

# British Triathlon Transgender Inclusion Literature Review

Final Report

## Contents

1. Executive Summary
2. Introduction
3. Methodology
4. Results
5. Recommendations

### Executive Summary

- Only 4% of the papers identified in the review directly assessed sports performance in a transgender sample, both were recreational athlete samples, and neither paper presents a clear performance advantage post transition.
- 78% of papers identified were commentary or opinion pieces based on existing literature or current events so did not present any original or new findings.
- Many studies raise the debates of 'safety' and 'fairness' when discussing the inclusion of transgender and intersex athletes.
- As a comparator some of the literature explored other factors such as medical conditions and social inequalities that can potentially result in performance advantages and the degree to which these are scrutinised or managed to ensure fairness.
- Several studies highlighted the negative experiences of transgender and intersex athletes when engaging in sport, and the long-term health impacts of exclusion from sport on transgender young people.
- Discussion focused on the movement away from gender verification in favour of an eligibility-based system.
- The majority of studies included in this review call for more research into specific elite transgender athlete performance when compared to elite cisgender athletes, as well as the exploration of different categorisation and eligibility systems to create a fair and inclusive sporting environment.

### Introduction

This document aimed to explore the current literature available on the subject of transgender inclusion in sport, with the goal of providing a solid evidence base to inform future policy development.

Cis-gender women have been historically disadvantaged with progress in women's sport a victory that has been hard won and even then still often poorly resourced when compared to male sport. One example of this is the decade long battle for female only public spaces such as toilets and changing rooms (Jones & Slater, 2020, Molotch, 2010). Many women feel these spaces are necessary to protect women from men and the real risks of male violence (Jeffreys, 2014, Ramster et al., 2018). Often some of the reluctance towards inclusive or gender free spaces stems from the fear associated with male intrusion on female 'safe spaces'.

Through the history of women's sport, female athletes have also been exposed to stringent, intrusive and often unnecessary gender verification processes. From mandatory 'nude parades' where doctors would inspect athletes' external genitalia, to chromosome testing that produced many false positives having catastrophic impacts on athletes' careers. The current policy has moved away from mandatory testing of all athletes and focuses on the measurement of testosterone levels to measure eligibility of athletes whose gender is deemed to be 'suspicious'.

This focus on suspicion and accusation only contributes to the vilification of transgender and intersex people, a community that is already dangerously oppressed and vulnerable. A study by the National LGB&T Partnership (2015) reported that 64% of people who identified as gender diverse were not physically active enough to maintain good health. This is part of a worrying trend of literature demonstrating poor physical and mental health related to lack of trans awareness, inaccessibility of services, gendered paperwork and the fear of discrimination (Guadalupe-Diaz, 2017; Pryor, 2019; Zwickl, 2019). This literature highlights the public health importance of making sport accessible for transgender and intersex people.

Transgender inclusion in sport is often discussed as a 'difficult subject', with the Transgender community often vilified in the media as 'cheats' or made out to be 'dangerous' and 'a threat to women'. This narrative is often driven by specific feminist groups. There is an ever-widening divide within feminist thinking between 'trans-inclusive' feminism and 'gender-critical' feminism, with some but not all who ascribe to the latter associated with the term TERF (trans-exclusionary radical feminism). The important factor that links these different groups is the premise that biological sex is fixed and an essential

factor to feminism, believing that the inclusion of trans individuals (more specifically trans women) is incompatible with feminism and womanhood (Pearce, Erikainen & Vincent, 2020). It is important to note that the term 'TERF' can be experienced by some as descriptive of a particular political/philosophical position, yet it is increasingly being used as an offensive slur (Bettcher, 2017).

It is very important that discussion and discourse around transgender inclusion considers the viewpoints of all involved, but equally it is important to recognise that not all involved have the same opportunity to have their voice heard. This review aims to showcase all voices in an equitable manner and move away from the unhelpful dissension presented in the press.

## Methodology

The current review was conducted using the PRISMA guidelines for systematic reviews (Page, 2020).

