BMJ Open

Disparities in sport participation of transgender women: a systematic and scoping review protocol

Jessica L Hamdan ,[1] Andrea Goldstein Shipper ,[2] Stephanie Roth ,[3] Yaara Zisman-Ilani [4,5]

To cite: Hamdan JL, Shipper AG, Roth S, *et al*. Disparities in sport participation of transgender women: a systematic and scoping review protocol. *BMJ Open* 2023;**13**:e074054. doi:10.1136/bmjopen-2023-074054

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (http://dx.doi.org/10.1136/bmjopen-2023-074054).

Received 25 March 2023
Accepted 27 June 2023

[1]Kinesiology, Recreation and Sport Studies, University of Tennessee ELI, Knoxville, Tennessee, USA
[2]Charles Library, Temple University, Philadelphia, Pennsylvania, USA
[3]Helen F. Graham Cancer Center, Junior Board Cancer Resource Library, Christiana Care, Newark, Delaware, USA
[4]Department of Social and Behavioral Sciences, College of Public Health, Temple University, Philadelphia, Pennsylvania, USA
[5]Department of Clinical, Educational and Health Psychology, Division of Psychology and Language Sciences, University College London (UCL), London, UK

Correspondence to
Dr Yaara Zisman-Ilani; yaara@temple.edu

ABSTRACT

Introduction Transgender women experience disparities in sport participation that are exacerbated by policies from sport organisations and legislation in the USA regulating the participation of transgender women in the category that best aligns with their gender identity. Both transgender and cisgender women are affected by these policies because sport organisations do not have a clear understanding of the effects of gender-affirming hormone therapy on transgender women and the unfair advantage they may have over cisgender women athletes. This article describes a review protocol to understand disparities in sport participation of transgender women.

Methods and analysis A systematic and scoping review is being conducted. Studies are included if they explore disparities in sport participation (ie, participation rates, real and/or perceived barriers to participation) of transgender women of any age. A search strategy has been developed for PubMed, EMBASE, Web of Science, Cochrane Library and CINAHL. Relevant grey literature will also be scanned. The planned search dates are July and August 2023.

Ethics and dissemination This review does not directly involve human subjects, so ethical approval is not required. Findings from the systematic review will be disseminated via publications in peer-reviewed journals and conferences.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This protocol outlines a thorough search of five databases as well as grey literature.
⇒ This protocol follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols guidelines.
⇒ The review is limited to publications in English.

INTRODUCTION

Transgender athletes are often subject to policies put in place by sport organisations to regulate their participation in sports even though there is limited evidence backing these policies.[1–4] These policies have been developed in recent years to address potential inequalities towards cisgender women athletes, who were assigned female at birth and identify as women, by transgender women athletes, who were assigned male at birth and identify as women. Such policies include the new regulations from World Athletics, in effect as of 31 March 2023, that strictly exclude transgender women who have experienced male puberty from competing in women's World Rankings competitions.[5] These regulations come less than a year after World Aquatics, formerly known as the Fédération Internationale de Natation, implemented similar regulations that were released after swimmer Lia Thomas, one of 36 known transgender athletes to compete at the collegiate level in the past decade,[6] became the first known transgender woman to win a National Collegiate Athletic Association Division I championship.[7] Such policies from sport organisations are based on the notion that transgender women athletes are at an advantage due to being assigned male at birth.[4] However, these policies create further suffering and discrimination for transgender women athletes, who not only struggle with daily challenges related to their transition but are also affected in their athletic careers by excluding transgender women athletes from competing and/or only allowing them to compete in a category that does not align with their gender identity.[4 8]

Beyond elite-level sport, transgender men and women experience disparities in sport participation and participate in sports at a lower rate compared with the general population.[8–11] In the USA, approximately 0.6% of the population ages 13 and older identify as transgender, with an even smaller proportion identifying as transgender women.[12] In the USA, there has been a rise in legislation in many states banning transgender youth from participating in sport in the category that best aligns with their gender identity.[13] There is an association between increased suicidality and familiarity with legislation banning

transgender individuals among sexual and gender minority people.[14]

