer, *NCAA facing lawsuit regarding transgender competitors' eligibility*, THE ATHLETIC (Mar. 14, 2024), <https://www.nytimes.com/athletic/5342387/2024/03/14/ncaa-transgender-lawsuit-lia-thomas/> [<https://perma.cc/5H5F-Q3SA>].

from joining school teams,¹⁶³ which will widen the gap between male and female participation in school sports. Doriane Coleman, Martina Navratilova, and Sanya Richards-Ross (respectively a Duke law professor, an eighteen-time tennis grand slam winner, and a four-time Olympic gold medalist in track) summed up these sorts of concerns in a widely shared opinion piece in the *Washington Post*: “Sport is an unusual if not unique institution. It is a public space where the relevance of sex is undeniable, and where pretending that it is irrelevant . . . will cause the very harm Title IX was enacted to address.”¹⁶⁴

This argument is unpersuasive for several reasons. Consider first the claim that allowing trans participation will discourage some cis females from participating in school sports. The evidence discussed in Section II.A strongly suggests that, except for those who transition only socially after undergoing male puberty, trans females on average have few if any athletic advantages over their cisgender peers. Furthermore, transgender people are only a tiny minority of the population. A 2022 study conducted by the Williams Institute at the UCLA School of Law found that .5% of adults in the U.S. and 1.4% of youth ages thirteen to seventeen openly identify as transgender.¹⁶⁵ Additionally, transgender students are underrepresented among the ranks of high school and college athletes. A study by the Human Rights Campaign conducted in 2017 before most of the current restrictions on trans participation were put in place, found that only 12% of openly transgender girls competed on high school teams.¹⁶⁶ As noted above,¹⁶⁷ overall female high school participation is roughly 60%. In 2023, only thirty-two openly trans students—male or female—were on college team rosters.¹⁶⁸ Although more trans girls and young women would undoubtedly play school sports if the environment were more welcoming, the small number of trans females in the population and the, at best, slight advantage of trans female athletes other than those who transition only socially after undergoing male puberty make it unlikely that a significant number of cis-female school athletes will ever compete against an athletically dominating transgender player. Given the many benefits of school sports participation discussed above, it’s even less likely that an appreciable number will respond to the situation by quitting or avoiding the team.

There is data to support these inferences. A study of sports participation among high school girls found no change between 2011 and 2019 in states with

¹⁶³ See Robyn E. Blumner, *Transgender Women in Women’s Sports: What’s Fair?*, SKEPTICAL INQUIRER (Nov./Dec. 2023), <https://skepticalinquirer.org/2023/10/transgender-women-in-womens-sports-whats-fair/> [<https://perma.cc/4ZJX-ZRXE>].

¹⁶⁴ Coleman, *supra* note 27.

¹⁶⁵ Jody L. Herman, Andrew R. Flores & Kathryn K. O’Neil, *How Many Adults and Youth Identify as Transgender in the United States?*, UCLA WILLIAMS INST. (June 2022), <https://williamsinstitute.law.ucla.edu/publications/trans-adults-united-states/> [<https://perma.cc/Q3AT-KUJ6>].

¹⁶⁶ See *Play to Win, Improving the Lives of LGBTQ Youth in Sports*, *supra* note 111.

¹⁶⁷ See Magness, *supra* note 151.

¹⁶⁸ Ariana Figueroa, *National ban on transgender athletes in girls’ sports passed by U.S. House panel*, NEBRASKA EXAM’R (Mar. 9, 2023), <https://nebraskaexaminer.com/2023/03/09/national-ban-on-transgender-athletes-in-girls-sports-passed-by-u-s-house-panel/> [<https://perma.cc/Q3AT-KUJ6>].

trans-inclusive policies and a decrease in states with trans-exclusive policies.¹⁶⁹ One possible hypothesis for this disparity is that transphobic fearmongering in states with trans-exclusive policies may deter cisgender participation. Another is that both trans and cis students may find it appealing to join teams that have welcoming policies.