## Terminology

Due to the changing nature of the understanding of sex and gender many of the terms used in the research considered as part of the review were outdated. Often terms such as transexual or disorders of sexual development (DSD) are used, but for the purposes of the current review more recent terminology will be used. Provided below is a basic overview of current terminology use in the current review.

### *Transgender*

An umbrella term that refers to those whose gender identity does not align with the sex they were assigned at birth. There are binary transgender identities such as 'a transgender woman' (a woman who was assigned male at birth) and 'a transgender man' (a man that was assigned female at birth). Additionally, there are non-binary transgender identities (those whose gender identity does not fall into the category of male or female) such as gender neutral or gender fluid.

### *Cisgender*

A term that refers to people whose gender identity aligns with the sex they were assigned at birth and fits within the male/female binary.

### *Sex assigned at birth*

A term that refers to the biological sex assigned to an individual at birth based on the presentation of their external genitalia, most often either male or female.

### *Intersex*

A term that refers to people whose biological sex does not fit comfortably in the category of 'male' and female'. Historically referred to as disorders of sexual development (DSD) or hermaphroditism, terms that can now be interpreted as offensive by some. Intersex in a sporting context is often in reference to conditions such as hyperandrogenism and Klinefelter syndrome (XXY Chromosomes).

### *Transition*

A term that refers to the process some transgender individuals undergo. Medical transition includes processes such as hormone replacement therapies and gender reassignment surgery. Social transition includes the process of living publicly and privately in the individuals true gender. It is important to note that medical transition is not necessary for all transgender individual and is not a precursor to a transgender identity.

## **Searches**

To inform this literature review, in February 2022, systematic searches were undertaken using relevant scientific databases: OVIDMedline, PsycArticles, Embase and PsycINFO. Additionally, citation searching was conducted on papers selected for review. Five search terms were used to identify research with a transgender focus (Trans/trans\*, Transgender, gender minority, non-binary, intersex). Three search terms were used to identify research with a sports performance focus (sport performance, elite sport, sport).

## **Inclusion/Exclusion Criteria**

Research papers identified during the search process were screened initially by title and abstract to establish if they met the inclusion/exclusion criteria below. A further screening of the full text was conducted for articles where it was unclear if they met the criteria from title and abstract alone

<b>Inclusion Criteria</b>	<b>Exclusion Criteria</b>
Any date	Not available in English language
Primary or Secondary research	Not available due to publication embargo

Primary research must have a clear transgender/intersex sample	Primary research where transgender/intersex sample is not identifiable
Secondary research must have a clear narrative around transgender/intersex inclusion/exclusion based on verifiable fact	Secondary research where no peer reviewed research is referenced

### Quality Assessment

Due to the low number of papers identified low quality was not used as a criteria for exclusion.

### Data Extraction and Synthesis

Articles were read and data extracted, then entered into an evidence table. The following variables were collected: Author/s, publication date, publication type, main findings, recommendations for policy. Due to the variety of methodological approaches and high number of secondary research papers identified, a narrative synthesis approach was used, where key messages from the research were coded into common themes.

## Results

### Demographic Findings

Initial searching of four subject specific databases identified 233 academic papers, 49 of which were duplications. Following the screening process 37 papers were identified that met the inclusion criteria and were included in the review. A further 13 papers were identified through citation searching, meaning 50 papers were included in the review. The papers year of publication ranged from 2000 to 2022 with the majority being published post 2015. 78% of the papers identified were secondary research presenting no original findings, but reviewing or commenting on existing literature. The majority of secondary literature identified was commentary/editorial papers (N=26) as well as literature reviews (N=11) and book chapters (N=2). Only 22% of papers identified presented original findings, using qualitative (N=19), quantitative (N=1) and mixed methods (N=1).

### **Lack of Primary Research with Transgender Sample**

Surprisingly, only 2 of the papers presenting original findings directly assessed sports performance in a transgender sample, others focused on the barriers and facilitators to sport and physical activity in the transgender community (N=6) or the general public opinion to transgender inclusion in sport (N=2). Of the two papers investigating performance levels in transgender athletes, both were recreational athlete samples consisting of 8 transgender women (Harper, 2015) and 17 transgender men/19 transgender women (Gooren & Bunck 2004).