Gender-affirming hormone therapy (GAHT) is used by transgender individuals to better align their body with their gender identity.[15] Transgender women who want to display female characteristics can take oestrogen, an antiandrogen or a combination of both.[15] Oestrogen is a sex hormone that is in higher concentration in women, while antiandrogens are used to reduce testosterone levels.[15] While some argue that GAHT does not remove the unfair advantage transgender women have due to being assigned male at birth,[1–3] others argue that there is not a clear link between testosterone levels and sport performance.[16–18]

There is an urgent need to prevent bias and discrimination for cisgender and transgender women athletes while enhancing fairness in sport. The purpose of this article is to describe a protocol of a systematic and scoping review to understand disparities in sport participation of transgender women. The results may help sport organisations make informed decisions to create more inclusive and fair competition.

METHODS AND ANALYSIS

Protocol and registration

Our protocol was created using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols checklist (online supplemental appendix A)[19] and the Cochrane Handbook for Systematic Reviews of Interventions.[20]

This protocol is registered on the Open Science Framework (OSF Registration DOI: https://doi.org/10.17605/OSF.IO/GS7ZB). No ethical approval is required.

Patient and public involvement

There was no patient or public involvement in the development of this protocol.

Eligibility criteria

This systematic and scoping review will include all literature that explores disparities in sport participation (ie, participation rates, real and/or perceived barriers to participation) of transgender women. The following inclusion criteria will be used to select eligible studies: (a) studies exploring experiences of disparities in sport participation; (b) studies including transgender women of any age; (c) all literature, including grey literature; (d) studies published in the English language. Studies not meeting these criteria, as well as systematic reviews, will be excluded. The planned start date for this review is July 2023, and the planned end date is April 2024.

Search strategy

We will search five databases: PubMed, EMBASE, Web of Science, Cochrane Library and CINAHL. The search strategy was developed by an experienced biomedical librarian for all databases and grey literature (online supplemental appendix B) using a combination of keywords and subject headings.

We will download the results to ReadCube Papers 4.14.5 and remove all duplicates prior to screening.

Study selection

Two reviewers will conduct a pilot test by independently screening a random 10% of the titles and abstracts and will discuss the results together, with the aim of reaching a minimum of 80% level of agreement. After screening all the titles and abstracts, full-text screening will be performed by two reviewers. Throughout the screening, unresolved disagreements will be discussed with a senior reviewer acting as arbiter where necessary. All screening results will be tracked using a standardised form created in Microsoft Excel.

Data extraction and management

All eligible studies will undergo data extraction by two reviewers independently. The extracted data will be collected on a predesigned form in Microsoft Excel developed by the two reviewers. The data extraction form will include the following information: authors, title, publication year, country, study design type, participant characteristics (ie, age, race, level of education and years in sport), sample size, and results of disparities and barriers. The results will be discussed following the data extraction, and any disagreements will be resolved through discussion between the two reviewers or through the help of a third senior reviewer.

Quality assessment

We will use the Critical Appraisal Skills Programme Qualitative Checklist, which consists of 10 questions, to assess the appraisal of qualitative studies.[21] We will use the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Cohort Studies, which includes 11 questions to assess the overall appraisal of cohort studies.[22] We will use the JBI Critical Appraisal Checklist for Case Control Studies to assess the overall appraisal of case control studies using 10 questions.[23] Two reviewers will assess the risk of bias of included studies independently. The results will be discussed following the completion of the quality assessment, and any disagreements will be resolved through discussion between the two reviewers or through the help of a third reviewer. Grading of Recommendations, Assessment, Development and Evaluations will be used to assess the strength of the body of evidence for all outcomes.

Outcome measures and data synthesis

Included studies should report disparities and/or barriers of participation. Data will be grouped according to the type of literature (ie, quantitative and qualitative). Where possible, we will conduct subgroup analyses according to gender (eg, transgender women and cisgender women), sport played (eg, swimming, basketball, track and field) and level of play (eg, beginner, intermediate, advanced and elite).

ETHICS AND DISSEMINATION

This review does not directly involve human subjects, so ethical approval is not required. Findings from the work will be disseminated via publications in peer-reviewed journals and conferences. We expect findings will benefit sport organisations by helping with improved decision making to become more inclusive and increase fairness in sports. Sport organisations at all levels of competition need to identify and work to remove barriers to sport participation for transgender individuals.