If the goal is to increase female school sports participation, there are far more effective strategies than banning trans females from female athletics. The Women's Sports Foundation, a research and advocacy organization founded by tennis legend Billie Jean King, has made numerous recommendations based on their extensive studies of the reasons that fewer girls than boys go out for sports and that girls leave sports at higher rates than boys.¹⁷⁰ Their proposals target social factors discussed in Section II.A that lead girls and boys to experience sports in gendered ways. One recommendation, for example, is to create educational programs to increase parental awareness of the benefits of female athletic participation and motivate parents to support and encourage their daughters' sports activities.¹⁷¹ Another is to hire more female coaches and athletic administrators and to instruct them on effective strategies for recruiting and retaining girls.¹⁷²

The argument that trans females should be excluded from school teams because including them diminishes top-performing cis females' chances of winning medals and receiving college scholarships may appear more compelling. When fractions of a second sometimes separate competitors, slight advantages can determine outcomes. If trans females on average have even a tiny edge over their cis-gender opponents, they will be more likely to prevail.

Closer consideration, however, reveals weaknesses in this reasoning. As discussed in Section II.A, there's a great deal we still don't know about how transitioning to female affects athletic performance, but the record of trans-female performance in actual competition belies claims that including trans females on female teams poses a serious threat to cis-female opportunities. Very few trans girls or young women have ever reached the upper echelons of their sport, and even when they have, they rarely have overwhelmed their opponents. For example, since 2003 when openly trans athletes were first allowed to participate in the Olympics, only one, weightlifter Laurel Hubbard, has ever

¹⁶⁹ Shoshana K. Goldberg & Thee Santos, *Fact Sheet: The Importance of Sports Participation for Transgender Youth*, AM. PROGRESS (Mar. 18, 2021), <https://www.americanprogress.org/article/fact-sheet-importance-sports-participation-transgender-youth/> [https://perma.cc/YRD3-GJTJ].

¹⁷⁰ N. Zarrett, P. T. Veliz & D. Sabo, *Keeping Girls in the Game: Factors that Influence Sport Participation*, WOMEN'S SPORTS FOUND. (2020), <https://www.womenssportsfoundation.org/wp-content/uploads/2020/02/Keeping-Girls-in-the-Game-Executive-Summary-FINAL-web.pdf> [https://perma.cc/7GHM-A9QY].

¹⁷¹ *Id.* at 5, 7.

¹⁷² *Id.* at 5, 7.

actually competed, and she didn't win any medals.¹⁷³ Lia Thomas's winning time in the 500-meter freestyle NCAA championship event was only average among winners for the ten preceding years and ten seconds slower than Katie Ledecky's all-time NCAA record.¹⁷⁴ In Oregon where there are no restrictions on trans students' participation on school teams that align with their gender identities, trans runner Aayden Gallagher recently sparked outrage in many circles when she set a state high school record in the 200-meter event. However, she won her race by only .2 of a second¹⁷⁵—hardly a field-dominating performance. Given the tiny percentages of elite trans female athletes and their performance thus far in top-level competitions, there's little reason to believe that their presence on school teams significantly threatens cis females' abilities to reap the benefits of their talents.

Fear that members of a group will dominate the competition, furthermore, is not normally considered a good reason for excluding them from athletic teams. For example, there has been no effort by the NCAA to restrict the number of female tennis players from abroad, even though more than 60% of those on women's Division I teams are international students.¹⁷⁶ These students reduce cisgender American girls' chances of receiving college tennis scholarships far more than trans students do. The reason that so many people consider trans students but not international students a threat to female school sports is that they regard trans-female inclusion as unfair. If we reject this view, as I've argued we should, the argument that trans students should be barred from competition because they lessen cis athletes' chances of gaining recognition loses a good deal of its force.

Opponents of trans-female inclusion on female school teams sometimes support their position by arguing that the protected female space created by Title IX should be understood to include female locker rooms.¹⁷⁷ The Women's Sports Policy Working Group, an organization of former elite athletes and sports administrators who have been outspoken about their objections to trans-female

¹⁷³ Micah Mitchell, *IN SPORTS AND IN LIFE, TRANS WOMEN DESERVE EQUAL ACCESS*, ACLU OHIO (Mar. 8, 2023, 11:00 AM), <https://www.acluohio.org/en/news/sports-and-life-trans-women-deserve-equal-access#:~:text=Two%20trans%20women%20in%20the,or%20take%20home%20any%20medals> [https://perma.cc/YRD3-GJTJ].

