

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA
CHARLESTON DIVISION

B.P.J., by her next friend and mother,
HEATHER JACKSON,

Plaintiff,

v.

Civil Action No. 2:21-cv-00316
Hon. Joseph R. Goodwin, District Judge

WEST VIRGINIA STATE BOARD OF
EDUCATION, HARRISON COUNTY BOARD
OF EDUCATION, WEST VIRGINIA
SECONDARY SCHOOL ACTIVITIES
COMMISSION, W. CLAYTON BURCH in his
official capacity as State Superintendent,
DORA STUTLER in her official capacity as
Harrison County Superintendent, PATRICK
MORRISEY in his official capacity as Attorney
General, and THE STATE OF WEST VIRGINIA,

Defendants,

and

LAINY ARMISTEAD,

Defendant-Intervenor.

**DEFENDANTS HARRISON COUNTY BOARD OF EDUCATION
AND DORA STUTLER'S MOTION FOR SUMMARY JUDGMENT**

Defendants Harrison County Board of Education (“HCBOE”) and County Superintendent Dora Stutler (“Stutler”) (collectively the “County Board”), by counsel, move for summary judgment pursuant to Rule 56 of the Federal Rules of Civil Procedure. The County Board has not caused any injury to Plaintiff B.P.J., and it is thus entitled to summary judgment. This conclusion is compelled for three reasons, all of which rely on undisputed facts and applicable law. These three reasons are set forth in greater detail in the County Board’s supporting memorandum of law, which is contemporaneously being filed with this motion.

First, the County Board is required to comply with and enforce West Virginia law, including the state law (“the Act”) that B.P.J. challenges in this civil action. Thus, B.P.J.’s claim is one against the State, not against the County Board. It is undisputed that, if B.P.J. has an actionable injury as she alleges, then her injury was inflicted by the State; the County Board undisputedly has no policy or custom of its own that has caused or will cause B.P.J. any harm, and it had no part in the creation or passage of the Act at issue. The County Board cannot be liable for any injury that it did not cause. Therefore, the HCBOE is entitled to summary judgment on the Title IX claim against it in Count I, and Stutler is entitled to summary judgment on the Equal Protection Clause claim against her, in her official capacity, in Count II.

Second, should the Court determine that Stutler, in her official capacity, is a proper defendant to Count II for purposes of an injunction, then she should be retained only in her capacity as a State official – not in her capacity as an official of the HCBOE. If Stutler ever enforces the Act at issue (in the event that the Court’s injunction is lifted or modified), she will be acting solely as a State official, not as a HCBOE official, because she would be enforcing only a State law, not any policy or custom of the County Board. Any such enforcement would be mandated; Stutler has no discretion regarding whether to enforce the Act. Under these circumstances and this Court’s clear precedent, any monetary award assessed against Stutler must be paid entirely by the State,

not by the County Board, because the State, not Stutler or the HCBOE, is solely responsible for the Act that B.P.J. claims harms her.

Finally, although the County Board undisputedly had no part in creating, developing, shaping, or passing the Act at issue, and it undisputedly has no policy or custom of its own that prevents B.P.J. from joining girls' teams based on transgender status, the County Board has been sued for damages, fees, and costs over the Act. Therefore, the County Board finds itself in the position of defending the Act, even though it did not create, support or pass the Act. As set forth in its supporting memorandum of law, a legal foundation clearly exists for finding that the Act is lawful under Title IX and that the Act does not violate the Equal Protection Clause.

There is evidence that biological males outperform biological females and that biological females are more prone to injury when participating in sports. Thus, permitting biological males to compete on teams designated for females may displace and injure biological female athletes. Title IX regulations permit sex-separated sports teams if selection for teams is based on competitive skill or if the sport is a contact sport, and it promotes equal athletic opportunity for members of both sexes. Thus, the Act does not violate Title IX. Similarly, the Act does not violate the Equal Protection Clause because the classification it makes is substantially related to its purposes of promoting fair competition and safety for biological female athletes.

Pursuant to Rule 7.1(a)(1) of the Local Rules of Civil Procedure of the United States District Court for the Southern District of West Virginia, copies of Exhibits 1 through 8, which are cited in the supporting memorandum of law, are attached to this motion.

WHEREFORE, for the reasons set forth herein and in the County Board's supporting memorandum of law, the HCBOE and Stutler respectfully request that the Court **GRANT** their Motion for Summary Judgment. The HCBOE is entitled to summary judgment on the sole claim against it, and it should be dismissed as a defendant. Stutler has not violated any

right of B.P.J.'s, and thus, she is also entitled to summary judgment. If Stutler is retained as a defendant to Count II for purposes of an injunction, then she must be retained as an agent of the State, not of the HCBOE, and consequently, any damages or other monetary award, including any award for attorneys' fees and costs, that may be assessed against her must be paid by the State. Therefore, the HCBOE and Stutler are entitled to summary judgment on Counts I and II, as well as B.P.J.'s claim for monetary damages, including any award for attorneys' fees and costs, against them. Thus, they respectfully request that the Court **GRANT** their motion.

Respectfully submitted this 21st day of April, 2022.

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Harrison County Superintendent, PATRICK
MORRISEY in his official capacity as Attorney
General, and THE STATE OF WEST VIRGINIA,

Defendants,

and

LAINEY ARMISTEAD,

Defendant-Intervenor.

CERTIFICATE OF SERVICE

I hereby certify that on 21st day of April, 2022, I electronically filed the foregoing
“Defendants Harrison County Board of Education and Dora Stutler’s Motion for Summary
Judgment” with the Clerk of the Court using the CM/ECF system, which will send notification of
such filing to all counsel of record.

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EXHIBIT 1

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B.P.J., by her next friend and *
Mother, HEATHER JACKSON, *
Plaintiff * Case No.
vs. * 2:21-CV-00316
WEST VIRGINIA STATE BOARD OF *
EDUCATION, HARRISON COUNTY *
BOARD OF EDUCATION, WEST *
VIRGINIA SECONDARY SCHOOL *
ACTIVITIES COMMISSION, W. *
CLAYTON BURCH in his official *
Capacity as State Superintendent, * VIDEOTAPED
DORA STUTLER in her official * VIDEOCONFERENCE
Capacity as Harrison County * DEPOSITION
Superintendent, PATRICK MORRISEY * OF
In his official capacity as * HEATHER JACKSON
Attorney General, and THE STATE * January 20, 2022
OF WEST VIRGINIA, *
Defendants *

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1 please tell me and I'll be glad to rephrase the
2 question. If you don't do that I will assume that you
3 have understood the question.

4 Is that fair?

5 A. Okay.

6 Q. Thank you.

7 Ms. Jackson, tell me about BPJ's education.
8 Did she start her education in Harrison County schools?

9 A. Yes, she started her education in Harrison
10 County schools.

11 Q. And did she start in pre-K or in kindergarten?

12 A. Kindergarten.

13 Q. Did she have any formal education before going
14 to kindergarten? In other words, was she in a
15 pre-school program or a pre-K program anywhere before
16 starting kindergarten?

17 A. No.

18 Q. And did she do her entire elementary schooling
19 at Norwood Elementary?

20 A. Yes, she did.

21 Q. Tell me the first --- well, in general, how was
22 your experience for --- how was the experience for BPJ
23 at the Norwood Elementary School did she have a positive
24 experience at that elementary school?

1 as well?

2 A. Yes.

3 Q. And did you have any issues or concerns when
4 they went through Norwood Elementary School?

5 A. Correct that. My oldest one transferred from
6 St. Mary's to Bridgeport Middle. My second one was all
7 in Norwood.

8 Q. Okay.

9 A. I think his kindergarten year, there was no room
10 at Norwood and he had to go to Johnson.

11 Q. Very good.

12 So you transferred your oldest child to St.
13 Mary's?

14 A. From St. Mary's directly to Bridgeport Middle,
15 so I correct that.

16 Q. So your middle --- your middle child, that child
17 did go through Norwood Elementary School?

18 A. Yes, yes.

19 Q. Any issues or concerns during his time at
20 Norwood Elementary School?

21 A. No.

22 Q. When did you first make any employees of Norwood
23 Elementary School or anybody in Harrison County schools
24 aware that BPJ identified as a female and was a

1 transgender student?

2 A. I contacted Mr. James Thornton, who was the
3 school counselor, but I don't know the date.

4 Q. Do you recall what grade BPJ was in at the time?

5 A. Third.

6 Q. And Mr. Thornton was the guidance counselor at
7 Norwood Elementary School at that time?

8 A. Yes.

9 Q. And can you tell me at about that communication?
10 What was discussed when you contacted Mr. Thornton?

11 A. That B [REDACTED] is a transgender female and wishes to
12 be --- conduct her life as such and her pronouns were
13 she/her.

14 Q. What was Mr. Thornton's response to that?

15 A. He understood and was going to take it to a
16 higher power. I'm guessing it was the principal at the
17 time.

18 Q. Was there anything else that you can recall that
19 was part of that initial communication with Mr. Thornton
20 about BPJ's transgender status?

21 A. That she was going to start presenting as a
22 female at school.

23 Q. And then what was Mr. Thornton's response to
24 that?

1 A. The same, that he would go ahead and handle what
2 had to be handled on his end.

3 Q. Did you find him to be supportive of ---?

4 A. Yes.

5 Q. Did you say extremely?

6 A. Extremely supportive of B [REDACTED]'s transition.

7 Q. Very good. Did Mr. Thornton, in fact, get back
8 to you after he spoke with the principal?

9 A. I don't recall.

10 Q. What was --- what was the next communication
11 that you recall having with the school officials with
12 regard to B [REDACTED]'s transition?

13 A. I would have had contact with her teacher at
14 that time. I can't remember her name at that time. And
15 realizing that she was going to have questions or that
16 the students would have questions, but I can't remember
17 that teacher's name. I apologize.

18 Q. That's no problem.

19 Tell me about the nature of your communications
20 with --- this would have been the third grade teacher.

21 Is that correct?

22 A. Right, right. That she was going to start
23 presenting as a female at school.

24 Q. And was the teacher supportive of that?

1 A. Yes.

2 Q. And then BPJ did start presenting as a female at
3 school I think I heard you testify earlier.

4 Is that correct?

5 A. That is correct.

6 Q. Were there any problems or issues with that?

7 A. The only thing that I know of is that the
8 teacher did get questions as to why B [REDACTED] was dressing
9 the way she was dressing, and her answer was she's B [REDACTED]
10 and that's what makes her happy.

11 Q. Were you comfortable with that response from the
12 teacher?

13 A. Yes.

14 Q. And so in the third grade did you have any
15 concerns with regard to how the school handled B [REDACTED]'s
16 transition?

17 A. No, I did not.

18 Q. And then BPJ also would have been enrolled at
19 Norwood Elementary School in the fourth and fifth
20 grades.

21 Is that true?

22 A. That is correct.

23 Q. And at that point she was --- in those grades
24 she was fully transitioned ---

1 A. Correct.

2 Q. --- to being a female student.

3 Is that correct?

4 A. Correct.

5 Q. And did you have any issues or concerns with the
6 way school officials handled that?

7 A. School officials handled it quite well.

8 Q. So during BPJ's tenure as a student at Norwood
9 Elementary School did you have any concerns or issues
10 with regard to how school officials handled --- how your
11 daughter wanted to handle her transgender status and how
12 she wanted to present at school?

13 A. They respected her transition and her
14 transgender status. They used her correct pronouns,
15 which was she/her.

16 Q. That was something that was important to you and
17 BPJ.

18 Is that correct?

19 A. Correct.

20 Q. So part of that --- my understanding is that
21 part of the communications that you would have had with
22 school officials at Norwood Elementary School included
23 completing a Gender Support Plan for BPJ.

24 Is that correct?

1 A. That is correct.

2 Q. And I'll ask you --- I'm going to ask you about
3 both Gender Support Plans because I know you're having
4 to grab things. I'm going to ask you about Exhibits 17
5 and 19, if you want to pull them out. We'll look at
6 Exhibit 17 first.

7 A. I've got 17 in front of me.

8 Q. Okay. Very good. We'll start there. We can
9 get to 19 when we get there.

10 And you can take as much time as you want to
11 review this, but my initial question is going to be is
12 this the Gender Support Plan that was in place when BPJ
13 was at Norwood Elementary School?

14 A. Yes, it is.

15 Q. And you would agree with me that this document
16 is dated August 23rd, 2019?

17 A. Correct.

18 Q. And this was a document that the Harrison County
19 Board of Education had in place, so that there was a
20 process to discuss a combination of a student who's
21 transgender like BPJ.

22 Is that correct?

23 ATTORNEY BLOCK: Objection to form.

24 THE WITNESS: That's my understanding.

1 BY ATTORNEY DENIKER:

2 Q. And in fact, did you meet with school officials
3 from the Harrison County Board of Education to develop
4 this Gender Support Plan to support BPJ?

5 A. I met with the people that are listed on the
6 last page of the Gender Peer Support Plan.

7 Q. Was there anybody present in the meeting on
8 August 23rd, 2019, whose name doesn't appear on the
9 signature page on page five, which is Bates number BPJ
10 011?

11 A. I don't know. I know that we were all supposed
12 to sign it to say that we were there in attendance. So
13 I presume everyone signed it.

14 Q. In looking at this signature page, do you recall
15 anybody being there whose name you don't see there?

16 A. I don't off the top of my head, no.

17 Q. Is your signature on this document?

18 A. Yes, ma'am, it is.

19 Q. And it looks like BPJ's signature is on this
20 document as well.

21 Is that correct?

22 A. Correct, because she was in attendance. She had
23 to sign it.

24 Q. So she was part of this meeting.

1 Is that right?

2 A. That's correct.

3 Q. Did you find the school officials that
4 participated in this process to be respectful of you and
5 of BPJ?

6 A. Yes, I did.

7 Q. And did you find that the purpose of this was to
8 help accommodate any needs that BPJ might have as a
9 transgender student?

10 ATTORNEY BLOCK: Objection to form.

11 THE WITNESS: That's my understanding that
12 that was the purpose of the document.

13 BY ATTORNEY DENIKER:

14 Q. Did you --- were you in agreement with the
15 Gender Support Plan that was put into place through this
16 August 23rd, 2019 document?

17 A. Yes, I was in agreement with it.

18 Q. Was BPJ in agreement with it?

19 A. Yes, as much as she understood. Yes.

20 Q. And did you believe that the school followed
21 through and accommodated her in accordance with this
22 Gender Support Plan while she was at the Norwood
23 Elementary School?

24 A. They followed the Gender Support Peer Plan, yes.

1 Q. So is it fair to say that you didn't have any
2 issues or concerns of BPJ's treatment as a transgender
3 student during the time that she was a student at
4 Norwood Elementary School?

5 A. I would say correct.

6 COURT REPORTER: I'm sorry. I'm sorry.
7 Can you state that question one more time? It was a
8 little fast.

9 ATTORNEY DENIKER: I will try to do that.

10 BY ATTORNEY DENIKER:

11 Q. Is it fair to say that you did not have any
12 issues or concerns with BPJ's treatment as a transgender
13 student during the time that she was enrolled as a
14 student at Norwood Elementary School?

15 A. We had no issues.

16 Q. Ms. Jackson, to confirm, it is my understanding
17 that Harrison County Schools does not offer
18 school-sponsored athletics for students who are in
19 elementary school. Is that consistent with your
20 understanding?

21 A. That's my understanding.

22 Q. And I heard you testify earlier that BPJ
23 participated in cheerleading, which was not a
24 school-related activity, while we was in elementary

1 school.

2 Is that correct?

3 A. That was through the Bridgeport Youth Football.

4 Q. And that's not affiliated with the Harrison
5 County Board of Education.

6 Is that correct?

7 A. That is --- that is correct.

8 Q. So the first time that BPJ was eligible to
9 participate in school-sponsored sports was when she went
10 to middle school for this coming academic year.

11 Is that correct?

12 A. That is correct.

13 Q. And BPJ, is she currently in the 6th grade?

14 A. That is correct.

15 Q. And is she still 11 years old?

16 A. Yes.

17 Q. And prior to her --- so she would have
18 transferred from Norwood Elementary School to Bridgeport
19 Middle School for the beginning of this academic year.

20 Is that correct?

21 A. Correct.

22 Q. And it's my understanding that Bridgeport Middle
23 School is a three-year middle school that has grades
24 six, seven and eight.

1 A. Correct.

2 Q. And was this a meeting that you would have had
3 with school officials to create another Gender Support
4 Plan for BPJ?

5 A. Correct.

6 Q. May 18th of 2021, at that time am I correct that
7 BPJ would have been finishing her 5th-grade year at
8 Norwood at that time?

9 A. Yes.

10 Q. So this meeting was done in preparation for
11 BPJ's transition to Bridgeport Middle School.

12 Is that correct?

13 A. Correct, and the meeting was held at Norwood.

14 Q. And as before, the folks that were in
15 attendance, are their signatures on page five of this
16 document, which is Bates number BPJ 006?

17 A. Yes, I presume that is everyone that was there.
18 We were all asked to sign in if we attended.

19 Q. And again, as I asked you before, is there
20 anybody who you recall being present for this meeting
21 whose name or signature doesn't appear on page five of
22 this document?

23 A. I don't think so.

24 Q. Is your signature on this document?

1 A. Yes, it is.

2 Q. And I also see BPJ's signature on this document.
3 Is that correct?

4 A. Yes.

5 Q. This included --- even though it was held at
6 Norwood Elementary School, this did include school
7 officials from Bridgeport Middle School.

8 Is that correct?

9 A. Correct.

10 Q. And this included a discussion about
11 accommodation for BPJ once she got to the middle school
12 for this current academic year.

13 Is that correct?

14 A. Correct.

15 Q. Was this meeting conducted professionally in
16 your opinion?

17 A. Yes.

18 Q. And were you able to discuss wishes, ideas, and
19 concerns you had about accommodations for BPJ as she was
20 starting into the middle school?

21 A. Yes.

22 Q. And did you feel like this was a positive
23 meeting?

24 A. Yes.

1 with regard to BPJ's ability to participate in school
2 sports?

3 A. No.

4 Q. Was BPJ permitted to participate in summer
5 conditioning with the Bridgeport Middle School
6 cross-country team in the summer of 2021?

7 A. Yes.

8 ATTORNEY BLOCK: Objection to form.

9 BY ATTORNEY DENIKER:

10 Q. And it's my understanding that the Middle School
11 cross-country team at Bridgeport Middle School does the
12 summer conditioning where they run together.

13 Is that correct?

14 A. They --- they all condition together, but they
15 separate out into groups, if that makes sense.

16 Q. How were those groups separated? Do you know?

17 A. Normally by speed in the conditioning
18 environment.

19 Q. Are they separated by sex or gender in any way?

20 A. Only by boys team and girls team.

21 Q. And was BPJ permitted to run then with the girls
22 teams in the girls groups?

23 A. Correct.

24 ATTORNEY BLOCK: Objection to form.

1 BY ATTORNEY DENIKER:

2 Q. Did you have any issues or concerns with how BPJ
3 was treated concerning conditioning?

4 A. No. The coaches were very respectful of her
5 pronouns and her transgender identity.

6 Q. And was that true for the entire cross-country
7 season?

8 A. The coaches --- yes, the coaches were very much
9 so, yes.

10 Q. So you had --- did BPJ have a positive
11 experience participating on the girls cross-country
12 team?

13 A. Yes.

14 Q. And so I got a little bit ahead of myself
15 because we were talking about summer conditioning and
16 then there were tryouts for cross-country.

17 Is that correct?

18 A. That's correct.

19 Q. And did that take place in August of 2021?

20 A. Yes.

21 Q. And BPJ tried out for the girls cross-country
22 team.

23 Is that correct?

24 A. That is correct.

1 Q. And she was permitted to do so by the middle
2 school.

3 Is that right?

4 A. That is correct.

5 Q. And was she selected for membership on the girls
6 cross-country team?

7 A. That is correct.

8 Q. And I think I heard you testify earlier that she
9 did compete through the whole season on the girls
10 cross-country team.

11 Is that right?

12 A. That is correct.

13 Q. And she had a good experience doing that?

14 A. Yes, she did.

15 Q. Good. I'm glad to hear that. And I had to
16 laugh when Mr. Tryon was asking you questions about
17 where she placed because it's clear to me that he has
18 never been to a middle school cross-country meet because
19 they're just --- even in high school, there are just
20 tons of kids and lots of runners, aren't there?

21 A. There's tons of them, yes.

22 Q. And just for the record, my kids never came in
23 first or second either, so I understand that.

24 Who were the coaches for the cross-country team

1 this spring?

2 A. We have not.

3 Q. Is it your understanding that she will be
4 permitted to try out for the girls track team?

5 A. I don't have an understanding whether she'll be
6 permitted or not.

7 Q. Because you have not had any discussions.
8 Is that correct?

9 A. Correct.

10 Q. Let me talk more candidly about BPJ's school
11 year. And I'm sorry if I already asked you this, but at
12 the middle school she's I guess almost halfway through
13 her sixth grade year.

14 Is that correct?

15 A. That is correct.

16 Q. And is she having a good school year?

17 A. She's having an excellent school year. After
18 she learned her locker combination, everything went
19 well.

20 Q. Right now all of us are having a flashback to
21 middle school and the trauma that was remembering your
22 locker code. I understand that, Ms. Jackson. And do
23 you feel that the school has appropriately implemented
24 the Gender Support Plan that you agreed upon?

1 A. Yes.

2 Q. And you don't have any issues or concerns with
3 how school officials have treated BPJ this school
4 year-to-date?

5 A. No.

6 Q. I want to follow up on a question that Mr. Tryon
7 asked about cross-country meets this fall. You
8 mentioned that some meets --- I think you called them
9 one and done meets?

10 A. Yes.

11 Q. And I think you described that everybody ---
12 they have the girls teams and the boys teams all run at
13 one time.

14 Is that correct?

15 A. Correct, correct.

16 Q. And in those situations the boys teams are still
17 competing against the boys teams and the girls teams are
18 still competing against the girls teams.

19 Is that correct?

20 A. Yes. The statistics go towards the appropriate
21 team.

22 Q. That was what I assumed was the case in those
23 meets, but I just wanted to ask you. I haven't seen one
24 of those, but I figured they still separated the results

EXHIBIT 2

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IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA
CHARLESTON DIVISION

* * * * *

B.P.J., by her next friend and *
Mother, HEATHER JACKSON, *
Plaintiff * Case No.
vs. * 2:21-CV-00316
WEST VIRGINIA STATE BOARD OF *
EDUCATION, HARRISON COUNTY *
BOARD OF EDUCATION, WEST *
VIRGINIA SECONDARY SCHOOL *
ACTIVITIES COMMISSION, W. *
CLAYTON BURCH in his official *
Capacity as State Superintendent, * VIDEOTAPED
DORA STUTLER in her official * VIDEOCONFERENCE
Capacity as Harrison County * DEPOSITION
Superintendent, PATRICK MORRISEY * OF
In his official capacity as * BPJ
Attorney General, and THE STATE * January 21, 2022
OF WEST VIRGINIA, *
Defendants *

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1 at Norwood Elementary.

2 Is that correct?

3 A. Yes.

4 Q. And did you go to Norwood Elementary School from
5 kindergarten through the fifth grade?

6 A. Yes.

7 Q. How did you like Norwood?

8 A. It was a nice school. I really enjoyed it.

9 Q. Did you have a good experience there?

10 A. Yeah.

11 Q. Was Mrs. Stutler your principal for a period of
12 the time that you were at Norwood Elementary School?

13 A. Yes.

14 Q. Did you know her then?

15 A. Like know her --- could you repeat the question?

16 Q. Sure. No. It probably wasn't a very good
17 question. Did you sometimes have interactions with Mrs.
18 Stutler when she was your principal?