Acknowledgements This protocol is conducted as part of the Temple University College of Public Health graduate-level course titled 'Systematic Reviews' EPBI 8307 during Spring 2022.

Contributors JLH drafted the first version of the manuscript and initiated the review question. YZ-I provided feedback on the manuscript, including the introduction, review question, search strategy and methodology, risk of bias assessment strategy, data extraction criteria and revisions. SR is a librarian who developed the initial search strategy, and AGS is a librarian who developed the revised search strategy.

Funding Publication of this article was funded in part by the Temple University Libraries Open Access Publishing Fund.

Disclaimer YZ-I is a member of a Patient-Centered Outcomes Research Institute (PCORI) Advisory Panel on Clinical Effectiveness and Decision Science

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, conduct, reporting or dissemination plans of this research.

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

ORCID iDs

Jessica L Hamdan http://orcid.org/0009-0002-0705-3538
Andrea Goldstein Shipper http://orcid.org/0000-0003-2819-4276
Stephanie Roth http://orcid.org/0000-0001-5415-1718
Yaara Zisman-Ilani http://orcid.org/0000-0001-6852-2583

REFERENCES

1 Hilton EN, Lundberg TR. Correction to: transgender women in the female category of sport: perspectives on testosterone suppression and performance advantage. *Sports Med* 2021;51:2235.
2 Roberts TA, Smalley J, Ahrendt D. Effect of gender affirming hormones on athletic performance in transwomen and transmen: implications for sporting organisations and legislators. *Br J Sports Med* 2021;55:577–83.
3 Harper J, O'Donnell E, Sorouri Khorashad B, *et al*. How does hormone transition in transgender women change body composition, muscle strength and Haemoglobin? Systematic review with a focus on the implications for sport participation. *Br J Sports Med* 2021;55:865–72.
4 Jones BA, Arcelus J, Bouman WP, *et al*. Sport and transgender people: a systematic review of the literature relating to sport participation and competitive sport policies. *Sports Med* 2017;47:701–16.
5 World Athletics. World athletics council decides on Russia, Belarus and female eligibility. 2023. Available: https://worldathletics.org/news/press-releases/council-meeting-march-2023-russia-belarus-female-eligibility [Accessed 24 Mar 2023].
6 Zeigler C, Webb K. These 36 trans athletes have competed openly in college. 2023. Available: https://www.outsports.com/trans/2022/1/7/22850789/trans-athletes-college-ncaa-lia-thomas [Accessed 15 May 2023].
7 Futterman M. FINA restricts transgender women from competing at elite level. 2022. Available: https://www.nytimes.com/2022/06/19/sports/fina-transgender-women-elite-swimming.html [Accessed 24 Mar 2023].
8 Jones BA, Arcelus J, Bouman WP, *et al*. Barriers and facilitators of physical activity and sport participation among young transgender adults who are medically transitioning. *Int J Transgend* 2017;18:227–38.
9 López-Cañada E, Devís-Devís J, Valencia-Peris A, *et al*. Physical activity and sport in trans persons before and after gender disclosure: prevalence, frequency, and type of activities. *J Phys Act Health* 2020;17:650–6.
10 Holder J, Morris J, Spreckley M. Barriers and facilitators for participation in physical activity in the transgender population: a systematic review. *Physical Activity and Health* 2022;6:136–52.
11 Oliveira J, Frontini R, Jacinto M, *et al*. Barriers and motives for physical activity and sports practice among trans people: a systematic review. *Sustainability* 2022;14:5295.
12 Herman JL, Flores AR, O'Neill KK. How many adults and youth identify as transgender in the United States? 2022. Available: https://williamsinstitute.law.ucla.edu/publications/trans-adults-united-states/ [Accessed 15 May 2023].
13 HRC Staff. ICYMI: governor lee signed tennessee's fourth anti-transgender sports ban into law; making it the state's 15th anti-LGBTQ+ law since 2015. 2023. Available: https://www.hrc.org/press-releases/icymi-governor-lee-signed-tennessees-fourth-anti-transgender-sports-ban-into-law-making-it-the-states-15th-anti-lgbtq-law-since-2015 [Accessed 01 May 2023].
14 Pharr JR, Chien L-C, Gakh M, *et al*. Serial mediation analysis of the association of familiarity with transgender sports bans and suicidality among sexual and gender minority adults in the United States. *Int J Environ Res Public Health* 2022;19:10641.
15 Irving A, Lehault WB. Clinical pearls of gender-affirming hormone therapy in transgender patients. *Mental Health Clinician* 2017;7:164–7.
16 Photopoulos J. The future of sex in elite sport. *Nature* 2021;592:S12–5.
17 Anderson E, Travers A. Transgender athletes in elite sport competitions. In: Anderson E, Travers A, eds. *Transgender athletes in competitive sport*. Routledge, 2017: 156–70.
18 Love A. The tenuous inclusion of transgender athletes in sport. In: Anderson E, Travers A, eds. *Transgender athletes in competitive sport*. Routledge, 2017: 194–205.
19 Moher D, Shamseer L, Clarke M, *et al*. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev* 2015;4:1.
20 Higgins JPT, Thomas J, Chandler J, eds. *Cochrane handbook for systematic reviews of interventions version 6.3*. Cochrane, 2022. Available: https://training.cochrane.org/handbook
21 Critical Appraisal Skills Programme. CASP qualitative checklist. 2018. Available: https://casp-uk.net/images/checklist/documents/CASP-Qualitative-Studies-Checklist/CASP-Qualitative-Checklist-2018_fillable_form.pdf [Accessed 15 May 2023].
22 Moola S, Munn Z, Tufanaru C, *et al*. Systematic reviews of etiology and risk, Chapter 7. Appendix 7.1, critical appraisal checklist for cohort studies. In: Aromataris E, Munn Z, eds. *JBI Manual for Evidence Synthesis*. JBI, 2020.
23 Moola S, Munn Z, Tufanaru C, *et al*. Systematic reviews of etiology and risk, Chapter 7. Appendix 7.2, critical appraisal checklist for case-control studies. In: Aromataris E, Munn Z, eds. *JBI Manual for Evidence Synthesis*. JBI, 2020.