¹⁷⁴ Richa Goswami, *Lia Thomas Is Fast but Stats Reveals She Won't Even Make It to Top 10 Against Katie Ledecky*, ESSENTIALLYSPORTS (Apr. 6, 2022, 9:15 AM), <https://www.essentiallysports.com/us-sports-news-swimming-news-lia-thomas-is-fast-but-stats-reveals-she-wont-even-make-it-to-top-10-against-katie-ledecky/> [perma.cc/KMW5-8BKF].

¹⁷⁵ Karleigh Webb, *Oregon trans teen Aayden Gallagher wins state 200-meter title, also wins a silver medal*, OUTSPORTS (May 19, 2024), <https://www.outsports.com/2024/5/19/24094170/oregon-trans-teen-aayden-gallagher-wins-state-200-meter-title-also-wins-a-silver-medal/#:~:text=The%20defending%20state%20champion%20won,second%20barrier%20in%20the%20event> [https://perma.cc/ZEF2-7MQY].

¹⁷⁶ *Trends in the Participation of International Student-Athletes in NCAA Divisions I and II*, NCAA, 6 (Oct. 2019), https://ncaaorg.s3.amazonaws.com/research/demographics/2019RES_ISATrendsDivSprt.pdf [https://perma.cc/KMW5-8BKF].

¹⁷⁷ Title IX doesn't expressly require single-sex locker rooms. See 20 U.S.C. §§ 1681–88 (2024).

inclusion, maintains that cis-female athletes are entitled to “a separate safe, private place to shower, change clothes and use the toilet” and that the presence of trans-females can make them feel vulnerable.¹⁷⁸ If forced to share a locker room with trans females, they argue, some cis females will opt out of sports participation.¹⁷⁹

Regardless of one’s views on the importance of locker room privacy, these concerns are not a reason to exclude trans females from female teams. Many students aren’t comfortable undressing in front of others. The solution is to make individual toilets, showers, and changing areas available to all students who wish to use them. Low-cost privacy screens can often be used to minimize expenses. Those who remain uncomfortable can change clothes and shower at home.

A final female-protective reason sometimes given for excluding trans girls and young women from school teams is that opening female sports to trans females invites cheating by cis males. Former University of Kentucky swimmer Riley Gaines, a plaintiff in a pending lawsuit against the NCAA for allowing Lia Thomas to compete as a female,¹⁸⁰ has described Thomas as “an arrogant cheat” who “stole a national title.”¹⁸¹ Four-time Olympic swimming medalist Nancy Hogshead-Maker has compared Thomas to the East German swimmers she lost to in the 1970s and ‘80s who used banned anabolic steroids to win trophies.¹⁸² Tennis great Martina Navratilova stated the argument baldly: “A man can decide to be female, take hormones if required by whatever sporting organization is concerned, win everything in sight and perhaps earn a small fortune, and then reverse his decision and go back to making babies if he so desires.”¹⁸³

There’s no documented evidence of a single case in which this sort of purposeful deception has actually occurred and good reason to believe that future occurrences are very improbable. To compete on a female team as a trans female, one must live that identity publicly. Not only is it extremely challenging

¹⁷⁸ *Access to Female Athletes’ Locker Rooms Should Be Restricted to Female Athletes*, WOMEN’S SPORTS POL’Y WORKING GRP. (Jan. 24, 2025), <https://womenssportspolicy.org/access-to-female-athletes-locker-rooms-should-be-restricted-to-female-athletes-january-28-2023/> [https://perma.cc/56QF-S5RS].

¹⁷⁹ *Id.*

¹⁸⁰ See Mark Puleo & Tess DeMeyer, *supra* note 162.

¹⁸¹ Jack Birle, *Riley Gaines says Lia Thomas ‘stole a national title’*, WASH. EXAM’R (Mar. 27, 2023, 11:55 AM), https://www.washingtonexaminer.com/news/2752393/riley-gaines-says-lia-thomas-stole-a-national-title/#google_vignette [https://perma.cc/HV9P-SCYE].

¹⁸² Guest Editorial, *Sex Matters: Why Transgender Athletes Must Not Compete Against Biological Females*, SWIMMING WORLD (Jan. 25, 2024, 12:39 PM), <https://www.swimmingworldmagazine.com/news/sex-matters-why-transgender-athletes-must-not-compete-against-biological-females/> [https://perma.cc/9TAZ-YYND].

