



**Independent**<sup>®</sup>  
Women's Forum

**Independent Women's**  
LAW CENTER

# COMPETITION

Title IX, Male-Bodied Athletes, and  
the Threat to Women's Sports





**Independent Women's Forum ("IWF")** is a nonprofit, non-partisan 501(C)(3) organization founded by women to foster education and debate about legal, social, and economic issues. IWF is dedicated to developing and advancing policies that aren't just well-intended, but actually enhance people's freedom, opportunities and well-being.



**Independent Women's Law Center ("IWLC")**, a project of IWF, advocates—in the courts, before administrative agencies, in Congress, and in the media—for equal opportunity, individual liberty, and respect for the American constitutional order.





# COMPETITION

## Title IX, Male-Bodied Athletes, and the Threat to Women's Sports

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***“[T]here will always be significant numbers of boys and men who would beat the best girls and women in head-to-head competition. Claims to the contrary are simply a denial of science.”***

MARTINA NAVRATILOVA

Winner of 18 Grand Slam Tennis Singles Titles






# TABLE OF CONTENTS

<b>Executive Summary</b>	<b>1</b>
<b>Introduction</b>	<b>3</b>
<b>I. Women’s Sports and American Law</b>	<b>5</b>
A. Title IX	5
B. Women’s Progress in Sports	6
<b>II. The Threat and the Pushback</b>	<b>9</b>
A. Transgender Participation in Women’s Sports	9
B. Male Participation on Women’s Teams Without a Male Counterpart	12
C. Efforts to Eliminate Single-Sex Sport Altogether	13
D. The Pushback	14
<b>III. The Data</b>	<b>17</b>
A. Physiological Differences Between Males and Females	17
B. The Male Athletic Advantage	18
C. Differences in Men’s and Women’s Athletic Performance	22
D. What Role Does Testosterone Suppression Play?	27
<b>IV. What’s the Harm?</b>	<b>31</b>
<b>Conclusion</b>	<b>37</b>
<b>Endnotes</b>	<b>39</b>



A photograph of a swimming pool with lane lines and starting blocks. The water is blue, and the lane lines are red and white. The starting blocks are white with blue and red accents. The background shows a tiled wall with blue and white tiles.

***“(I)f sex classifications are abandoned...female athletes would almost always lose to males.... This is as true of athletes at the highest echelons like Serena Williams and Katie Ledecky as it is of the development athletes in high school, college, and beyond who aspire to take their place.”***

PROF. DORIANE LAMBELET COLEMAN  
Duke Law School



# EXECUTIVE SUMMARY

It is undisputed that the average male is bigger, faster, and stronger than the average female. Accordingly, when it comes to athletics, single-sex competitions have long been the norm.

Increasingly, however, males and transgender women (who were born male) are seeking to participate in women's sports. In the name of "inclusion," females are being asked to step aside to make room for these athletes. This isn't fair. And it undermines Title IX, the landmark legislation passed by Congress to increase opportunities for women and girls.

To help athletic associations, policy-makers, and courts understand the growing threat to female athletes, Independent Women's Forum and Independent Women's Law Center have prepared this report. In it, we summarize American law regarding sex discrimination and athletics, analyze the evidence regarding physiological sex differences and the male-female athletic gap, and review testimony from just a few of the many females who have competed with or against male-bodied athletes.


The evidence is clear: In almost every sport, allowing natal males to compete on women's teams or in women's events will put female athletes at a significant competitive disadvantage. In some cases, it will deny female athletes the opportunity to compete at all. Female athletes have fought too long and too hard for equal athletic opportunity to let that happen.



PHOTO BY KATHERINE FREY/THE WASHINGTON POST VIA GETTY IMAGES



PHOTO BY DANIEL POCKETT/AFL MEDIA VIA GETTY IMAGES

A photograph of two female athletes on a track. The athlete on the left is wearing a blue short-sleeved shirt and blue shorts, looking towards the right. The athlete on the right is wearing a black tank top and black shorts, looking down. In the background, there are blue tents with the word 'SEAR' visible. The text is overlaid in the center of the image.

***“I would have won my first-  
ever high school track  
meet if it weren’t for this  
[male-bodied] athlete...It  
was very disappointing.”***

MARGARET ONEAL  
Hawaii



*Placed 2nd behind a transgender competitor who previously  
competed in high school sports as a male.*



# INTRODUCTION

In February 2020, high school student **Margaret Oneal** of Maui, Hawaii, lost a 400-meter women's track race to a transgender/male-bodied athlete.\* It was the first and only race of Oneal's freshman year at St. Anthony School in a track season cut short by the COVID-19 pandemic.

Just a year and a half earlier, Oneal's mother, Team USA Masters track athlete **Cynthia Monteleone**, also competed against a male-bodied athlete at the 2018 World Masters Athletics Championships in Málaga, Spain. Monteleone beat Yanelle Del Mar Zape by a hair in the 200-meter race. But Zape beat Monteleone's teammate Rachel Guest at the April 2019 World Championship indoor meet in Toruń, Poland.<sup>1</sup>

This mother-daughter story is just one illustration of the tension caused by the growing participation of transgender athletes in women's sports. But it is not only transgender athletes who are challenging eligibility requirements for women's sports. Across the U.S., high school boys increasingly are seeking spots on women's field hockey and volleyball teams where the schools offer no corresponding men's team.

While the total number of natal males seeking to compete in women's sports is relatively small, the harm they cause is not insignificant. In **head-to-head competitions**, allowing even one or two male-bodied athletes to compete in the women's division can severely limit the chances of success for female athletes. On **teams with limited roster spots**, allowing even one natal male to participate inevitably takes a spot and playing time (and, possibly, a scholarship) from a female athlete. And in many sports, allowing male-bodied athletes to compete with and against females will increase the risk of injury to female athletes. As the number of natal males seeking to compete in women's sports grows, the risks to female athletes also grow. Claims to the contrary deny science, defy logic, and undermine Title IX.

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\*A word about terminology: Throughout this report, we use the term "**male-bodied athlete**" or "**natal male**" to clarify the birth sex of a person who is not female but who is competing (or seeking to compete) on a women's team. More generally, we use the terms "**male**" and "**female**" to refer to the two main biological categories into which humans and most other living things are divided based on physical and physiological features including chromosomes, gene expression, hormone levels and function, and reproductive/sexual anatomy. We use the term "**sex**" to refer to the condition of being either male or female as observed at birth. (Sex differs from "**gender**", which is related to identity, expression, and social expectations/norms.) We use the term "**gender identity**" to describe the way in which a person understands and expresses himself or herself as male, female, or something else. And we use the term "**transgender**" to refer to people whose gender identity does not align with their observed sex at birth.



A full-page photograph of Sharron Davies, a British Olympic Silver Medalist, standing in a swimming pool. She is wearing a dark blue one-piece swimsuit with an Adidas logo on the left chest and a British Olympic emblem on the right. She has her hair pulled back and is smiling at the camera. The background shows the pool and some blurred lights.

***“Those with a male sex  
advantage should not  
be able to compete in  
women’s sport.”***

SHARRON DAVIES  
British Olympic Silver Medalist





# I. WOMEN'S SPORTS AND AMERICAN LAW

## A. Title IX

Almost 50 years ago, Congress enacted Title IX, the landmark sex equality law, as part of the Education Amendments of 1972. Title IX bans sex discrimination in all federally-funded education programs. It states:

*No 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.*<sup>2</sup>

Congress enacted Title IX to end unjust discrimination in education<sup>3</sup> and to expand educational opportunities for women and girls.<sup>4</sup> Although the statute originally made no mention of athletics, in 1974, Congress passed an amendment proposed by Senator Jacob Javits of New York that directed the Department of Health, Education, and Welfare to issue regulations “which shall include with respect to intercollegiate athletic activities reasonable provisions considering the nature of particular sports.”<sup>5</sup>

**Title IX’s athletic regulations,** promulgated pursuant to the Javits Amendment, state that schools “may operate or sponsor separate teams for members of each sex where selection for such teams is based upon competitive skill.”<sup>6</sup> For non-contact sports, the regulations allow schools to offer **sex-specific athletic teams**, so

long as the sport is offered to both sexes.<sup>7</sup> For contact sports, sex-based exclusions are permitted even where the school does not offer a team for the excluded sex.<sup>8</sup> Educational institutions are, therefore, permitted to operate single-sex athletics teams,<sup>9</sup> so long as they provide “**equal athletic opportunity for members of both sexes.**”<sup>10</sup> Schools must comply with Title IX irrespective of various local rules and irrespective of the policies of individual athletic associations.<sup>11</sup>

**The federal government has taken steps to require (not just allow) schools to let male-bodied athletes play on female teams and against female athletes.**

## B. Women's Progress in Sports

Title IX's binary conception of sex, under which schools may operate separate teams for male and female athletes helped to usher in a period of unprecedented athletic opportunity and achievement for women and girls.

Prior to the passage of Title IX, only one in 27 high school girls participated in organized sports. By 2016, two in five participated.<sup>12</sup> Only 31,852 women played college sports during the 1971-1972 school year.<sup>13</sup> **During the 2019-20 school year, the number of female college athletes reached 221,212.**<sup>14</sup>

Since the passage of Title IX, there has also been a steady increase in female participation in the **Olympic games**. In 1972, there were 84 women and 316 men in the U.S delegation to the Summer Olympics in Munich, Germany.<sup>15</sup> At the 2016 Rio games, there were 291 women and 263 men in the U.S. delegation.<sup>16</sup> At the 2020 Summer Olympics, held in Tokyo in 2021, there were 329 women and 294 men in the U.S. delegation.<sup>17</sup>

**The significant increase in the number of female athletes since the 1970s was made possible by a binary approach that created separate teams for females.**




PHOTO BY ISTOCKPHOTO

The female share of athletic scholarships has increased dramatically as well. In 1972, almost no such scholarships existed. By 2004, women received 45% of athletic scholarship dollars.<sup>18</sup> During the 2019-2020 school year, there were **84,901 athletic scholarships available to female athletes.**<sup>19</sup>

None of this progress in women's sports would have been possible without a binary approach to athletics that takes into account the average differences in the athletic performance of males and females.



A portrait of Tracey Lambrechts, a woman with reddish-brown hair tied back, wearing black-rimmed glasses and a dark grey tank top. She is smiling and holding a large red weightlifting plate in front of her. The background is dark. A semi-transparent purple box contains text and a quote. On the left side of the purple box, there are three horizontal orange bars.


***“We’re all about equality for women in sport but right now that equality is being taken away from us. . . . Unfortunately, there’s nothing we can do because every time we voice it we get told to be quiet.”***

TRACEY LAMBRECHTS

Former Women’s Olympic Weightlifter (2016 Rio), New Zealand

*Held several New Zealand national records that were broken by Laurel Hubbard, who formerly competed as a male.*





***NCAA Division II runner CeCe  
(formerly Craig) Telfer of  
Franklin Pierce University  
wins the 400 meter  
hurdles on May 25, 2019.***



## II. THE THREAT AND THE PUSHBACK

Challenges to single-sex athletic competition fall into three primary categories:

(a) policies that allow transgender athletes who were born male to participate in women's sports; (b) policies that allow male athletes to participate on women's teams (usually field hockey or volleyball) where the institution offers no male counterpart; and (c) efforts to eliminate sex-specific sports altogether.

### A. Transgender Participation in Women's Sports

#### Athletic Associations

A growing number of state, national, and international athletic associations allow transgender participation in women's sports. The rules for participation vary by association.