19 A. Yes.

20 Q. And how was that? Was she nice with you when
21 you dealt with her?

22 A. Yes.

23 Q. Did you think she was a good principal?

24 A. Yes.

1 Q. Were you happy with what came out of that
2 meeting?

3 A. Yes.

4 Q. You were comfortable with the agreements that
5 was reached with regard to the name that would be used
6 and the bathroom facilities and any other accommodations
7 that would be made for you?

8 ATTORNEY HARTNETT: Objection.

9 THE WITNESS: Yes.

10 BY ATTORNEY DENIKER:

11 Q. And then how did fourth grade go? Was it a good
12 --- was it a good year for you?

13 A. Yeah.

14 Q. Did you feel that the teachers and the principal
15 and the other employees of the school were supportive of
16 you?

17 A. Yes, very.

18 Q. Good. And did you feel that they treated you
19 kindly and fairly?

20 A. Yes.

21 Q. And it sounds like from your earlier testimony
22 that you also had a good experience with the students in
23 the school.

24 Is that correct?

1 A. Yes.

2 Q. Tell me about your fifth grade year at Norwood
3 Elementary School. Did you have a good experience that
4 year?

5 A. Yes. There was brand new teachers and my
6 teacher was Ms. Watson. She was a very nice teacher.

7 Q. And do you feel that everyone at the school was
8 supportive of you?

9 A. Yes.

10 Q. Did you feel that everybody treated you in a
11 fair and kind manner?

12 A. Yes.

13 Q. And so you had a good school year in fifth grade
14 as well?

15 A. Yes.

16 Q. Do you recall having any other meetings in
17 fourth or fifth grade to discuss your transitioning to
18 being --- to presenting as a girl at school?

19 A. Not that I can remember. Beginning of fourth
20 grade was the only one I think.

21 Q. And then it's my understanding that this year
22 you started at Bridgeport Middle School.

23 Is that right?

24 A. Yes.

1 Q. And were you a part of that meeting?

2 A. Yes.

3 Q. Do you remember who else was a part of that
4 meeting?

5 A. We had my new principal, Mr. Mazza, the
6 counselor there, Mrs. Shields and my mom.

7 Q. And were you comfortable with what was discussed
8 and agreed upon at that meeting?

9 A. Yes.

10 Q. And how has sixth grade been so far?

11 A. It's been good.

12 Q. Do you like Mr. Mazza?

13 A. Yes.

14 Q. He is your principal this year.
15 Is that right?

16 A. Yes.

17 Q. Do you feel like Mr. Mazza is supportive of you?

18 A. Yes, very.

19 Q. Good. And do you think that he treats you in a
20 kind and fair manner?

21 A. Yes.

22 Q. How are your classes this year? Do you like
23 them?

24 A. Yeah, I like my classes. I have really nice

1 teachers.

2 Q. I think I saw that you are a straight A student.
3 Maybe I saw that in something that your mom wrote.

4 Is that right?

5 A. Yes.

6 Q. Congratulations. Good for you. Do you feel
7 that your teachers are fair and supportive of you?

8 A. Yes.

9 Q. And are you comfortable with the arrangements
10 that the school has made for you this year in terms of
11 addressing how you want to present at school as being a
12 girl?

13 A. Yes.

14 Q. I know that we have discussed today sports and
15 your participation in sports, and I heard you say that
16 you love running.

17 Is that right?

18 A. Yes.

19 Q. And I understand that you tried out for the
20 girls cross-country team.

21 Is that correct?

22 A. Yes.

23 Q. So I want to talk to you a little bit about that
24 process. The cross-country team, did they do some

1 A. Yes.

2 Q. And did you make the team?

3 A. Yes.

4 Q. And I think you said this year they didn't have
5 any cuts.

6 Is that right?

7 A. Yes.

8 Q. Who were your coaches for cross-country this
9 year?

10 A. I had Ms. Schoonmaker, Ms. --- Coach Flesher and
11 Coach McBrayer.

12 Q. And did they coach both the girls and the boys
13 cross-country teams?

14 A. Yes.

15 Q. How was your season?

16 A. It was good.

17 Q. Did you like cross-country?

18 A. Yes.

19 Q. Did you believe that your coaches treated your
20 fairly and kindly this season?

21 A. Yes.

22 Q. Did you feel that they were supportive of you?

23 A. Yes.

24 Q. So you think it's fun to run up hills and

1 Q. And B [REDACTED], I should have clarified. Do you know
2 what I'm talking about when I say House Bill 3293?

3 A. Yeah, HB-3293. Yes.

4 Q. Okay.

5 I just wanted to make sure that you knew what I
6 was talking about. I thought that you did.

7 B [REDACTED], if you had any concerns about how you
8 were being treated at school, would you feel comfortable
9 going to talk to Mr. Mazza about that?

10 A. Yes. If I was being treated bad, then I would
11 talk to Mr. Mazza.

12 Q. Would you also feel comfortable going to some of
13 your teachers about that?

14 A. Yes.

15 Q. But do you feel that overall all of the teachers
16 and administrators, including your principals at
17 Bridgeport Middle School, have been supportive of your
18 status as a transgender student?

19 A. Could you repeat the question?

20 Q. Sure. And I apologize, it was a long one. Do
21 you believe that the teachers and administrators, and
22 that would include the principals and the other
23 employees at Bridgeport Middle School, have been
24 supportive of your transgender status?

1 A. Yes, I think they have been supportive.

2 Q. When you were on the cross-country team did you
3 believe your teammates were supportive of you?

4 A. Yes.

5 Q. And how about in school, have you had any issues
6 with other students or problems with students related to
7 your transgender status?

8 ATTORNEY HARTNETT: Objection to form.

9 THE WITNESS: No. No.

10 ATTORNEY DENIKER: B [REDACTED], those are all
11 the questions I have for you now. Thanks so much for
12 your time today.

13 ATTORNEY HARTNETT: We can take a break.
14 I think this might be a good time to take a break and
15 then we can come back for questions.

16 VIDEOGRAPHER: Okay. Going off the
17 record. The current time reads 2:28 p.m.

18 OFF VIDEOTAPE

19 ---

20 (WHEREUPON, A SHORT BREAK WAS TAKEN.)

21 ---

22 ON VIDEOTAPE

23 VIDEOGRAPHER: We are back on the record.

24 The current time reads 2:42 p.m.

EXHIBIT 3

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IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA
CHARLESTON DIVISION

B.P.J. by her next friend and)
mother, HEATHER JACKSON,)
Plaintiff,)

vs.) Case No.

WEST VIRGINIA STATE BOARD OF) 2:21-cv-00316
EDUCATION, HARRISON COUNTY)
BOARD OF EDUCATION, WEST)
VIRGINIA SECONDARY SCHOOL)
ACTIVITIES COMMISSION, W.)
CLAYTON BURCH in his official)
capacity as State)
Superintendent, DORA STUTLER,)
in her official capacity as)
Harrison County)
Superintendent, and THE STATE)
OF WEST VIRGINIA,)
Defendants.)

And)
LAINIEY ARMISTEAD,)
Defendant-Intervenor.)

-----)

REMOTE VIDEOTAPED DEPOSITION OF

DORA STUTLER

AND

DAVE MAZZA

Tuesday, March 8, 2022

Volume I

Reported by:

ALEXIS KAGAY, CSR No. 13795

Job No. 5079542

PAGES 1 - 240

1 Q Did you or anyone at the county board present
2 the county board members with the -- with the bill
3 H.B. 3293?

4 A No.

5 Q Has the board voted in any way relating to 01:05:04
6 policies around H.B. 3293?

7 A No.

8 Q What is the county board's relationship with
9 the Department of Education?

10 A I believe, as the superintendent, I am the 01:05:21
11 conduit from the County Board of Education to my
12 board. So information that comes from the state
13 board is usually a conduit through me to the board,
14 although my board has -- our state boards have their
15 own association that also has a relationship with 01:05:50
16 the state board, and they do have a fall meeting and
17 a winter meeting to update board members. So
18 they -- they have a relationship outside of my
19 relationship with the state board through that
20 organization. 01:06:08

21 Q When you say "they," who are you referring
22 to?

23 A My board members. My five board members are
24 part of a state -- it's just an association. Like I
25 have an association for superintendents, there's an 01:06:23

1 Q Just so I understand, you've said "adopt a
2 policy." What I'm asking is, are there instances
3 where the policy comes directly from the county
4 board?

5 A No. As far as creating the policy, like 01:08:07
6 writing it, the actual making of the policy, I
7 don't --

8 Q No problem. Thank you.

9 If the county board disagrees with a policy
10 that's been presented by the state board, will it 01:08:40
11 still adopt that policy?

12 A We have no choice but to follow state board
13 policy.

14 Q So what is the purpose of having votes as it
15 relates to policies? 01:08:56

16 A They're -- I guess it's -- we adopt state
17 policy. We use the language for state policy. And
18 that is our guidance.

19 If we have a local policy, and it would be
20 something like our local discipline policy, we have 01:09:08
21 an overarching state policy for safe and supportive
22 schools, policy 4373, and it gives you examples of
23 how you would discipline, if this occurs.

24 A local policy would take that policy, adopt
25 all the same language as the state policy, but we 01:09:31

1 A That's been approved by my board, by my
2 five-member board.

3 Q Understood. Is the county board
4 superintendent responsible for monitoring H.B. 3293?

5 MS. DENIKER: Objection to the form. 01:14:04

6 THE WITNESS: That -- there is a current
7 injunction with that rule, so we're...

8 BY MS. REINHARDT:

9 Q Is the county board superintendent
10 responsible for monitoring state policies that are 01:14:30
11 adopted by the county board?

12 MS. DENIKER: Objection to form.

13 THE WITNESS: Would you repeat that question.

14 BY MS. REINHARDT:

15 Q Is the county board superintendent 01:14:41
16 responsible for monitoring policies, let's say state
17 policies, that are adopted by the county board?

18 MS. DENIKER: Same objection.

19 THE WITNESS: Our -- our county board
20 policies are following state board policy. 01:15:01

21 BY MS. REINHARDT:

22 Q And is the county board superintendent
23 responsible for monitoring those?

24 MS. DENIKER: Same objection.

25 THE WITNESS: We enforce the policy as it 01:15:13

1 comes down from the State and our local board
2 because we're required to enforce state policy.

3 BY MS. REINHARDT:

4 Q And how do you enforce it, state policy?

5 A We follow what the rule says. 01:15:40

6 Q Does the rule describe how it should be
7 enforced?

8 MS. DENIKER: Objection to the form.

9 THE WITNESS: Generally, we know how to
10 enforce the rule. And if we had questions about a 01:16:02
11 state board policy, we would contact the state board
12 to make clarification.

13 BY MS. REINHARDT:

14 Q Understood. And what is your relationship
15 with the county board superintendent -- I'm sorry, 01:16:14
16 let -- let me rephrase that.

17 What is your relationship with the state
18 board superintendent?

19 A I contact him when I need to. He's -- he is
20 available, and our state board is available, our 01:16:32
21 state department.

22 Q In what instances would you need to -- in
23 what instances would you need to discuss things with
24 the state board superintendent?

25 A I've had contact with our state board 01:16:49

1 Q Understood. Does the county board have any
2 policies pertaining to sports?

3 A We have minimal. We have two.

4 Q And what are those two policies?

5 A We have a policy on extracurricular 01:44:45
6 activities for 6 to 12, just defining what
7 extracurricular would be for 6 to 12th grade. And
8 the other policy that we have is on how you obtain a
9 letter, how are you a lettermen, as far as sports is
10 concerned. 01:45:07

11 Q When were those policies developed?

12 A I believe 2008 was one. I don't remember the
13 date on the other. They were early. They're --
14 they're older policies.

15 Q So as it relates to the lettermen policy, 01:45:20
16 I'll use that as an example, who is responsible for
17 enforcing it?

18 A That would be the school AD and the athletic
19 program at the school. That would be really
20 pertaining to the high school athletic directors. 01:45:40

21 Q And does the county board ever need to step
22 in, as far as enforcing those policies?

23 A Only if there would be a disagreement. I
24 would assume that if a child thought they were
25 supposed to get a letter, and they didn't, then I 01:46:00

1 would probably be -- it would be brought to my
2 attention.

3 Q Understood. And just for clarity, does the
4 county board have any policies related to sex
5 separation in sports? 01:46:12

6 A No, we do not have an adopted policy for
7 that. We follow SSAC guidelines on what teams are
8 coed.

9 Q Does the County have any policies pertaining
10 to transgender students? 01:46:40

11 A No.

12 Q What do you know about H.B. 3293?

13 MS. DENIKER: Objection to the form.

14 THE WITNESS: It -- it was a state law passed
15 in July of '21. 01:47:05

16 BY MS. REINHARDT:

17 Q What does H.B. 3293 do?

18 MS. DENIKER: Objection to the form.

19 THE WITNESS: I can really only tell you what
20 I know when I read the statute. It's a -- it makes 01:47:24

21 a distinction between -- it begins by saying that
22 there is an inherent difference between a male and a
23 female. It talks about safety during sporting
24 activities or doing -- during athletics. And it
25 also addresses the equity or displacement of female 01:47:46

1 Q And once the association made you aware of
2 H.B. 3293, did you report -- did you report anything
3 related to H.B. 3293 to someone you report to?

4 And I can rephrase that if that was not
5 clear. 01:59:29

6 A No.

7 Q Did you discuss H.B. 3293 with anyone who
8 reports to you?

9 A No.

10 Q Was the County Board of Education -- did the 01:59:45
11 County Board of Education have a role in drafting
12 H.B. 3293?

13 A No.

14 Q Did the county board provide any comments or
15 thoughts to the legislature regarding H.B. 3293 that 02:00:01
16 you are aware of as Superintendent Stutler?

17 A Are you speaking about my county-elected
18 board or --

19 Q The County Board of Education, generally.

20 A No. 02:00:22

21 Q How was H.B. 3293 described to you as
22 Superintendent Stutler?

23 MS. DENIKER: Objection to the form.

24 THE WITNESS: I truly just read the
25 administrative updates, and I will tell you that we 02:00:42

1 Do you see that?

2 A Yes.

3 Q Then on the following page, which is
4 HCBOE 00345, it says, "WV House Bill 3293."

5 Do you see that? 02:04:54

6 A Yes.

7 Q And is it correct that you, as Dora Stutler,
8 were not present for this presentation?

9 A I do not attend all of those association
10 meetings. So I do not recall that particular 02:05:12
11 presentation. These attorneys do present often at
12 these organization meetings.

13 Q After this presentation, did any of the --
14 other superintendents that are members of this
15 associations speak with you about a presentation? 02:05:33

16 A No.

17 Q Has the county board had any conversations
18 with the State Board of Education, prior to the
19 enactment of H.B. 3293, about students who are
20 transgender participating in sports? 02:05:54

21 A No.

22 Q Now, looking at this page, which I believe is
23 345, is that the same page you're currently on?

24 A Yes.

25 Q Can you just review it and let me know if 02:06:07

1 students participating in sports?

2 A There was a gender support plan being created
3 at Norwood Elementary for B.P.J. She was going to
4 attend Bridgeport Middle School.

5 Q So -- 02:10:49

6 A And there's a section -- there's a section on
7 that plan, Are you an athlete?

8 Q Other than the gender support plan that
9 you're speaking of, were there any other
10 conversations with Bridgeport Middle School 02:11:04
11 employees about transgender students
12 participations -- participation in sports?

13 A No.

14 Q Did the county board have any conversations
15 with employees at Norwood Elementary School prior to 02:11:18
16 the enactment of H.B. 3293 about students who are
17 transgender participating in sports?

18 A No.

19 Q What is the county board's rule as it relates
20 to H.B. 3293? 02:11:45

21 MS. DENIKER: Objection to the form.

22 THE WITNESS: It's like any other state law.
23 But there's an injunction, so that was never
24 enacted.

25 BY MS. REINHARDT: 02:11:58

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Q Has H.B. 3293 been enforced against any other student other than B.P.J.? I apologize.

A There's an injunction against it. We take -- we've taken no action. 02:12:17

MS. REINHARDT: Susan, I believe the rest of my questions relate to topic 10, so if it suits the parties, we'll take a break now for about 20 minutes, and then I would ask the county board to have David Mazza present. 02:12:39

MS. DENIKER: And then are done with all other topics upon which Ms. Stutler will be testifying on?

MS. REINHARDT: I am not.

MS. DENIKER: Okay. 02:12:51

THE VIDEOGRAPHER: So -- okay.

MS. REINHARDT: We can also go off the record.

THE VIDEOGRAPHER: Yeah, let's discuss -- okay. We're -- we're going off the record. The time is 2:13 p.m., and this is the end of Media Unit No. 2. 02:13:00

One moment.

(Recess.)

THE VIDEOGRAPHER: All right. We are back on 02:53:32

1 THE WITNESS: No. Because we are not
2 operating under House B. -- House Bill 3293.

3 BY MS. REINHARDT:

4 Q Despite the injunction, if one was not put in
5 place, would the process that you've described be 03:09:05
6 the same for H.B. 3293?

7 MS. DENIKER: Object to the form.

8 THE WITNESS: If a student -- if a student
9 athlete is objecting to something, according to SSAC
10 rules, they could follow that process. 03:09:20

11 BY MS. REINHARDT:

12 Q Thank you. Did the county board have any
13 conversations with WVSSAC prior to the enactment of
14 H.B. 3293 about students who are transgender
15 participating in sports? 03:09:40

16 A No.

17 Q Do you know who Bernie Dolan is?

18 A Yes.

19 Q Who is Bernie Dolan?

20 A He's the executive director of the SSAC. 03:09:52

21 Q Did the county board have any conversations
22 with Mr. Dolan, prior to the enactment of H.B. 3293,
23 about students who are transgender participating in
24 sports?

25 A No. 03:10:11

1 questions, I want to see if I can confirm what you
2 previously stated.

3 Can you confirm whether or not the county
4 board had any conversations with anyone outside of
5 the County Board of Education about H.B. 3293 as it 03:16:44
6 relates to students who are transgender
7 participating in school sports?

8 MS. DENIKER: Objection on the basis it's
9 been asked and answered.

10 You can answer. 03:16:59

11 THE WITNESS: I am unaware of any
12 conversations.

13 BY MS. REINHARDT:

14 Q If the preliminary injunction was not in
15 place, what would be required of the county board as 03:17:07
16 it relates to H.B. 3293?

17 MS. DENIKER: Objection to the form.

18 THE WITNESS: We -- we have not acted or
19 changed the way that we would continue with sports
20 in our athletic programs and -- 03:17:39

21 BY MS. REINHARDT:

22 Q And that -- and that's true even if the
23 injunction was not in place?

24 MS. DENIKER: Objection to the form.

25 THE WITNESS: The board has taken no action 03:17:52

1 as it relates to this house bill.

2 BY MS. REINHARDT:

3 Q I'm asking what that'd be required to do.

4 MS. DENIKER: Objection to the form.

5 THE WITNESS: We receive the house bill. 03:18:14

6 It's not enacted. We've made no action on that.

7 And I could not speak on what actions would be

8 taken. We have not had to address that.

9 BY MS. REINHARDT:

10 Q Who will be responsible for promulgating 03:18:36

11 rules to implement H.B. 3293?

12 MS. GREEN: Object to the form.

13 MS. DENIKER: Objection to the form.

14 THE WITNESS: It would be the same process we
15 would with any new house bill or rule that we have. 03:18:49

16 BY MS. REINHARDT:

17 Q And that's in line with how you characterized
18 the process earlier in this deposition; is that
19 correct?

20 MS. DENIKER: Objection to the form. 03:19:04

21 THE WITNESS: I believe so.

22 BY MS. REINHARDT:

23 Q I am just trying to not make you reiterate
24 the -- your process for implementing policies, but
25 if you prefer, I am happy to hear that. 03:19:20

1 for the fifth-grade year?

2 A Tarra Shields -- in conversation with
3 Tarra Shields, they put this plan into place, her
4 going into fourth grade. And, now, this is from
5 Tarra Shields. There were -- they -- she had a -- 04:08:05
6 I'm talking from Tarra, that she had a good
7 fourth-grade year. They were going -- she was going
8 into the fifth grade, and they felt there was really
9 no need to change anything.

10 At any time, a parent can request that the 04:08:20
11 plan be reviewed. So I would take that if there's
12 not another plan dated, that they felt that, you
13 know, she was having a good two years.

14 Q And who are you referring to when you say
15 "they"? 04:08:35

16 A I -- I would say Tarra Shields, this team
17 that was with her at Norwood. And you've also got
18 to understand the parent is involved in this.
19 And -- and B [REDACTED].

20 Q Did the county board implement any policies 04:08:46
21 related to transgender students after implementing
22 B [REDACTED]'s gender support plan?

23 A No.

24 Q Now I'm going to ask you to go back to what
25 was previously marked as WV-19. 04:09:05

1 THE WITNESS: I think I've said this. When
2 the county board gets a new law, we -- we have to
3 abide by that rule. It was not our rule. And the
4 county board is given those rules; we have to abide
5 by those, period. 04:50:27

6 BY MS. REINHARDT:

7 Q I'm wondering if the county board supported
8 H.B. 3293 when it was being considered by the
9 legislation.

10 MS. DENIKER: Same objection to the form. 04:50:43

11 THE WITNESS: I'm not going to -- I don't
12 know how to really answer that other than we support
13 all of our students in the sense that we need to
14 make them comfortable and aware and -- and support
15 them in their surroundings. 04:50:58

16 BY MS. REINHARDT:

17 Q So you are not aware of any rule prior to
18 H.B. 3293 in West -- where a school in West Virginia
19 had to follow the gender in WVEIS in order for a
20 student to participate on a sports team? 04:51:14

21 MR. TRYON: Objection.

22 MS. GREEN: Object to the form.

23 THE WITNESS: I'm not aware of any other
24 school in West Virginia.

25 ///

1 MS. DENIKER: And I'm going to ask for --
2 this is Susan Deniker again.

3 What is the scope of timing on your question,
4 Ms. Reinhardt?

5 MS. REINHARDT: It will be from January 1st, 04:57:03
6 2019, to present.

7 THE WITNESS: No.

8 BY MS. REINHARDT:

9 Q Thank you. And just as one last final
10 follow-up question, has the county board implemented 04:57:12
11 any Title IX policies pertaining to transgender
12 students' participation in sports?

13 A No.

14 MS. REINHARDT: Thank you very much,
15 Superintendent Stutler. I believe that opposing 04:57:26
16 counsel may have a few questions for you.

17 THE WITNESS: Thank you.

18

19 EXAMINATION

20 BY MS. GREEN: 04:57:34

21 Q Hello, Superintendent Stutler. This is
22 Roberta Green with WVSSAC --

23 MS. GREEN: Kelly, did -- were you guys
24 hopping on to go first? Okay. I'll just leap to
25 the front of the line, then. 04:58:02

1 Q Do you know how that process is done?

2 A Not from beginning to end. I know parts.

3 Q Is it fair to say that you will defer

4 testimony on behalf of the Harrison County Board of

5 Education about rostering for school sports in 05:54:29

6 Harrison County to the other designee for today's

7 30(b)(6) deposition?

8 A Yes.

9 Q You were also asked questions today about

10 House Bill 3293. 05:54:44

11 Superintendent Stutler, are you familiar with

12 that house bill that was passed by the West Virginia

13 legislature?

14 A Yes.

15 Q And you would have reviewed that bill; is 05:54:55

16 that correct?

17 A Yes.

18 Q You were asked some questions about whether

19 the Harrison County Board of Education supported

20 that bill, and I want to ask you more specific 05:55:03

21 questions about that.

22 Did the Harrison County Board of Education as

23 an entity do anything officially to advocate or

24 support that bill?