¹⁸³ Rob Goldberg, *Martina Navratilova: Transgender Athletes in Women’s Sport Is Insane, Cheating*, BLEACHER REP. (Feb. 18, 2019), <https://bleacherreport.com/articles/2821380-martina-navratilova-transgender-athletes-in-womens-sport-is-insane-cheating> [https://perma.cc/Q9T3-QFW9].

psychologically to present to the world a marginalized sexual identity that isn't one's own, but it almost certainly means enduring the intense harassment that trans people—especially trans athletes—typically experience.¹⁸⁴ If team participation is predicated on taking feminizing hormones, one must undergo bodily changes—some irreversible—that would be anathema to virtually any cis male. Unlike anabolic steroids, feminizing hormones diminish rather than enhance an athlete's strength and speed. How many cis boys and young men would subject themselves to these experiences simply to play, or even to excel, on a female school sports team?

IV. THE CASE OF ATHLETES WHO TRANSITION ONLY SOCIALLY AFTER MALE PUBERTY

On several occasions in the preceding sections, I've acknowledged that student-athletes who transition only socially after undergoing male puberty might be a special case. Since genetically based average differences in athletic performance between trans and cis female athletes are larger for this group of trans females than for others, the fairness and protection of female sports arguments appear to hold special sway in this context. In advocating for inclusive policies for trans females on female teams, it's tempting to make an exception for those who have experienced male puberty and transition only socially. However, there are reasons to hesitate before taking this position.

School sports teams offer benefits for trans youth that go beyond those conferred on all students. Trans children and young adults are disproportionately targets of harassment and violence.¹⁸⁵ Compared to cis students, they have higher rates of depression and suicidality¹⁸⁶ and lower levels of physical fitness.¹⁸⁷ Many feel alienated from school and are frequently absent.¹⁸⁸ Studies have shown that trans students who participate in sports have lower rates of depression and higher grades than those who do not.¹⁸⁹ Even trans students who are not athletes benefit from attending schools that allow students to try out for teams that align with their gender identities. Trans students at these schools are less likely than other trans students to be absent because of safety concerns and more likely to feel connected to their school communities.¹⁹⁰

¹⁸⁴ *School Climate for Transgender Students*, HUM. RTS. CAMPAIGN, https://assets2.hrc.org/welcoming-schools/documents/WS_School_Climate_for_Transgender_Students_Data.pdf [https://perma.cc/R4T2-DCEL].

¹⁸⁵ See Goldberg & Santos, *supra* note 169.

¹⁸⁶ *Id.*

¹⁸⁷ See Safer, *supra* note 97.

¹⁸⁸ See Goldberg & Santos, *supra* note 169.

¹⁸⁹ *Id.*

¹⁹⁰ Joseph G. Kosciw, Ph.D., Caitlin M. Clark, Ph.D., Nhan L. Truon, Ph.D., Adrian D. Zongrone, M.P.H., *The 2019 National School Climate Survey Executive Summary*, GLSEN, xxv, (2020), https://www.glsen.org/sites/default/files/2020-10/NSCS-2019-Full-Report_0.pdf [https://perma.cc/KMW5-8BKF].

If trans girls are to reap the benefits of trans-inclusive school athletic policies—benefits that schools should work to provide to all students—it’s not tenable for secondary schools to condition sports participation on taking puberty blockers or gender-affirming hormones. One reason is that large numbers of trans secondary school students simply lack access to these treatments. Many live in states that have passed bans on gender-affirming medical care for minors, and the ability of minors to access this care anywhere in the U.S. is currently under siege.¹⁹¹ Students not legally barred from receiving such care often lack access for other reasons. Gender-affirming medical care is expensive, and many insurance plans don’t cover it.¹⁹² Moreover, minors can’t receive such care without parental consent, and many parents of trans youth are not on board.