- At least 19 **state athletic associations** allow athletes to compete according to their gender identity *without restriction*, meaning without surgery or hormone therapy.<sup>20</sup> In these states, the only requirement for participation on women's teams is self-identification as a female.<sup>21</sup>
- The **National Collegiate Athletic Association (NCAA)** allows natal males to compete on women's teams once they have completed *one calendar year of testosterone suppression treatment*.<sup>22</sup> In April 2021, the NCAA's Board of Governors issued a statement "firmly and unequivocally" supporting the participation of transgender (natal male) athletes on women's collegiate athletic teams.<sup>23</sup>
- The **International Olympic Committee (IOC)** allows natal males to compete as women, provided that they have declared a female gender identity (and do not change it, for sporting purposes, for at least four years) *and* can demonstrate testosterone levels below 10 nanomoles per liter for at least a year.<sup>24</sup> [By comparison, most females, including elite female athletes, have testosterone levels of 0.12 to 1.79 nanomoles per liter; the normal testosterone range for post-pubescent males is 7.7 to 29.4 nanomoles per liter.]<sup>25</sup>

### Federal law

Recently, the federal government has taken steps to require (not just allow) schools to let transgender/natal male athletes play on female teams and compete against female athletes. On his first day in office in 2021, President Joe Biden issued **Executive Order 13988**, requiring the Department of Education to develop a plan to address “discrimination on the basis of gender identity,” including “deni[al of] access to . . . school sports.”<sup>26</sup> The Biden administration based its order on the Supreme Court’s 2020 ruling in *Bostock v. Clayton County*,<sup>27</sup> which held that Title VII of the Civil Rights Act of 1964 prohibits *workplace* discrimination against gay and transgender employees.\*\*

By extending *Bostock* to education, the administration is telling schools that they may never take biological sex into consideration, including with respect to sports

In June, 2021, the **Department of Education** complied with Executive Order 13988 by issuing a **Notice of Interpretation** of Title IX. The Notice states that the Department will investigate, under threat of termination of an educational institution’s federal financial assistance, any allegations

of individuals being “excluded from, denied equal access to, or subjected to sex stereotyping in academic or extracurricular opportunities” because of “gender identity.”<sup>28</sup> By unilaterally extending *Bostock* beyond the employment context to education, the administration is telling schools that they may never take biological sex into consideration, including with respect to sports.<sup>29</sup>

### *To be clear, the Department of Education’s Notice of Interpretation is unlawful.*

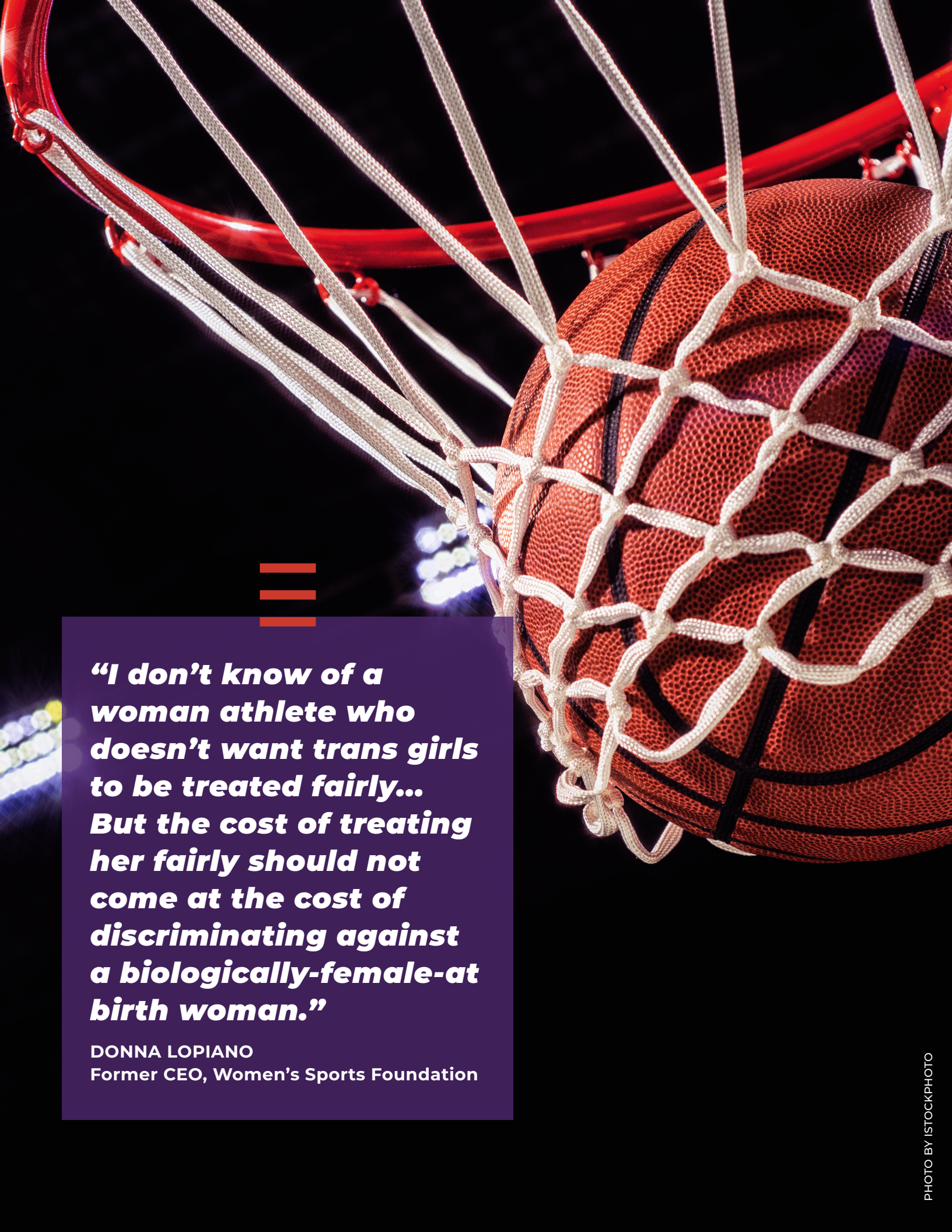
It is not the role of an administrative agency to make or change federal law. And the Supreme Court was crystal clear that *Bostock* concerned only Title VII (employment law), not Title IX (education). But by threatening revocation of federal financial assistance, the Department of Education’s Notice of Interpretation attempts to coerce schools into requiring women’s teams to include transgender athletes.

**Congress** has also entered the fray, attempting to codify transgender inclusion requirements across federal law. H.R. 5, known as the “Equality Act,”<sup>30</sup> would redefine “sex” under numerous federal statutes to include “gender identity.” If passed, **the Equality Act** would (among other things)<sup>31</sup> accomplish legislatively what the Biden administration has attempted to do administratively: require schools and athletic associations to open up girls’ and women’s sports to natal males who identify as female.<sup>32</sup>

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\*\* The *Bostock* decision did not purport to interpret Title IX, which applies to educational institutions that receive federal funds.





***“I don’t know of a woman athlete who doesn’t want trans girls to be treated fairly... But the cost of treating her fairly should not come at the cost of discriminating against a biologically-female-at birth woman.”***

**DONNA LOPIANO**  
Former CEO, Women’s Sports Foundation

## B. Male Participation on Women's Teams without a Male Counterpart

Across the U.S., many schools offer field hockey, volleyball, or other sports for females only. Significantly, schools initially created many of these programs to increase opportunities for female athletes so as to comply with Title IX.

Although female-only teams do not violate federal law,<sup>33</sup> they may run afoul of some state laws. For example, **Supreme Judicial Court of Massachusetts** has held that the state equal rights amendment prohibits schools from banning boys from girls' teams where the school offers no male counterpart.<sup>34</sup> As a result, and despite protest from parent groups,<sup>35</sup> Massachusetts today requires that public schools allow boys to play on girls' teams (such as field hockey and volleyball) where the school does not offer a boy's team. This policy applies even though such teams traditionally have limited rosters and need to cut students after tryouts.<sup>36</sup> In other words, males are allowed to play even where their participation means that female athletes get cut from the team or lose playing time.

For gender activists, trans-inclusion is merely a vehicle for abolishing single-sex sport altogether.

In applying *Bostock* to Title IX, the **Biden administration** has (perhaps inadvertently) adopted the position of the Massachusetts Supreme Judicial Court, requiring that schools across the country allow males to try out for and

compete on women's teams where the school does not offer the same sport for men. A quick review of the reasoning of *Bostock* illustrates why.

Prior to *Bostock*, courts interpreted Title VII (and, indeed, most federal sex-discrimination laws) as prohibiting: (1) discrimination against individuals because they are female or male and (2) policies that favor one sex over the other. Courts did *not* interpret federal law as prohibiting all policies that take biological sex into consideration. For example, prior to *Bostock*, courts would not have held an employer liable for sex discrimination under Title VII simply for offering separate male and female bathrooms, even though an employer clearly takes biological sex into consideration in providing separate sex-specific facilities.

In *Bostock*, however, the Court reasoned that discrimination against a transgender employee necessarily requires awareness of the employee's sex at birth in comparison to that employee's gender identity or mode of gender expression at work. Accordingly, the Court concluded that discrimination on the



basis of transgender status *is* discrimination “because of sex,” as prohibited by Title VII. *Bostock*, thus, established a “**but for**” test for determining liability.<sup>37</sup> This means that any employer who relies, even in part, on biological sex when making a particular decision or adopting a particular policy may be held liable for sex discrimination under Title VII.



The Biden administration’s decision to extend this reasoning to the education context has serious implications for women’s sports.

A coach who decides that an otherwise qualified male athlete cannot play on a women’s team is clearly making a decision that would have been different *but for* the particular student’s sex,<sup>38</sup> which *Bostock* seems to prohibit.<sup>39</sup>

Suppose, for example, that a male student who is cut from the men’s lacrosse team then tries out for the women’s team and demonstrates that

he is a better player than any of the female students. Or suppose that a male student wants to play college field hockey, but his college only offers women’s field hockey (as is the case at most American colleges that offer the sport). The Department of Education’s Notice of Interpretation forbids coaches from denying roster spots to athletically superior male players simply because they are male.<sup>40</sup>

## C. Efforts to Eliminate Single-Sex Sport Altogether

Some gender ideologues argue for the elimination of sex-specific sports altogether.<sup>41</sup> These activists claim that allowing males and females to compete in separate divisions reinforces pernicious stereotypes about male and female abilities and perpetuates the presumption that sex is binary.<sup>42</sup>

Writing in the *Washington Post* in April 2021, for example, Professor Elizabeth Sharrow of the University of Massachusetts argues that single-sex athletic teams are a form of segregation that damages women and girls.<sup>43</sup> For gender activists, like Sharrow, trans-inclusion is not a goal in and of itself: it is a vehicle for abolishing single-sex sports.