PRISMA-P 2015 Checklist

This checklist has been adapted for use with protocol submissions to *Systematic Reviews* from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 **4**:1

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	☒	☐	1-2
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	☐	☒	
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	☒	☐	57
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	☒	☐	4-33
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	☒	☐	263-267
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	☐	☒	
Support					
Sources	5a	Indicate sources of financial or other support for the review	☒	☐	269-272
Sponsor	5b	Provide name for the review funder and/or sponsor	☐	☒	
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	☐	☒	
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	☒	☐	64-98
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	☒	☐	98-101
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	☒	☐	115-121
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	☒	☐	121-122, 125-128
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	☒	☐	Appendix B

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	☒	☐	129-130
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	☒	☐	133-138
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	☒	☐	141-143, 145-147
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	☒	☐	143-145
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	☒	☐	167
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	☒	☐	150-162
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	☒	☐	167-168
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2, Kendall's tau)	☐	☒	
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	☒	☐	168-171
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	☒	☐	167-168
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	☐	☒	
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	☒	☐	162-164

Appendix B: Search Strategy

Searches run on 5/12/2023 by Andrea Goldstein Shipper, MSLIS

PubMed (1809-present): 1171 results

#1	(athlet*[tiab] OR sport*[tiab] OR physical activit*[tiab] OR athletes[mesh] OR sports[mesh])
#2	(transgender*[tiab] OR transfem*[tiab] OR transwoman*[tiab] OR transwomen*[tiab] OR trans woman*[tiab] OR trans women*[tiab] OR trans people*[tiab] OR trans person*[tiab] OR transpeople*[tiab] OR transperson*[tiab] OR transsexual*[tiab] OR trans youth*[tiab] OR trans individual*[tiab] OR trans female*[tiab] OR gender identit*[tiab] OR nonbinary[tiab] OR non-binary[tiab] OR gender nonconforming[tiab] OR gender non-conforming[tiab] OR gender expansive[tiab] OR gender fluid[tiab] OR genderfluid[tiab] OR gender queer[tiab] OR genderqueer[tiab] OR gender dysphori*[tiab] OR "transgender persons"[mesh] OR transsexualism[mesh] OR "gender identity"[mesh] OR "gender dysphoria"[mesh])
#3	#1 and #2