Harper (2015) explored the different self-reported race times of 8 transgender recreational distance runners over a period of years, the main findings reported that self-reported race time were slower after transition. The study also used age grading to take account for the changes in performance over the duration of the study, when age was taken into account athletes had similar age graded scores against cis-gender males before transition and against cis-gender females after transition, supporting the assertion that medical transition negatively impacts endurance running performance. It is important to note that this study uses a very small recreational athlete sample and self-report race times. Authors highlighted that recruiting an elite sample of transgender athletes was not possible as there were no elite transgender distance runners at the time. Additionally, the authors did attempt to verify race times where possible, and none of the times that were verifiable were found to be incorrect, suggesting the participants were truthful with their self-reported times.

Gooren and Bunck (2004) explore the difference in muscle area in 17 transgender men and 19 transgender women, findings suggest that muscle area reduces in transgender women and increases in transgender men post medical transition. The authors highlighted that while the transgender women after transition retained more muscle area than the transgender men before transition (who had completed female puberty) there was a clear overlap between groups, and the retained muscle in the transgender female was within the 'normal' limits of cisgender women. Transgender men increased testosterone and muscle mass to within cisgender male norms. Whereas transgender women's testosterone levels decreased to 'castration levels' and muscle area significantly decreased after 1 year of hormone replacement treatment, with no further reduction after 3 years suggesting a plateau in reduction. Similar to Harper (2015) there were distinct limitations to the study including sample size and the narrow focus on muscle area and plasma testosterone levels. Additionally, the sporting aspects of the study were minimal, the physical activity and sporting levels of the participants was not clear and there



was no direct comparisons to cisgender individuals. Moreover, the current literature does not consider the impacts of an individual's age at the time of transition, and if an individual transitions pre, during or post puberty has a different impact on their athletic performance (Rizzone, 2022). Gooren and Bunck (2004) reports a comparison pre and post transition, yet is based on the assumption that a pre-transition transgender sample would equate cisgender norms, but without comparison to a cisgender control sample this cannot be confirmed.

Many of the other papers included in the review refer to research exploring the performance difference between cisgender males and cisgender females to extrapolate the potential of a transgender advantage (Anderson, Knox & Heather, 2019; Hamilton et al., 2021; Hilton & Lundberg, 2021; Knox, Anderson & Heather, 2019; Pike, 2021). Yet, it is clear there is a dearth of research specifically exploring the so-called transgender advantage, sport performance in transgender individuals or anything specifically relevant to intersex or non-binary individuals. Furthermore, the two studies presented above do not offer a conclusive answer to the questions of whether transgender athletes experience a performance advantage over cisgender athletes.

### **What does a fair playing field look like?**

“Fair sports competition does not require that athletes be equal in every imaginable respect” (Murray, 2010, p. 13).

Often transgender inclusion is discussed in the terms of fairness and maintaining fairness in the face of potential advantage. This argument is based on the premise that transgender athletes (more specifically transgender and intersex women) have a performance advantage over cisgender women. (It is worth noting that there is very little concern about any potential advantage or disadvantage experienced by transgender or intersex men, with many policies stating that transgender men can compete “without restriction”.)

If we overlook that lack of empirical evidence for a transgender advantage and instead explore assumption found in some of the literature that a transgender advantage exists based on evidence from cisgender males, would this be a valid assertion?

It is well established in the literature that cisgender males have a physical advantage over cisgender females and this extends to sports performance (Haizlip, Harrison, & Leinwand, 2015; Sandbakk, Solli, & Holmberg, 2018).

Additionally, there is literature that suggests the performance advantage of higher levels of free testosterone in cisgender women, enables these women to perform better than those with lower testosterone levels in a variety of track and field events (Bermon & Garnier, 2017). The authors have later published an addendum to highlight that there is no proof of causality and that the study was exploratory and further research is necessary to establish if there is causal relationship between better performance and higher testosterone levels in cisgender women (Bermon & Garnier, 2021).