Sharrow's goal of mandatory sex-integration in sport could very well become the law of the land if the United States adopts the proposed **Equal Rights Amendment (ERA)** to the Constitution. Although the ERA makes no mention of sports, its language is sufficiently broad that courts would likely interpret it as prohibiting the separation of the sexes in most contexts,<sup>44</sup> including athletics.<sup>45</sup>

**The language of the ERA is so broad that courts would likely interpret it as prohibiting the separation of the sexes in most contexts, including sports.**

But activists may not have to wait for a constitutional amendment to achieve their objective of open, sex-neutral sport. As noted above, the Biden administration has already taken steps unilaterally to apply *Bostock* to Title IX (despite Justice Gorsuch's insistence that the Court's decision was limited to

the employment context). Applying *Bostock*'s "but for" test to sports will call into question not just individual coaching decisions about particular players, but the existence of single-sex teams altogether.<sup>46</sup> Indeed, if federal courts (incorrectly) hold that *Bostock* applies to Title IX, as some already have,<sup>47</sup> it may become unlawful ever to separate athletes into men's and women's teams because to do so would require consideration of the participants' sex, the very thing that Justice Gorsuch's opinion in *Bostock* prohibits.

## **D. The Pushback**

Across the country, a number of federal and state legislators have begun to push back against efforts to force women's sports to include natal males.

Before leaving Congress in 2020, Rep. Tulsi Gabbard (D-HI) joined forces with Rep. Markwayne Mullin (R-OK) to introduce the **"Protect Women's Sports Act."**<sup>48</sup> This bill seeks to statutorily define "sex" for purposes of athletics under Title IX as biological sex at birth, not gender identity.<sup>49</sup>

In March 2020, Idaho became the first state to pass a law limiting eligibility for women's teams to natal females.<sup>50</sup> Mississippi, Montana, Florida, West Virginia, Tennessee, Arkansas and Alabama have all followed suit, and a number of other states currently are considering similar measures.<sup>51</sup>

Unfortunately, some of the proposed legislative "fixes" miss the mark by, for example: (1) broadly covering youth and non-competitive sports without exception



and/or (2) excluding college level competitive sports (where the male physiological differences are most prominent and most disadvantage female athletes).

Although the laws that aim to protect women's sports differ from state to state, they all expressly contradict the federal Department of Education's Notice of Interpretation. This conflict between state legislative authority and federal administrative authority will, ultimately, have to be resolved in court.

Indeed, advocates for inclusion of natal males in women's sports have filed at least three lawsuits seeking to block enforcement of several of the above mentioned state laws. Ironically, these suits argue that state attempts to prohibit male-bodied athletes from participating in women's sports constitute unlawful sex discrimination under the Equal Protection Clause of the 14th Amendment and under Title IX, the law passed to expand opportunities for women and girls.<sup>52</sup>

**State efforts to protect women's sports expressly contradict federal mandates, setting up a conflict that, ultimately, will be resolved in court.**

On August 30, 2021, attorneys general from 20 states countered with a lawsuit of their own. The lawsuit, filed in the U.S. District Court for the Eastern District of Tennessee, seeks (among other things) a declaration that Title IX does not prohibit schools from offering single-sex sports teams or from determining eligibility for those teams on the basis of sex at birth. The lawsuit also seeks an injunction prohibiting the Department of Education from enforcing its Notice of Interpretation or any other non-binding guidance that administratively rewrites Title IX.<sup>53</sup>


PHOTO BY ALEX EDELMAN/AFP VIA GETTY IMAGES



Former Rep. Tulsi Gabbard (D-HI)

In resolving these cases, courts will need to consider the specific language of the legislation at issue (including the legal definition of “sex” under Title IX), the authority (if any) given to the Department of Education's Notice of Interpretation, and potentially the scientific evidence regarding the male-female athletic differential.





***“I didn’t feel it was fair for [this athlete] to be playing [and taking] away a position from girls who could have started, which to me was so wrong on so many levels.”***

DESTINY LABUANAN  
Maui, HI

*Played on the same high school volleyball team as a student who had previously competed on the school’s men’s team.*



# III. THE DATA

It is undisputed that the average male is bigger, faster, and stronger than the average female. These differences in athletic ability are not just the effect of human variation between top athletes and non-athletes. Nor are they the result of socialization, unequal opportunity, or lack of funding.<sup>54</sup> Rather, the male-female athletic differential is almost entirely the result of biology.<sup>55</sup>

## A. Physiological Differences Between Males and Females

### Men have:



larger  
hearts



larger  
lungs



more  
bone mass



more  
muscle mass



stronger  
muscles



less fat

Biological differences between females and males begin *in utero*,<sup>56</sup> becoming vastly more pronounced during puberty. Below are just some of the many differences that contribute to the male athletic advantage:

#### Hearts, Lungs, Hemoglobin, and Aerobic Capacity

- Males have larger hearts than females,<sup>57</sup> which helps to pump blood to the muscles more efficiently.<sup>58</sup>
- Males have larger lungs than females,<sup>59</sup> which helps to oxygenate the blood.<sup>60</sup>
- Males have about a 12% higher concentration of hemoglobin than females,<sup>61</sup> which helps to transport oxygen in the blood.<sup>62</sup>
- As a result, males typically have better aerobic capacity than females.<sup>63</sup>

#### Bones/Skeletal Structure:

- Grown males are, on average, 4.5 inches taller<sup>64</sup> and have longer, larger, and denser skeletal structures<sup>65</sup> than grown females.
- Grown males tend to have greater bone mass, even after taking body size into account.<sup>66</sup>
- In some parts of the body, males have different bone geometry than females.<sup>67</sup>
- As a result, male and female bodies have different biomechanics, with the female body “set up to produce less force in running, jumping and throwing.”<sup>68</sup>

#### Muscle Mass, Muscle Strength, and Fat Distribution

- Grown males have approximately 36% greater muscle mass than grown females (with about 40% more muscle mass in the upper body, and 33% more muscle mass in the lower body).<sup>69</sup>

- Grown males have more fast-twitch muscle than females, which allows them to generate greater force, speed, and anaerobically-produced energy than females.<sup>70</sup>
- Grown males have less fat (and a different distribution of body fat) than grown females.<sup>71</sup>
- Even in males and females with similar body mass, male muscles are stronger than female muscles (both absolutely and relative to lean body mass).<sup>72</sup>

## B. The Male Athletic Advantage

How do physiological differences impact performance? Scientists believe that when it comes to sport-specific actions, such as tackling or throwing, the physiological differences between males and females combine in ways that are **“likely synergistic”** and that “widely surpass the sum of individual magnitudes of advantage in isolated fitness variables.”<sup>73</sup>

### Male puberty confers a significant, and lasting, athletic advantage.


It is widely believed that significant athletic gaps do not emerge until around age 12.<sup>74</sup> Nevertheless, boys may carry some athletic advantage over girls even in **childhood**. For example, a 2012 study

of physical fitness differences between pre-pubescent boys and girls found that boys performed better in tests of aerobic fitness, strength, speed, and agility, while girls performed better in tests of balance and flexibility.<sup>75</sup> Some studies also indicate significant sex differences in throwing ability from an early age.<sup>76</sup> And other studies indicate that boys have an advantage over girls in running, jumping, and aerobic capacity even before the age of ten.<sup>77</sup>

Irrespective of the debate surrounding any childhood athletic gap, the science is consistent and irrefutable that the 20-fold boost in testosterone that occurs during **male puberty**<sup>78</sup> creates a significant, and lasting, athletic advantage for men. Because most American boys begin puberty between ages 9 and 14,<sup>79</sup> **the male-female athletic differential is significant by age 15.**<sup>80</sup>

This advantage is particularly prominent with respect to activities where speed, size, power, strength, or cardiorespiratory/anthropometric characteristics are determinative of performance.<sup>81</sup> Males may also have an advantage in sports where aggressive behavior and risk taking influence performance, as these behaviors are more common in individuals exposed to higher levels of testosterone.<sup>82</sup>



A young woman with curly hair is crouching on a red running track, looking directly at the camera. She is wearing a blue athletic shirt with orange lettering and black shorts. The track has white lane markings.

***“We know who’s going to win the race before it even begins...It just seems like all our hard work is going down the drain.”***

ALANNA SMITH  
Danbury, CT





Males **jump** approximately **25% higher** than females



Males **throw** about **25% further** than females



Males **run** approximately **11% faster** than females



Males **accelerate** around **20% faster** than females



Males **punch 30–162% harder** than females



Males are around **30% stronger** than females of equivalent stature and mass

female strength differential is so great that even untrained males are stronger than athletically trained females.<sup>90</sup>

With regard to **specific skills**, studies indicate that post-pubescent males can jump (25%) higher than females,<sup>83</sup> throw (25%) further than females,<sup>84</sup> run (11%)<sup>85</sup> faster than females, and accelerate (20%)<sup>86</sup> faster than females.

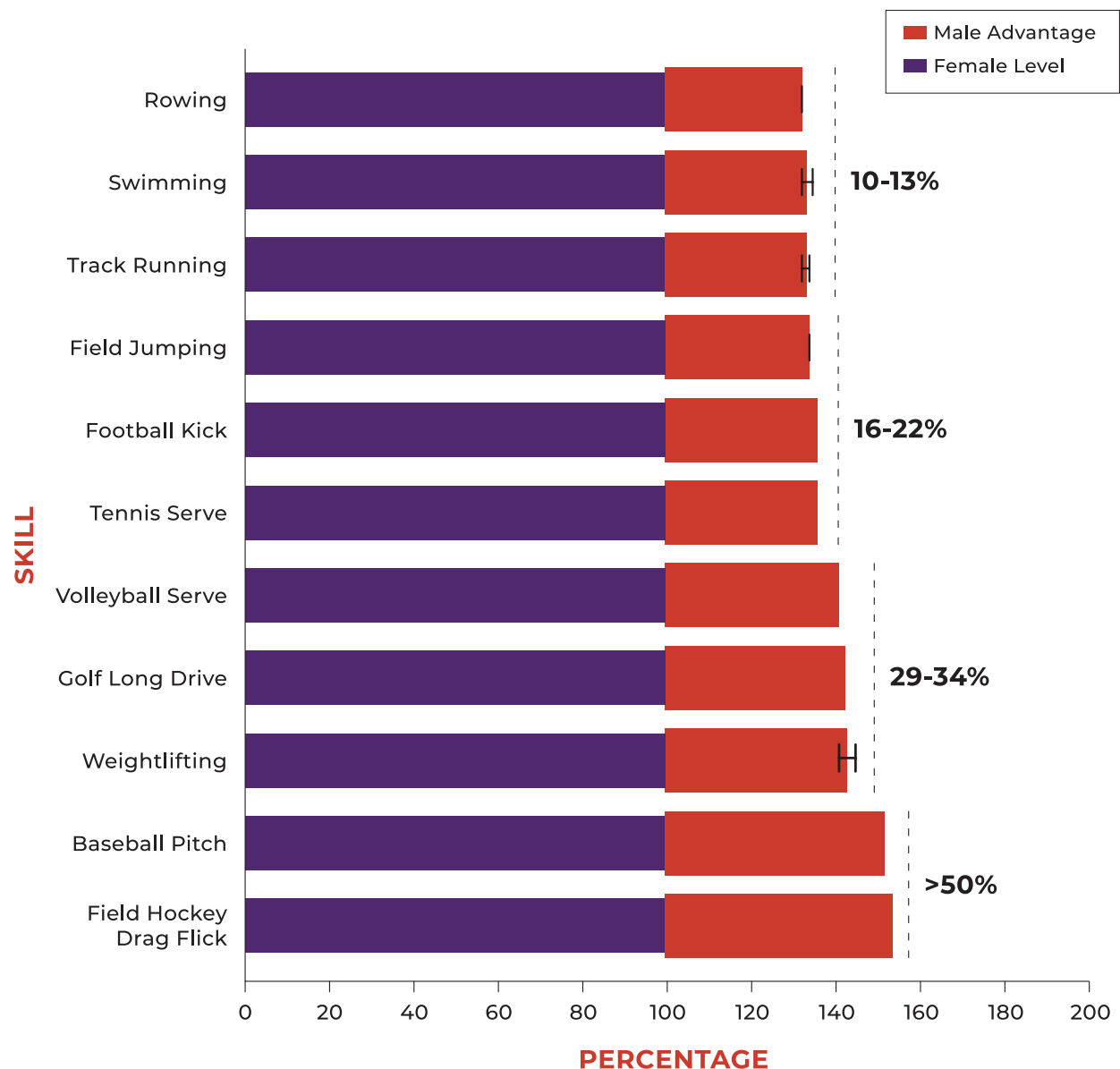
Perhaps the largest performance gap is seen in the area of strength. Some studies show that males are able to lift 30% more than females of equivalent stature and mass.<sup>87</sup> Males can also punch significantly harder than females. Andrew Langford, a performance scientist, strength & conditioning coach, and an associate lecturer at Sheffield Hallam University in England, estimates that men can punch with 30% greater force than women.<sup>88</sup> But at least one study has found that “even with roughly uniform levels of fitness, the males’ average power during a punching motion was 162% greater than females, with the least-powerful man still stronger than the most powerful woman.”<sup>89</sup> **The male-**

In addition to these significant performance gaps, studies indicate that males are much less prone to **sports-related injuries** than females.<sup>91</sup> Gaps in injury rates, as well as in numerous individual athletic functions, contribute to significant performance gaps across sporting events and across various levels of athletic competition.