It’s also important that secondary schools avoid creating incentives for trans students to take medicines they might have reservations about taking. A wide array of American medical associations endorse the use of puberty blockers and gender-affirming hormones for trans youth who have been evaluated by qualified medical personnel who determine they would benefit from such treatments.¹⁹³ However, there is serious debate among some medical scientists about the long-term effects of some of these drugs and the proper criteria for prescribing them.¹⁹⁴ Adolescents and teens should not be forced to choose between taking these medicines and participating in school sports.¹⁹⁵

In Section V, I advocate expanding coed opportunities in school sports as a means of accommodating some of the competing considerations I discussed

¹⁹¹ HRC Found., *supra* note 84.

¹⁹² See Tekla Taylor, *The State of Trans Healthcare Laws in 2025*, A4TE (Jan. 13, 2025), <https://transequality.org/news/state-trans-healthcare-2025> [<https://perma.cc/MU6W-77AS>]; for information on Medicaid coverage for gender-affirming care, see *Medicaid Coverage of Transgender-Related Healthcare*, MOVEMENT ADVANCEMENT PROJECT, <https://www.lgbtmap.org/equality-maps/medicaid> [<https://perma.cc/N6RA-M4WF>].

¹⁹³ *Medical Organization Statements*, ADVOCATES FOR TRANS EQUALITY, <https://transhealthproject.org/resources/medical-organization-statements/> [<https://perma.cc/E7G2-TC9X>].

¹⁹⁴ The Cass Review, a study published in April 2024 critiquing youth gender identity services in England, has generated considerable controversy. Dr. Hilary Cass, *The Cass Review*, NHS ENGLAND, (Apr. 2024), <https://cass.independent-review.uk/home/publications/final-report/> [<https://perma.cc/68LY-8AZN>]; *But see* Meredith McNamara, Kellan Baker, Kara Connelly, Aron Johanna Olson-Kennedy, Ken C. Pang, Ayden Scheim, Jack Turba & Anne Alstott, *An Evidence-Based Critique of the Cass Review*, https://law.yale.edu/sites/default/files/documents/integrity-project_cass-response.pdf [<https://perma.cc/79RH-VEGU>] (extensively critiquing the Cass Review).

¹⁹⁵ Some opponents of trans-female inclusion on female teams deny their proposals preclude trans-female participation in school sports. For example, The Women’s Sports Policy Working Group advocates accommodations that “can include competing in the men’s category or an ‘open’ category for everyone who is not female.” See *Female Sports Are for Female Athletes*, WOMEN’S SPORTS POL’Y WORKING GRP. (May 5, 2024), <https://womenssportspolicy.org/the-resolution/> [<https://perma.cc/79RH-VEGU>]. Given trans teens’ struggles for social acceptance, however, it seems evident that few would find this proposal a palatable option.

earlier. As I explain below, however, coed teams cannot be the whole response. As long as schools continue to field female-only teams—which I believe they ought to do—the question of whether to include on these teams trans females who transition only socially after undergoing male puberty will continue to arise.

A reasonable approach may be to allow trans females who transition only socially after male puberty to play on secondary school but not college teams. There are significant differences between these contexts. Although some states have been considering legislation to limit even adult access to gender-affirming hormones,¹⁹⁶ the bans currently in effect apply only to minors—i.e., those under eighteen.¹⁹⁷ Few college students therefore face age-based restrictions. Adults, furthermore, can make their own medical decisions, so parental consent requirements are rarely a legal barrier for college students.¹⁹⁸ Lack of insurance coverage for gender-affirming care is also less of a problem in college than in secondary school because colleges and universities typically offer student health insurance plans. Schools can make sure to offer plans that include coverage for gender-affirming care.¹⁹⁹ Although concerns about coercing athletes to take medicines they are wary of taking are real even in college, older students are more apt than younger students to have the maturity to make reasoned decisions. They're also more likely than younger students to feel confident about their gender identities. Finally, although being eligible to play on a college sports team is a factor in social acceptance at all levels of schooling, it's a much bigger factor in high school than in college. With rare exceptions, college athletes were high school standouts. Most care a great deal about winning trophies and gaining recognition. Some have dreams of a professional career. Only a small percentage of high school athletes have comparable ambitions. Most play for the other benefits discussed earlier. Moreover, student-athletes are a far smaller fraction of college students than high school students. Students who transition only socially have more avenues in college than in secondary school to find community outside of team athletics.