Many papers included in this review use the physical advantage documented in cisgender athletes to propose the 'safety' narrative, that the exclusion of transgender and intersex women is justified as they present safety concern if allowed to compete with cisgender women (Carbmill Consulting/SCEG, 2020; Hilton & Lundberg, 2021; Pike, 2021). Following this narrative it is important to consider the safety implications within contact sports, Pike (2021) posits that safety must come above fairness and inclusion, and if the inclusion of transgender women in women's rugby increases the risk of harm, then it is unsafe to allow transgender women to compete. In many sports (e.g. combat sports) if those with higher levels of strength and muscle mass present a safety concern to those with lower levels it is often mitigated by additional classifications such as weight. Yet many cisgender athletes are physically stronger than others but compete in the same event, at what point does this become an 'unfair' advantage and a safety concern.

This fairness narrative and the difference between 'fair' and 'unfair' advantage is discussed at length in several of the papers included in the review. Karkazis et al. (2012) raises the point that athletes with Hyperandrogenism (intersex) are simply born with a naturally occurring variations that could potentially afford an advantage, just like Marfan Syndrome could give a height advantage, Myostatin-Related Muscle Hypertrophy could give a strength advantage or Ehlers-Danlos Syndrome could give a flexibility advantage, yet these conditions are not monitored or policed in the same way.

Wahlert & Fiester (2012) go as far as to suggest that transgender and intersex athletes should not be considered in the same debate, that intersex athletes should not be considered in anyway as cheating as any advantage they have is naturally occurring, yet transgender athletes are changing their hormone levels by using 'unnatural' means. While the sentiment towards transgender athletes could be interpreted as hostile, there is a level of consistency around the discussion of medical conditions that could offer potential performance advantage. While most of the research included in this review aims to discuss transgender inclusion in sport there is a conflation between transgender and

intersex athletes, the examples used to suggest a transgender advantage are more often than not intersex athletes such as Caster Semenya and Dutee Chand.

A commentary paper written by Cooky and Dworkin (2013) questions at what point does an advantage become unfair and why is there not regulation and testing for other medical conditions or physical changes that could present an unfair advantage. The authors also raise the point that other socio-economic factors such as race, class, access to equipment could present performance advantages and disadvantages but these are deemed 'fair' advantages. For example when Usain Bolt set a world record in the 2009 World Championships he was wearing shoes that were specifically designed for him, this type of technology was not available for all runners, yet this was not deemed an 'unfair' advantage.

Another narrative that emerges from the debate of fairness is the influence of sexism within the sporting system and the view of cisgender women as the 'weaker sex' who need protection (McDonagh & Pappano, 2008), and that there needs to be a move away from preconceived ideas of transgender and intersex athletes as a threat to the cisgender women (Xavier & McGill, 2012). Sánchez, Martínez-Patiño & Vilain (2013) posits the focus on the testosterone levels in transgender and intersex women and the lack of concern for the variability of testosterone levels in male athletes highlights the sexist nature of the sporting system. Are cisgender men with naturally higher testosterone levels also gaining an 'unfair' advantage? And do those cisgender men who have naturally lower levels of testosterone need protecting on the grounds of 'safety' and 'fairness'? This is where Wall (2020) propose a clarification of the goal of fairness. The author posits if the goal is a victor to emerge from a completely level hormonal playing field then hormonal levels should be monitored and regulated for all athletes to ensure no one is disadvantaged. Alternatively, if the goal is a victor to emerge from a completely competitively level playing field then socioeconomic inequalities present a much more pressing concern than transgender and intersex athletes (Wall, 2020).

### **Impacts in the individual**

Several of the papers included in the review explore the impacts of inclusion on individual athletes and the overall impacts on the transgender community. The majority of transgender individuals questioned in the current literature report having negative experiences of engaging in physical activity and sport (Hargie, Mitchell & Somerville, 2017; Jones et al, 2017; Pereira-García et al 2021). They report experiencing external discrimination such as transphobia, hostility from other athletes, difficulty negotiating

changing spaces and being misgender, as well as internal struggles such as shame, not knowing when to switch teams and struggling with gendered clothing (Caudwell, 2014; Elling-Machartzki, 2014, Herrick, Rocchi, & Couture; 2020; Travers & Deri, 2011).