For example, British biologist Emma Hilton and Swedish researcher Tommy Lundberg reviewed performance gaps in a variety of specific athletic activities and found disparities of more than 50% in activities, such as a baseball pitch or a field hockey drag flick, where upper body effort plays a significant role.<sup>92</sup>

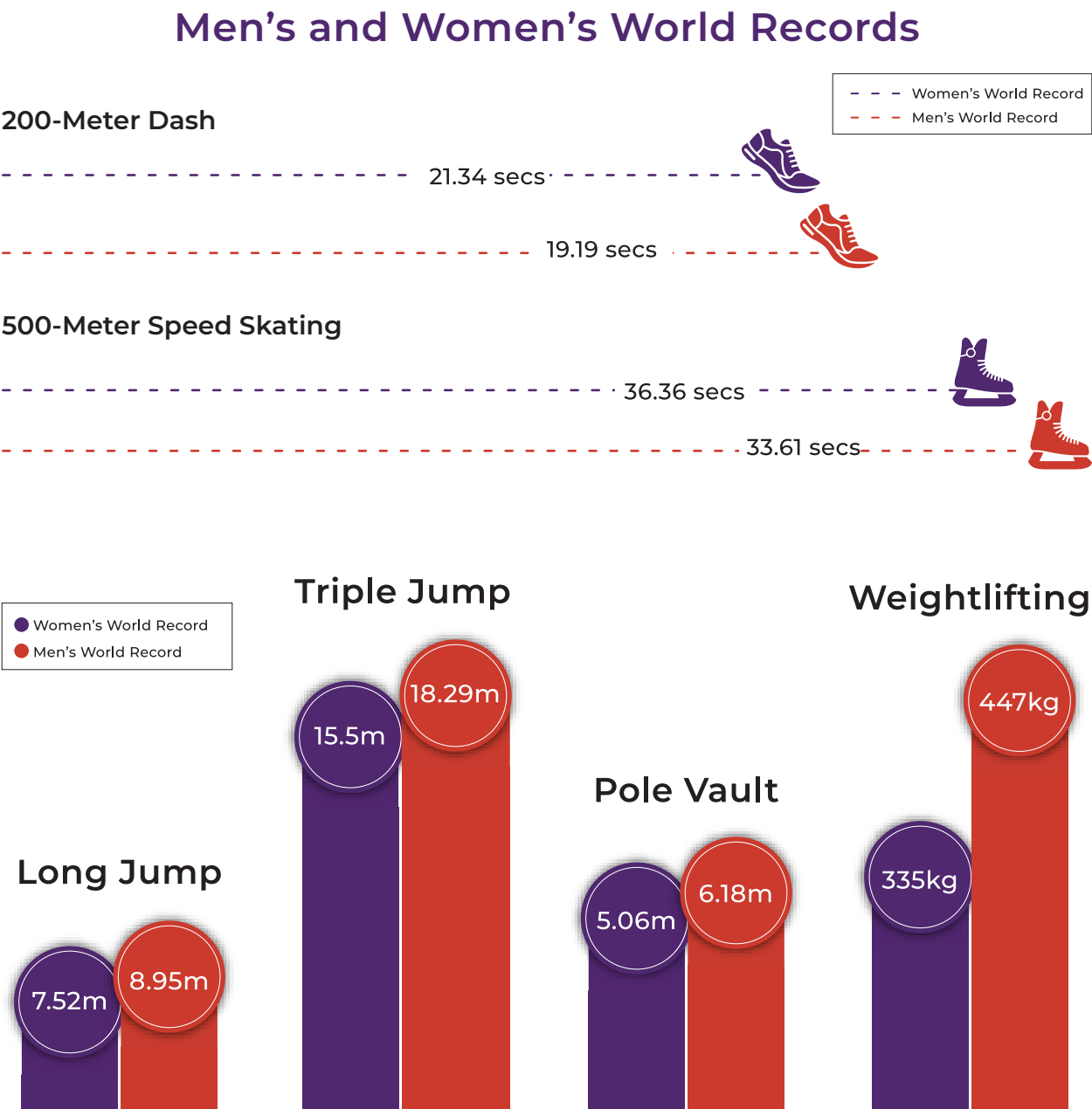
## Male Advantage for Particular Sport-related Skills



**Source:** Emma N. Hilton and Tommy R. Lundberg, *Transgender Women in the Female Category of Sport: Perspectives on Testosterone Suppression and Performance Advantage*, 51 *SPORTS MEDICINE* 199, 202-203 (2021), <https://link.springer.com/article/10.1007/s40279-020-01389-3> (data demonstrating the male performance advantage over females in selected sporting disciplines with the female level set to 100%).

### C. Differences in Men's and Women's Athletic Performance

In terms of overall performance, males have a significant—and, indeed, insurmountable—athletic advantage over females.<sup>93</sup> Not surprisingly, then, we see significant disparities in men's and women's **world records** across events. In running, to take just one example, the gap between men's and women's world-record times is 9-10% at every distance up to the marathon.<sup>94</sup> The chart below makes the point clearly:



Source: worldathletics.org



Even the most talented female athletes cannot beat the top male athletes in their sport. For example,

- **Allyson Felix** is the most decorated U.S. track and field athlete in Olympic history. She has competed in five Olympic Games, winning 11 medals (one more than Carl Lewis). Seven of her medals are Gold.<sup>95</sup> And, yet, Felix's best 400-meter speed (49.26 seconds)<sup>96</sup> is four seconds slower than Usain Bolt's personal best (45.28 seconds)<sup>97</sup> and more than six seconds slower than Wayde van Niekerk's world record (43.03 seconds).<sup>98</sup>
- **Florence Griffith Joyner** ("Flo-Jo")<sup>99</sup> died in 1998, but she still holds the women's world record in both the 100-meter (10.49 seconds) and 200-meter (21.34 seconds).<sup>100</sup> Compare this to Usain Bolt's 100-meter world record of 9.58 seconds.<sup>101</sup> Bolt also holds the men's world record for the 200-meter race, which he ran in 19.19 seconds<sup>102</sup>—2.15 seconds faster than Flo-Jo.
- At the 2020 Tokyo Olympics (held in 2021), American **Sydney McLaughlin** broke the women's world record in the 400-meter hurdles with a time of 51.46 seconds; Karsten Warholm of Norway broke the men's world record in the same event with a time of 45.94 seconds.<sup>103</sup>
- Great Britain's **Bethany Shriever** won a Gold medal in women's BMX racing in Tokyo with a time of 44.538 seconds.<sup>104</sup> The winner of the men's event in Tokyo, Niek Kimmann of the Netherlands, finished with a time of 39.053 seconds.<sup>105</sup>
- American swimmer **Lydia Jacoby** earned a Gold medal in the 100-meter breaststroke in Tokyo with an impressive time of 1:4.95.<sup>106</sup> Meanwhile, American Adam Peaty, the men's 100-meter breaststroke Gold medal winner in Tokyo, finished with a time of 57.37 seconds.<sup>107</sup>



PHOTO BY  
TONY DUFFY/ALLSPORT  
VIA GETTY IMAGES



Lydia Jacoby, 100-meter, 1:4.95

PHOTO BY MADDIE MEYER VIA GETTY IMAGES



Adam Peaty, 100-meter, 57.37

PHOTO BY IAN MACNICOL VIA GETTY IMAGES

- Even among athletes that are basically the same size, sex matters significantly. As Duke Law Professor Doriane Lambelet Coleman explains, Olympic swimmers **Missy Franklin** and Ryan Lochte are both about the same height (6'2") and have approximately the same wingspan (6'4"). And yet Franklin's record in the 200-meter backstroke is 2:04.06, while Lochte's world record is 1:53.94—a full nine seconds faster. Writes Coleman,

*If Franklin had been in [Lochte's] race, at her best she would have been about half a lap behind Lochte when he finished . . . Franklin would not have had a world record; she would not have been on the podium; in fact, she would not have made the team. In those circumstances, we might not even know her name.*<sup>108</sup>

But it is not just the top male athletes who can beat the world's best females:

- Tennis player **Serena Williams** is widely regarded as one of the greatest athletes of all time. Yet, in 1998, the 203rd-ranked men's player, Karsten Braasch, beat both Serena and her sister Venus.<sup>109</sup>



PHOTO BY AELTC/JED LEICESTER - POOL  
VIA GETTY IMAGES



PHOTO BY OLIVER HARDT/AFP  
VIA GETTY IMAGES

- In the USA Swimming Speedo Junior National Championships in 2019, **nine U19 boys** swam the 1500-meter faster than the women's Gold medal winner in the same event at the 2019 FINA World Championships.<sup>110</sup> The boy who came in first swam the race in 15:16.97<sup>111</sup>—over a minute and a half faster than the women's champion.<sup>112</sup>
- In 2019, **high school student Matthew Boling** ran a 100-meter race in just 9.98 seconds—0.51 seconds faster than **FloJo's world record**.<sup>113</sup> In fact, in 2018, the man now ranked 5,606th in the world ran a 100-meter race in the same time as FloJo (10.48 seconds).<sup>114</sup>



## Comparison of 2017 Track & Field Performances

Event	Best Women's Result 2017	Best Men's Result	Instances of Men Out-Performing
100 Meters	10.71	9.69	10,009
200 Meters	21.77	19.77	8,993
400 Meters	49.46	43.62	10,898
800 Meters	1:55.16*	1:43.10	12,285+
1500 Meters	3:56.14	3:28.80	8,251
3000 Meters	8:23.14	7:28.73	1,784
5000 Meters	14:18.37	12:55.23	2,140
High Jump	2.06 meters	2.40 meters	2,981
Pole Vault	4.91 meters	6.00 meters	2,981
Long Jump	7.13 meters	8.65 meters	4,801
Triple Jump	14.96 meters	18.11 meters	3,440

**Source:** Doriane Lambelet Coleman & Wickliffe Shreve, Comparing Athletic Performance of the Best Elite Women to the Boys and Men, Duke Center for Sports Law & Pol'y (Summer 2017), <https://law.duke.edu/sports/sex-sport/comparative-athletic-performance/>.