25 MS. REINHARDT: Objection to form. 05:55:15

1 THE WITNESS: No.

2 BY MS. DENIKER:

3 Q Did any employee or agent of Harrison County,
4 in their official capacities, take any action to
5 advocate for the passage of that bill? 05:55:25

6 MS. REINHARDT: Objection.

7 THE WITNESS: No.

8 BY MS. DENIKER:

9 Q Did any employee or agent of the
10 Harrison County Board of Education in any way 05:55:34
11 contribute to the passage of that bill by providing
12 testimony or information to support passage of
13 House Bill 3293?

14 MS. REINHARDT: Objection to form.

15 THE WITNESS: No. 05:55:48

16 BY MS. DENIKER:

17 Q Did the Harrison County Board of Education,
18 through the elected board, pass any policy
19 proclamation or other statement that related to
20 House Bill 3293 in any way? 05:56:00

21 A No.

22 Q Has the Harrison County Board of Education
23 taken any action to implement the provisions of
24 House Bill 3293 as you sit here today?

25 A No. 05:56:13

1 items that only go to certain people.

2 The secretaries have, usually, residency
3 information, scheduling, the schedules, things like
4 that, but some of the stuff that is put in the
5 WVEIS, it's mostly my counselor, myself and my 06:40:03
6 assistant.

7 Q In WVEIS, are students' names listed and
8 other -- so I'm asking, are student names listed,
9 including their ID number?

10 A That is correct. 06:40:16

11 Q And are students' genders listed in WVEIS?

12 A Yes, they are.

13 Q And if a student were to participate in a
14 school athletic program, would the athletic director
15 need to check WVEIS to know which team the student 06:40:39
16 needed to be on?

17 A No.

18 Q How is it -- how are students designated
19 between teams?

20 A They are given an information sheet that is 06:40:48
21 filled out by them or the -- the student or the
22 parent. That information goes back to the athletic
23 director who then puts it in a portal that would be
24 seen by the WVSSAC.

25 Q Does that portal have a name? 06:41:03

1 BY MS. REINHARDT:

2 Q And if a -- if a student is gender
3 nonconforming, does the school have a policy on what
4 would be put as their gender for school sports?

5 A Can you repeat that again, please? 06:47:27

6 Q If a student is gender nonconforming -- and
7 what I mean by that is they neither identify as just
8 a boy or a girl -- does the school have a policy for
9 how they're listed on a sports team's roster?

10 A We do not. 06:47:43

11 Q Does the school have a policy related to what
12 transgender students are listed as for the purposes
13 of sports teams' rosters?

14 A We do not.

15 Q I'm just going to make sure I have -- I've 06:47:59
16 asked all my questions on this topic. One second.

17 Other than school policies, does WVSSAC have
18 any policies that you would follow related to
19 students' genders listed on school sports?

20 MS. GREEN: Object to the form. 06:48:33

21 MS. DENIKER: Object to the form.

22 THE WITNESS: I have never seen any
23 information like that from the SSAC.

24 BY MS. REINHARDT:

25 Q Thank you. And I want to ask if you've ever 06:48:42

EXHIBIT 4

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA
CHARLESTON DIVISION

B.P.J., by her next friend and mother,
HEATHER JACKSON,

Plaintiff,

v.

Civil Action No. 2:21-cv-00316
Hon. Joseph R. Goodwin, District Judge

WEST VIRGINIA STATE BOARD OF
EDUCATION, HARRISON COUNTY BOARD
OF EDUCATION, WEST VIRGINIA
SECONDARY SCHOOL ACTIVITIES
COMMISSION, W. CLAYTON BURCH in his
official capacity as State Superintendent,
DORA STUTLER in her official capacity as
Harrison County Superintendent, PATRICK
MORRISEY in his official capacity as Attorney
General, and THE STATE OF WEST VIRGINIA,

Defendants,

and

LAINEY ARMISTEAD,

Defendant-Intervenor.

**DEFENDANT SUPERINTENDENT DORA STUTLER'S RESPONSES AND
OBJECTIONS TO PLAINTIFF'S SECOND SET OF REQUESTS FOR ADMISSION**

Pursuant to Rule 36 of the Federal Rules of Civil Procedure, Defendant Superintendent Dora Stutler ("Superintendent Stutler") hereby responds and objects to "Plaintiff's Second Set of Requests for Admission to Defendant Harrison County Superintendent Dora Stutler" as follows:

GENERAL OBJECTION: Superintendent Stutler objects to the definitions of "County Board" and "County Superintendent" as set forth in Plaintiff's requests for admission.

REQUEST NO. 25: Admit that the Harrison County Board of Education and the Harrison County School Superintendent must comply with H.B. 3293 unless enjoined from doing so by a court.

RESPONSE: **OBJECTION.** Superintendent Stutler objects to the extent this request is seeking a legal conclusion. Subject to and without waiving the objection, Superintendent Stutler states as follows: Because H.B. 3293 is a West Virginia State law that applies to County Boards of Education, including the Harrison County Board of Education (“County Board”) and its County Superintendent, because H.B. 3293 provides for private causes of action, and thus imposes liability against County Boards of Education, like the County Board, and while the County Board and its County Superintendent did not devise and have not adopted H.B. Bill 3293 as their own policy, Superintendent Stutler admits this request because, absent an injunction by a court, the County Board and the County Superintendent would be compelled and required to enforce H.B. Bill 3293 because it is a mandatory State law that affords the County Board and the County Superintendent no discretion.

REQUEST NO. 26: Admit that H.B. 3293 prohibits the Harrison County Board of Education and the Harrison County Superintendent from adopting or enforcing a policy that would allow B.P.J. to participate on girls’ athletic teams at Bridgeport Middle School.

RESPONSE: **OBJECTION.** Superintendent Stutler objects to the extent this request is seeking a legal conclusion. Subject to and without waiving the objection, Superintendent Stutler states as follows: Because H.B. 3293 is a West Virginia State law that applies to County Boards of Education, including the County Board and its County Superintendent, because H.B. 3293 provides for private causes of action, and thus imposes liability against County Boards of Education, like the County Board, and while the County Board and its County

Superintendent did not devise and have not adopted H.B. Bill 3293 as their own policy, Superintendent Stutler admits this request because, absent an injunction by a court, the County Board and the County Superintendent would be compelled and required to enforce H.B. Bill 3293 because it is a mandatory State law that affords the County Board and the County Superintendent no discretion.

REQUEST NO. 27: Admit that the West Virginia Secondary School Athletic Commission must comply with H.B. 3293 unless enjoined from doing so by a court.

RESPONSE: **OBJECTION.** Superintendent Stutler objects to the extent this request is seeking a legal conclusion. Subject to and without waiving the objection, Superintendent Stutler is not in a position to admit or deny this request because it concerns the West Virginia Secondary School Athletic Commission's obligations under H.B. 3293.

REQUEST NO. 28: Admit that H.B. 3293 prohibits the West Virginia Secondary School Athletic Commission from adopting or enforcing a policy that would allow B.P.J. to participate on girls' athletic teams at Bridgeport Middle School

RESPONSE: **OBJECTION.** Superintendent Stutler objects to the extent this request is seeking a legal conclusion. Subject to and without waiving the objection, Superintendent Stutler is not in a position to admit or deny this request because it concerns the West Virginia Secondary School Athletic Commission's obligations under H.B. 3293.

REQUEST NO. 29: Admit that there are no athletic teams designated as "coed or mixed," as that phrase is used in H.B. 3293 (codified at Code of West Virginia §18-2-25d(c)(1)(C)), offered at Bridgeport Middle School.

RESPONSE: Denied.

REQUEST NO. 48: Admit that when enforcing West Virginia State law you act on behalf of the State of West Virginia.

RESPONSE: **OBJECTION.** Superintendent Stutler objects to the extent this request is seeking a legal conclusion. Subject to and without waiving the objection, Superintendent Stutler admits this request.

REQUEST NO. 49: Admit that when enforcing West Virginia State law you are a State Actor for purposes of 42 U.S.C. § 1983.

RESPONSE: **OBJECTION.** Superintendent Stutler objects to the extent this request is seeking a legal conclusion. Subject to and without waiving the objection, Superintendent Stutler admits this request.

REQUEST NO. 50: Admit that you are required to enforce H.B. 3293 assuming the Court has not enjoined you from doing so.

RESPONSE: **OBJECTION.** Superintendent Stutler objects to the extent this request is seeking a legal conclusion. Subject to and without waiving the objection, Superintendent Stutler states as follows: Because H.B. 3293 is a West Virginia State law that applies to County Boards of Education, including the County Board and its County Superintendent, because H.B. 3293 provides for private causes of action, and thus imposes liability against County Boards of Education, like the County Board, and while the County Board and its County Superintendent did not devise and have not adopted H.B. Bill 3293 as their own policy, Superintendent Stutler admits this request because, absent an injunction by a court, the County Board and the County Superintendent would be compelled and required to enforce H.B. Bill 3293 because it is a mandatory State law that affords the County Board and the County Superintendent no discretion.

EXHIBIT 5

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA
CHARLESTON DIVISION

B.P.J., by her next friend and mother,
HEATHER JACKSON,

Plaintiff,

v.

Civil Action No. 2:21-cv-00316
Hon. Joseph R. Goodwin, District Judge

WEST VIRGINIA STATE BOARD OF
EDUCATION, HARRISON COUNTY BOARD
OF EDUCATION, WEST VIRGINIA
SECONDARY SCHOOL ACTIVITIES
COMMISSION, W. CLAYTON BURCH in his
official capacity as State Superintendent,
DORA STUTLER in her official capacity as
Harrison County Superintendent, PATRICK
MORRISEY in his official capacity as Attorney
General, and THE STATE OF WEST VIRGINIA,

Defendants,

and

LAINEY ARMISTEAD,

Defendant-Intervenor.

**DEFENDANT HARRISON COUNTY BOARD OF EDUCATION’S RESPONSES AND
OBJECTIONS TO PLAINTIFF’S SECOND SET OF REQUESTS FOR ADMISSION**

Pursuant to Rule 36 of the Federal Rules of Civil Procedure, Defendant Harrison County Board of Education (“County Board”) hereby responds and objects to “Plaintiff’s Second Set of Requests for Admission to Defendant Harrison County Board of Education” as follows:

GENERAL OBJECTION: The County Board objects to the definitions of “County Board” and “County Superintendent” as set forth in Plaintiff’s requests for admission. Those definitions are overly broad and outside the permissible scope of discovery under the

REQUEST NO. 25: Admit that the Harrison County Board of Education and the Harrison County School Superintendent must comply with H.B. 3293 unless enjoined from doing so by a court.

RESPONSE: **OBJECTION.** The County Board objects to the extent this request is seeking a legal conclusion. Subject to and without waiving the objection, the County Board states as follows: Because H.B. 3293 is a West Virginia State law that applies to County Boards of Education, including the County Board and its County Superintendent, because H.B. 3293 provides for private causes of action, and thus imposes liability against County Boards of Education, like the County Board, and while the County Board and its County Superintendent did not devise and have not adopted H.B. Bill 3293 as their own policy, the County Board admits this request because, absent an injunction by a court, the County Board would be compelled and required to enforce H.B. Bill 3293 because it is a mandatory State law that affords the County Board no discretion.

REQUEST NO. 26: Admit that H.B. 3293 prohibits the Harrison County Board of Education and the Harrison County Superintendent from adopting or enforcing a policy that would allow B.P.J. to participate on girls' athletic teams at Bridgeport Middle School.

RESPONSE: **OBJECTION.** The County Board objects to the extent this request is seeking a legal conclusion. Subject to and without waiving the objection, the County Board states as follows: Because H.B. 3293 is a West Virginia State law that applies to County Boards of Education, including the County Board and its County Superintendent, because H.B. 3293 provides for private causes of action, and thus imposes liability against County Boards of Education, like the County Board, and while the County Board and its County Superintendent did not devise and have not adopted H.B. Bill 3293 as their own policy, the County Board admits this

request because, absent an injunction by a court, the County Board would be compelled and required to enforce H.B. Bill 3293 because it is a mandatory State law that affords the County Board no discretion.

REQUEST NO. 27: Admit that the West Virginia Secondary School Athletic Commission must comply with H.B. 3293 unless enjoined from doing so by a court.

RESPONSE: **OBJECTION.** The County Board objects to the extent this request is seeking a legal conclusion. Subject to and without waiving the objection, the County Board is not in a position to admit or deny this request because it concerns the West Virginia Secondary School Athletic Commission’s obligations under H.B. 3293.

REQUEST NO. 28: Admit that H.B. 3293 prohibits the West Virginia Secondary School Athletic Commission from adopting or enforcing a policy that would allow B.P.J. to participate on girls’ athletic teams at Bridgeport Middle School

RESPONSE: **OBJECTION.** The County Board objects to the extent this request is seeking a legal conclusion. Subject to and without waiving the objection, the County Board is not in a position to admit or deny this request because it concerns the West Virginia Secondary School Athletic Commission’s obligations under H.B. 3293.

REQUEST NO. 29: Admit that there are no athletic teams designated as “coed or mixed,” as that phrase is used in H.B. 3293 (codified at Code of West Virginia §18-2-25d(c)(1)(C)), offered at Bridgeport Middle School.

RESPONSE: Denied.

REQUEST NO. 30: Admit that there are no athletic teams designated as “coed or mixed,” as that phrase is used in H.B. 3293 (codified at Code of West Virginia §18-2-

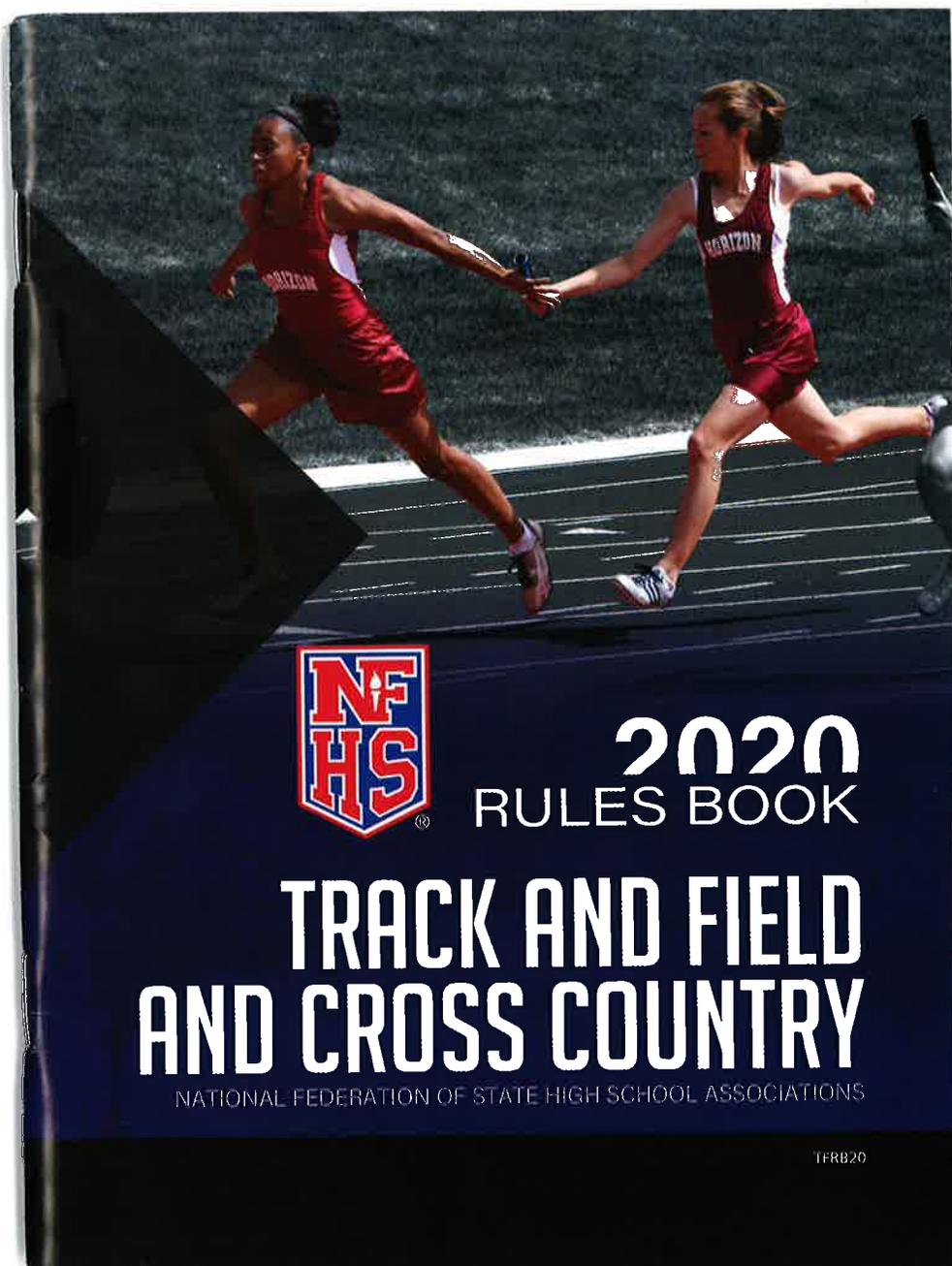
Board states as follows: Because H.B. 3293 is a West Virginia State law that applies to County Boards of Education, including the County Board and its County Superintendent, because H.B. 3293 provides for private causes of action, and thus imposes liability against County Boards of Education, like the County Board, and while the County Board and its County Superintendent did not devise and have not adopted H.B. Bill 3293 as their own policy, the County Board admits this request because, absent an injunction by a court, the County Board would be compelled and required to enforce H.B. Bill 3293 because it is a mandatory State law that affords the County Board no discretion.

REQUEST NO. 49: Admit that but for the injunction in this case (Dkt. 67) the Harrison County School Board and schools within the Harrison County School District would not take any actions that violated H.B. 3293.

RESPONSE: **OBJECTION.** The County Board objects to the extent this request is seeking a legal conclusion. Subject to and without waiving the objection, the County Board states as follows: Because H.B. 3293 is a West Virginia State law that applies to County Boards of Education, including the County Board and its County Superintendent, because H.B. 3293 provides for private causes of action, and thus imposes liability against County Boards of Education, like the County Board, and while the County Board and its County Superintendent did not devise and have not adopted H.B. Bill 3293 as their own policy, the County Board admits this request because, absent an injunction by a court, the County Board would be compelled and required to enforce H.B. Bill 3293 because it is a mandatory State law that affords the County Board no discretion.

REQUEST NO. 50: Admit that, but for the injunction in this case (Dkt. 67), the Harrison County School Board and Bridgeport Middle School would not have permitted Plaintiff

EXHIBIT 6



2020
RULES BOOK

TRACK AND FIELD AND CROSS COUNTRY

NATIONAL FEDERATION OF STATE HIGH SCHOOL ASSOCIATIONS

TFRB20

STAGGERS IN METERS

FOR 30-INCH LANES (INDOOR ONLY)

| Staggers for: | 1 Turn* | 2 Turns | 3 Turns | 4 Turns |
|---------------|---------|---------|---------|---------|
| All lanes | 2.39 m | 4.79 m | 7.18 m | 9.57 m |

FOR 36-INCH LANES

| | | | | |
|-----------|--------|--------|--------|---------|
| All lanes | 2.87 m | 5.74 m | 8.62 m | 11.49 m |
|-----------|--------|--------|--------|---------|

FOR 42-INCH LANES

| | | | | |
|-----------|--------|--------|---------|---------|
| All lanes | 3.35 m | 6.70 m | 10.06 m | 13.40 m |
|-----------|--------|--------|---------|---------|

* A turn is the curved portion of the track. A standard 400-meter track has two turns (curves) in one lap.

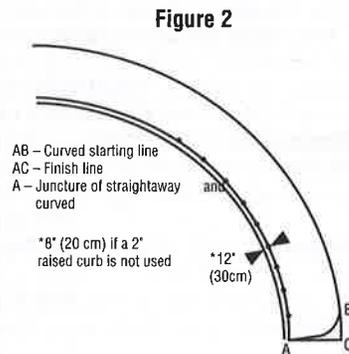
ART. 6 . . . For races around one or more curves that are not run in lanes, a curved starting line may be used so that each competitor will run the same distance going into the first curve. The curved starting line may be established by driving a row of pins 10 feet (3 meters) apart, 12 inches (30 centimeters) from the curb. The first pin is to be 12 inches (30 centimeters) from the curb at the start. Usually seven or eight pins are sufficient.

NOTES:

1. If a painted line is used to mark the inside lane boundary for Lane 1, the first pin is to be 8 inches (20 centimeters) from the curb at the start. Using a steel tape 100 feet (30 meters) long or longer with the pin farthest from the start as a center, scribe an arc from the pole to the outer curb of the track. This will not be an arc of a circle as the radius will change as the tape loses contact with each successive pin.
2. It is recommended that a dashed line of the same color and curvature as the starting line(s) be painted on the track three meters behind the curved starting line(s) in order to aid in the step-up start.

The 3-meter (10-foot) distance for spacing of the pins is an arbitrary and sufficiently accurate interval. The accompanying diagram will help in properly constructing the starting line.

When using the curved starting line on the straightaway, scribe an arc with the center at the pole and with a radius of 100 feet. In this case, the curved line will be an arc of a circle since the radius is constant. For races around one or more curves where alleys are used, a curved starting line within each alley should be utilized. To accurately equate the starting line, each alley shall be measured separately using this procedure.



ART. 7 . . . Hurdle Spacing:

Boys Competition

| Distance of Race | No. of Hurdles | Hurdle Height | Starting Line to First Hurdle | Between Hurdles | Last Hurdle to Finish Line |
|------------------|----------------|---------------|---|------------------------|--|
| 55 m | 5 | 39 in. | 13.72 m (45 ft.) | 9.14 m (30 ft.) | 4.72 m (15 ft., 5 ³ / ₈ in.) |
| 110 m | 10 | 39 in. | 13.72 m (45 ft.) | 9.14 m (30 ft.) | 14.02 m (45 ft., 10 ⁵ / ₈ in.) |
| 300 m | 8 | 36 in. | 45 m (147 ft., 7 ¹ / ₂ in.) | 35 m (114 ft., 10 in.) | 10 m (32 ft., 9 ³ / ₄ in.) |

Girls Competition

| Distance of Race | No. of Hurdles | Hurdle Height | Starting Line to First Hurdle | Between Hurdles | Last Hurdle to Finish Line |
|------------------|----------------|---------------|---|--|--|
| 55 m | 5 | 33 in. | 13 m (42 ft., 8 in.) | 8.5 m (27 ft., 10 ³ / ₄ in.) | 8 m (26 ft., 3 in.) |
| 100 m | 10 | 33 in.* | 13 m (42 ft., 8 in.) | 8.5 m (27 ft., 10 ³ / ₄ in.) | 10.5 m (34 ft., 5 ¹ / ₂ in.) |
| 300 m | 8 | 30 in. | 45 m (147 ft., 7 ¹ / ₂ in.) | 35 m (114 ft., 10 in.) | 10 m (32 ft., 9 ³ / ₄ in.) |

NOTE: *State associations may adopt either the low (30-inch) or high (33-inch) height in the 100-meter hurdle race for girls, but national records are recognized only at the 33-inch height.

SECTION 4 TRACK EQUIPMENT

The NFHS does not perform scientific tests on any specific items of equipment to determine if the equipment poses undue risks to student-athletes, coaches, officials or spectators. Such determinations are the responsibility of equipment manufacturers.

ART. 1 . . . Starting blocks are blocks or pedals mounted on a frame to ensure a rigid surface against which the feet may be braced to start a race. Springs, hand or body supports shall not be permitted.

ART. 2 . . . An adapter on the blocks may be used by competitors, provided it is not necessary to modify the track.