Embase (embase.com, 1974-present): 776 results

#1	(athlet*:ab,ti OR sport*:ab,ti OR 'physical activit*':ab,ti OR athlete/exp or sport/exp)
#2	(transgender*:ab,ti OR transfem*:ab,ti OR transwoman*:ab,ti OR transwomen*:ab,ti OR 'trans woman*':ab,ti OR 'trans women*':ab,ti OR 'trans people*':ab,ti OR 'trans person*':ab,ti OR transpeople*:ab,ti OR transperson*:ab,ti OR transsexual*:ab,ti OR 'trans youth*':ab,ti OR 'trans individual*':ab,ti OR 'trans female*':ab,ti OR 'gender identit*':ab,ti OR nonbinary:ab,ti OR 'non-binary':ab,ti OR 'gender nonconforming':ab,ti OR 'gender non-conforming':ab,ti OR 'gender expansive':ab,ti OR 'gender fluid':ab,ti OR genderfluid:ab,ti OR 'gender queer':ab,ti OR genderqueer:ab,ti OR 'gender dysphori*':ab,ti OR 'transgender and gender nonbinary'/exp OR 'gender identity'/exp OR 'gender dysphoria'/exp)
#3	#1 and #2

Web of Science Core Collection (Clarivate Analytics, 1900-present): 792 results

1	TS=(athlet* OR sport* OR "physical activit*")
2	TS=(transgender* OR transfem* OR transwoman* OR transwomen* OR "trans woman*" OR "trans women*" OR "trans people" OR "trans person*" OR transpeople* OR transperson* OR transsexual* OR "trans youth*" OR "trans individual*" OR "trans female*" OR "gender identit*" OR nonbinary OR "non-binary" OR "gender nonconforming" OR "gender non-conforming" OR "gender expansive" OR "gender fluid" OR genderfluid OR "gender queer" OR genderqueer OR "gender dysphori*")

3	#1 and #2

Cochrane CENTRAL Register of Controlled Trials (Wiley): 4 results

#1	(athlet* OR sport* OR "physical activit*"):ti,ab,kw
#2	(transgender* OR transfem* OR transwoman* OR transwomen* OR "trans woman*" OR "trans women*" OR "trans people" OR "trans person*" OR transpeople* OR transperson* OR transsexual* OR "trans youth*" OR "trans individual*" OR "trans female*" OR "gender identit*" OR nonbinary OR "non-binary" OR "gender nonconforming" OR "gender non-conforming" OR "gender expansive" OR "gender fluid" OR genderfluid OR "gender queer" OR genderqueer OR "gender dysphori*"):ti,ab,kw
#3	#1 and #2

CINAHL (EBSCOhost, 1976-present): 422 results

S1	(TI (athlet* OR sport* OR "physical activit*") OR AB (athlet* OR sport* OR "physical activit*") OR MH "athletes+" OR MH "sports+")
S2	(TI (transgender* OR transfem* OR transwoman* OR transwomen* OR "trans woman*" OR "trans women*" OR "trans people" OR "trans person*" OR transpeople* OR transperson* OR transsexual* OR "trans youth*" OR "trans individual*" OR "trans female*" OR "gender identit*" OR nonbinary OR "non-binary" OR "gender nonconforming" OR "gender non-conforming" OR "gender expansive" OR "gender fluid" OR genderfluid OR "gender queer" OR genderqueer OR "gender dysphori*") OR AB (transgender* OR transfem* OR transwoman* OR transwomen* OR "trans woman*" OR "trans women*" OR "trans people" OR "trans person*" OR transpeople* OR transperson* OR transsexual* OR "trans youth*" OR "trans individual*" OR "trans female*" OR "gender identit*" OR nonbinary OR "non-binary" OR "gender nonconforming" OR "gender non-conforming" OR "gender expansive" OR "gender fluid" OR genderfluid OR "gender queer" OR genderqueer OR "gender dysphori*") OR MH "transgender persons+" OR MH "gender-nonconforming persons+" OR MH "gender dysphoria" OR MH "gender identity+")
S3	S1 and S2