In many events, *males outperform the best female athletes thousands of times a year*.<sup>115</sup> For example, Duke Law professors Doriane Coleman and Wickliffe Shreve found that in 2017 alone, men and boys around the world beat Allyson Felix's best time in the 400-meter dash more than 15,000 times.<sup>116</sup> Coleman and Shreve put it simply: men and boys beating the world's best female athletes "is far from the exception. It's the rule."<sup>117</sup>

Because of the significant male athletic advantage, it is common for elite women's teams to prepare for top competition by scrimmaging against younger boys' teams. For example, in 2013 and 2014, the **U.S. Women's National Ice Hockey Team** prepared for the 2014 Winter Olympics in Sochi by facing off against top-ranked male high school hockey teams—and losing 6-3 to Dexter Southfield in Massachusetts and 3-1 to the Salisbury School in Connecticut.<sup>118</sup> Even the celebrated **U.S. Women's National Soccer Team**, which won the 2019 FIFA Women's World Cup, has prepared for competition by scrimmaging top boys' teams—and losing 5-2 to FC Dallas' U-15 team.<sup>119</sup>

The male-female athletic gap also exists at ordinary levels of competition between male and females.<sup>120</sup> Indeed, according to World Rugby, "there is no overlap in performance between males compared to females at all matched levels of competition."<sup>121</sup>

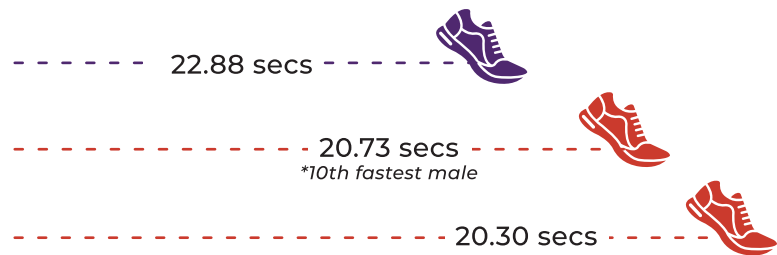
A full-page photograph of Allyson Felix, a professional sprinter, captured in mid-stride during a race. She is wearing a dark blue singlet with 'ATHLETA' printed across the chest. Her race bib, pinned to the center, features logos for 'USATF', 'U.S. OLYMPIC TEAM TRIALS', and 'TRACKTOWN', with her name 'FELIX' prominently displayed in the middle. She is also wearing dark blue shorts and white athletic shoes. The background is a blurred stadium filled with spectators, creating a sense of motion and competition.

***In 2017, men and boys  
around the world  
outperformed Allyson  
Felix's best 400-meter  
more than 15,000 times.***

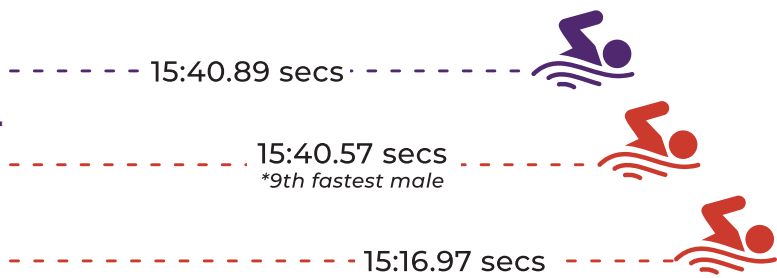


This is true even at the high school level. A review of the best times in the nation across high school track and swimming events during 2019 is illustrative. In the 200-meter dash, the high school male with the tenth-fastest time still beat the top high school female.<sup>122</sup> Likewise, the 9th fastest male high school swimmer beat the top female high school swimmer in the 1500-meter.<sup>123</sup>

### 2019 High School Outdoor 200 Meter Track Speeds



### 2019 High School Swimming 1500 Meter



**Sources:** [athletic.net/TrackAndField/Division/](https://athletic.net/TrackAndField/Division/); [USASwimming.org](https://USASwimming.org)

— Fastest High School Male Time  
— Fastest High School Female Time

The male-female athletic gap is also evident in individuals who are not athletically-trained at all.<sup>124</sup>

## D. What Role Does Testosterone Suppression Play?

Some activists and state athletic associations take the position that male-bodied athletes should be allowed to participate in women's sports even if they have not undergone a period of hormone therapy.<sup>125</sup> The IOC and the NCAA, by contrast, require a period of testosterone suppression before natal males can participate in women's competitions.<sup>126</sup> In fact, for some athletic regulatory bodies, testosterone levels are dispositive in determining whether someone is eligible to compete as a female.<sup>127</sup>

So does hormone therapy meaningfully eliminate the male athletic advantage? And do current testosterone levels accurately predict performance? The answer, it turns out, is no.

After two years of testosterone suppression, college athlete CeCe (formerly Craig) Telfer ran the indoor 200-meter dash in 24.45 seconds—faster than Telfer's 2017 pre-transition time of 24.64.

Although the significant increase in circulating testosterone that occurs during male puberty is, indeed, the primary biological basis for the male athletic advantage,<sup>128</sup> it is not the only basis. There are, for example, over 3000 genes that contribute to muscle differences between human males and females.<sup>129</sup> **Genetic differences**, of course, cannot be eliminated by reducing testosterone,<sup>130</sup>

and these differences may create different muscle responses to training between even those men and women who have the same concentrations of testosterone.<sup>131</sup>

Moreover, many of the changes brought about by increased levels of testosterone during male puberty (such as changes to skeletal architecture) are **permanent and unalterable** by testosterone reduction later in life.<sup>132</sup> Testosterone suppression will not, for example, make a person shorter or reduce a person's wingspan.

Consider the following:

- **Bone Density and Size** — According to a review of the literature by Hilton and Lundberg, transgender individuals who were born male **maintain bone mineral density over a median of 12.5 years of testosterone suppression.**<sup>133</sup> Testosterone suppression does not alter height, limb length, or other skeletal parameters. Thus, transgender athletes who were born male and begin testosterone suppression after the onset of male puberty are likely to retain an athletic advantage in sports, such as basketball, volleyball, handball, where **height, limb length, and handspan** are relevant. Moreover, male-bodied athletes are likely to continue to be less injury-prone than their female counterparts even after years of testosterone suppression and hormone therapy.<sup>134</sup>
- **Muscle Size** — Hilton and Lundberg also found that, while testosterone suppression reduces muscle size, *it does not reverse muscle size to female levels.*<sup>135</sup> Hilton and Lundberg reviewed twelve longitudinal studies that collectively suggest that 12 months of testosterone suppression to female-typical levels results in **only about a 5% loss of lean body mass or muscle size.**<sup>136</sup> They concluded that, “given the large baseline differences in muscle mass between males and females, the reduction achieved by 12 months of testosterone suppression can be reasonably assessed as small.”<sup>137</sup>



- **Muscle Strength** — Studies on the effect of testosterone suppression on muscle strength (as opposed to size) indicate that **testosterone reduction removes about 5-10% of strength advantages**.<sup>138</sup> Even after years of testosterone suppression, natal males remain stronger than most females.<sup>139</sup> And it is possible that even these decreases in strength can be made up by rigorous athletic training on the part of the athlete whose testosterone is suppressed.<sup>140</sup>
- **Endurance** — The most significant reduction in athletic advantage after hormone therapy seems to be in **hemoglobin counts**, with a 11-14% change.<sup>141</sup> Although further study is needed, it is possible that testosterone suppression brings transgender athletes who were born male closer to the female baseline for endurance sports than for sports that depend on strength or explosive power.<sup>142</sup>
- **Speed** — A study published in the British Journal of Sports Medicine found that transgender women (natal males) in the United States Air Force maintained a **significant advantage in speed** over biological females after a year of hormone therapy.<sup>143</sup> It is perhaps not surprising, then, that two years after undergoing hormone suppression treatment, college athlete **CeCe (formerly Craig) Telfer** ran the indoor 200-meter dash in 24.45 seconds—faster than Telfer's 2017 pre-transition time of 24.64.<sup>144</sup>

Hormone therapy does not come close to leveling the proverbial playing field.


An individual's current testosterone levels are not, therefore, precise predictors of performance. And hormone therapy does not come close to leveling the proverbial playing field.<sup>145</sup>

Some transgender athletes acknowledge as much. International Olympic Committee advisor **Joanna Harper**, a natal male, says that, despite more than 15 years of hormone therapy, she “carr[ies] more muscle mass than a woman [her] size, absolutely.”<sup>146</sup>

And former tennis player and transgender pioneer **Renee Richards** (formerly Richard Raskin) now admits that biology provided her an advantage over her female competitors. Richards, who won her own legal battle for the right to play in the female category of the U.S. Open,<sup>147</sup> now says that transgender athletes who are natal males should not participate in competitive women's sports.







***“I knew that I was the fastest girl here, one of the fastest in the state....Then, the gun went off. And I lost.”***

**CHELSEA MITCHELL**  
Canton, CT



*Lost four state championships, two all-New England awards, and additional other honors to male-bodied competitors.*



“Having lived for the past 30 years,” Richards says, “I know if I’d had surgery at the age of 22, and then at 24 went on the tour, no genetic woman in the world would have been able to come close to me.”<sup>148</sup>

**What about natal males who take puberty blockers from an early age and, therefore, never experience male puberty?**<sup>149</sup> Would this intervention meaningfully reduce or eliminate the male athletic advantage? Unclear, particularly since not all male-female differences are testosterone driven and also because males experience some degree of heightened exposure to testosterone even prior to puberty—both in the womb and shortly after birth.<sup>150</sup> Indeed, Hilton reports that at least one study of males treated with puberty blockers as young as 12, followed by hormone treatment at 16, found that early intervention did *not* reduce height, lean body mass, or grip strength to age-matched female levels.<sup>151</sup>

## IV. WHAT’S THE HARM?

The inclusion of male-bodied athletes in women’s sports harms female athletes by: **(a)** decreasing the chances of female athletic success; **(b)** taking away roster spots, playing time, and potential scholarships from female athletes; and **(c)** (in some sports) increasing the chances of injury.

Supporters of inclusion often argue that, because the number of natal males seeking to compete in women’s sports is relatively small, the harm to natal females as a group is negligible.<sup>152</sup> But to the individual female athletes who lose to male-bodied athletes, the harm feels quite substantial. Moreover, even a small number of natal male athletes have the potential to deny numerous females opportunities to reach the podium.

For example, in just a few short years, two natal males, Terry Miller and Andraya Yearwood, set 17 Connecticut track meet records<sup>153</sup> and captured 15 women’s State Championship titles previously held by girls. **Chelsea Mitchell**, who ran for Canton High School in Connecticut, lost four state championships, two all-New England awards, and various other honors to Miller and/or Yearwood.<sup>154</sup>



“That’s a devastating experience,” Mitchell wrote for USA Today in 2021. “It tells me that I’m not good enough; that my body isn’t good enough; and that no matter how hard I work, I am unlikely to succeed, because I’m a woman.”<sup>155</sup>

**The participation of even a small number of natal males in women’s sports has the potential to deny numerous female athletes repeated opportunities to win.**

In some cases, the participation of male-bodied athletes in female sports is so demoralizing that it decreases the desire of girls and women to compete at all. Cynthia Monteleone, who coaches track and field, in addition to competing herself, said the prospect of racing against a male-bodied

competitor was so devastating for one of her female athletes that the young woman “didn’t even want to run track for the rest of the season.”