ART. 3 . . . The relay baton shall not exceed 11.81 inches (30 centimeters) in length. Its circumference shall be at least 4 inches and no more than 5 inches (102-127 millimeters). It shall be a smooth, hollow tube, made in one piece of wood, metal or other rigid material. It shall weigh at least 1.766 ounces (50 grams). Tape shall not be used to wrap the baton.

ART. 4 . . . The hurdle shall be constructed to fit within the track lanes, and the top bar shall have a dimension of about 2³/₄ inches (7 centimeters) in height. It shall be painted white or white with two or more vertical or diagonal stripes.

ART. 5 . . . The pullover force is that force which, when applied to the top of a hurdle, will cause it to overturn.

ART. 6 . . . The hurdle shall be of such weight and balance that it requires a steady pullover force of not less than the following weights at the specified heights as follows:

| | | | |
|----------------|------------|----------------|------------|
| 30 in. = 8 lb. | (3.629 kg) | 36 in. = 6 lb. | (2.722 kg) |
| 33 in. = 7 lb. | (3.175 kg) | 39 in. = 6 lb. | (2.722 kg) |

ART. 22 . . . The planting box shall not contain any foreign materials except planting box padding, which shall meet the ASTM Standards. Such padding can be incorporated into the design of the planting box or can be a padding addition to an existing planting box.

ART. 23 . . . No person shall be allowed to touch the vaulting pole except the pole may be caught by an assigned official, assigned pole catcher or the competitor, when circumstances warrant, but never to prevent the pole from dislodging the bar. If there is a tailwind that might cause a properly released pole to fall forward, the referee should appoint an official and authorize him/her to catch the pole after it has been properly released.

ART. 24 . . . After competition has started, the bar shall not be lowered, except to determine a first-place winner when a tie for that place is involved.

ART. 25 . . . An accurate measurement of the height of the crossbar will be taken before each record attempt. Any displaced crossbar should be placed on the standards in exactly the same position as before its displacement. To ensure this, one face should be marked for identification.

ART. 26 . . . Measurements shall be recorded to the nearest lesser ¼ inch or centimeter. Measurements shall be made with non-stretchable tape such as fiberglass, nylon, steel or certified scientific measurement device (laser). Measurement of the official height shall be from a point on the same level as the takeoff to the lowest point on the upper side of the crossbar.

ART. 27 . . . It is a foul if the competitor:

- a. Displaces the crossbar from the pins on which it originally rested, with the body or the pole.

NOTE: If the crossbar and/or uprights are placed incorrectly by the contest official, the trial is not recorded as a foul and the vaulter has an additional trial.

- b. Leaves the ground in an attempt and fails to clear the crossbar.
EXCEPTION: The competitor aborts the approach and in stopping plants the pole and momentum causes his/her feet to leave the ground.
- c. During the vault, raises the hand which is uppermost when he/she leaves the ground to a higher point on the pole, or if the hand which was underneath is raised to any point on the pole above the other hand.
- d. Allows any part of his/her body or the pole to touch the ground or the landing system beyond the vertical plane of the top of the stopboard, without first clearing the bar.
- e. Fails to initiate a purposeful action of completing the requirements of the athletic challenge (trial) within the prescribed time period after the competitor's name is called and after the crossbar and standards have been set.
- f. After clearing the crossbar, contacts an upright and displaces the crossbar.
- g. Steadies the crossbar with a hand(s) or arm(s).
- h. Grips the pole above the top hand-hold band.
- i. Touches or catches the pole preventing it from dislodging the crossbar.

PENALTY: An unsuccessful trial is charged.

SECTION 6 DISCUS THROW

ART. 1 . . . The discus shall be constructed so that its body is of wood or other suitable material attached to a circumscribing smooth metal or plastic rim. Metal plates shall be set flush with the sides of the wood, plastic or composition material body and in the exact center as a means of acquiring the correct weight. These metal plates shall be circular with a diameter of 2 inches (5 centimeters). Each side of the discus shall be a counterpart of the other side and there shall be no indentations, projecting points or sharp edges. Each side shall taper in a straight line from the beginning of the curve of the rim to the edge of the centrally placed metal plate. A discus constructed entirely of rubber, plastic or metal alloys is legal if it conforms with the specifications for weight, size and shape. The rim of the discus shall not be sandblasted and shall remain smooth.

ART. 2 . . . The discus shall meet the following specifications:

| | Boys Competition | Girls Competition |
|---------------------------------|---------------------|---------------------|
| Weight (minimum) | 1.6 kg. (3.527 lb.) | 1.0 kg. (2.205 lb.) |
| Diameter (minimum) | 209 mm (8.228 in.) | 180 mm (7.087 in.) |
| (maximum) | 211 mm (8.307 in.) | 182 mm (7.165 in.) |
| Diameter of Core (minimum) | 50 mm (1.968 in.) | 50 mm (1.968 in.) |
| (maximum) | 57 mm (2.244 in.) | 57 mm (2.244 in.) |
| Thickness of Center (minimum) | 40 mm (1.575 in.) | 37 mm (1.457 in.) |
| (maximum) | 42 mm (1.654 in.) | 39 mm (1.535 in.) |
| Rim thickness ¼ inch From Edge: | | |
| (minimum) | 12 mm (0.472 in.) | 12 mm (0.472 in.) |
| (maximum) | 13 mm (0.512 in.) | 13 mm (0.512 in.) |
| Radius of Edge | 6 mm (0.236 in.) | 6 mm (0.236 in.) |

ART. 3 . . . The throwing circle shall be level and 8 feet, 2½ inches (2.50 meters) in diameter. The circumference shall be marked with a metal, wood or plastic band which shall not rise more than ¾ inch (1.9 centimeters) above the level of the circle or, if the circle has a surface of asphalt, concrete, wood or other hard material, a painted line 2 inches (5 centimeters) wide may be substituted for the band. The inside edge of the line or band is the limit of the throwing circle.

ART. 4 . . . Projecting lines, 2 inches (5 centimeters) wide and 8 inches (20 centimeters) long, lying on the diameter extended and outside the circumference, shall be used to designate the back half of the throwing circle. (Figure 7)

ART. 5 . . . A 34.92-degree sector shall be marked on the ground and drawn from the center of the throwing circle. The inside edges of these lines shall mark the sector. **Refer to Appendix B regarding setting up the sector.**

ART. 6 . . . The use of a protective cage is required. For portable or permanent installation, there shall be a rear to the cage as well as sides that extend forward at least to the front of the ring. It is recommended that the cage be constructed of

heavy nylon netting or other material that will absorb the energy of the discus to prevent bounce back. See Appendix A for options regarding dimensions of the cage.

NOTES:

1. The ends of the cage (wing/gate pole) should be placed within 4 to 5 feet of the sector lines.
2. The discus throwing cage is designed to provide limited protection for competitors, officials and spectators in the immediate throwing area. Due to the nature of the event, it does not assure the safety of the aforementioned personnel.
3. It is recommended that all throwing areas be cordoned off, roped, fenced or flagged well outside the sector lines to minimize the risk of injury for spectators and athletes.

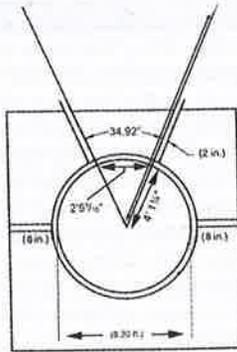


Figure 7

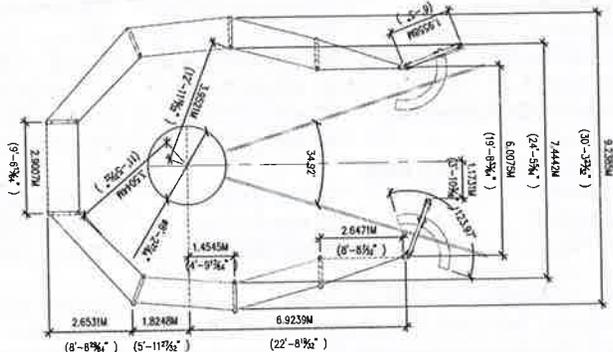


Figure 8

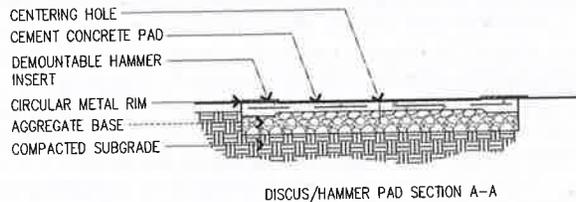


Figure 9

ART. 7 . . . Taping of any part of the throwing hand or fingers shall not be permitted unless there is an open wound that must be protected by tape. Taping of the wrist is permissible. Gloves are not permitted; however, a support belt may be worn. No harness or mechanical device attached to the hand or arm shall be used.

ART. 8 . . . The lines which mark the throwing sector are outside the limits of the sector. A throw shall be made from inside the circle.

ART. 9 . . . It is a foul if the competitor:

- a. Fails to initiate a purposeful action of completing the requirements of the athletic challenge of the event within one minute after the competitor's name is called.
- b. After stepping into the circle, fails to pause before starting the throw.
- c. After starting the attempt, touches any surface outside the circle during a throw.
- d. Throws the discus so it does not fall within the sector lines.
- e. Throws a discus which hits the cage and/or an object outside the sector before landing within the sector.
- f. Leaves the circle before the implement has landed.
- g. Does not exit the back half of the circle.

PENALTY: The throw is not measured, but counts as a trial.

ART. 10 . . . The measurement shall be from the nearest edge of the first mark made by the discus to the inside edge of the throwing circle nearest such mark, measured along an extended radius of the circle.

ART. 11 . . . Measurements shall be recorded to the nearest lesser inch or centimeter. Measurements shall be made with nonstretchable tape such as fiberglass, nylon, steel or certified scientific measurement device (laser). The judges shall hold the tape in such a way that the readings will be at the circle.

SECTION 7 SHOT PUT

ART. 1 . . . The shot shall be constructed so its body is a solid sphere made of any metal or suitable material not softer than brass, or a shell of such metal filled with lead or other material. The shot shall not have indentations other than a weight marking which must be manufactured in such a manner that no advantage is gained by the grip. For indoor meets only, a shot consisting of a shell of rubber or plastic with a center filled with lead pellets may be used.

ART. 2 . . . The shot shall meet the following specifications:

| | Boys Competition | Girls Competition |
|-------------------------|---|---|
| Weight (minimum) | 5.443 kg (12 lb.) | 4.0 kg (8.818 lb.) |
| Diameter (minimum) | 98.4 mm (3.875 in.) | 95 mm (3.740 in.) |
| (maximum) | 117.5 mm (4.625 in.) | 110mm (4.331 in.) |
| Circumference (minimum) | 12 ¹ / ₈ in. (30.91 cm) | 11 ³ / ₄ in. (29.84 cm) |
| (maximum) | 14 ¹ / ₂ in. (36.91 cm) | 13 ³ / ₈ in. (34.56 cm) |

SP

Wrapping the whipcord binding with tape is prohibited.

Specifications for the alternate rubber tip used in lieu of the metal point:

- Overall length of rubber tip 35-77 millimeters
- Diameter of front of rubber tip 14-35 millimeters
- Thickness at front of rubber tip 5 millimeter minimum

NOTE: When a rubber tip is used, the metal point shall end in a slightly rounded button-shape or other feature onto which the rubber tip shall be attached. The tip should be made of rubber or an equivalent soft plastic.

ART. 2 . . . The javelin shall meet all IAAF specifications. The most important specifications are outlined below:

| | Boys Competition | Girls Competition |
|--|--|---|
| Weight (minimum) | 800 g (1.764 lb.) | 600 g (1.323 lb.) |
| Overall Length | | |
| (minimum) | 260 cm (8 ft. 6 ³ / ₈ in.) | 220 cm (7 ft. 2 ⁵ / ₈ in.) |
| (maximum) | 270 cm (8 ft. 10 ⁹ / ₁₆ in.) | 230 cm (7 ft. 6 ⁹ / ₁₆ in.) |
| Length of metal head | | |
| (minimum) | 25 cm (9.842 in.) | 25 cm (9.842 in.) |
| (maximum) | 33 cm (12.992 in.) | 33 cm (12.992 in.) |
| Distance from tip of metal head to center of gravity | | |
| (minimum) | 90 cm (2 ft. 11 ⁷ / ₁₆ in.) | 80 cm (2 ft. 7 ¹ / ₂ in.) |
| (maximum) | 106 cm (3 ft. 5 ³ / ₄ in.) | 92 cm (3 ft. 1 ¹ / ₄ in.) |
| Diameter of shaft at thickest point, front of grip | | |
| (minimum) | 25 mm (0.984 in.) | 20 mm (0.787 in.) |
| (maximum) | 30 mm (1.181 in.) | 25 mm (0.984 in.) |
| | Boys Competition | Girls Competition |
| Diameter of tail midpoint (minimum) | No less than 90% of diameter of front of grip | No less than 90% of diameter of front of grip |
| Diameter of front midpoint (maximum) | No greater than 90% of diameter of front of grip | No greater than 90% of diameter of front of grip |
| Width of cord grip | | |
| (minimum) | 15 cm (5.906 in.) | 14 cm (5.512 in.) |
| (maximum) | 16 cm (6.299 in.) | 15 cm (5.906 in.) |

ART. 3 . . . The runway for the throw should have a minimum length of 120 feet (36.5 meters) and shall be marked by two parallel lines, 13 feet, 1½ inches (4 meters) apart and terminated by a foul-line arc with a radius of 26 feet, 3 inches (8 meters) as shown on Figures 13 and 14. The foul-line arc shall be marked with white marking material or a white metal, plastic or wood band 2¾ inches (7 cm) in width. If using a band, the top surface shall be level with the throwing surface.

The line or band shall be in the throwing sector with the edge toward the runway coinciding with the foul-line arc. A line 2¾ inches (7 cm) in width and 2 feet, 5½ inches (75 cm) in length shall be placed or painted on each side of the runway perpendicular to the side boundaries at the intersection of the foul-line arc and the inside of the side boundary lines. The athlete must exit behind the intersection of the arc and the foul line. (Figures 13 and 14)

ART. 4 . . . The throwing sector into which the javelin must fall is that area defined by extending radii through the two intersections of the arc with the runway lines and a point midway between the runway lines and 26 feet, 3 inches (8 meters) from the foul line. (Figure 13)

ART. 5 . . . The foul line is the hairline which is used to mark the limit of a competitor's run during a trial. (Figure 13)

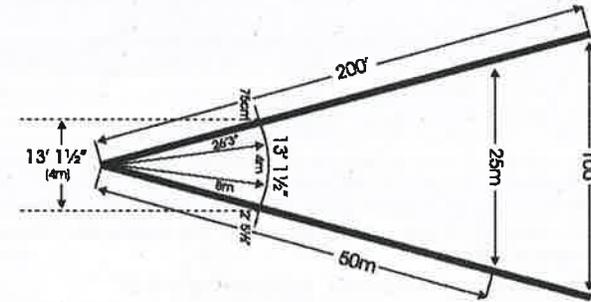


Figure 13
Javelin Run-up Lane

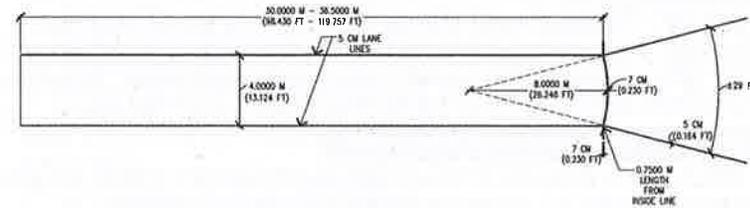


Figure 14
Javelin Runway

ART. 6 . . . Taping of any part of the throwing hand or fingers shall not be permitted unless there is an open wound that must be protected by tape. Taping of the wrist is permissible. Gloves are not permitted; however, a support belt may be worn.

JT

- e. In the process of landing or leaving the pit, touches the ground outside the landing area nearer the foul line than the nearest mark made in the landing pit.
- f. Fails to initiate the purposeful action of completing the requirements of the athletic challenge (jump/trial) of the event within one minute (or prescribed time limit) after the competitor's name is called. (6-2-2 Table)

PENALTY: An unsuccessful trial is charged but not measured.

ART. 9 . . . Each legal jump shall be measured perpendicularly to the foul line or its extension and from that point in the pit touched by the person or apparel of the jumper which is nearest the foul line or its extension.

ART. 10 . . . The judges shall hold the tape in such a way that the readings will be at the takeoff board.

ART. 11 . . . Measurements shall be recorded to the nearest lesser ¼ inch or centimeter. Measurements may be made with non-stretchable tape such as fiberglass, nylon, steel or certified scientific measurement device (laser). Other scientific measuring devices may be used if approved by the games committee.

Rule 7 Special Events

SECTION 1 DECATHLON, PENTATHLON, HEPTATHLON

NOTE: The standard scoring for special events should be a point scale established by IAAF unless state association determines otherwise.

ART. 1 . . . The boys decathlon shall consist of 10 events which shall be held on two consecutive days in the following order, unless state association rules apply:

| First day | Second day |
|----------------|------------------------------|
| 100-meter Dash | 110-meter HH |
| Long Jump | Discus Throw |
| Shot Put | Pole Vault |
| High Jump | Triple Jump or Javelin Throw |
| 400-meter Dash | 1600- or 1500-meter Run |

NOTE: Scoring table for the 1600-meter run is located at www.nfhs.org, Track and Field.

ART. 2 . . . The pentathlon shall consist of five events which shall be held in the following order, unless state association rules apply:

| Boys | Girls |
|-------------------------|---------------|
| Long Jump | 100-meter HH |
| High Jump | High Jump |
| 200-meter Dash | Shot Put |
| Discus Throw | Long Jump |
| 1600- or 1500-meter Run | 800-meter Run |

NOTE: Scoring table for the 1600-meter run is located at www.nfhs.org, Track and Field.

ART. 3 . . . The girls heptathlon shall consist of seven events which will be held on two consecutive days in the following order, unless state association rules apply:

| First Day | Second Day |
|----------------|----------------|
| 100-meter HH | Long Jump |
| High Jump | Javelin Throw* |
| Shot Put | 800-meter Run |
| 200-meter Dash | |

*Some state associations substitute the discus throw for the javelin throw.

SECTION 2 SPECIAL EVENTS

ART. 1 . . . The following may be included in the order of events and shall be conducted under USATF youth event rules unless state association policy determines otherwise (www.usatf.org/about/competition-rules.aspx):

- a. Shuttle relays
- b. Specialty relays
- c. Steeplechase
- d. Hammer throw
- e. Race walking
- f. Indoor weight throw (using legal weight throw cage)

Rule 8 Cross Country

NOTE: All uniform rules are now in Rule 4-3.

SECTION 1 COURSE

ART. 1 . . . The cross country course shall be 2,500 to 5,000 meters (1.5 to 3.1 miles) in length as determined by the meet director or games committee. Measurement shall be along the shortest possible route a runner may take on the prescribed course. The course shall be clearly marked using one or more of the following methods:

- a. A single wide line or boundary lines, both inside and outside, marked with a material which is not injurious to the eyes or skin;
- b. The use of natural or artificial boundary markers; or
- c. Signposts with large directional arrows wherever the course turns, or flags about 1 foot square and mounted on stakes which hold them 6 feet or more above the ground.

NOTE: If a single wide line is used, it may or may not mark the shortest possible route that a runner may take.

EXHIBIT 7

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA
CHARLESTON DIVISION

B.P.J., by her next friend and mother,
HEATHER JACKSON,

Plaintiff,

vs.

WEST VIRGINIA STATE BOARD OF
EDUCATION; HARRISON COUNTY BOARD
OF EDUCATION; WEST VIRGINIA
SECONDARY SCHOOLS ACTIVITIES
COMMISSION; W. CLAYTON BURCH, in his
official capacity as State Superintendent, DORA
STUTLER, in her official capacity as the
Harrison County Superintendent, and the
STATE OF WEST VIRGINIA,

Defendants,

and

LAINY ARMISTEAD,

Defendant-Intervenor.

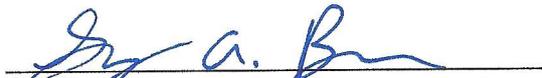
Case No. 2:21-cv-00316

Hon. Joseph R. Goodwin

DECLARATION OF GREGORY A. BROWN, PH.D., FACSM

I, Dr. Gregory A. Brown, pursuant to 28 U.S. Code § 1746, declare under penalty of perjury under the laws of the United States of America that the facts contained in my Expert Declaration of Gregory A. Brown, Ph.D., FACSM in the Case of B.P.J. v. West Virginia State Board of Education, attached hereto, are true and correct to the best of my knowledge and belief, and that the opinions expressed therein represent my own expert opinions.

Executed on February 23, 2022.



Gregory A. Brown

G. Brown

Expert Report, B.P.J. v. WV BOE et al.

Expert Report of
Gregory A Brown, Ph.D. FACSM
In the case of B.P.J. vs. West Virginia State Board of Education.

Overview

In this declaration, I explore three important questions relevant to current discussions and policy decisions concerning inclusion of transgender individuals in women's athletic competitions. Based on my professional familiarity with exercise physiology and my review of the currently available science, including that contained in the many academic sources I cite in this report, I set out and explain three basic conclusions:

- At the level of (a) elite, (b) collegiate, (c) scholastic, and (d) recreational competition, men, adolescent boys, or male children, have an advantage over equally aged, gifted, and trained women, adolescent girls, or female children in almost all athletic events;
- Biological male physiology is the basis for the performance advantage that men, adolescent boys, or male children have over women, adolescent girls, or female children in almost all athletic events; and
- The administration of androgen inhibitors and cross-sex hormones to men or adolescent boys after the onset of male puberty does not eliminate the performance advantage that men and adolescent boys have over women and adolescent girls in almost all athletic events. Likewise, there is no published scientific evidence that the administration of puberty blockers to males before puberty eliminates the pre-existing athletic advantage that prepubertal males have over prepubertal females in almost all athletic events.

In short summary, men, adolescent boys, and prepubertal male children perform better in almost all sports than women, adolescent girls, and prepubertal female children because of their inherent physiological advantages. In general, men, adolescent boys, and prepubertal male children, can run faster, output more muscular power, jump higher, and possess greater muscular endurance than women, adolescent girls, and prepubertal female children. These advantages become greater during and after male puberty, but they exist before puberty.

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

Male advantages in measurements of body composition, tests of physical fitness, and athletic performance have also been shown in children before puberty. These advantages are magnified during puberty, triggered in large part by the higher testosterone concentrations in men, and adolescent boys, after the onset of

adolescent girls and prepubertal female children, in competitions involving running speed, swimming speed, cycling speed, jumping height, jumping distance, and strength (to name a few, but not all, of the performance differences). As I discuss later, it is now clear that these performance advantages for men, adolescent boys, and prepubertal male children, are inherent to the biological differences between the sexes.

10. In fact, I am not aware of any scientific evidence today that disproves that after puberty men possess large advantages in athletic performance over women—so large that they are generally insurmountable for comparably gifted and trained athletes at every level (i.e. (a) elite, (b) collegiate, (c) scholastic, and (d) recreational competition). And I am not aware of any scientific evidence today that disproves that these measured performance advantages are at least largely the result of physiological differences between men and women which have been measured and are reasonably well understood.

11. My use of the term “advantage” in this paper must not be read to imply any normative judgment. The adult female physique is simply different from the adult male physique. Obviously, it is optimized in important respects for the difficult task of childbearing. On average, women require far fewer calories for healthy survival. Evolutionary biologists can and do theorize about the survival value or “advantages” provided by these and other distinctive characteristics of the female physique, but I will leave that to the evolutionary biologists. I use “advantage” to refer merely to performance advantages in athletic competitions.