A study by Cohen & Semerjian (2008) detailed the experiences of 'Angela' a transgender ice hockey player who was exposed to discriminatory treatment such as being publicly outed and asked by officials to show her genitals to prove her gender, which had a catastrophic affect on her health and wellbeing. Transgender individuals face huge barriers to becoming sufficiently active to maintain good basic health (LGB&T Partnership, 2015), and many feel that if further barriers are put in place around sporting participation this could have a long term effect on the health and wellbeing of transgender young people, as they are being shown that sport is no place for them (Barrara, Millington & Kremen, 2021). Throughout this debate it is important to remember that transgender athletes are individuals and they are a whole generation of young people who will be impacted upon in the future.

### **Gender or Eligibility?**

Throughout many of the papers included in this review there is a narrative focused on sex segregation, gender verification and the possibility of alternative categorisation methods.

Many applauded the move away from requiring athletes to have gender reassignment surgery and legal recognition of their gender in order to compete, viewing this as unethical and inaccessible, as surgery and legal gender recognition are not legal in many countries (Genel, 2017; Newbould, 2016). Yet the move away from mandatory gender verification was met with mixed feelings, where some felt although this was a positive move for cisgender female athletes, it compounded the discrimination experience by transgender and intersex athletes as gender verification would only be undertaken when an athlete's gender was deemed 'suspicious' (Cooky & Dworkin, 2013; Mahomed & Dhai, 2019).

Many of the papers commented on the inconsistent nature and often unsuccessful approaches to gender verification in sporting history, from external examination, which was unnecessarily invasive, embarrassing and hugely inaccurate to chromosomal patterning, which did not take into account of physiology or psychology as well as being unreliable in the case of many intersex athletes. Gender verification was replaced by the polymerase chain reaction (PCR) test of the SRY gene, which was also unreliable and lead to many

false positives destroying athletes' careers, before the move to the current system of serum testosterone testing.

Despite this, Harper et al. (2018) held three separate public events to gain the perspectives of the general population on gender verification, 43% were in favour of chromosomal testing and 36% of gonadal sex (which is determined from external exam), both of which are less reliable than serum testosterone testing. These findings highlight the vital need for detailed knowledge on the subject of gender verification to inform accurate policies.

The ethical considerations associated with gender verification were discussed, with some feeling that the testing process was unethical, violating human rights, as well as national and international genetic privacy laws (Elsas et al., 2000; Mahomed & Dhali, 2019; Teetzel, 2006; Wiesemann, 2011; Winkler & Gilleri, 2021). Additionally, Karkazis & Carpenter (2018) highlight that current guidance could be interpreted as contravening itself stating "no athlete will be forced to undergo any assessment and/or treatment under these Regulations" whilst also requiring certain athletes to undergo treatments or take medications to satisfy eligibility.

Many feel the more productive approach would be to move away from gender verification in favour of the eligibility system. Yet this would require recognition of current flaws, for example the current regulations recognise and respect self-identification and that a transgender woman is a woman, however should she not meet the eligibility criteria to compete in the female category she would be unable to compete in the male category due to being a woman (Newbould, 2016). Whereas a move towards a true eligibility-based system would see those whose testosterone levels are below the decided level would compete in one event and those above would compete in another, regardless of gender identity.

### **Limitations**

It is important to recognise that this literature review, like any has limitations. The current review was restricted to papers published in the English language and used a limited number of databases meaning there is no guarantee to have found every relevant paper if they were published in fields outside of sport, ethics, psychology, sociology, medicine or public health. Additionally, gender and sex terminology and policy are continuously changing, so many papers included in the view were outdated purely due to the evolving nature of the debate. It is also important to recognise the high levels of emotion attached

to this subject, and while it is impossible to be truly unbiased, this review aimed to present the messages presented in the current literature in as balanced a way as possible.

## Recommendations

The following recommendations have been identified from the studies considered within this review.