“‘What was the point?’” Monteleone recalls her athlete saying. “‘I trained so hard for my events and I have no chance of winning the conference championship.’”<sup>156</sup>

Female college students have also lost numerous competitions to male-bodied athletes. During the 2019-20 school year, for example **Juniper (formerly Jonathan) Eastwood**<sup>157</sup> took away wins from multiple female competitors, including Southern Utah University sophomore **Haley Tanne**, who lost to Eastwood in the open mile, the distance mile medley, and the cross country Big Sky conference races.

“I just remember being so confused and not even knowing how to feel, just like, how is this happening?” Tanne told Independent Women’s Forum.<sup>158</sup>

The world of professional sport is also beginning to see natal males beat female athletes. **Rachel McKinnon**, a transgender athlete/natal male, who has lived under various names including Rhys<sup>159</sup> and now Veronica Ivy,<sup>160</sup> has taken cycling awards from numerous women, including **Dawn Orwick**, who would have earned Gold in the 2019 Masters Worlds sprint (35-39 age category), had McKinnon not taken that top spot.<sup>161</sup>



PHOTO BY OLI SCARFF/AFP VIA GETTY IMAGES



When asked about her loss to transgender/natal male cyclist Jillian Bearden at the 2016 El Tour de Tucson,<sup>162</sup> third place finisher **Suzanne Sonye** remarked, “I feel bad about saying it but, no, I do not think it’s fair play and I question her integrity knowing that she’s going into these events knowing that she is going to be stronger.”<sup>163</sup>

As disappointing as it is for a female athlete to lose a competition to a male-bodied competitor, it is perhaps even more frustrating to lose the chance to compete at all. Yet, when natal males are selected for limited-roster teams or advanced to the next level of head-to-head competition, **female athletes lose opportunities to compete.**



Laurel (formerly Gavin) Hubbard

PHOTO BY DAN MULLAN VIA GETTY IMAGES

New Zealand Weightlifter **Laurel (formerly Gavin) Hubbard** made history as the first transgender athlete to compete in an individual event at the Tokyo Summer Olympics.<sup>164</sup> At the age of 45, Hubbard competed in the over-87-kilogram division, but finished last in the competition after being eliminated without registering a single lift.<sup>165</sup> But that does not make Hubbard’s selection less problematic—when the New Zealand team added Hubbard to its Olympic delegation, a female weightlifter lost a chance to compete in Tokyo.

According to Tasmanian Senator Claire Chandler, that weightlifter was **Roviel Detenamo**. “Eighteen-year-old Roviel Detenamo could have become the first woman in 20 years to qualify to represent Nauru at the Olympic Games,” Sen. Chandler said in August, 2021.

“She could have been in Tokyo proving that, if you have the talent and the work ethic, even a teenager from a nation of 12,000 people can make the Olympics and compete on the same stage as world champions from China and the USA. But we didn’t witness that, because Roviel was denied the opportunity to become an Olympian, one of the most celebrated and respected titles in the world.”<sup>166</sup>

Former New Zealand weightlifter **Tracey Lambrechts** understands this frustration all too well. Lambrechts held several New Zealand national records before

Hubbard began competing in the women's division. To avoid losing her spot on New Zealand's national team, Lambrechts lost nearly 40 pounds in three months and entered a different weight class. Ultimately, Lambrechts retired in response to how her league handled the matter.<sup>167</sup>

While Hubbard's participation in women's sports garnered international attention, it is easy to overlook similar outcomes at the high school level, which usually go unreported. In Maui, Hawaii, for example, when a natal male who had previously competed on the school's men's volleyball team joined the women's team, biological girls lost the opportunity to start for their team.<sup>168</sup> And in jurisdictions where males are allowed to compete on women's high school teams without male counterparts, males inevitably take varsity spots and playing time from girls. This, of course, directly undermines Title IX, the purpose of which is to increase opportunities for women and girls—not limit them.

**Male participation on limited roster teams inevitably takes spots and playing time from girls.**


In some sports, allowing natal males to compete with and against female athletes increases the chance of injury. For example, in her first fight as a woman, MMA fighter **Fallon Fox** fractured Tamikka Brents's orbital bone.

Not surprisingly, Brents said she felt “overwhelmed” in the fight by Fox's power.<sup>169</sup> At the high school level, injuries caused by natal males in women's sports are unlikely to be widely reported. Thus, while a teammate of the volleyball player from Hawaii reports that the natal male athlete injured at least one girl and caused a concussion in another, the mainstream press did not report the incidents.<sup>170</sup>

Because of the obvious potential for injury, **World Rugby** in October 2020 established a rule banning the participation of natal males on women's teams. After consulting with numerous experts from the fields of medicine, physiology, and psychology, as well as with players, transgender representatives, and rugby experts, the organization concluded that the “size, force- and power-producing advantages” that male-bodied individuals enjoy over female athletes translate into ***an unacceptable risk to player safety***.<sup>171</sup>

As World Rugby understands, the harm to female athletes isn't just hypothetical. It's real. Allowing male-bodied athletes to play with and against females transforms women's sport into co-ed sport, elevating the risk of injury and undermining equal opportunity for female athletes.





***“Coaches at the collegiate level are rewarded for winning, so these coaches will choose biological males in order to remain competitive in their conference. Where are the spaces for biological females then? What does this mean for equal opportunity for women?”***

CYNTHIA MONTELEONE

Team USA Masters Track Athlete, Coach, and Metabolic Practitioner

*Competed against transgender athlete Yanelle Del Mar Zape of Colombia while representing Team USA in the 2018 women's World Masters Athletics Championships in Málaga, Spain.*





***“When it comes to women’s sports, biology matters.”***

INGA THOMPSON

10x National Champ, 3x Olympian, 3x World Medalist, 2x  
Podium Finisher in the Women’s Tour de France

*Competed at the 1984, 1988, and 1992 Olympic Games.*



# CONCLUSION

Despite evidence that hormone therapy cannot eliminate the male-female performance gap, some supporters of transgender inclusion in women's athletics continue to insist that natal males who suppress their testosterone should be allowed to compete as women. Others, particularly those who support the participation of boys in sports such as field hockey and women's volleyball, do not deny the male athletic advantage, but simply argue that inclusion is more important than fairness.<sup>172</sup>

The fact remains, however, that (even at the high school level) the world of competitive sport is a zero-sum game where some athletes make the team

and others do not; where someone wins and someone loses. And in a zero-sum competition, the inclusion of male-bodied athletes in women's sport inevitably means that females lose out.

**Congress enacted Title IX  
to expand opportunities for  
women and girls, not limit them.**

In the short term, inclusion of natal males in women's sports hurts individual female athletes. But in the long run, the logic of allowing male participation in women's events and on women's teams could be used to eliminate sex-specific sport altogether.<sup>173</sup> As we approach the 50th anniversary of Title IX, we must resist calls for "inclusion" that result in the *exclusion* of any female athlete from competitive sport.



***“[When it comes to competitive athletics,]  
sex segregation is the only way to  
achieve equality for girls and women.”***

MARTINA NAVRATILOVA

Winner of 18 Grand Slam Tennis Singles Titles



# ENDNOTES

- 1 See Kelsey Bolar, *After Competing Against Transgender Athletes, Mom and Daughter Fight for Fairness in Women's Sports*, THE DAILY SIGNAL (June 15, 2021) (hereinafter *Fight for Fairness*), <https://www.dailysignal.com/2021/06/15/after-competing-against-transgender-athletes-mom-and-daughter-fight-for-fairness-in-womens-sports/>; see also Kelsey Bolar & Elizabeth Tew, *A Mom & Daughter Fight For Fairness In Women's Sports*, INDEPENDENT WOMEN'S FORUM (June 15, 2021), <https://www.iwf.org/2021/06/15/a-mom-daughter-fight-for-fairness-in-womens-sports/> (video).
- 2 20 U.S.C. § 1681(a).
- 3 See *Neal v. Bd. of Trs. of Cal. State Univs.*, 198 F.3d 763, 766 (9th Cir. 1999) (explaining that Title IX was designed to eliminate significant “discrimination against women in education”).
- 4 According to Senator Birch Bayh, one of Title IX's primary sponsors, the statute promised women “an equal chance to attend the schools of their choice, to develop the skills they want, and to apply those skills with the knowledge that they will have a fair chance to secure the jobs of their choice with equal pay for work.” 118 Cong. Rec. 5808 (1972).
- 5 Pub. L. No. 93-380, § 844, 88 Stat. 484, 612 (1974) (hereinafter the Javits Amendment); see also *McCormick ex rel. McCormick v. Sch. Dist. of Mamaroneck*, 370 F.3d 275, 287 (2d Cir. 2004) (explaining the history of the Javits Amendment and the regulations promulgated thereunder).
- 6 34 C.F.R. § 106.41(b).
- 7 *Id.*; see also *O'Connor v. Bd. of Ed. of Sch. Dist. 23*, 449 U.S. 1301 (1980) (refusing to vacate a stay that prohibited a female student from trying out for the boys' basketball team where the school also had a girls' team).
- 8 34 C.F.R. § 106.41(b).
- 9 The Equal Protection Clause of the United States Constitution forbids arbitrary discrimination on the basis of sex, but it does not presumptively prohibit separation of the sexes in the same way that it forbids racial segregation. See *Craig v. Boren*, 429 U.S. 190 (1976) (outlining the “intermediate scrutiny” standard for sex-based classifications). The reason that courts scrutinize racial classifications more strictly than they scrutinize sex-based classifications is that biological sex differences sometimes provide relevant grounds for distinction, whereas racial classifications do not. By recognizing the inherent difference between race and sex, courts have carved out space to accommodate legitimate distinctions between males and females, while still prohibiting unjust discrimination. See e.g., Brief of Independent Women's Law Center as Amicus Curiae, *Equal Means Equal v. Ferriero*, No. 20-1802 at 21-22 (U.S. Ct. App., 1st Cir. Feb. 2021), [https://www.iwf.org/wp-content/uploads/2021/02/EqualandEqual\\_vs\\_Ferriero\\_Amicus\\_Brief\\_of\\_IndependentWomensLawCenter.pdf](https://www.iwf.org/wp-content/uploads/2021/02/EqualandEqual_vs_Ferriero_Amicus_Brief_of_IndependentWomensLawCenter.pdf); see also Kim Forde-Mazrui, *Tradition as Justification: The Case of Opposite-Sex Marriage*, 78 U. CHI. L. REV. 281, 321 (2011) (noting that “‘real differences’ between the sexes make it more likely that there are legitimate reasons to differentiate on the basis of sex than on the basis of race”).
- 10 34 C.F.R. § 106.41(c) (emphasis added).
- 11 14 CFR § 1253.125(c) (“The obligation to comply with these Title IX regulations is not obviated or alleviated by any rule or regulation of any organization, club, athletic or other league, or association that would render any applicant or student ineligible to participate or limit the eligibility or participation of any applicant or student, on the basis of sex, in any education program or activity operated by a recipient and that receives Federal financial assistance.”).
- 12 Women's Sports Found., *Title IX and the Rise of Female Athletes in America* (Sept. 2, 2016), <https://www.womenssportsfoundation.org/education/title-ix-and-the-rise-of-female-athletes-in-america/>; see also Fred Bowen, *Title IX Has Helped Encourage Many Girls To Play Sports*, WASH. POST (June 20, 2012) (in 1972, 295,000 girls and 3.67 million boys competed in high school sports; for the 2010-2011 academic year, 3.2 million high school girls and 4.5 million high school boys participated in school athletics).