12. I find in the literature a widespread consensus that the large performance and physiological advantages possessed by males—rather than social considerations or considerations of identity—are precisely the *reason* that most athletic competitions are separated by sex, with women treated as a “protected class.” To cite only a few statements accepting this as the justification:

- Handelsman et al. (2018) wrote, “Virtually all elite sports are segregated into male and female competitions. The main justification is to allow women a chance to win, as women have major disadvantages against men who are, on average, taller, stronger, and faster and have greater endurance due to their larger, stronger, muscles and bones as well as a higher circulating hemoglobin level.” (803)
- Millard-Stafford et al. (2018) wrote “Current evidence suggests that women will not swim or run as fast as men in Olympic events, which speaks against eliminating sex segregation in these individual sports” (530) “Given the historical context (2% narrowing in swimming over 44 y), a reasonable assumption might be that no more than 2% of the

current performance gap could still potentially be attributed to sociocultural influences.”, (533) and “Performance gaps between US men and women stabilized within less than a decade after federal legislation provided equal opportunities for female participation, but only modestly closed the overall gap in Olympic swimming by 2% (5% in running).” (533) Dr. Millard-Stafford, a full professor at Georgia Tech, holds a Ph.D. in Exercise Physiology and is a past President of the American College of Sports Medicine.

- In 2021, Hilton et al. wrote, “most sports have a female category the purpose of which is the protection of both fairness and, in some sports, safety/welfare of athletes who do not benefit from the physiological changes induced by male levels of testosterone from puberty onwards.” (204)
- In 2020 the Swiss High Court (“Tribunal Fédéral”) observed that “in most sports . . . women and men compete in two separate categories, because the latter possess natural advantages in terms of physiology.”¹
- The members of the Women’s Sports Policy Working Group wrote that “If sports were not sex-segregated, female athletes would rarely be seen in finals or on victory podiums,” and that “We have separate sex sport and eligibility criteria based on biological sex because this is the only way we can assure that female athletes have the same opportunities as male athletes not only to participate but to win in competitive sport. . . . If we did not separate athletes on the basis of biological sex—if we used any other physical criteria—we would never see females in finals or on podiums.” (WSPWG Briefing Book 2021 at 5, 20.)
- In 2020, the World Rugby organization stated that “the women's category exists to ensure protection, safety and equality for those who do not benefit from the biological advantage created by these biological performance attributes.” (World Rugby Transgender Women Guidelines 2020.)
- In 2021 Harper et al. stated “...the small decrease in strength in transwomen after 12–36 months of GAHT [Gender Affirming Hormone Therapy] suggests that transwomen likely retain a strength advantage

¹ “dans la plupart des sports . . . les femmes et les hommes concourent dans deux catégories séparées, ces derniers étant naturellement avantagés du point de vue physique.” Tribunal Fédéral decision of August 25, 2020, Case 4A_248/2019, 4A_398/2019, at §9.8.3.3.

over cisgender women.” (7) and “...observations in trained transgender individuals are consistent with the findings of the current review in untrained transgender individuals, whereby 30 months of GAHT may be sufficient to attenuate some, but not all, influencing factors associated with muscular endurance and performance.” (8)

- Hamilton et al. (2021), in a consensus statement for the International Federation of Sports Medicine (FIMS) concluded that “Transwomen have the right to compete in sports. However, cisgender women have the right to compete in a protected category.” (1409)

13. While the sources I mention above gather more extensive scientific evidence of this uncontroversial truth, I provide here a brief summary of representative facts concerning the male advantage in athletic performance.

A. Men are stronger.

14. Males exhibit greater strength throughout the body. Both Handelsman et al. (2018) and Hilton & Lundberg (2021) have gathered multiple literature references that document this fact in various muscle groups.

15. Men have in the neighborhood of 60%-100% greater **arm strength** than women. (Handelsman 2018 at 812.)² One study of elbow flexion strength (basically, bringing the fist up towards the shoulder) in a large sample of men and women found that men exhibited 109% greater isometric strength, and 89% higher strength in a single repetition. (Hilton 2021 at 204, summarizing Hubal (2005) at Table 2.)

16. **Grip strength** is often used as a useful proxy for strength more generally. In one study, men showed on average 57% greater grip strength than women. (Bohannon 2019.) A wider meta-analysis of multiple grip-strength studies not limited to athletic populations found that 18- and 19-year-old males exhibited in

² Handelsman expresses this as women having 50% to 60% of the “upper limb” strength of men. Handelsman cites Sale, *Neuromuscular function*, for this figure and the “lower limb” strength figure. Knox et al., *Transwomen in elite sport* (2018) are probably confusing the correct way to state percentages when they state that “differences lead to decreased trunk and lower body strength by 64% and 72% respectively, in women” (397): interpreted literally, this would imply that men have **almost 4x as much** lower body strength as do women.

the neighborhood of 2/3 greater grip strength than females. (Handelsman 2017 Figure 3, summarizing Silverman 2011 Table 1.)³

17. In an evaluation of maximal isometric handgrip strength in 1,654 healthy men, 533 healthy women aged 20-25 years and 60 “highly trained elite female athletes from sports known to require high hand-grip forces (judo, handball),” Leyk et al. (2007) observed that, “The results of female national elite athletes even indicate that the strength level attainable by extremely high training will rarely surpass the 50th percentile of untrained or not specifically trained men.” (Leyk 2007 at 415.)

18. Men have in the neighborhood of 25%-60% greater **leg strength** than women. (Handelsman 2018 at 812.) In another measure, men exhibit 54% greater knee extension torque and this male leg strength advantage is consistent across the lifespan. (Neder 1999 at 120-121.)

19. When male and female Olympic weightlifters of the same body weight are compared, the top males lift weights between 30% and 40% greater than the females of the same body weight. But when top male and female performances are compared in powerlifting, without imposing any artificial limitations on bodyweight, the male record is 65% higher than the female record. (Hilton 2021 at 203.)

20. In another measure that combines many muscle groups as well as weight and speed, moderately trained males generated 162% greater punching power than females even though men do not possess this large an advantage in any single bio-mechanical variable. (Morris 2020.) This objective reality was subjectively summed up by women’s mixed-martial arts fighter Tamikka Brents, who suffered significant facial injuries when she fought against a biological male who identified as female and fought under the name of Fallon Fox. Describing the experience, Brents said:

“I’ve fought a lot of women and have never felt the strength that I felt in a fight as I did that night. I can’t answer whether it’s because she was born a man or not because I’m not a doctor. I can only say, I’ve never felt so overpowered ever in my life, and I am an abnormally strong female in my own right.”⁴

³ Citing Silverman, *The secular trend for grip strength in Canada and the United States*, *J. Sports Sci.* 29:599-606 (2011).

⁴ <http://whoatv.com/exclusive-fallon-foxs-latest-opponent-opens-up-to-whoatv/> (last accessed October 5, 2021).

B. Men run faster.

21. Many scholars have detailed the wide performance advantages enjoyed by men in running speed. One can come at this reality from a variety of angles.

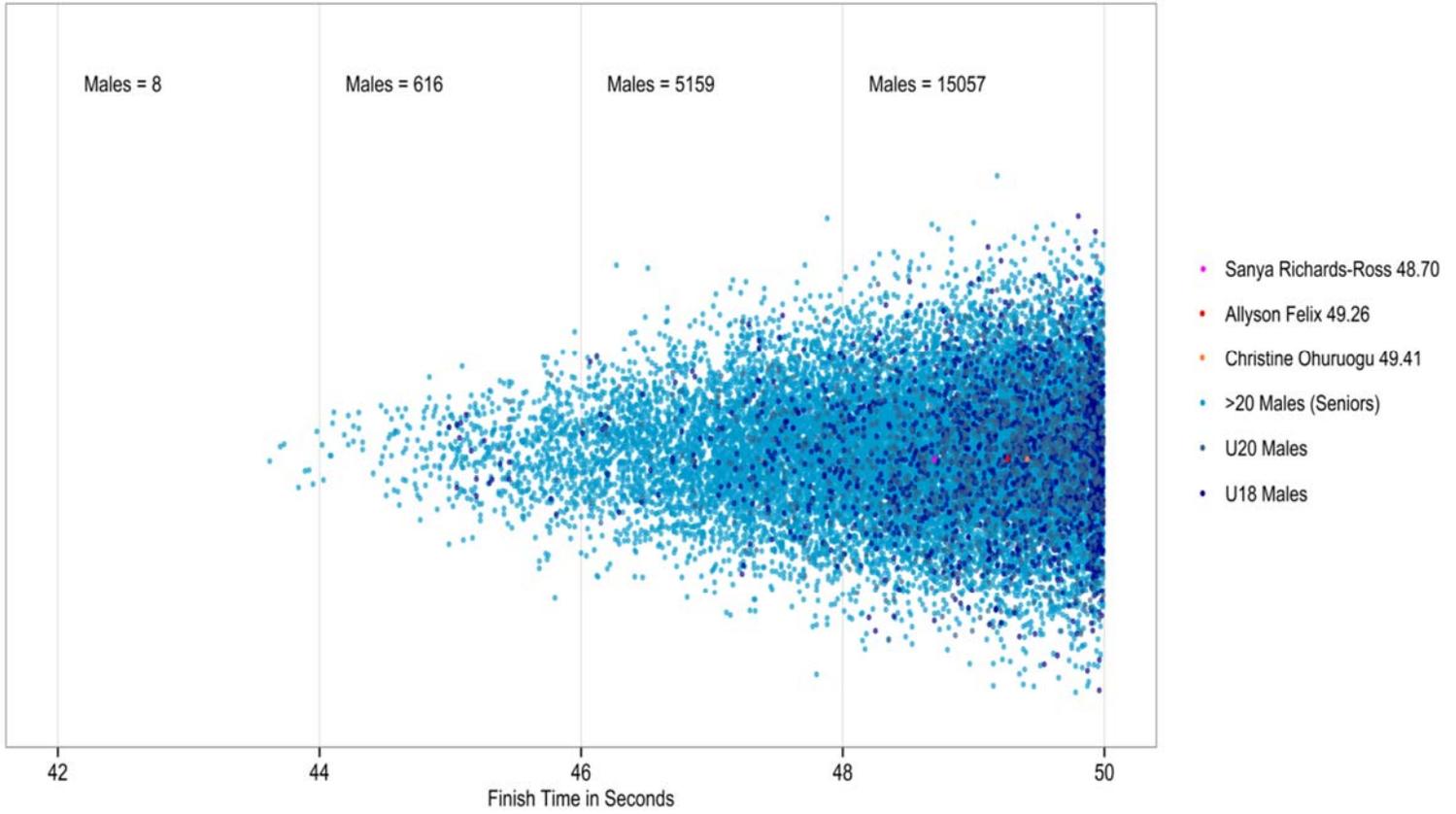
22. Multiple authors report a male speed advantage in the neighborhood of 10%-13% in a variety of events, with a variety of study populations. Handelsman et al. 2018 at 813 and Handelsman 2017 at 70 both report a male advantage of about 10% by age 17. Thibault et al. 2010 at 217 similarly reported a stable 10% performance advantage across multiple events at the Olympic level. Tønnessen et al. (2015 at 1-2) surveyed the data and found a consistent male advantage of 10%-12% in running events after the completion of puberty. They document this for both short sprints and longer distances. One group of authors found that the male advantage increased dramatically in ultra-long-distance competition (Lepers & Knechtle 2013.)

23. A great deal of current interest has been focused on track events. It is worth noting that a recent analysis of publicly available sports federation and tournament records found that men enjoy the *least* advantage in running events, as compared to a range of other events and metrics, including jumping, pole vaulting, tennis serve speed, golf drives, baseball pitching speed, and weightlifting. (Hilton 2021 at 201-202.) Nevertheless, as any serious runner will recognize, the approximately 10% male advantage in running is an overwhelming difference. Dr. Hilton calculates that “approximately 10,000 males have personal best times that are faster than the current Olympic 100m female champion.” (Hilton 2021 at 204.) Professors Doriane Coleman, Jeff Wald, Wickliffe Shreve, and Richard Clark dramatically illustrated this by compiling the data and creating the figure below (last accessed on February 10, 2022, at <https://bit.ly/35yOyS4>), which shows that the *lifetime best performances* of three female Olympic champions in the 400m event—including Team USA’s Sanya Richards-Ross and Allyson Felix—would not match the performances of “literally thousands of boys and men, including thousands who would be considered second tier in the men’s category” *just in 2017 alone*: (data were drawn from the International Association of Athletics Federations (IAAF) website which provides complete, worldwide results for individuals and events, including on an annual and an all-time basis).

G. Brown

Expert Report, B.P.J. v. WV BOE et al.

Comparing the Best Elite Females to Boys and Men:
Personal Bests for 3 Female Gold Medalists versus 2017 Performances by Boys and Men



24. Professor Coleman and her colleague Wicklyffe Shreve also created the table below (last accessed on February 10, 2022, at <https://bit.ly/37E1s2X>), which “compares the number of men—males over 18—competing in events reported to the International Association of Athletics Federation whose results in each event in 2017 would have ranked them above the very best elite woman that year.”

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

25. The male advantage becomes insuperable well before the developmental changes of puberty are complete. Dr. Hilton documents that even “schoolboys”—defined as age 15 and under—have beaten the female world records in running, jumping, and throwing events. (Hilton 2021 at 204.)

26. Similarly, Coleman and Shreve created the table below (last accessed on February 10, 2022, at <https://bit.ly/37E1s2X>), which “compares the number of boys—males under the age of 18—whose results in each event in 2017 would rank them above the single very best elite [adult] woman that year:” data were drawn from the International Association of Athletics Federations (IAAF) website

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

27. In an analysis I have performed of running events (consisting of the 100 m, 200 m, 400 m, 800 m, 1500 m, 5000 m, and 10000 m) in the Division 1, Division 2, and Division 3 NCAA Outdoor track championships for the years of 2010-2019, the average performance across all events of the 1st place man was 14.1% faster than the 1st place woman, with the smallest difference being a 10.2% advantage for men in the Division 1 100 m race. The average 8th place man across all events (the last place to earn the title of All American) was 11.2% faster than 1st place woman, with the smallest difference being a 6.5% advantage for men in the Division 1 100 m race. (Brown et al. Unpublished observations, to be presented at the 2022 Annual Meeting of the American College of Sports Medicine.)

28. Athletic.net® is an internet-based resource providing “results, team, and event management tools to help coaches and athletes thrive.” Among the resources available on Athletic.net are event records that can be searched by nationally or by state age group, school grade, and state. Higerd (2021) in an evaluation of high school track running performance records from five states (CA, FL, MN, NY, WA), over three years (2017 – 2019) observed that males were 14.38% faster than females in the 100M (at 99), 16.17% faster in the 200M (at 100), 17.62% faster in the 400M (at 102), 17.96% faster in the 800M (at 103), 17.81% faster in the 1600M (at 105), and 16.83% faster in the 3200M (at 106).

C. Men jump higher and farther.

29. Jumping involves both leg strength and speed as positive factors, with body weight of course a factor working against jump height. Despite their substantially greater body weight, males enjoy an even greater advantage in jumping than in running. Handelsman 2018 at 813, looking at youth and young adults, and Thibault 2010 at 217, looking at Olympic performances, both found male advantages in the range of 15%-20%. See also Tønnessen 2015 (approximately 19%); Handelsman 2017 (19%); Hilton 2021 at 201 (18%). Looking at the vertical jump called for in volleyball, research on elite volleyball players found that males jumped on average 50% higher during an “attack” at the net than did females. (Sattler 2015; see also Hilton 2021 at 203 (33% higher vertical jump).)

30. Higerd (2021) in an evaluation of high school high jump performance available through the track and field database athletic.net®, which included five states (CA, FL, MN, NY, WA), over three years (2017 – 2019) (at 82) observed that in 23,390 females and 26,843 males, females jumped an average of 1.35 m and males jumped an average of 1.62 m, for an 18.18% performance advantage for males (at 96). In an evaluation of long jump performance in 45,705 high school females and 54,506 high school males the females jumped an average of 4.08 m and males jumped an average of 5.20 m, for a 24.14% performance advantage for males (at 97).

31. The combined male advantage of body height and jump height means, for example, that a total of seven women in the WNBA have ever dunked a basketball in the regulation 10 foot hoop,⁵ while the ability to dunk appears to be almost universal among NBA players: “Since the 1996–97 season (the earliest data is available from Basketball-Reference.com), 1,801 different [NBA] players have combined for 210,842 regular-season dunks, and 1,259 out of 1,367 players (or 92%) who have played at least 1,000 minutes have dunked at least once.”⁶

D. Men throw, hit, and kick faster and farther.

32. Strength, arm-length, and speed combine to give men a large advantage over women in throwing. This has been measured in a number of studies.

33. One study of elite male and female baseball pitchers showed that men throw baseballs 35% faster than women—81 miles/hour for men vs. 60 miles/hour for women. (Chu 2009.) By age 12, “boys’ throwing velocity is already between 3.5 and 4 standard deviation units higher than the girls’.” (Thomas 1985 at 276.) By age seventeen, the *average* male can throw a ball farther than 99% of seventeen-year-old females. (Lombardo 2018; Chu 2009; Thomas 1985 at 268.) Looking at publicly available data, Hilton & Lundberg found that in both baseball pitching and the field hockey “drag flick,” the *record* ball speeds achieved by males are more than 50% higher than those achieved by females. (Hilton 2021 at 202-203.)

34. Men achieve serve speeds in tennis more than 15% faster than women; and likewise in golf achieve ball speeds off the tee more than 15% faster than women. (Hilton 2021 at 202.)

35. Males are able to throw a javelin more than 30% farther than females. (Lombardo 2018 Table 2; Hilton 2021 at 203.)

36. Men serve and spike volleyballs with higher velocity than women, with a performance advantage in the range of 29-34%. (Hilton 2021 at 204 Fig. 1.)

37. Men are also able to kick balls harder and faster. A study comparing collegiate soccer players found that males kick the ball with an average 20% greater velocity than females. (Sakamoto 2014.)

⁵ https://www.espn.com/wnba/story/_/id/32258450/2021-wnba-playoffs-brittney-griner-owns-wnba-dunking-record-coming-more.

⁶ <https://www.si.com/nba/2021/02/22/nba-non-dunkers-patty-mills-tj-mccconnell-steve-novak-daily-cover>

E. Males exhibit faster reaction times.

38. Interestingly, men enjoy an additional advantage over women in reaction time—an attribute not obviously related to strength or metabolism (e.g. VO_2max). “Reaction time in sports is crucial in both simple situations such as the gun shot in sprinting and complex situations when a choice is required. In many team sports this is the foundation for tactical advantages which may eventually determine the outcome of a game.” (Dogan 2009 at 92.) “Reaction times can be an important determinant of success in the 100m sprint, where medals are often decided by hundredths or even thousandths of a second.” (Tønnessen 2013 at 885.)

39. The existence of a sex-linked difference in reaction times is consistent over a wide range of ages and athletic abilities. (Dykiert 2012.) Even by the age of 4 or 5, in a ruler-drop test, males have been shown to exhibit 4% to 6% faster reaction times than females. (Latorre-Roman 2018.) In high school athletes taking a common baseline “ImPACT” test, males showed 3% faster reaction times than females. (Mormile 2018.) Researchers have found a 6% male advantage in reaction times of both first-year medical students (Jain 2015) and world-class sprinters (Tønnessen 2013).

40. Most studies of reaction times use computerized tests which ask participants to hit a button on a keyboard or to say something in response to a stimulus. One study on NCAA athletes measured “reaction time” by a criterion perhaps more closely related to athletic performance—that is, how fast athletes covered 3.3 meters after a starting signal. Males covered the 3.3 meters 10% faster than females in response to a visual stimulus, and 16% faster than females in response to an auditory stimulus. (Spierer 2010.)

41. Researchers have speculated that sex-linked differences in brain structure, as well as estrogen receptors in the brain, may be the source of the observed male advantage in reaction times, but at present this remains a matter of speculation and hypothesis. (Mormile at 19; Spierer at 962.)

III. Men have large measured physiological differences compared to women which demonstrably or likely explain their performance advantages.

42. No single physiological characteristic alone accounts for all or any one of the measured advantages that men enjoy in athletic performance. However, scientists have identified and measured a number of physiological factors that contribute to superior male performance.

A. Men are taller and heavier than women

43. In some sports, such as basketball and volleyball, height itself provides competitive advantage. While some women are taller than some men, based on data from 20 countries in North America, Europe, East Asia, and Australia, the 50th percentile for body height for women is 164.7 cm (5 ft 5 inches) and the 50th percentile for body height for men is 178.4 cm (5 ft 10 inches). Helping to illustrate the inherent height difference between men and women, from the same data analysis, the 95th percentile for body height for women is 178.9 cm (5 feet 10.43 inches), which is only 0.5 cm taller than the 50th percentile for men (178.4 cm; 5 feet 10.24 inches), while the 95th percentile for body height for men is 193.6 cm (6 feet 4.22 inches). (Roser 2013.)

44. To look at a specific athletic population, an evaluation of NCAA Division 1 basketball players compared 68 male guards and 59 male forwards to 105 female guards and 91 female forwards, and found that on average the male guards were 187.4 ± 7.0 cm tall and weighed 85.2 ± 7.4 kg while the female guards were 171.6 ± 5.0 cm tall and weighed 68.0 ± 7.4 kg. The male forwards were 201.7 ± 4.0 cm tall and weighed 105.3 ± 5.9 kg while the female forwards were 183.5 ± 4.4 cm tall and weighed 82.2 ± 12.5 kg. (Fields 2018 at 3.)

B. Males have larger and longer bones, stronger bones, and different bone configuration.

45. Obviously, males on average have longer bones. “Sex differences in height have been the most thoroughly investigated measure of bone size, as adult height is a stable, easily quantified measure in large population samples. Extensive twin studies show that adult height is highly heritable with predominantly additive genetic effects that diverge in a sex-specific manner from the age of puberty onwards.” (Handelsman 2018 at 818.) “Pubertal testosterone exposure leads to an ultimate average greater height in men of 12–15 centimeters, larger bones, greater muscle mass, increased strength and higher hemoglobin levels.” (Gooren 2011 at 653.)

46. “Men have distinctively greater bone size, strength, and density than do women of the same age. As with muscle, sex differences in bone are absent prior to puberty but then accrue progressively from the onset of male puberty due to the sex difference in exposure to adult male circulating testosterone concentrations.” (Handelsman 2018 at 818.)

47. “[O]n average men are 7% to 8% taller with longer, denser, and stronger bones, whereas women have shorter humerus and femur cross-sectional

areas being 65% to 75% and 85%, respectively, those of men.” (Handelsman 2018 at 818.)

48. Greater height, leg, and arm length themselves provide obvious advantages in several sports. But male bone geometry also provides less obvious advantages. “The major effects of men’s larger and stronger bones would be manifest via their taller stature as well as the larger fulcrum with greater leverage for muscular limb power exerted in jumping, throwing, or other explosive power activities.” (Handelsman 2018 at 818.)

49. Male advantage in bone size is not limited to length, as larger bones provide the mechanical framework for larger muscle mass. “From puberty onwards, men have, on average, 10% more bone providing more surface area. The larger surface area of bone accommodates more skeletal muscle so, for example, men have broader shoulders allowing more muscle to build. This translates into 44% less upper body strength for women, providing men an advantage for sports like boxing, weightlifting and skiing. In similar fashion, muscle mass differences lead to decreased trunk and lower body strength by 64% and 72%, respectively in women. These differences in body strength can have a significant impact on athletic performance, and largely underwrite the significant differences in world record times and distances set by men and women.” (Knox 2019 at 397.)