¹⁹⁶ Kiara Alfonseca, *States move to restrict transgender adult care amid gender-affirming youth care battles*, ABC NEWS (Feb. 14, 2025), <https://abcnews.go.com/US/states-move-restrict-transgender-adult-care-amid-gender/story?id=118733720> [<https://perma.cc/P5H2-T9GN>].

¹⁹⁷ President Trump's executive order withholding federal funding from medical professionals who provide gender-affirming care for children—which is currently being challenged—defines “children” as individuals under the age of 19. Raymond, *supra* note 84.

¹⁹⁸ Since trans-female athletes typically must take gender-affirming hormones for a specified length of time in order to qualify for college competition, barriers to accessing gender-affirming hormones while a minor will prevent some trans-female college students from competing in their first and possibly even second year of college. Although redshirting is not a desirable option for some student-athletes, the implications of requiring trans-female students to undergo hormone treatment before competing still appear to be less problematic in college than in high school.

¹⁹⁹ Ten states currently bar Medicaid coverage for gender-affirming medical care for both minors and adults. See *Equality Maps: Healthcare Laws and Policies: Medicaid*, MOVEMENT ADVANCEMENT PROJECT (Jan. 28, 2025), <https://www.lgbtmap.org/equality-maps/medicaid> [<https://perma.cc/N6RA-M4WF>].

V. REVISITING THE SYSTEM OF SEX-SEGREGATED SPORTS

Throughout my discussion thus far, I've taken the continued existence of female-only school sports teams as a given and have posed the question of trans-female inclusion in the ways it's typically posed in societal and legal debates. Some commentators have suggested rethinking the premise that school sports teams should be segregated by sex.²⁰⁰ After all, sex segregation is a flawed concept. Despite President Trump's executive order proclaiming that there are only two sexes, there is considerable scientific consensus that sex isn't binary. Genetically, anatomically, and hormonally across a variety of species there are many individuals whose sex doesn't fit neatly into the categories of "male" and "female."²⁰¹ Furthermore, sex-segregated sports not only presuppose but also reinforce the notion of female athletic inferiority. As long as the sexes are precluded from competing against one another, female inferiority will be a self-fulfilling prophesy. For example, a runner who outstrips her female competition will never know how much faster she might have run in a more competitive coed race.²⁰² If all sports were played on a coed basis, trans-female inclusion on female teams would be a non-issue.

The obvious problem with simply eliminating single-sex sports, however, is that few girls and young women would currently qualify for coed school teams. Regardless of how much of the male-female athletic performance gap is due to unchangeable biological factors and how much is due to social factors, the performance gaps in sports that reward speed and strength are real.

²⁰⁰ See generally MCDONAGH & PAPPANO, *supra* note 141 (analyzing the problems of single-sex sports). Other scholars who have critiqued sex-segregated sports are Tracy Turner, *Dismantling the Cage of Binary Sports*, 67 ST. LOUIS U. L.J. (2022) and Nancy Leong, *Against Women's Sports*, 95 WASH. U. L. REV. 1, 1251 (2018). I have discussed this issue in Rosalind Simson, *The Title IX Athletic Regulations and the Ideal of a Gender-Free Society*, 11 DENVER SPORTS ENT. L. J. 1 (2011).

²⁰¹ See, e.g., Christoph Rehmann-Sutter, Olaf Hiort, Ulrike M Krämer, Lisa Malich & Malte Spielmann, *Is sex still binary?*, 35 MED. GENET. 173 (2023); Agustin Fuentes, *Biological Science Rejects the Sex Binary, and That's Good for Humanity*, SAPIENS (May 11, 2022), <https://www.sapiens.org/biology/biological-science-rejects-the-sex-binary-and-thats-good-for-humanity/> [perma.cc/8849-HSU6].

²⁰² Nancy Leong makes this point in *Against Women's Sports*, 95 WASH. U. L. REV. 1251, 1277 (2018). Another example is the different rules for male and female sports. For instance, because female tennis competitions require winning two of three sets while male competitions require winning three of five, girls and women have less incentive than boys and men to maximize their stamina. The assumption that females should play fewer sets because they have less endurance than men is especially troubling in light of women's successes over men in marathon swimming. See Ned Denison, *Marathon Swimming: Where Women Have Outperformed the Men*, SWIMMING WORLD (Mar. 8, 2023), <https://www.swimmingworldmagazine.com/news/marathon-swimming-where-women-have-outperformed-the-men/#:~:text=Unlike%20competitive%20pool%20swimming%2C%20marathon,head%2Dto%2Dhead%20races> [https://perma.cc/ZDQ3-8WVV].