- 13 Protect Title IX, *Title IX: History, Influence and More*, <https://www.protecttitleix.com/history-1> (last visited Aug. 11, 2021).
- 14 *Executive Summary: Sponsorship and Participation of NCAA Championship Sports (2019-2020)*, NCAA SPORTS SPONSORSHIP AND PARTICIPATION RATES DATABASE, <https://www.ncaa.org/about/resources/research/ncaa-sports-sponsorship-and-participation-rates-database>.
- 15 *United States at the 1972 München Summer Games*, SR/Olympic Sports, <https://web.archive.org/web/20200417043419/https://www.sports-reference.com/olympics/countries/USA/summer/1972/>.
- 16 Greg Myre, *U.S. Women Are The Biggest Winners At The Rio Olympics*, NPR (Aug. 21, 2016), <https://www.npr.org/sections/thetorch/2016/08/21/490818961/u-s-women-are-the-biggest-winners-in-rio-olympics>.
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- 21 A guidance produced and distributed by the ACLU, GenderSpectrum, the Human Rights Campaign, the National Center for Lesbian Rights, and the National Education Association urges schools to permit male students to play on female athletic teams *even if they have not begun hormone therapy or taken any medical steps to alter their male physiology*. Asaf Orr, et al., *Schools In Transition: A Guide For Supporting Transgender Students In K-12 Schools* 29-29 (July 2016) (hereinafter *SCHOOLS IN TRANSITION*), <https://hrc-prod-requests.s3-us-west-2.amazonaws.com/files/assets/resources/Schools-In-Transition.pdf?mtime=20200713142742&focal=none> (asserting that it is "inappropriate" for schools to require transgender students to begin any form of medical transition prior to participating in sports according to their gender identity).
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- 26 *Executive Order on Preventing and Combating Discrimination on the Basis of Gender Identity or Sexual Orientation* (E.O. 13988) (Jan. 20, 2021), <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-preventing-and-combating-discrimination-on-basis-of-gender-identity-or-sexual-orientation/>.
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- 28 Federal Register Notice of Interpretation: Enforcement of Title IX of the Education Amendments of 1972 with Respect to Discrimination Based on Sexual Orientation and Gender Identity in Light of *Bockstock v Clayton County*, DOE (June 2021), <https://www2.ed.gov/about/offices/list/ocr/docs/202106-titleix-noi.pdf>; see also U.S. Department of Education, Press Release, U.S. Department of Education Confirms Title IX Protects Students from Discrimination Based on Sexual Orientation and Gender Identity (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>.
- 29 See Jennifer C. Braceras & Kelsey Bolar, *Biden Administration's New Title IX Guidance Solidifies Threat To Girls' Sports*, INDEPENDENT WOMEN'S FORUM (June 17, 2021), <https://www.iwf.org/2021/06/17/biden-administrations-new-title-ix-guidance-solidifies-threat-to-girls-sports/> (explaining the impact of the new policy).
- 30 Equality Act, H.R. 5, 117th Cong. (as introduced in the House, Feb. 18, 2021).
- 31 See Inez F. Stepman, *The Equality Act Makes Women Unequal*, WALL STREET JOURNAL (Feb. 23, 2021) (explaining that the Equality Act would jeopardize myriad sex-specific programs, including women's prisons, domestic violence shelters, STEM education programs, and more).
- 32 See Doriane Coleman, Martina Navratilova, & Sanya Richards-Ross, *Pass The Equality Act, But Don't Abandon Title IX*, WASH. POST (Apr. 29, 2019) (hereinafter *Don't Abandon Title IX*).
- 33 See e.g., *Clark v. Arizona Interscholastic Ass'n* ("Clark I") 695 F.2d 1126 (9th Cir. 1982), cert. denied, 464 U.S. 818 (1983) and *Clark v. Arizona Interscholastic Ass'n*, 886 F.2d 1191 (9th Cir. 1989) ("Clark II") (rejecting claims of discrimination by a male high school student who was not allowed to compete for a place on the women's volleyball team where the school offered no men's team.)
- 34 See *Attorney Gen. v. Mass. Interscholastic Athletic Ass'n*, 378 Mass. 342 (1979) (relying on Mass. Const. art. I; Mass. Const. art. CVI in holding that the Massachusetts ERA prohibits the state athletic association from adopting a rule that "No boy may play on a girls team").
- 35 Tom Fargo, *Coalition Takes Field Hockey Concerns To The State House*, BOSTON HERALD (Jan. 23, 2020) (explaining the objection of various parents to boys playing on high school women's field hockey teams).
- 36 See Tommy Cassell, *Boys Just Want To Have Fun: Three Boys From Wayland High Teamed Up To Play Field Hockey This Fall*, MILFORD DAILY NEWS (Nov. 9, 2019); Buddy Thomas, *Playing Boys Puts Bullseye On Somerset Berkley Field Hockey*, SOUTHCOAST TODAY (Oct. 10, 2018); see also Shira Springer, *MIAA Must Draw A Line On Boys Playing Girls' Field Hockey*, BOSTON GLOBE (Nov. 27, 2015) (objecting to the Massachusetts policy).
- 37 *Bostock v. Clayton County*, 590 U.S. \_\_\_, 140 S. Ct. 1731, 1742 (2020).
- 38 The fact that the team is set up to be a single-sex team would, likely, provide no defense under a Title IX, which lacks any sort of Bona Fide Occupational Qualification (BFOQ) exemption for sex discrimination.
- 39 See Jennifer C. Braceras, *On Day One, Biden Eliminates Single Sex Sports*, INDEPENDENT WOMEN'S FORUM (Jan. 21, 2021), <https://www.iwf.org/2021/01/21/biden-eliminates-single-sex-sports/>.
- 40 *Id.*
- 41 See Nancy Leong, *Against Women's Sports*, 95 WASH. U. L. REV. 1249 (2018) (arguing that dividing athletes by sex should not be our default position); EILEEN MCDONAGH & LAURA PAPPANO, *PLAYING WITH THE BOYS: WHY SEPARATE IS NOT EQUAL IN SPORTS* (2008).
- 42 See Nancy Leong & Emily Bartlett, *Sex Segregation in Sport As A Public Health Issue*, 40 CARDOZO L. REV. 1813, 1816 (2019); ADRIENNE MILNER & JOMILLS BRADDOCK, *SEX SEGREGATION IN SPORTS: WHY SEPARATE IS NOT EQUAL* (2016).
- 43 Elizabeth Sharrow, *Five States Ban Transgender Girls From Girls' School Sports. But Segregating Sports By Sex Hurts All Girls*, WASH. POST (Apr. 16, 2021) (arguing that single-sex teams reinforce gender stereotypes and claiming that Title IX's endorsement of single-sex teams was intended to be "temporary"); see also Robin Ryle, *The Case of Transgender Athletes. Why Sports Aren't Fair and That's OK*, NEWSWEEK (Feb. 12, 2021) (arguing that "sports remain one of the last strongholds for the cult of gender differences" and suggesting that sex is not a meaningful category when it comes to competitive sport).

- 44 The 14th Amendment's Equal Protection Clause already prohibits discrimination against similarly-situated individuals. If we layer the Equal Rights Amendment on top of the existing Equal Protection mandate, courts are likely to interpret the new amendment as going further than current law and requiring that the government treat males and females not just equally, but the same. See Kim Forde-Mazrui, ***Why the Equal Rights Amendment Would Endanger Women's Equality: Lessons from Colorblind Constitutionalism***, 16 DUKE J. CONST. LAW & PUB. POL'Y 1, 22 (2021) (hereinafter *The ERA Would Endanger Women's Equality*) (explaining that courts would likely interpret the ERA as requiring the strictest of scrutiny for all sex-specific government policies and arguing, from a progressive standpoint, that this is bad for women); see also Inez Stepman, *Equal Rights Amendment Will Replace Equality With Enforced Sameness*, THE HILL (Jan. 17, 2020), <https://thehill.com/opinion/civil-rights/478765-equal-rights-amendment-will-replace-equality-with-enforced-sameness> (explaining, from a conservative perspective, the dangers of treating men and women the same in all circumstances).
- 45 See *The ERA Would Endanger Women's Equality*, *supra* n. 44 at 38 (explaining that the ERA would likely eliminate single-sex activities such as separate men's and women's sports).
- 46 See Jennifer C. Bracer, ***On The Anniversary Of Title IX, Are Women's Sports In Jeopardy?***, THE HILL (June 23, 2020).
- 47 *Grimm v. Gloucester Cnty. Sch. Bd.*, 972 F.3d 586, 616 (4th Cir. 2020), *as amended* (Aug. 28, 2020), *reh'g en banc denied*, 976 F.3d 399 (4th Cir. 2020), *cert. denied*, No. 20-1163, 2021 U.S. LEXIS 3441 (U.S., June 28, 2021); *Adams v. Sch. Bd. of St. Johns Cnty.*, 968 F.3d 1286, 1305 (11th Cir. 2020), *vacated*, No. 18-13592, 2021 U.S. App. LEXIS 20777, (11th Cir. Fla., July 14, 2021).
- 48 Protect Women's Sports Act of 2020, H.R. 8932, 116th Cong. (2019-2020).
- 49 *Id.*; see also Jennifer C. Bracer, *One Progressive's Attempt To Save Women's Sports*, INDEPENDENT WOMEN'S FORUM (Dec. 15, 2020), <https://www.iwf.org/2020/12/15/protect-womens-sports/> (describing the legislation and its objectives).
- 50 **Fairness in Women's Sports Act**, H.B. 500, 65th Leg., 2020 Second Reg. Sess. (Idaho 2020) ("Athletic teams or sports designated for females, women, or girls shall not be open to students of the male sex. If disputed, a student may establish sex by presenting a signed physician's statement that shall indicate the student's sex based solely on: (a) The student's internal and external reproductive anatomy; (b) The student's normal endogenously produced levels of testosterone; and (c) An analysis of the student's genetic makeup.") The Idaho law applies to any sport or athletic team sponsored by a public school or college as well as any school that is a member of the Idaho high school activities association or any college that is a member of the national collegiate athletic association (NCAA), national association of intercollegiate athletics (NAIA), or national junior college athletic association (NJCAA). *Id.*
- 51 See Bianca Quilantan, ***'This Isn't The Olympics': GOP Transgender Laws Head To Court***, POLITICO (July 3, 2021); Gillian R. Brassil, ***How Some States Are Moving to Restrict Transgender Women in Sports***, N.Y. TIMES (June 22, 2021) (as of June, 2021, at least 25 states have introduced bills banning male-bodied athletes from competing in women's sports).
- 52 See e.g., *Hecox v. Little*, 479 F. Supp. 3d 930 (D. Idaho 2020) (blocking enforcement of Idaho's law prohibiting natal males from participating in girls' sports), *remanded by Hecox v. Little*, No. 20-35815, 2021 U.S. App. LEXIS 18903 (9th Cir., June 24, 2021); *BPJ v. W.Va. State Bd. of Educ.*, No. 2:21-cv-00316 (D. W.Va., July 21, 2021) (temporarily enjoining West Virginia's law barring natal males from participating in girls' sports); *D.N. v. DeSantis*, No. 21-cv-61344 (S.D. Fla., June 29, 2021)(complaint filed); see also Quilantan, *supra* n. 51 (describing the lawsuits challenging state prohibitions on male-bodied athletes in female sport).
- 53 *Tennessee v. Cardona*, No. 3:21-cv-00308, (E.D. Tenn., Aug. 30, 2021)(complaint filed).
- 54 Were that the case, we would expect to see the male-female athletic gap continuing to narrow over time. In fact, over the last forty years, the gap has remained steady, despite increased opportunities and funding for women's sports. See CAROLE HOOVEN, T: THE STORY OF TESTOSTERONE: THE HORMONE THAT DOMINATES AND DIVIDES US at 107 (2021); Emma N. Hilton & Tommy R. Lundberg, ***Transgender Women in the Female Category of Sport: Perspectives on testosterone Suppression and Performance Advantage***, 51 SPORTS MED. 199, 201 (2021); Valérie Thibault, et al., ***Women and Men in Sport Performance: The Gender Gap Has Not Evolved Since 1983***, 9 J. SPORTS SCI. MED. 214 (2010).