50. Meanwhile, distinctive aspects of the female pelvis geometry cut against athletic performance. “[T]he widening of the female pelvis during puberty, balancing the evolutionary demands of obstetrics and locomotion, retards the improvement in female physical performance.” (Handelsman 2018 at 818.) “[T]he major female hormones, oestrogens, can have effects that disadvantage female athletic performance. For example, women have a wider pelvis changing the hip structure significantly between the sexes. Pelvis shape is established during puberty and is driven by oestrogen. The different angles resulting from the female pelvis leads to decreased joint rotation and muscle recruitment ultimately making them slower.” (Knox 2019 at 397.)

51. There are even sex-based differences in foot size and shape. Wunderlich & Cavanaugh (2001) observed that a “foot length of 257 mm represents a value that is ... approximately the 20th percentile men’s foot lengths and the 80th percentile women’s foot lengths.” (607) and “For a man and a woman, both with statures of 170 cm (5 feet 7 inches), the man would have a foot that was approximately 5 mm longer and 2 mm wider than the woman.” (608). Based on these, and other analyses, they conclude that “female feet and legs are not simply scaled-down versions of male feet but rather differ in a number of shape characteristics, particularly at the arch, the lateral side of the foot, the first toe, and the ball of the foot.” (605) Further, Fessler et al. (2005) observed that “female foot length is consistently smaller than male foot length” (44) and concludes that

“proportionate foot length is smaller in women” (51) with an overall conclusion that “Our analyses of genetically disparate populations reveal a clear pattern of sexual dimorphism, with women consistently having smaller feet proportionate to stature than men.” (53)

52. Beyond simple performance, the greater density and strength of male bones provide higher protection against stresses associated with extreme physical effort: “[S]tress fractures in athletes, mostly involving the legs, are more frequent in females, with the male protection attributable to their larger and thicker bones.” (Handelsman 2018 at 818.)

C. Males have much larger muscle mass.

53. The fact that, on average, men have substantially larger muscles than women is as well known to common observation as men’s greater height. But the male advantage in muscle size has also been extensively measured. The differential is large.

54. “On average, women have 50% to 60% of men’s upper arm muscle cross-sectional area and 65% to 70% of men’s thigh muscle cross-sectional area, and women have 50% to 60% of men’s upper limb strength and 60% to 80% of men’s leg strength. Young men have on average a skeletal muscle mass of >12 kg greater than age-matched women at any given body weight.” (Handelsman 2018 at 812. See also Gooren 2011 at 653, Thibault 2010 at 214.)

55. “There is convincing evidence that the sex differences in muscle mass and strength are sufficient to account for the increased strength and aerobic performance of men compared with women and is in keeping with the differences in world records between the sexes.” (Handelsman 2018 at 816.)

56. Once again, looking at specific and comparable populations of athletes, an evaluation of NCAA Division 1 basketball players consisting of 68 male guards and 59 male forwards, compared to 105 female guards and 91 female forwards, reported that on average the male guards had 77.7 ± 6.4 kg of fat free mass and 7.4 ± 3.1 kg fat mass while the female guards had 54.6 ± 4.4 kg fat free mass and 13.4 ± 5.4 kg fat mass. The male forwards had 89.5 ± 5.9 kg fat free mass and 15.9 ± 5.6 kg fat mass while the female forwards had 61.8 ± 5.9 kg fat free mass and 20.5 ± 7.7 kg fat mass. (Fields 2018 at 3.)

D. Females have a larger proportion of body fat.

57. While women have smaller muscles, they have proportionately more body fat, in general a negative for athletic performance. “Oestrogens also affect body

composition by influencing fat deposition. Women, on average, have higher percentage body fat, and this holds true even for highly trained healthy athletes (men 5%–10%, women 8%–15%). Fat is needed in women for normal reproduction and fertility, but it is not performance-enhancing. This means men with higher muscle mass and less body fat will normally be stronger kilogram for kilogram than women.” (Knox 2019 at 397.)

58. “[E]lite females have more (<13 vs. <5 %) body fat than males. Indeed, much of the difference in [maximal oxygen uptake] between males and females disappears when it is expressed relative to lean body mass. . . . Males possess on average 7–9 % less percent body fat than females.” (Lepers 2013 at 853.)

59. Knox et al. observe that both female pelvis shape and female body fat levels “disadvantage female athletes in sports in which speed, strength and recovery are important,” (Knox 2019 at 397), while Tønnessen et al. describe the “ratio between muscular power and total body mass” as “critical” for athletic performance. (Tønnessen 2015 at 7.)

E. Males are able to metabolize and release energy to muscles at a higher rate due to larger heart and lung size, and higher hemoglobin concentrations.

60. While advantages in bone size, muscle size, and body fat are easily perceived and understood by laymen, scientists also measure and explain the male athletic advantage at a more abstract level through measurements of metabolism, or the ability to deliver energy to muscles throughout the body.

61. Energy release at the muscles depends centrally on the body’s ability to deliver oxygen to the muscles, where it is essential to the complex chain of biochemical reactions that make energy available to power muscle fibers. Men have multiple distinctive physiological attributes that together give them a large advantage in oxygen delivery.

62. Oxygen is taken into the blood in the lungs. Men have greater capability to take in oxygen for multiple reasons. “[L]ung capacity [is] larger in men because of a lower diaphragm placement due to Y-chromosome genetic determinants.” (Knox 2019 at 397.) Supporting larger lung capacity, men have “greater cross-sectional area of the trachea”; that is, they can simply move more air in and out of their lungs in a given time. (Hilton 2021 at 201.)

63. More, male lungs provide superior oxygen exchange even for a given volume: “The greater lung volume is complemented by testosterone-driven **enhanced alveolar multiplication** rate during the early years of life. Oxygen exchange takes place between the air we breathe and the bloodstream at the alveoli,

so more alveoli allows more oxygen to pass into the bloodstream. Therefore, the greater lung capacity allows more air to be inhaled with each breath. This is coupled with an improved uptake system allowing men to absorb more oxygen.” (Knox 2019 at 397.)

64. “Once in the blood, oxygen is carried by haemoglobin. **Haemoglobin concentrations** are directly modulated by testosterone so men have higher levels and can carry more oxygen than women.” (Knox 2019 at 397.) “It is well known that levels of circulating hemoglobin are androgen-dependent and consequently higher in men than in women by 12% on average.... Increasing the amount of hemoglobin in the blood has the biological effect of increasing oxygen transport from lungs to tissues, where the increased availability of oxygen enhances aerobic energy expenditure.” (Handelsman 2018 at 816.) (See also Lepers 2013 at 853; Handelsman 2017 at 71.) “It may be estimated that as a result the average maximal oxygen transfer will be ~10% greater in men than in women, which has a direct impact on their respective athletic capacities.” (Handelsman 2018 at 816.)

65. But the male metabolic advantage is further multiplied by the fact that men are also able to **circulate more blood per second** than are women. “Oxygenated blood is pumped to the active skeletal muscle by the heart. The left ventricle chamber of the heart is the reservoir from which blood is pumped to the body. The larger the left ventricle, the more blood it can hold, and therefore, the more blood can be pumped to the body with each heartbeat, a physiological parameter called ‘stroke volume’. The female heart size is, on average, 85% that of a male resulting in the stroke volume of women being around 33% less.” (Knox 2018 at 397.) Hilton cites different studies that make the same finding, reporting that men on average can pump 30% more blood through their circulatory system per minute (“cardiac output”) than can women. (Hilton 2021 at 202.)

66. Finally, at the cell where the energy release is needed, men appear to have yet another advantage. “Additionally, there is experimental evidence that testosterone increases . . . **mitochondrial biogenesis**, myoglobin expression, and IGF-1 content, which may augment energetic and power generation of skeletal muscular activity.” (Handelsman 2018 at 811.)

67. “Putting all of this together, men have a much more efficient cardiovascular and respiratory system.” (Knox 2019 at 397.) A widely accepted measurement that reflects the combined effects of all these respiratory, cardiovascular, and metabolic advantages is referred to as “ $\dot{V}O_2\text{max}$,” which refers to the maximum rate at which an individual can consume oxygen during aerobic

A. Boys exhibit advantages in athletic performance even before puberty.

71. It is often said or assumed that boys enjoy no significant athletic advantage over girls before puberty. However, this is not true. Writing in their seminal work on the physiology of elite young female athletes, McManus and Armstrong (2011) reviewed the differences between boys and girls regarding bone density, body composition, cardiovascular function, metabolic function, and other physiologic factors that can influence athletic performance. They stated, “At birth, boys tend to have a greater lean mass than girls. This difference remains small but detectable throughout childhood with about a 10% greater lean mass in boys than girls prior to puberty.” (28) “Sexual dimorphism underlies much of the physiologic response to exercise,” and most importantly these authors concluded that, “Young girl athletes are not simply smaller, less muscular boys.” (23)

72. Certainly, boys’ physiological and performance advantages increase rapidly from the beginning of puberty until around age 17-19. But much data and multiple studies show that significant physiological differences, and significant male athletic performance advantages in certain areas, exist before significant developmental changes associated with male puberty have occurred.

73. Starting at birth, girls have more body fat and less fat-free mass than boys. Davis et al. (2019) in an evaluation of 602 infants reported that at birth and age 5 months, infant boys have larger total body mass, body length, and fat-free mass while having lower percent body fat than infant girls. In an evaluation of 20 boys and 20 girls ages 3-8 years old, matched for age, height, and body weight Taylor et al. (Taylor 1997) reported that the “boys had significantly less fat, a lower % body fat and a higher bone-free lean tissue mass than the girls” when “expressed as a percentage of the average fat mass of the boys”, the girls’ fat mass was 52% higher than the boys “...while the bone-free lean tissue mass was 9% lower” (at 1083.) In an evaluation of 376 prepubertal [Tanner Stage 1] boys and girls, Taylor et al. (2010) observed that the boys had 21.6% more lean mass, and 13% less body fat (when expressed as percent of total body mass) than did the girls. In a review of 22 peer reviewed publications on the topic, Staiano and Katzmarzyk (2012) conclude that “... girls have more T[otal]B[ody]F[at] than boys throughout childhood and adolescence. (at 4.)

74. In the seminal textbook, *Growth, Maturation, and Physical Activity*, Malina et al. (2004) present a summary of data from Gauthier et al. (1983) which present data from “a national sample of Canadian children and youth” demonstrating that from ages 7 to 17, boys have a higher aerobic power output than do girls of the same ages when exercise intensity is measured using heart rate

(Malina at 242.) That is to say, that at a heart rate of 130 beats per minute, or 150, or 170, a 7 to 17 year old boy should be able to run, bike, or swim faster than a similarly aged girl.

75. Considerable data from school-based fitness testing exists showing that prepubertal boys outperform comparably aged girls in tests of muscular strength, muscular endurance, and running speed. These sex-based differences in physical fitness are relevant to the current issue of sex-based sports categories because, as stated by Lesinski et al. (2020), in an evaluation “of 703 male and female elite young athletes aged 8–18” (1) “fitness development precedes sports specialization” (2) and further observed that “males outperformed females in C[ounter]M[ovement]J[ump], D[rop]J[ump], C[hange]o[f]D[irection speed] performances and hand grip strength.” (5).

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

77. The 20-m multistage fitness test is a commonly used maximal running aerobic fitness test used in the Eurofit Physical Fitness Test Battery and the FitnessGram Physical Fitness test. It is also known as the 20-meter shuttle run test, PACER test, or beep test (among other names; this is not the same test as the shuttle run in the Presidential Fitness Test). This test involves continuous running between two lines 20 meters apart in time to recorded beeps. The participants stand behind one of the lines facing the second line and begin running when instructed by the recording. The speed at the start is quite slow. The subject continues running between the two lines, turning when signaled by the recorded beeps. After about one minute, a sound indicates an increase in speed, and the beeps will be closer together. This continues each minute (level). If the line is reached before the beep sounds, the subject must wait until the beep sounds before continuing. If the line is not reached before the beep sounds, the subject is given a warning and must continue to run to the line, then turn and try to catch up with the pace within two more 'beeps'. The subject is given a warning the first time they fail to reach the line (within 2 meters) and eliminated after the second warning.

78. To illustrate the sex-based performance differences observed by Tambalis, I have prepared the following table showing the number of laps completed in the 20 m shuttle run for children ages 6-18 years for the low, middle, and top decile (Tambalis 2016 at 740 & 742), and have calculated the percent difference between the boys and girls using the same equation as Millard-Stafford (2018).

Performance difference between boys and girls ÷ Girls performance

Number of laps completed in the 20m shuttle run for children ages 6-18 years

| Age | Male | | | Female | | | Male-Female % Difference | | |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|--------------------------|-----------|-----------|
| | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile |
| 6 | 4 | 14 | 31 | 4.0 | 12.0 | 26.0 | 0.0% | 16.7% | 19.2% |
| 7 | 8 | 18 | 38 | 8.0 | 15.0 | 29.0 | 0.0% | 20.0% | 31.0% |
| 8 | 9 | 23 | 47 | 9.0 | 18.0 | 34.0 | 0.0% | 27.8% | 38.2% |
| 9 | 11 | 28 | 53 | 10.0 | 20.0 | 40.0 | 10.0% | 40.0% | 32.5% |
| 10 | 12 | 31 | 58 | 11.0 | 23.0 | 43.0 | 9.1% | 34.8% | 34.9% |
| 11 | 15 | 36 | 64 | 12.0 | 26.0 | 48.0 | 25.0% | 38.5% | 33.3% |
| 12 | 15 | 39 | 69 | 12.0 | 26.0 | 49.0 | 25.0% | 50.0% | 40.8% |
| 13 | 16 | 44 | 76 | 12.0 | 26.0 | 50.0 | 33.3% | 69.2% | 52.0% |
| 14 | 19 | 50 | 85 | 12.0 | 26.0 | 50.0 | 58.3% | 92.3% | 70.0% |
| 15 | 20 | 53 | 90 | 12.0 | 25.0 | 47.0 | 66.7% | 112.0% | 91.5% |
| 16 | 20 | 54 | 90 | 11.0 | 24.0 | 45.0 | 81.8% | 125.0% | 100.0% |
| 17 | 18 | 50 | 86 | 10.0 | 23.0 | 50.0 | 80.0% | 117.4% | 72.0% |
| 18 | 13 | 48 | 87 | 8.0 | 23.0 | 39.5 | 62.5% | 108.7% | 120.3% |

79. The Presidential Fitness Test was widely used in schools in the United States from the late 1950s until 2013 (when it was phased out in favor of the Presidential Youth Fitness Program and FitnessGram, both of which focus on health-related physical fitness and do not present data in percentiles). Students participating in the Presidential Fitness Test could receive “The National Physical Fitness Award” for performance equal to the 50th percentile in five areas of the fitness test, “while performance equal to the 85th percentile could receive the Presidential Physical Fitness Award.” Tables presenting the 50th and 85th percentiles for the Presidential Fitness Test for males and females ages 6 – 17, and differences in performance between males and females, for curl-ups, shuttle run, 1 mile run, push-ups, and pull-ups appear in the Appendix.

80. For both the 50th percentile (The National Physical Fitness Award) and the 85th percentile (Presidential Physical Fitness Award), with the exception of curl-ups in 6-year-old children, boys outperform girls. The difference in pull-ups for the 85th percentile for ages 7 through 17 are particularly informative with boys

outperforming girls by 100% – 1200%, highlighting the advantages in upper body strength in males.

81. A very recent literature review commissioned by the five United Kingdom governmental Sport Councils concluded that while “[i]t is often assumed that children have similar physical capacity regardless of their sex, . . . large-scale data reports on children from the age of six show that young males have significant advantage in cardiovascular endurance, muscular strength, muscular endurance, speed/agility and power tests,” although they “score lower on flexibility tests.” (UK Sports Councils’ Literature Review 2021 at 3.)

82. Hilton et al., also writing in 2021, reached the same conclusion: “An extensive review of fitness data from over 85,000 Australian children aged 9–17 years old showed that, compared with 9-year-old females, 9-year-old males were faster over short sprints (9.8%) and 1 mile (16.6%), could jump 9.5% further from a standing start (a test of explosive power), could complete 33% more push-ups in 30 [seconds] and had 13.8% stronger grip.” (Hilton 2021 at 201, summarizing the findings of Catley & Tomkinson 2013.)

83. The following data are taken from Catley & Tomkinson (2013 at 101) showing the low, middle, and top decile for 1.6 km run (1.0 mile) run time for 11,423 girls and boys ages 9-17.

1.6 km run (1.0 mile) run time for 11,423 girls and boys ages 9-17

| Age | Male | | | Female | | | Male-Female % Difference | | |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|--------------------------|-----------|-----------|
| | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile |
| 9 | 684 | 522 | 423 | 769.0 | 609.0 | 499.0 | 11.1% | 14.3% | 15.2% |
| 10 | 666 | 511 | 420 | 759.0 | 600.0 | 494.0 | 12.3% | 14.8% | 15.0% |
| 11 | 646 | 500 | 416 | 741.0 | 586.0 | 483.0 | 12.8% | 14.7% | 13.9% |
| 12 | 621 | 485 | 408 | 726.0 | 575.0 | 474.0 | 14.5% | 15.7% | 13.9% |
| 13 | 587 | 465 | 395 | 716.0 | 569.0 | 469.0 | 18.0% | 18.3% | 15.8% |
| 14 | 556 | 446 | 382 | 711.0 | 567.0 | 468.0 | 21.8% | 21.3% | 18.4% |
| 15 | 531 | 432 | 373 | 710.0 | 570.0 | 469.0 | 25.2% | 24.2% | 20.5% |
| 16 | 514 | 423 | 366 | 710.0 | 573.0 | 471.0 | 27.6% | 26.2% | 22.3% |
| 17 | 500 | 417 | 362 | 708.0 | 575.0 | 471.0 | 29.4% | 27.5% | 23.1% |

84. Tomkinson et al. (2018) performed a similarly extensive analysis of literally millions of measurements of a variety of strength and agility metrics from the “Eurofit” test battery on children from 30 European countries. They provide detailed results for each metric, broken out by decile. Sampling the low, middle, and top decile, 9-year-old boys performed better than 9-year-old girls by between 6.5%

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and 9.7% in the standing broad jump; from 11.4% to 16.1% better in handgrip; and from 45.5% to 49.7% better in the “bent-arm hang.” (Tomkinson 2018.)

85. The Bent Arm Hang test is a measure of upper body muscular strength and endurance used in the Eurofit Physical Fitness Test Battery. To perform the Bent Arm Hang, the child is assisted into position with the body lifted to a height so that the chin is level with the horizontal bar (like a pull up bar). The bar is grasped with the palms facing away from body and the hands shoulder width apart. The timing starts when the child is released. The child then attempts to hold this position for as long as possible. Timing stops when the child's chin falls below the level of the bar, or the head is tilted backward to enable the chin to stay level with the bar.

86. Using data from Tomkinson (2018; table 7 at 1452), the following table sampling the low, middle, and top decile for bent arm hang for 9- to 17-year-old children can be constructed:

Bent Arm Hang time (in seconds) for children ages 9 - 17 years

| Age | Male | | | Female | | | Male-Female % Difference | | |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|--------------------------|-----------|-----------|
| | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile |
| 9 | 2.13 | 7.48 | 25.36 | 1.43 | 5.14 | 16.94 | 48.95% | 45.53% | 49.70% |
| 10 | 2.25 | 7.92 | 26.62 | 1.42 | 5.15 | 17.06 | 58.45% | 53.79% | 56.04% |
| 11 | 2.35 | 8.32 | 27.73 | 1.42 | 5.16 | 17.18 | 65.49% | 61.24% | 61.41% |
| 12 | 2.48 | 8.79 | 28.99 | 1.41 | 5.17 | 17.22 | 75.89% | 70.02% | 68.35% |
| 13 | 2.77 | 9.81 | 31.57 | 1.41 | 5.18 | 17.33 | 96.45% | 89.38% | 82.17% |
| 14 | 3.67 | 12.70 | 38.39 | 1.40 | 5.23 | 17.83 | 162.14% | 142.83% | 115.31% |
| 15 | 5.40 | 17.43 | 47.44 | 1.38 | 5.35 | 18.80 | 291.30% | 225.79% | 152.34% |
| 16 | 7.39 | 21.75 | 53.13 | 1.38 | 5.63 | 20.57 | 435.51% | 286.32% | 158.29% |
| 17 | 9.03 | 24.46 | 54.66 | 1.43 | 6.16 | 23.61 | 531.47% | 297.08% | 131.51% |

87. Evaluating these data, a 9-year-old boy in the 50th percentile (that is to say a 9-year-old boy of average upper body muscular strength and endurance) will perform better in the bent arm hang test than 9 through 17-year-old girls in the 50th percentile. Similarly, a 9-year-old boy in the 90th percentile will perform better in the bent arm hang test than 9 through 17-year-old girls in the 90th percentile.

88. Using data from Tomkinson et al. (2017; table 1 at 1549), the following table sampling the low, middle, and top decile for running speed in the last stage of the 20 m shuttle run for 9- to 17-year-old children can be constructed.

20 m shuttle Running speed (km/h at the last completed stage)

| Age | Male | | | Female | | | Male-Female % Difference | | |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|--------------------------|-----------|-----------|
| | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile |
| 9 | 8.94 | 10.03 | 11.13 | 8.82 | 9.72 | 10.61 | 1.36% | 3.19% | 4.90% |
| 10 | 8.95 | 10.13 | 11.31 | 8.76 | 9.75 | 10.74 | 2.17% | 3.90% | 5.31% |
| 11 | 8.97 | 10.25 | 11.53 | 8.72 | 9.78 | 10.85 | 2.87% | 4.81% | 6.27% |
| 12 | 9.05 | 10.47 | 11.89 | 8.69 | 9.83 | 10.95 | 4.14% | 6.51% | 8.58% |
| 13 | 9.18 | 10.73 | 12.29 | 8.69 | 9.86 | 11.03 | 5.64% | 8.82% | 11.42% |
| 14 | 9.32 | 10.96 | 12.61 | 8.70 | 9.89 | 11.07 | 7.13% | 10.82% | 13.91% |
| 15 | 9.42 | 11.13 | 12.84 | 8.70 | 9.91 | 11.11 | 8.28% | 12.31% | 15.57% |
| 16 | 9.51 | 11.27 | 13.03 | 8.71 | 9.93 | 11.14 | 9.18% | 13.49% | 16.97% |
| 17 | 9.60 | 11.41 | 13.23 | 8.72 | 9.96 | 11.09 | 10.09% | 14.56% | 19.30% |

89. Evaluating these data, a 9-year-old boy in the 50th percentile (that is to say a 9-year-old boy of average running speed) will run faster in the final stage of the 20 m shuttle run than 9 through 17-year-old girls in the 50th percentile. Similarly, a 9-year-old boy in the 90th percentile will run faster in the final stage of the 20-m shuttle run than 9 through 15, and 17-year-old girls in the 90th percentile and will be 0.01 km/h (0.01%) slower than 16-year-old girls in the 90th percentile.

90. Just using these two examples for bent arm hang and 20-m shuttle running speed (Tomkinson 2107, Tomkinson 2018) based on large sample sizes (thus having tremendous statistical power) it becomes apparent that a 9-year-old boy will be very likely to outperform similarly trained girls of his own age and older in athletic events involving upper body muscle strength and/or running speed.

91. Another report published in 2014 analyzed physical fitness measurements of 10,302 children aged 6 -10.9 years of age, from the European countries of Sweden, Germany, Hungary, Italy, Cyprus, Spain, Belgium, and Estonia. (De Miguel-Etayo et al. 2014.) The authors observed "... that boys performed better than girls in speed, lower- and upper-limb strength and cardiorespiratory fitness." (57) The data showed that for children of comparable fitness (i.e. 99th percentile boys vs. 99th percentile girls, 50th percentile boys vs. 50th percentile girls, etc.) the boys outperform the girls at every age in measurements of handgrip strength, standing long jump, 20-m shuttle run, and predicted VO₂max (pages 63 and 64, respectively). For clarification, VO₂max is the maximal oxygen consumption, which correlates to 30-40% of success in endurance sports.