If the sports offered in most U.S. secondary schools and colleges were offered only on a coed basis, teams would be mainly male. Female sports participation and average female athletic skill levels would undoubtedly decrease.

To accommodate competing considerations, The Women's Sports Foundation (WSF) issued a Policy Statement that advocates expanding co-ed opportunities while retaining all-female teams.²⁰³ According to their proposal, all children who have not yet reached puberty—i.e., elementary school children—should play coed sports.²⁰⁴ Schools should provide all-female teams but not all-male teams for older students. Girls who demonstrate the ability to play on a team previously designated for boys should be allowed to compete there, regardless of whether the school offers an all-girls team in that sport and regardless of whether the sport is a contact sport.²⁰⁵ When a school offers both all-female and coed teams in the same sport, it should leave it up to any girls who can make the coed team to decide whether a single-sex or a coed team “will most appropriately match their skill level.”²⁰⁶ The WSF takes a more restrictive view of boys playing on all-female teams. It advocates allowing boys to try out for a girls' team in a particular sport only on the rare occasions when a school doesn't offer a coed team in that sport, boys at that school have fewer athletic opportunities than girls, and the boys trying out have strength and skill levels comparable to those of the girls.²⁰⁷ Like the Title IX athletic regulations, the WSF justifies this asymmetrical model by pointing to the ongoing underrepresentation of girls in school athletics.

Some observers have proposed innovative ways of increasing girls' chances of qualifying for coed teams. One suggestion is to create more competitions that use factors other than sex as the basis for matching competitors. For example, coed wrestling pairs opponents based on weight classes, and some girls have proven to be more than the equal of boys in their weight class.²⁰⁸ Another proposal is to introduce rule changes to minimize the

²⁰³ *ISSUES RELATED TO GIRLS AND BOYS COMPETING WITH AND AGAINST EACH OTHER IN SPORTS AND PHYSICAL ACTIVITY SETTINGS*, WOMEN'S SPORTS FOUND., <https://www.womenssportsfoundation.org/wp-content/uploads/2019/08/issues-related-to-girls-and-boys-competing-with-and-against-each-other-in-sports-and-physical-activity-settings-the-foundation-position.pdf> [perma.cc/B4SS-RLQA]. Others who have made similar recommendations are McDonagh & Pappano, *supra* note 192 at 29 and Karen L. Tokarz, *Separate but Unequal Educational Sports Programs: The Need for a New Theory of Equality*, 1 BERKELEY WOMEN'S L. J. 201, 240 (1985). I also advocated this approach in Simson, *supra* note 192 at 28, 42.

²⁰⁴ WOMEN'S SPORTS FOUND., *supra* note 195.

²⁰⁵ *Id.* at 2–5. The WSF argues that denying girls the right enjoyed by boys to play on teams suited to their abilities violates the Equal Protection Clause of the federal Constitution.

²⁰⁶ *Id.* at 4.

²⁰⁷ *Id.* at 5.

²⁰⁸ Bill Hutchinson, *No Fluke: Maine girl beats boys to win 2nd straight state wrestling title*, ABC NEWS (Feb. 22, 2024, 1:50 PM), <https://abcnews.go.com/US/fluke-maine-girl-beats-boys-win-2nd-straight/story?id=107407141> [perma.cc/33TB-6WFZ]. Seemingly perversely, the upshot of girls having success wrestling against boys has been the creation of more all-female wrestling teams; See Clay Masters, *Wrestle Like A Girl: How Colleges Are Pushing The NCAA To Recognize Women's Wrestling*, NPR (Mar. 31, 2018), <https://www.npr.org/2018/03/31/596545662/wrestle-like-a-girl-how-colleges-are-pushing-the-ncaa-to-recognize-womens-wrestle> [perma.cc/7UZN-ML8B].

significance of differences in physical size. An example in basketball might be to award only one point rather than two for baskets scored within five feet of the basket to neutralize the advantages of being tall enough to dunk the ball.²⁰⁹ Another option is for schools to diversify their sports offerings to include sports like fencing and gymnastics that reward agility, balance, coordination, and other traits more evenly shared among the sexes.²¹⁰

Expanding coed sports options would benefit all girls and young women. Those interested in playing a sport currently offered only to males at their school—wrestling or football, for example—could try out for the team. And in sports that their school currently offers on a single-sex basis to both males and females, athletically talented females who could make coed teams could have access to the typically greater opportunities there.²¹¹ At those high schools where the level of competition and quality of coaching is far better on the coed than the girls' team, some girls might opt for the coed team in hopes of improving their skills enough to qualify for college scholarships.