- 55 *Don't Abandon Title IX*, *supra* n. 32 (“[t]he sex differential isn’t the result of boys and men having a male gender identity, more resources, better training or superior discipline. It’s because they have androgenized bodies”).
- 56 See Doriane Lambelet Coleman, ***Sex in Sport***, 80 LAW & CONTEMP. PROBS. 63, 90 (2017) (hereinafter *Sex in Sport*) (most females have a matching XX pair of chromosomes and most males have an unmatched XY pair, and this genetic standard is the case in all but a few births per thousand); *Sex Begins in the Womb* in EXPLORING THE BIOLOGICAL CONTRIBUTIONS TO HUMAN HEALTH: DOES SEX MATTER? (2001) (in utero, developmental processes differentially organize tissues for later activation in the male or female; sex determination and differentiation occur in a series of sequential processes governed by genetic and environmental factors); Emma Hilton, Reviewing The Science Supporting The IOC Decision To Let Male-born Transgender Athletes Into Female Competition at #WPUKFairPlay meeting in London (July 10, 2019) (hereinafter Hilton Speech) (transcript available at [https://fairplayforwomen.com/emma\\_hilton/](https://fairplayforwomen.com/emma_hilton/)) (“at 7 weeks gestation . . . genetic makeup drives sex differentiation into male or female forms, and the dimorphic characteristics associated with sex begin to develop.”).
- 57 Stefan Pfaffenberger et al., ***Size Matters! Impact of Age, Sex, Height, and Weight on the Normal Heart Size***, 6 CIRCULATION: CARDIOVASCULAR IMAGING 1073 (2013); see also Albert Oberman et al., ***Heart Size of Adults in a Natural Population- Tecumseh, Michigan Variation by Sex, Age, Height, and Weight***, 35 CIRCULATION 724, 729 (1967) (neither body size nor clinical status fully compensate for the discrepancies in heart size between the sexes).
- 58 College of Arts & Sciences Forum, *Running: Why Are Men Faster than Women?*, Ohio State University (Mar. 10, 2015) (hereinafter Ohio State Forum), <https://www.ohio-forum.com/2015/03/running-why-are-men-faster-than-women/>.
- 59 Michelle A. Carey et al., ***It's All About Sex: Male-female Differences In Lung Development And Disease***, 18 TRENDS ENDOCRINOL. METAB. 308 (2007); see also Antonella LoMauro & Andrea Aliverti, ***Sex Differences In Respiratory Function***, 14 BREATHE 131 (2018) (sex differences in lung growth and development start in the prenatal period).
- 60 Ohio State Forum, *supra* n. 58.
- 61 William G. Murphy, ***The Sex Difference In Haemoglobin Levels In Adults - Mechanisms, Causes, And Consequences***, 28 BLOOD REVIEWS 41 (2013).
- 62 Ohio State Forum, *supra* n. 58.
- 63 Hilton & Lundberg, *supra* n. 54, at 201-202 (citing Russell R. Pate and Andrea Kriska, *Physiological Basis of the Sex Difference in Cardiorespiratory Endurance*, 1 SPORTS MED. 87 (1984)); Ohio State Forum, *supra* n. 58 (noting that the “difference in VO<sub>2</sub>max can be explained by the fact that men tend to have a higher concentration of hemoglobin for transporting oxygen in the blood, larger hearts for pumping oxygen rich blood to the working muscles, and larger lungs for oxygenating the blood”); Hanjabam Barun Sharma and 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. CLIN. AND DIAGN. RES. CC09 (2016) (males had greater aerobic capacity than females with similar training & competition level).
- 64 Max Roser et al., *Human Height*, OUR WORLD IN DATA (May 2019), <https://ourworldindata.org/human-height#:~:text=Where%20are%20men%20much%20taller,3%25%20to%20over%2012%25>.
- 65 Jerry W. Nieves et al., ***Males Have Larger Skeletal Size and Bone Mass Than Females, Despite Comparable Body Size***, 20 J. OF BONE AND MINERAL RES. 529 (2005); see also Hilton & Lundberg, *supra* n. 54, at 201-202.
- 66 Nieves, *supra* n. 65 at 529.
- 67 *Id.*
- 68 Andrew Langford, *Sex Differences, Gender, and Competitive Sport*, QUILLETTE (Apr. 5, 2019), [https://quillette.com/2019/04/05/sex-differences-gender-and-competitive-sport/#\\_ftnref10](https://quillette.com/2019/04/05/sex-differences-gender-and-competitive-sport/#_ftnref10). In addition, male bodies have a lower incidence of stress and osteoporotic fractures than females. Nieves et al., *supra* n. 65 at 529. And females lose bone mass faster and earlier than men as they age. Khaled A. Alswat, ***Gender Disparities in Osteoporosis***, 9 J. CLIN. MED. RES. 382 (2017).

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- 70 Ohio State Forum, *supra* n. 58; see also Langford, *supra* n. 68 (in skeletal muscle, males have a higher proportion of type II fibres, which are able to contract quicker and produce more force than their counterparts).
- 71 Dong Hoon Lee et al., *Development And Validation Of Anthropometric Prediction Equations For Lean Body Mass, Fat Mass And Percent Fat In Adults Using The National Health And Nutrition Examination Survey (Nhanes) 1999-2006*, 118 BR. J. NUTR. 858 (2017) (on average, men had 11% less body fat than women and men had higher variation in lean body mass, whereas women had higher variation in fat mass); Kalypso Karastergiou et al., *Sex Differences In Human Adipose Tissues - The Biology Of Pear Shape*, 3 BIOLOGY OF SEX DIFFERENCES 13 (2012) (women have higher percent body fat and deposit it in a different pattern than men with relatively more adipose tissue in the hips and thighs).
- 72 Andrea E. J. Miller et al., *Gender Differences In Strength And Muscle Fiber Characteristics*, 66 EUR. J. APPL. PHYSIOL. 254, 261 (1993).
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- 77 Hilton & Lundberg, *supra* n. 54, at 201 (citing Mark J. Catley & Grant R. Tomkinson, *Normative Health-related Fitness Values For Children: Analysis Of 85347 Test Results On 9–17-year-old Australians Since 1985*, 47 BR. J. SPORTS MED. 98 (2013) (study of 85,000 Australian children found that 9-year-old boys could run faster, jump higher, and complete more push-ups than 9-year-old girls); Konstantinos D. Tambalis, Demosthenes D. Panagiotakos, Glykeria Psarra et al., *Physical Fitness Normative Values For 6–18-year-old Greek Boys And Girls, Using The Empirical Distribution And The Lambda, Mu, And Sigma Statistical Method*, 16 EUR. J. SPORT SCI. 736 (2016) (male athletic advantage found in running and jumping in a study of Greek 6-year-olds); S. Eiberg, H. Hasselstrom, V. Grønfelt et al., *Maximum Oxygen Uptake And Objectively Measured Physical Activity In Danish Children 6–7 Years Of Age: The Copenhagen School Child Intervention Study*, 39 BR. J. SPORTS MED. 725 (2005) (study of 6- and 7-year-old Danish children found boys had a higher absolute and relative aerobic capacity than girls).
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- 79 *When is Puberty too Early?*, DUKE HEALTH (updated July 7, 2020), <https://www.dukehealth.org/blog/when-puberty-too-early> (most boys begin puberty between the ages of 9 and 14); see also *Men's Health Issues: Biology Of The Male Reproductive System / Puberty In Boys*, MERCK MANUAL CONSUMER VERSION, <https://www.merckmanuals.com/home/men-s-health-issues/biology-of-the-male-reproductive-system/puberty-in-boys> ("In boys, puberty usually occurs between the ages of 10 and 14 years. However, it is not unusual for puberty to begin as early as age 9 or to continue until age 16").



- 80 See e.g., HOOVEN, *supra* n. 54 at 105 (noting that, by age 15, nearly every boy throws better than even the best girls); see also McKay & Burns, *supra* n. 74 (significant male-female athletic differences emerge around age 12).
- 81 See WORLD RUGBY TRANSGENDER GUIDELINE (Oct. 9, 2020) (hereinafter RUGBY REPORT), <https://www.world.rugby/the-game/player-welfare/guidelines/transgender/women>.
- 82 Stéphane François Bermon, *Androgens And Athletic Performance Of Elite Female Athletes*, 24 CURRENT OPINION 246, 249 (2017).
- 83 Langford, *supra* n. 68; see also John J. McMahon et al., *Sex Differences in Countermovement Jump Phase Characteristics*, 5 SPORTS 8 (2017) (finding that men jumped 24% higher than women in line with the range of 25%–27% reported in similar studies).
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- 85 Hilton & Lundberg, *supra* n. 54, at 204.
- 86 Langford, *supra* n. 68 (citing Isaiah T. McFarland et al., *Relationship of Two Vertical Jumping Tests to Sprint and Change of Direction Speed among Male and Female Collegiate Soccer Players*, 4 SPORTS 11 (2016)).
- 87 Hilton & Lundberg, *supra* n. 54, at 203-204 (even after adjustment for mass, male olympic weightlifters are 30% stronger than female weightlifters, and even females who are 60% heavier than males do not overcome strength deficits); see also D. Leyk et al., *Hand-grip Strength Of Young Men, Women And Highly Trained Female Athletes*, 99 EUR. J. APPL. PHYSIOL. 415 (2007) (males have significantly greater grip strength, a measure commonly used to indicate overall strength; even strength training by women will rarely make them stronger than the majority of untrained or not specifically trained men).
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- 89 Paul Gabrielsen, *Why Males Pack a Powerful Punch*, @TheU (Feb. 5 2020), <https://attheu.utah.edu/facultystaff/carrier-punch/> (citing Jeremy S. Morris et al., *Sexual Dimorphism in Human Arm Power and Force*, 223 J. EXPER. BIOLOGY at 4 (2020)).
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- 95 Gary Klein, *Allyson Felix Breaks Record For Most U.S. Olympic Track Medals, Surpassing Carl Lewis*, L.A. TIMES (Aug. 7, 2021); Ben Church and Hannah Ritchie, *Allyson Felix Becomes Most Decorated Us Track And Field Athlete In Olympics History*, CNN (Aug. 7, 2021), <https://www.google.com/amp/s/amp.cnn.com/cnn/2021/08/07/sport/allyson-felix-tokyo-2020-olympics-spt-intl/index.html>.
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