92. The standing long jump, also called the Broad Jump, is a common and easy to administer test of explosive leg power used in the Eurofit Physical Fitness Test Battery and in the NFL Combine. In the standing long jump, the participant stands behind a line marked on the ground with feet slightly apart. A two-foot take-

off and landing is used, with swinging of the arms and bending of the knees to provide forward drive. The participant attempts to jump as far as possible, landing on both feet without falling backwards. The measurement is taken from takeoff line to the nearest point of contact on the landing (back of the heels) with the best of three attempts being scored.

93. Using data from De Miguel-Etayo et al. (2014, table 3 at 61), which analyzed physical fitness measurements of 10,302 children aged 6 -10.9 years of age, from the European countries of Sweden, Germany, Hungary, Italy, Cyprus, Spain, Belgium, and Estonia, the following table sampling the low, middle, and top decile for standing long jump for 6- to 9-year-old children can be constructed:

Standing Broad Jump (cm) for children ages 6-9 years

| Age | Male | | | Female | | | Male-Female % Difference | | |
|--------|-----------|-----------|-----------|-----------|-----------|-----------|--------------------------|-----------|-----------|
| | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile |
| 6-<6.5 | 77.3 | 103.0 | 125.3 | 69.1 | 93.8 | 116.7 | 11.9% | 9.8% | 7.4% |
| 6.5-<7 | 82.1 | 108.0 | 130.7 | 73.6 | 98.7 | 121.9 | 11.5% | 9.4% | 7.2% |
| 7-<7.5 | 86.8 | 113.1 | 136.2 | 78.2 | 103.5 | 127.0 | 11.0% | 9.3% | 7.2% |
| 7.5-<8 | 91.7 | 118.2 | 141.6 | 82.8 | 108.3 | 132.1 | 10.7% | 9.1% | 7.2% |
| 8-<8.5 | 96.5 | 123.3 | 146.9 | 87.5 | 113.1 | 137.1 | 10.3% | 9.0% | 7.1% |
| 8.5-<9 | 101.5 | 128.3 | 152.2 | 92.3 | 118.0 | 142.1 | 10.0% | 8.7% | 7.1% |

94. Another study of Eurofit results for over 400,000 Greek children reported similar results. “[C]ompared with 6-year-old females, 6-year-old males completed 16.6% more shuttle runs in a given time and could jump 9.7% further from a standing position.” (Hilton 2021 at 201, summarizing findings of Tambalis et al. 2016.)

95. Silverman (2011) gathered hand grip data, broken out by age and sex, from a number of studies. Looking only at the nine direct comparisons within individual studies tabulated by Silverman for children aged 7 or younger, in eight of these the boys had strength advantages of between 13 and 28 percent, with the remaining outlier recording only a 4% advantage for 7-year-old boys. (Silverman 2011 Table 1.)

96. To help illustrate the importance of one specific measure of physical fitness in athletic performance, Pocek (2021) stated that to be successful, volleyball “players should distinguish themselves, besides in skill level, in terms of above-average body height, upper and lower muscular power, speed, and agility. Vertical jump is a fundamental part of the spike, block, and serve.” (8377) Pocek further stated that “relative vertical jumping ability is of great importance in volleyball regardless of the players’ position, while absolute vertical jump values can differentiate players not only in terms of player position and performance level but in their career trajectories.” (8382)

97. Using data from Ramírez-Vélez (2017; table 2 at 994) which analyzed vertical jump measurements of 7,614 healthy Colombian schoolchildren aged 9 -17.9 years of age the following table sampling the low, middle, and top decile for vertical jump can be constructed:

Vertical Jump Height (cm) for children ages 9 - 17 years

| Age | Male | | | Female | | | Male-Female % Difference | | |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|--------------------------|-----------|-----------|
| | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile |
| 9 | 18.0 | 24.0 | 29.5 | 16.0 | 22.3 | 29.0 | 12.5% | 7.6% | 1.7% |
| 10 | 19.5 | 25.0 | 32.0 | 18.0 | 24.0 | 29.5 | 8.3% | 4.2% | 8.5% |
| 11 | 21.0 | 27.0 | 32.5 | 19.5 | 25.0 | 31.0 | 7.7% | 8.0% | 4.8% |
| 12 | 22.0 | 27.5 | 34.5 | 20.0 | 25.5 | 31.5 | 10.0% | 7.8% | 9.5% |
| 13 | 23.0 | 30.5 | 39.0 | 19.0 | 25.5 | 32.0 | 21.1% | 19.6% | 21.9% |
| 14 | 23.5 | 32.0 | 41.5 | 20.0 | 25.5 | 32.5 | 17.5% | 25.5% | 27.7% |
| 15 | 26.0 | 35.5 | 43.0 | 20.2 | 26.0 | 32.5 | 28.7% | 36.5% | 32.3% |
| 16 | 28.0 | 36.5 | 45.1 | 20.5 | 26.5 | 33.0 | 36.6% | 37.7% | 36.7% |
| 17 | 28.0 | 38.0 | 47.0 | 21.5 | 27.0 | 35.0 | 30.2% | 40.7% | 34.3% |

98. Similarly, using data from Taylor (2010; table 2, at 869) which analyzed vertical jump measurements of 1,845 children aged 10 -15 years in primary and secondary schools in the East of England, the following table sampling the low, middle, and top decile for vertical jump can be constructed:

Vertical Jump Height (cm) for children 10 -15 years

| Age | Male | | | Female | | | Male-Female % Difference | | |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|--------------------------|-----------|-----------|
| | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile | 10th %ile | 50th %ile | 90th %ile |
| 10 | 16.00 | 21.00 | 29.00 | 15.00 | 22.00 | 27.00 | 6.7% | -4.5% | 7.4% |
| 11 | 20.00 | 27.00 | 34.00 | 19.00 | 25.00 | 32.00 | 5.3% | 8.0% | 6.3% |
| 12 | 23.00 | 30.00 | 37.00 | 21.00 | 27.00 | 33.00 | 9.5% | 11.1% | 12.1% |
| 13 | 23.00 | 32.00 | 40.00 | 21.00 | 26.00 | 34.00 | 9.5% | 23.1% | 17.6% |
| 14 | 26.00 | 36.00 | 44.00 | 21.00 | 28.00 | 34.00 | 23.8% | 28.6% | 29.4% |
| 15 | 29.00 | 37.00 | 44.00 | 21.00 | 28.00 | 39.00 | 38.1% | 32.1% | 12.8% |

99. As can be seen from the data from Ramírez-Vélez (2017) and Taylor (2010), males consistently outperform females of the same age and percentile in vertical jump height. Both sets of data show that an 11-year-old boy in the 90th percentile for vertical jump height will outperform girls in the 90th percentile at ages 11 and 12, and will be equal to girls at ages 13, 14, and possibly 15. These data indicate that an 11-year-old would be likely to have an advantage over girls of the same age and older in sports such as volleyball where “absolute vertical jump

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values can differentiate players not only in terms of player position and performance level but in their career trajectories.” (Pocek 2021 at 8382.)

100. Boys also enjoy an advantage in throwing well before puberty. “Boys exceed girls in throwing velocity by 1.5 standard deviation units as early as 4 to 7 years of age. . . The boys exceed the girls [in throwing distance] by 1.5 standard deviation units as early as 2 to 4 years of age.” (Thomas 1985 at 266.) This means that the average 4- to 7-year-old boy can out-throw approximately 87% of all girls of his age.

101. Record data from USA Track & Field indicate that boys outperform girls in track events even in the youngest age group for whom records are kept (age 8 and under).⁸

American Youth Outdoor Track & Field Record times in age groups 8 and under (time in seconds)

| Event | Boys | Girls | Difference |
|--------------|-------------|--------------|-------------------|
| 100M | 13.65 | 13.78 | 0.95% |
| 200M | 27.32 | 28.21 | 3.26% |
| 400M | 62.48 | 66.10 | 5.79% |
| 800M | 148.59 | 158.11 | 6.41% |
| 1500M | 308.52 | 314.72 | 2.01% |
| Mean | | | 3.68% |

102. Looking at the best times within a single year shows a similar pattern of consistent advantage for even young boys. I consider the 2018 USATF Region 8 Junior Olympic Championships for the youngest age group (8 and under).⁹

2018 USATF Region 8 Junior Olympic Championships for the 8 and under age group

| Event | Boys | Girls | Difference |
|--------------|-------------|--------------|-------------------|
| 100M | 15.11 | 15.64 | 3.51% |
| 200M | 30.79 | 33.58 | 9.06% |
| 400M | 71.12 | 77.32 | 8.72% |
| 800M | 174.28 | 180.48 | 3.56% |
| 1500M | 351.43 | 382.47 | 8.83% |
| Mean | | | 6.74% |

⁸<http://legacy.usatf.org/statistics/records/view.asp?division=american&location=outdoor%20track%20%26%20field&age=youth&sport=TF>

⁹ <https://www.athletic.net/TrackAndField/meet/384619/results/m/1/100m>

⁹ <https://www.athletic.net/CrossCountry/Division/List.aspx?DivID=62211>

103. Using Athletic.net⁹, for 2021 Cross Country and Track & Field data for boys and girls in the 7-8, 9-10, and 11-12 year old age group club reports, and for 5th, 6th, and 7th grade for the whole United States I have compiled the tables for 3000 m events, and for the 100-m, 200-m, 400-m, 800-m, 1600-m, 3000-m, long jump, and high jump Track and Field data to illustrate the differences in individual athletic performance between boys and girls, all of which appear in the Appendix. The pattern of males outperforming females was consistent across events, with rare anomalies, only varying in the magnitude of difference between males and females.

104. Similarly, using Athletic.net, for 2021 Track & Field data for boys and girls in the 6th grade for the state of West Virginia, I have compiled tables, which appear in the appendix, comparing the performance of boys and girls for the 100-m, 200-m, 400-m, 800-m, 1600-m, and 3200-m running events in which the 1st place boy was consistently faster than the 1st place girl, and the average performance of the top 10 boys was consistently faster than the average performance for the top 10 girls. Based on the finishing times for the 1st place boy and girl in the 6th grade in West Virginia 1600-m race, and extrapolating the running time to a running pace, the 1st place boy would be expected to finish 273 m in front of the 1st place girl, which is 2/3 of a lap on a standard 400-m track, or almost the length of 3 football fields. In comparison, the 1st place boy would finish 66 m in front of the 2nd place boy, and the 1st place girl would finish 20 m in front of the 2nd place girl.

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Top 10 West Virginia boys and girls 6th grade outdoor track for 2021 (time in seconds)

| | 100 m | | | 200 m | | | 400 m | | |
|----|-------|-------|---------------------------------------|-------|-------|---------------------------------------|-------|-------|---------------------------------------|
| | Boys | Girls | | Boys | Girls | | Boys | Girls | |
| 1 | 13.18 | 14.00 | Difference between #1 boy and #1 girl | 26.97 | 29.28 | Difference between #1 boy and #1 girl | 60.04 | 65.50 | Difference between #1 boy and #1 girl |
| 2 | 13.94 | 14.19 | | 29.38 | 30.05 | | 60.48 | 67.51 | |
| 3 | 14.07 | 14.47 | 5.9% | 30.09 | 30.34 | 7.9% | 66.26 | 68.60 | 8.3% |
| 4 | 14.44 | 14.86 | | 30.10 | 30.73 | | 67.12 | 70.43 | |
| 5 | 14.46 | 14.92 | Average difference boys vs girls | 30.24 | 31.00 | Average difference boys vs girls | 68.28 | 71.09 | Average difference boys vs girls |
| 6 | 14.53 | 15.04 | | 30.38 | 31.04 | | 68.36 | 71.38 | |
| 7 | 14.75 | 15.04 | 2.9% | 30.54 | 31.10 | 2.4% | 69.65 | 73.61 | 5.6% |
| 8 | 14.78 | 15.20 | | 30.69 | 31.10 | | 69.70 | 73.87 | |
| 9 | 14.84 | 15.25 | | 30.74 | 31.35 | | 69.76 | 74.07 | |
| 10 | 14.94 | 15.28 | | 30.99 | 31.64 | | 70.63 | 74.21 | |

| | 800 m | | | 1600 m | | | 3200 m | | |
|----|-------|-------|---------------------------------------|--------|-------|---------------------------------------|--------|-------|---------------------------------------|
| | Boys | Girls | | Boys | Girls | | Boys | Girls | |
| 1 | 147.2 | 164.5 | Difference between #1 boy and #1 girl | 305.5 | 357.8 | Difference between #1 boy and #1 girl | 678.4 | 776.6 | Difference between #1 boy and #1 girl |
| 2 | 147.9 | 166.1 | | 318.1 | 361.6 | | 750.0 | 809.8 | |
| 3 | 152.1 | 167.2 | 10.6% | 322.0 | 379.8 | 14.6% | 763.3 | 811.0 | 12.7% |
| 4 | 153.2 | 170.2 | | 336.0 | 385.2 | | 766.3 | 843.0 | |
| 5 | 155.3 | 171.0 | Average difference boys vs girls | 342.2 | 390.2 | Average difference boys vs girls | 771.7 | 850.6 | Average difference boys vs girls |
| 6 | 159.5 | 171.5 | | 348.0 | 392.0 | | 782.8 | 852.1 | |
| 7 | 159.9 | 174.8 | 7.5% | 356.6 | 393.3 | 11.5% | 794.1 | 858.0 | 8.1% |
| 8 | 167.8 | 174.9 | | 357.5 | 395.7 | | 803.0 | 862.8 | |
| 9 | 169.2 | 175.9 | | 362.4 | 398.1 | | 812.1 | 869.9 | |
| 10 | 172.6 | 177.6 | | 366.0 | 403.2 | | 814.3 | 883.3 | |

105. As serious runners will recognize, differences of 3%, 5%, or 8% are not easily overcome. During track competition the difference between first and second place, or second and third place, or third and fourth place (and so on) is often 0.5 - 0.7%, with some contests being determined by as little as 0.01%.

106. I performed an analysis of running events (consisting of the 100-m, 200-m, 400-m, 800-m, 1500-m, 5000-m, and 10,000-m) in the Division 1, Division 2, and Division 3 NCAA Outdoor championships for the years of 2010-2019: the mean difference between 1st and 2nd place was 0.48% for men and 0.86% for women. The mean difference between 2nd and 3rd place was 0.46% for men and 0.57% for women. The mean difference between 3rd place and 4th place was 0.31% for men and 0.44% for women. The mean difference between 1st place and 8th place (the last place to earn the title of All American) was 2.65% for men and 3.77% for women. (Brown et al. Unpublished observations, to be presented at the 2022 Annual Meeting of the American College of Sports Medicine.)

107. A common response to empirical data showing pre-pubertal performance advantages in boys is the argument that the performance of boys may

represent a social–cultural bias for boys to be more physically active, rather than representing inherent sex-based differences in pre-pubertal physical fitness. However, the younger the age at which such differences are observed, and the more egalitarian the culture within which they are observed, the less plausible this hypothesis becomes. Eiberg et al. (2005) measured body composition, VO₂max, and physical activity in 366 Danish boys and 332 Danish girls between the ages of 6 and 7 years old. Their observations indicated that VO₂max was 11% higher in boys than girls. When expressed relative to body mass the boys' VO₂max was still 8% higher than the girls. The authors stated that "...no differences in haemoglobin or sex hormones¹⁰ have been reported in this age group," yet "... when children with the same VO₂max were compared, boys were still more active, and in boys and girls with the same P[hysical] A[ctivity] level, boys were fitter." (728). These data indicate that in pre-pubertal children, in a very egalitarian culture regarding gender roles and gender norms, boys still have a measurable advantage in regards to aerobic fitness when known physiological and physical activity differences are accounted for.

108. And, as I have mentioned above, even by the age of 4 or 5, in a ruler-drop test, boys exhibit 4% to 6% faster reaction times than girls. (Latorre-Roman 2018.)

109. When looking at the data on testosterone concentrations previously presented, along with the data on physical fitness and athletic performance presented, boys have advantages in athletic performance and physical fitness before there are marked differences in testosterone concentrations between boys and girls.

110. For the most part, the data I review above relate to pre-pubertal children. Today, we also face the question of inclusion in female athletics of males who have undergone "puberty suppression." The UK Sport Councils Literature Review notes that, "In the UK, so-called 'puberty blockers' are generally not used until Tanner maturation stage 2-3 (i.e. after puberty has progressed into early sexual maturation)." (9.) While it is outside my expertise, my understanding is that current practice with regard to administration of puberty blockers is similar in the United States. Tanner stages 2 and 3 generally encompass an age range from 10 to 14 years old, with significant differences between individuals. Like the authors of the UK Sports Council Literature Review, I am "not aware of research" directly addressing the implications for athletic capability of the use of puberty blockers. (UK Sport Councils Literature Review at 9.) As Handelsman documents, the male advantage begins to increase rapidly—along with testosterone levels—at about age 11, or "very closely aligned to the timing of the onset of male puberty." (Handelsman 2017.) It seems likely that males who have undergone puberty suppression will

¹⁰ This term would include testosterone and estrogens.

EXHIBIT 8

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA
CHARLESTON DIVISION

B.P.J., by her next friend and mother, HEATHER JACKSON,

Plaintiff,

vs.

WEST VIRGINIA STATE BOARD OF EDUCATION; HARRISON COUNTY BOARD OF EDUCATION; WEST VIRGINIA SECONDARY SCHOOLS ACTIVITIES COMMISSION; W. CLAYTON BURCH, in his official capacity as State Superintendent, DORA STUTLER, in her official capacity as the Harrison County Superintendent, and the STATE OF WEST VIRGINIA,

Defendants,

and

LAINY ARMISTEAD,

Defendant-Intervenor.

Case No. 2:21-cv-00316

Hon. Joseph R. Goodwin

DECLARATION OF DR. CHAD T. CARLSON, M.D., FACSM

I, Dr. Chad T. Carlson, pursuant to 28 U.S. Code § 1746, declare under penalty of perjury under the laws of the United States of America that the facts contained in my Expert Report of Dr. Chad T. Carlson, M.D., FACM prepared for *B.P.J. v. West Virginia*, attached hereto, are true and correct to the best of my knowledge and belief, and that the opinions expressed therein represent my own expert opinions.

Executed on February 23, 2022.



Chad T. Carlson, MD

**Expert Report of Dr. Chad Thomas Carlson, M.D., FACM
prepared for *B.P.J. v. West Virginia*
February 23, 2022**

c. Males exhibit large average advantages in size, weight, and physical capacity over females—often falling far outside female ranges. Even before puberty, males have a performance advantage over females in most athletic events. Failure to preserve protected female-only categories in contact sports (broadly defined) will ultimately increase both the frequency and severity of injury suffered by female athletes who share playing space with these males.

d. Current research supports the conclusion that suppression of testosterone levels by males who have already begun puberty will not fully reverse the effects of testosterone on skeletal size, strength, or muscle hypertrophy, leading to persistence of sex-based differences in power, speed, and force-generating capacity.

12. In this white paper, I use the term “contact sports” to refer broadly to all sports in which collisions between players, or collisions between equipment such as a stick or ball and the body of a player, occur with some frequency (whether or not permitted by the rules of the game), and are well recognized in the field of sports medicine as causes of sport-related injuries.⁸ The 1975 Title IX implementing regulations (34 CFR § 106.41) say that “for purposes of this [regulation] contact sports include boxing, wrestling, rugby, ice hockey, football, basketball, *and other sports* the purpose or major activity of which involves bodily contact.” Certainly, all of the sports specifically named in the regulation fall within my definition of “contact sport.” Mixed martial arts, field hockey (Barboza 2018), soccer (Kuczinski 2018), rugby (Viviers 2018), lacrosse

⁸ It is common to see, within the medical literature, reference to distinctions between “contact” and “collision” sports. For purposes of clarity, I have combined these terms, since in the context of injury risk modeling, there is no practical distinction between them.

body is impacted at the waist can result in high torque and acceleration on the neck and head.

40. Sport-related concussion—a common sports injury and one with potentially significant effects—is attributable to linear, angular, or rotational acceleration and deceleration forces that result from impact to the head, or from an impact to the body that results in a whiplash “snap” of the head. (Rowson 2016.) In the case of a concussive head injury, it is the brain that accelerates or decelerates on impact, colliding with the inner surface of the skull. (Barth 2001 at 255.)

41. None of this is mysterious: each of us, if we had to choose between being hit either by a large, heavy athlete running at full speed, or by a small, lighter athlete, would intuitively choose collision with the small, light athlete as the lesser of the two evils. And we would be right. One author referred to the “increase in kinetic energy, and therefore imparted forces” resulting from collision with larger, faster players as “profound.” (Dashnaw 2012.)

V. GENDER DIFFERENCES RELEVANT TO INJURY

42. It is important to state up front that it is self-evident to most people familiar with sport and sport injuries that if men and women were to consistently participate together in competitive contact sports, there would be higher rates of injury in women. This is one reason that rule modifications often

exist in leagues where co-ed participation occurs.¹⁴ Understanding the physics of sports injuries helps provide a theoretical framework for why this is true, but so does common sense and experience. All of us are familiar with basic objective physiological differences between the sexes, some of which exist in childhood, and some of which become apparent after the onset of puberty, and persist throughout adulthood. And as a result of personal experience, all of us also have some intuitive sense of what types of collisions are likely to cause pain or injury. Not surprisingly, our “common sense” on these basic facts about the human condition is also consistent with the observations of medical science. Below, I provide quantifications of some of these well-known differences between the sexes that are relevant to injury risk, as well as some categorical differences that may be less well known.

A. Height and weight

43. It is an inescapable fact of the human species that males as a group are statistically larger and heavier than females. On average, men are 7% to 8% taller than women. (Handelsman 2018 at 818.) According to the most recently available Centers for Disease Control and Prevention (CDC) statistics, the weight of the average U.S. adult male is 16% greater than that of the average U.S. adult female. (CDC 2018.) This disparity persists into the athletic cohort.

¹⁴ For example, see <https://www.athleticbusiness.com/college/intramural-coed-basketball-playing-rules-vary-greatly.html> (detailing variety of rule modifications applied in co-ed basketball). Similarly, coed soccer leagues often prohibit so-called “slide tackles,” which are not prohibited in either men’s or women’s soccer. See, e.g., <http://www.premiercoedsports.com/pages/rulesandpolicies/soccer>.

Researchers find that while athletes tend on average to be lighter than non-athletes, the weight difference between the average adult male and female athlete remains within the same range—between 14% and 23%, depending on the sport analyzed. (Santos 2014; Fields 2018.) Indeed, World Rugby estimates that the typical male rugby player weighs 20% to 40% more than the typical female rugby player. (World Rugby Transgender Women Guidelines 2020.) This size advantage by itself allows men to bring more force to bear in a collision.

B. Bone and connective tissue strength

44. Men have bones in their arms, legs, feet, and hands that are both larger and stronger per unit volume than those of women, due to greater cross-sectional area, greater bone mineral content, and greater bone density. The advantage in bone size (cross-sectional area) holds true in both upper and lower extremities, even when adjusted for lean body mass. (Handelsman 2018 at 818; Nieves 2005 at 530.) Greater bone size in men is also correlated with stronger tendons that are more adaptable to training (Magnusson 2007), and an increased ability to withstand the forces produced by larger muscles (Morris 2020 at 5). Male bones are not merely larger, they are stronger per unit of volume. Studies of differences in arm and leg bone mineral density – one component of bone strength – find that male bones are denser, with measured advantages of between 5% and 14%. (Gilsanz 2011; Nieves 2005.)

45. Men also have larger ligaments than women (Lin 2019 at 5), and stiffer connective tissue (Hilton 2021 at Table 1), providing greater protection against joint injury.