If significant numbers of cisgender females qualified for and decided to play on coed school teams, transgender females could try out for these teams without feeling ostracized. This would be an especially welcome alternative for students who transition only socially after undergoing male puberty.

It's important to recognize, however, that the WSF's proposals would only partially defuse debate about trans-female participation on female school teams. As long as all-female teams are retained, the question of whether trans-females should be eligible for them remains. The WSF suggests that schools that offer both a coed team and an all-female team in a particular sport leave it up to the female athletes rather than their coaches to decide which team best matches their skill levels.²¹² Girls or young women who could make their school's coed team would thus be free to decide they would be better served on the female team because, for example, they would be more apt to shine there. If cisgender females are free to make this decision based on preference rather than athletic ability, should transgender females have the same option? This question raises all the same issues as the original question of whether trans females should be allowed to compete on female school teams. I have argued in this article that the answer in almost all cases is yes.

²⁰⁹ I previously made this suggestion in Simson, *supra* note 187 at 39.

²¹⁰ See Leong, *supra* note 192 at 1271.

²¹¹ I'm assuming that the advantages of male teams discussed in Section II.A would carry over to coed teams.

²¹² WOMEN'S SPORT'S FOUND., *supra* note 195. The WSF doesn't offer justification for this view, but I suspect it's based on a desire to expand not restrict female athletic options. Whatever the WSF's justification, I agree with their position, at least for now. There are currently many unknowns about how many girls and young women could qualify for coed teams and what sort of reception those who join those teams would receive there.

VI. CONCLUSION

There is growing opposition among lawmakers, policymakers, and the general public to including transgender girls and young women on female school sports teams. The principal arguments made by opponents of inclusion are that allowing trans-female students to compete on female teams is unfair to cisgender students and threatens the integrity of female school sports. I have argued that both of these arguments are deeply flawed.

Athletics is included within the purview of Title IX because of the many educational benefits it provides to the students who participate. Among these benefits are lessons in shedding biases and rejecting stereotypes. Nelson Mandela eloquently explained the unifying power of athletics: "Sport . . . speaks to youth in a language they understand. Sport can create hope where once there was only despair. It is more powerful than governments in breaking down racial barriers. It laughs in the face of all types of discrimination."²¹³

Although Mandela was undoubtedly not thinking about transgender student-athletes when he said these words in 2000, his insights are relevant to the current controversy. The Biden administration was on the right track when it sought to expand the scope of Title IX's coverage to include discrimination based on gender identity. Resistance to this expansion is fueled in part by misinformation. As I discussed in Section II.A, arguments for trans-female exclusion from female sports typically ignore differences among types of gender transitions, overlook relevant evidence, and fail to recognize the limitations of research into the effects of gender transitions on athletic performance. As I discussed in Section II.B, this resistance is also fueled by a failure to think critically about the meaning of fairness in school athletic competitions. The result is that instead of serving as a driving force for inclusivity, as Mandela envisioned, school sports have become a battleground that has increased the marginalization of transgender youth.

Of course, integrating trans females into female athletics is challenging. I have argued in Section V for the need to think creatively about ways to increase opportunities for coed sports. Since female-only teams remain a needed option, however, we should use the issue of trans-female inclusion as an occasion to remind ourselves that sport's ability to help students confront biases and stereotypes is part of the reason that athletics are included within the purview of Title IX.

²¹³ *Celebrating the Legacy of Our Patron on Mandela Day*, LAUREUS (Mar. 15, 2022), <https://www.laureus.com/news/celebrating-the-legacy-of-a-hero-on-mandela-day> [perma.cc/7FZC-T7AB].