C. Speed

46. When it comes to acceleration from a static position to a sprint, men are consistently faster than women. World record sprint performance gaps between the sexes remain significant at between 7% and 10.5%, with world record times in women now exhibiting a plateau (no longer rapidly improving with time) similar to the historical trends seen in men. (Cheuvront 2005.) This performance gap has to do with, among other factors, increased skeletal stiffness, greater cross-sectional muscle area, denser muscle fiber composition and greater limb length. (Handelsman 2018.) Collectively, males, on average, run about 10% faster than females. (Lombardo 2018 at 93.) This becomes important as it pertains to injury risk, because males involved in sport will often be travelling at faster speeds than their female counterparts in comparable settings, with resultant faster speed at impact, and thus greater impact force, in a given collision.

D. Strength/Power

47. In 2014, a male mixed-martial art fighter identifying as female and fighting under the name Fallon Fox fought a woman named Tamikka Brents, and caused significant facial injuries in the course of their bout. Speaking about their fight later, Brents said:

“I’ve fought a lot of women and have never felt the strength that I felt in a fight as I did that night. I can’t answer whether it’s because she was born a man or not because I’m not a doctor. I can only say, I’ve never felt so overpowered ever in my life, and I am an abnormally strong female in my own right.”¹⁵

48. So far as I am aware, mixed martial arts is not a collegiate or high school interscholastic sport. Nevertheless, what Brent experienced in an extreme setting is true and relevant to safety in all sports that involve contact. In absolute terms, males as a group are substantially stronger than women.

49. Compared to women, men have “larger and denser muscle mass, and stiffer connective tissue, with associated capacity to exert greater muscular force more rapidly and efficiently.” (Hilton 2021 at 201.) Research shows that on average, during the prime athletic years (ages 18-29) men have, on average, 54% greater total muscle mass than women (33.7 kg vs. 21.8 kg) including 64% greater muscle mass in the upper body, and 47% greater in the lower body. (Janssen 2000 at Table 1.) The cross-sectional area of muscle in women is only 50% to 60% that of men in the upper arm, and 65% to 70% of that of men in the thigh. This translates to women having only 50% to 60% of men's upper limb strength and 60% to 80% of men's lower limb strength. (Handelsman 2018 at 812.) Male weightlifters have been shown to be approximately 30% stronger than female weightlifters of equivalent stature and mass. (Hilton 2021 at 203.) But in competitive athletics, since the stature and mass of the average male

¹⁵ <https://bjj-world.com/transgender-mma-fighter-fallon-fox-breaks-skull-of-her-female-opponent/>

exceeds that of the average female, actual differences in strength between average body types will, on average, exceed this. The longer limb lengths of males augment strength as well. Statistically, in comparison with women, men also have lower total body fat, differently distributed, and greater lean muscle mass, which increases their power-to-weight ratios and upper-to-lower limb strength ratios as a group. Looking at another common metric of strength, males average 57% greater grip strength (Bohannon 2019) and 54% greater knee extension torque (Neder 1999). Research shows that sex-based discrepancies in lean muscle mass begin to be established from infancy, and persist through childhood to adolescence. (Davis 2019; Kirchengast 2001; Taylor 1997; Taylor 2010; McManus 2011.)

50. Using their legs and torso for power generation, men can apply substantially larger forces with their arms and upper body, enabling them to generate more ball velocity through overhead motions, as well as to generate more pushing or punching power. In other words, isolated sex-specific differences in muscle strength in one region (even differences that in isolation seem small) can, and do combine to generate even greater sex-specific differences in more complex sport-specific functions. One study looking at moderately-trained individuals found that males can generate 162% more punching power than females. (Morris 2020.) Thus, multiple small advantages aggregate into larger ones.

E. Throwing and kicking speed

51. One result of the combined effects of these sex-determined differences in skeletal structure is that men are, on average, able to throw objects faster than women. (Lombardo 2018; Chu 2009; Thomas 1985.) By age seventeen, the *average* male can throw a ball farther than 99% of seventeen-year-old females—which necessarily means at a faster initial speed assuming a similar angle of release— despite the fact that factors such as arm length, muscle mass, and joint stiffness individually don't come close to exhibiting this degree of sex-defined advantage. One study of elite male and female baseball pitchers showed that men throw baseballs 35% faster than women—81 miles/hour for men vs. 60 miles/hour for women. The authors of this study attribute this to a sex-specific difference in the ability to generate muscle torque and power. (Chu 2009.) A study showing greater throwing velocity in male versus female handball players attributed it to differences in body size, including height, muscle mass, and arm length. (Van Den Tillaar 2012.) Interestingly, significant sex-related difference in throwing ability has been shown to manifest even before puberty, but the difference increases rapidly during and after puberty. (Thomas 1985 at 266.) These sex-determined differences in throwing speed are not limited to sports where a ball is thrown. Males have repeatedly been shown to throw a javelin more than 30% farther than females. (Lombardo 2018 Table 2; Hilton 2021 at 203.) Even in preadolescent children, differences exist. International youth records for 5- to

12-year-olds in the javelin show 34-55% greater distance in males vs. females using a 400g javelin.¹⁶

52. Men also serve and spike volleyballs with higher velocity than women, with a performance advantage in the range of 29-34%. (Hilton 2021.) Analysis of first and second tier Belgian national elite male volleyball players shows ball spike speeds of 63 mph and 56 mph respectively. (Forthomme 2005.) NCAA Division I female volleyball players—roughly comparable to the second-tier male elite group referenced above—average a ball spike velocity of approximately 40 mph (18.1 m/s). (Ferris 1995 at Table 2.) Notably, based on the measurements of these studies, male spiking speed in *lower* elite divisions is almost 40% greater than that of NCAA Division I female collegiate players. Separate analyses of serving speed between elite men and women Spanish volleyball players showed that the average power serving speed in men was 54.6 mph (range 45.3–64.6 mph), with maximal speed of 76.4 mph. In women, average power serving speed was 49 mph (range 41–55.3 mph) with maximal speed of 59 mph. This translates to an almost 30% advantage in maximal serve velocity in men. (Palao 2014.)

53. Recall that kinetic energy is dependent on mass and the square of velocity. A volleyball (with fixed mass) struck by a male, and traveling an

¹⁶ <http://age-records.125mb.com/>.

average 35% faster than one struck by a female, will deliver 82% more energy to a head upon impact.

54. The greater leg strength and jumping ability of men confer a further large advantage in volleyball that is relevant to injury risk. In volleyball, an “attack jump” is a jump to position a player to spike the ball downward over the net against the opposing team. Research on elite national volleyball players found that on average, males exhibited a 50% greater vertical jump height during an “attack” than did females. (Sattler 2015.) Similar data looking at countermovement jumps (to block a shot) in national basketball players reveals a 35% male advantage in jump height. (Kellis 1999.) In volleyball, this dramatic difference in jump height means that male players who are competing in female divisions will more often be able to successfully perform a spike, and this will be all the more true considering that the women’s net height is seven inches lower than that used in men’s volleyball. Confirming this inference, research also shows that the successful attack percentage (that is, the frequency with which the ball is successfully hit over the net into the opponent’s court in an attempt to score) is so much higher with men than women that someone analyzing game statistics can consistently identify games played by men as opposed to women on the basis of this statistic alone. These enhanced and more consistently successful attacks by men directly correlate to their greater jumping ability and attack velocity at the net. (Kountouris 2015.)

55. The combination of the innate male-female differences cited above, along with the lower net height in women's volleyball, means that if a reasonably athletic male is permitted to compete against women, the participating female players will likely be exposed to higher ball velocities that are outside the range of what is typically seen in women's volleyball. When we recall that ball-to-head impact is a common cause of concussion among women volleyball players, this fact makes it clear that participation in girls' or women's volleyball by biologically male individuals will increase concussion injury risk for participating girls or women.

56. Male sex-based advantages in leg strength also lead to greater kick velocity. In comparison with women, men kick balls harder and faster. A study comparing kicking velocity between university-level male and female soccer players found that males kick the ball with an average 20% greater velocity than females. (Sakamoto 2014.) Applying the same principles of physics we have just used above, we see that a soccer ball kicked by a male, travelling an average 20% faster than a ball kicked by a female, will deliver 44% more energy on head impact. Greater force-generating capacity will thus increase the risk of an impact injury such as concussion.

VI. ENHANCED FEMALE VULNERABILITY TO CERTAIN INJURIES

57. Above, I have reviewed physiological differences that result in the male body bringing greater weight, speed, and force to the athletic field or court,

and how these differences can result in a greater risk of injury to females when males compete against them. It is also true that the female body is more vulnerable than the male body to certain types of injury even when subject to comparable forces. This risk appears to extend to the younger age cohorts as well. An analysis of Finnish student athletes from 1987-1991, analyzing over 600,000 person-years of activity exposures, found, in students under fifteen years of age, higher rates of injury in girls than boys in soccer, volleyball, judo and karate. (Kujala 1995.) Another epidemiological study looking specifically at injury rates in over 14,000 middle schoolers over a 20 year period showed that “in sex-matched sports, middle school girls were more likely to sustain *any* injury (RR = 1.15, 95% CI = 1.1, 1.2) or a time-loss injury (RR = 1.09, 95% CI = 1.0, 1.2) than middle school boys.” In analyzed both-sex sports (i.e., sex-separated sports that both girls and boys play, like soccer), girls sustained higher injury rates, and greater rates of time-loss injury. (Beachy 2014.) Another study of over 2000 middle school students at nine schools showed that the injury rate was higher for girls’ basketball than for football (39.4 v 30.7/1000 AEs), and injury rates for girls’ soccer were nearly double that of boys’ soccer (26.3 v. 14.7/1000 AEs). (Caswell 2017.) In this regard, I will focus on two areas of heightened female vulnerability to collision-related injury which have been extensively studied: concussions, and anterior cruciate ligament injuries.

A. Concussions

58. Females are more likely than males to suffer concussions in comparable sports, and on average suffer more severe and longer lasting disability once a concussion does occur. (Harmon 2013 at 4; Berz 2015; Blumenfeld 2016; Covassin 2003; Rowson 2016.) Females also seem to be at higher risk for post-concussion syndrome than males. (Berz 2015; Blumenfeld 2016; Broshek 2005; Colvin 2009; Covassin 2012; Dick 2009; Marar 2012; Preiss-Farzanegan 2009.)

59. The most widely-accepted definition of sport-related concussion comes from the Consensus Statement on Concussion in Sport (see below).¹⁷ (McCrorry 2018.) To summarize, concussion is “a traumatically induced transient

¹⁷ “Sport related concussion is a traumatic brain injury induced by biomechanical forces. Several common features that may be utilised in clinically defining the nature of a concussive head injury include:

SRC may be caused either by a direct blow to the head, face, neck or elsewhere on the body with an impulsive force transmitted to the head.

SRC typically results in the rapid onset of short-lived impairment of neurological function that resolves spontaneously. However, in some cases, signs and symptoms evolve over a number of minutes to hours.

SRC may result in neuropathological changes, but the acute clinical signs and symptoms largely reflect a functional disturbance rather than a structural injury and, as such, no abnormality is seen on standard structural neuroimaging studies.

SRC results in a range of clinical signs and symptoms that may or may not involve loss of consciousness. Resolution of the clinical and cognitive features typically follows a sequential course. However, in some cases symptoms may be prolonged.

The clinical signs and symptoms cannot be explained by drug, alcohol, or medication use, other injuries (such as cervical injuries, peripheral vestibular dysfunction, etc) or other comorbidities (e.g., psychological factors or coexisting medical conditions).”

disturbance of brain function and involves a complex pathophysiological process” that can manifest in a variety of ways. (Harmon 2013 at 1.)

60. Sport-related concussions have undergone a significant increase in societal awareness and concurrent injury reporting since the initial passage of the Zachery Lystedt Concussion Law in Washington State in 2009 (Bompadre 2014), and the subsequent passage of similar legislation governing return-to-play criteria for concussed athletes in most other states in the United States. (Nat’l Cnf. of State Leg’s 2018). Concussion is now widely recognized as a common sport-related injury, occurring in both male and female athletes. (CDC 2007.) Sport-related concussions can result from player-surface contact or player-equipment contact in virtually any sport. However, sudden impact via a player-to-player collision, with rapid deceleration and the transmission of linear or rotational forces through the brain, is also a common cause of concussion injury. (Covassin 2012; Marar 2012; Barth 2001; Blumenfeld 2016; Boden 1998; Harmon 2013 at 4.)

61. A large retrospective study of U.S. high school athletes showed a higher rate of female concussions in soccer (79% higher), volleyball (0.6 concussions/10,000 exposures, with 485,000 reported exposures, vs. no concussions in the male cohort), basketball (31% higher), and softball/baseball (320% higher). (Marar 2012.) A similarly-sized, similarly-designed study comparing concussion rates between NCAA male and female collegiate athletes showed, overall, a concussion rate among females 40% higher than that of

males. Higher rates of injury were seen across individual sports as well, including ice hockey (10% higher); soccer (54% higher); basketball (40% higher); and softball/baseball (95% higher). (Covassin 2016.) The observations of these authors, my own observations from clinical practice, and the acknowledgment of our own Society's Position Statement (Harmon 2013), all validate the higher frequency and severity of sport-related concussions in women and girls.

62. Most epidemiological studies to date looking at sport-related concussion in middle schoolers show that more boys than girls are concussed. There are fewer studies estimating concussion *rate*. This is, in part, because measuring injury rate is more time and labor-intensive. Researchers at a childrens' hospital, for example, could analyze the number of children presenting to the emergency department with sport-related concussion and publish findings of absolute number. However, to study concussion incidence, athlete exposures also have to be recorded. Generally speaking, an athlete exposure is a single practice or game where an athlete is exposed to playing conditions that could reasonably supply the necessary conditions for an injury to occur. Rates of athletic injury, concussion among them, are then, by convention, expressed in terms of injury rate per 1000 athletic exposures. More recently, some studies have been published that analyze the rates of concussion in the middle school population. Looking at the evidence, the conclusion can be made that females experience increased susceptibility to concussive injuries before puberty. For example, Ewing-Cobbs, et al. (2018) found elevated post-

concussion symptoms in girls across all age ranges studied, including children between the ages of 4 and 8. Kerr's 2017 study of middle school students showed over three times the rate of female vs male concussion in students participating in sex-comparable sports [0.18 v. 0.66/1000 A.E.'s]. (Kerr 2017.) This is the first study I am aware of that mimics the trends seen in adolescent injury epidemiology showing a higher rate of concussion in girls than boys in comparable sports.

63. More recent research looking at the incidence of sport-related concussions in U.S. middle schoolers between 2015 and 2020, found that the rate of concussion was higher in middle school athletes than those in high school. In this study, girls had more than twice the rate of concussion injury (0.49/1000 athletic exposures vs 0.23/1000 AE) in analyzed sports (baseball/softball, basketball, soccer and track), as well as statistically greater time loss. (Hacherl 2021 (Journal of Athletic Training); Hacherl 2021 (Archives of Clinical Neuropsychology).) The authors hypothesized that the increasing incidence of concussion in middle school may relate to "other distinct differences associated with the middle school sport setting itself, such as, the large variations in player size and skill."¹⁸

64. In addition, females on average suffer materially greater cognitive impairment than males when they do suffer a concussion. Group differences in

¹⁸ <https://www.nata.org/press-release/062421/middle-school-sports-have-overall-higher-rate-concussion-reported-high-school>.

cognitive impairment between females and males who have suffered concussion have been extensively studied. A study of 2340 high school and collegiate athletes who suffered concussions determined that females had a 170% higher frequency of cognitive impairment following concussions, and that in comparison with males, female athletes had significantly greater declines in simple and complex reaction times relative to their preseason baseline levels. Moreover, the females experienced greater objective and subjective adverse effects from concussion even after adjusting for potentially protective effect of helmets used by some groups of male athletes. (Broshek 2005 at 856, 861; Colvin 2009; Covassin 2012.)

65. This large discrepancy in frequency and severity of concussion injury is consistent with my own observations across many years of clinical practice. The large majority of student athletes who have presented at my practice with severe and long-lasting cognitive disturbance have been adolescent girls. I have seen girls remain symptomatic for over a year, and lose ground academically and become isolated from their peer groups due to these ongoing symptoms. For patients who experience these severe effects, post-concussion syndrome can be life-altering.

66. Some of the anatomical and physiological differences that we have considered between males and females help to explain the documented differences in concussion rates and in symptoms between males and females. (Covassin 2016; La Fontaine 2019; Lin 2019; Tierney 2005; Wunderle 2014.)

Anatomically, there are significant sex-based differences in head and neck anatomy, with females exhibiting in the range of 30% to 40% less head-neck segment mass and neck girth, and 49% lower neck isometric strength. This means that when a female athlete's head is subjected to the same load as an analogous male, there will be a greater tendency for head acceleration, and resultant injury. (Tierney 2005 at 276-277.)

67. When modeling the effect of the introduction of male mass, speed, and strength into women's rugby, World Rugby gave particular attention to the resulting increases in forces and acceleration (and injury risk) experienced in the head and neck of female players. Their analysis found that "the magnitude of the known risk factors for head injury are . . . predicted by the size of the disparity in mass between players. The addition of [male] speed as a biomechanical variable further increases these disparities," and their model showed an increase of up to 50% in neck and head acceleration that would be experienced in a typical tackle scenario in women's rugby. As a result, "a number of tackles that currently lie beneath the threshold for injury would now exceed it, causing head injury." (World Rugby Transgender Women Guidelines 2020.) While rugby is notoriously contact-intensive, similar increases to risk of head and neck injury to women are predictable in any sport context in which males and females collide at significant speed, as happens from time to time in sports including soccer, softball, and basketball.

68. In addition, even when the heads of female and male athletes are subjected to identical accelerative forces, there are sex-based differences in neural anatomy and physiology, cerebrovascular organization, and cellular response to concussive stimuli that make the female more likely to suffer concussive injury, or more severe concussive injury. For instance, hypothalamic-pituitary disruption is thought to play a role in post-concussion symptomatology that differentially impacts women. (McGroarty 2020; Broshek 2005 at 861.) Another study found that elevated progesterone levels during one portion of the menstrual cycle were associated with more severe post-concussion symptomatology that differentially impacted women. (Wunderle 2014.)

69. As it stands, when females compete against each other, they already have higher rates of concussive injury than males, across most sports. The addition of biologically male athletes into women's contact sports will inevitably increase the risk of concussive injury to girls and women, for the multiple reasons I have explained above, including, but not limited to, the innate male advantage in speed and lean muscle mass. Because the effects of concussion can be severe and long-lasting, particularly for biological females, we can predict with some confidence that if participation by biological males in women's contact sports based on gender identity becomes more common, more biological females will suffer substantial concussive injury and the potential for long-term harm as a result.

B. Anterior Cruciate Ligament injuries

70. The Anterior Cruciate Ligament (“ACL”) is a key knee stabilizer that prevents anterior translation of the tibia relative to the femur and also provides rotatory and valgus knee stability.¹⁹ (Lin 2019 at 4.) Girls and women are far more vulnerable to ACL injuries than are boys and men. The physics of injury that we have reviewed above makes it inevitable that the introduction of biologically male athletes into the female category will increase still further the occurrence of ACL injuries among girls or women who encounter these players on the field.

71. Sports-related injury to the ACL is so common that it is easy to overlook the significance of it. But it is by no means a trivial injury, as it can end sports careers, require surgery, and usually results in early-onset, post-traumatic osteoarthritis, triggering long-term pain and mobility problems later in life. (Wang 2020.)

72. Even in the historic context in which girls and women limit competition to (and so only collide with) other girls and women, the rate of ACL injury is substantially higher among female than male athletes. (Flaxman 2014; Lin 2019; Agel 2005.) One meta-analysis of 58 studies reports that female athletes have a 150% relative risk for ACL injury compared with male athletes, with other estimates suggesting as much as a 300% increased risk. (Montalvo 2019; Sutton 2013.) Particularly in those sports designated as contact sports, or

¹⁹ Valgus force at the knee is a side-applied force that gaps the medial knee open.

sports with frequent cutting and sharp directional changes (basketball, field hockey, lacrosse, soccer), females are at greater risk of ACL injury. In basketball and soccer, this risk extends across all skill levels, with female athletes between two and eight times more likely to sustain an ACL injury than their male counterparts. (Lin 2019 at 5.) These observations are widely validated, and consistent with the relative frequencies of ACL injuries that I see in my own practice.

73. When the reasons underlying the difference in the incidence of ACL injury between males and females were first studied in the early 1990s, researchers speculated that the difference might be attributable to females' relative inexperience in contact sports, or to their lack of appropriate training. However, a follow-up 2005 study looking at ACL tear disparities reported that, "Despite vast attention to the discrepancy between anterior cruciate ligament injury rates between men and women, these differences continue to exist." (Agel 2005 at 524.) Inexperience and lack of training do not explain the differences. Sex seems to be an independent predictor of ACL tear risk.

74. In fact, as researchers have continued to study this discrepancy, they have determined that multiple identifiable anatomical and physiological differences between males and females play significant roles in making females more vulnerable to ACL injuries than males. (Flaxman 2014; Lin 2019; Wolf 2015.) Summarizing the findings of a number of separate studies, one researcher recently cited as anatomical risk factors for ACL injury smaller ligament size,

decreased femoral notch width, increased posterior-inferior slope of the lateral tibia plateau, increased knee and generalized laxity, and increased body mass index (BMI). With the exception of increased BMI, each of these factors is more likely to occur in female than male athletes. (Lin 2019 at 5.) In addition, female athletes often stand in more knee valgus (that is, in a “knock-kneed” posture) due to wider hips and a medially-oriented femur. Often, this is also associated with a worsening of knee valgus during jump landings. The body types and movement patterns associated with these valgus knee postures are more common in females and increase the risk for ACL tear. (Hewett 2005.)

75. As with concussion, the cyclic fluctuation of sex-specific hormones in women is also thought to be a possible risk factor for ACL injury. Estrogen acts on ligaments to make them more lax, and it is thought that during the ovulatory phase of menses (when estrogen levels peak), the risk of ACL tear is higher. (Chidi-Ogbolu 2019 at 1; Herzberg 2017.)

76. Whatever the factors that increase the injury risk for ACL tears in women, the fact that a sex-specific difference in the rate of ACL injury exists is well established and widely accepted.

77. Although non-contact mechanisms are the most common reason for ACL tears in females, tears related to contact are also common, with ranges reported across multiple studies of from 20%-36% of all ACL injuries in women. (Kobayashi 2010 at 672.) For example, when a soccer player who is kicking a ball is struck by another player in the lateral knee of the stance leg, medial and

rotational forces can tear the medial collateral ligament (MCL), the ACL, and the meniscus. Thus, as participation in the female category based on identity rather than biology becomes more common (entailing the introduction of athletes with characteristics such as greater speed and lean muscle mass), and as collision forces suffered by girls and women across the knee increase accordingly, the risk for orthopedic injury and in particular ACL tears among impacted girls and women will inevitably rise.

78. Of course there exists variation in all these factors within a given group of males or females. However, it is also true that within sex-specific pools, size differential is somewhat predictable and bounded, even considering outliers. When males are permitted to enter into the pool of female athletes based on gender identity rather than biological sex, there is an increased possibility that a statistical outlier in terms of size, weight, speed, and strength—and potentially an extreme outlier—is now entering the female pool. Although injury is not guaranteed, risks to female participants will increase. And as I discuss later, the available evidence together suggests that this will be true even with respect to males who have been on testosterone suppression for a year or more. World Rugby relied heavily upon this when they were determining their own policy, and I think it is important to reiterate that this policy, rooted in concern for athlete safety, is justifiable based upon current evidence from medical research and what we know about biology.