### 1. More specific research is necessary for an informed policy development process

There needs to be a move away from opinion and discussion and the over interpretation of limited and flawed research, and a focus on specific, robust experimental investigation. As stated above there is a current gap in the literature related to performance in transgender athletes, specifically there are no studies exploring performance in elite transgender athletes. Furthermore, there is a necessity for exploration around the potential mitigating factor of the age of transition. As it is widely accepted that there is little performance difference across the sexes in pre-pubescent children it is necessary to explore if pre, during and post puberty transition has an impact on testosterone levels, muscle strength and other performance indicators. Moreover, specific research into the needs of non-binary athletes is necessary as no literature included in this review focused on this cohort.

### 2. All parties should be involved in the discussion

It is important that all parties are involved in any decisions made about policy development. It is also vital that there is a recognition of the inequalities faced by certain groups, that more weight should not be given to the bigger or louder group but that every voice is heard in an equitable fashion. Existing studies demonstrate that public opinion on issues surrounding gender are often outdated or ill-informed. This is not always a sign of fault or choice, the legacy of Section 28 and other discriminatory legislation means that education about identities beyond heterosexual and cisgender was not easily accessible until recently. It is important to ensure consultation is driven by fact and relevant research, and not by the court of public opinion.

### 3. Explore eligibility over gender verification

A focus on an eligibility system could make a movement towards inclusivity whilst mitigating the risks associated with safety and fairness. Ensuring all athletes whether

cisgender, transgender or intersex are held to the same criteria fosters true inclusivity. Additionally, it is important to question the true requirements of the particular sport when considering eligibility criteria. As part of this consideration should be given to all inequalities that could lead to potential performance advantage. This is a important area for more research and consultation to explore, potentially piloting specific events with an eligibility system on a small scale to explore if it a viable option for the sport.

#### 4. Explore alterative categorisation

Many studies in the current review proposed alternative categorisation methods other than sex segregation. For example a handicap system like golf (Bianchi, 2017; Winkler & Gilleri, 2021) or an algorithmic system like that used in the Paralympics (Anderson, Knox & Healthier, 2019). However, there is a recognition by the authors that these would be difficult and time consuming to develop.

#### 5. Explore alternative options for different levels of competition

Exploring more inclusive models in recreational and lower-level competitions, before moving them into elite level competition is a good way of trialling inclusive approaches and other methods of categorisation other than sex segregation. The SCEG guidance highlighted participants felt there should be a different approach to transgender inclusion in grassroots sport (Carbmill Consulting/SCEG, 2021). See Newman and Witcomb (in press) for further detail on non-sex segregated competitive sport.

## References

- Anderson, L., Knox, T., & Heather, A. (2019). Trans-athletes in elite sport: inclusion and fairness. *Emerging topics in life sciences*, 3(6), 759-762.
- Barrera, E., Millington, K., & Kremen, J. (2021). The Medical Implications of Banning Transgender Youth From Sport Participation. *JAMA pediatrics*.
- Bermon, S. & Garnier, P. (2017) Serum androgen levels and their relation to performance in track and field: mass spectrometry results from 2127 observations in male and female elite athletes, *British Journal of Sports Medicine*;51:1309-1314.
- Bermon, S. & Garnier, P. (2021) Correction: Serum androgen levels and their relation to performance in track and field: mass spectrometry results from 2127 observations in male and female elite athletes; *British Journal of Sports Medicine* ;55:e7.
- Bettcher, T. M. (2017). Trans feminism: recent philosophical developments. *Philosophy Compass*, 12(11), e12438.
- Bianchi, A. (2017). Transgender women in sport. *Journal of the Philosophy of Sport*, 44(2), 229-242.
- Carbmill Consulting/SCEG (2020) SCEG Project for Review and Redraft of Guidance for Transgender Inclusion in Domestic Sport 2021, Project Report, available online: <https://www.ukssport.gov.uk/news/2021/09/30/transgender-inclusion-in-domestic-sport>
- Caudwell, J. (2014). [Transgender] young men: Gendered subjectivities and the physically active body. *Sport, Education and Society*, 19(4), 398-414.
- Cohen, J. H., & Semerjian, T. Z. (2008). The collision of trans-experience and the politics of women's ice hockey. *International Journal of Transgenderism*, 10(3-4), 133-145.
- Cooky, C., & Dworkin, S. L. (2013). Policing the boundaries of sex: A critical examination of gender verification and the Caster Semenya controversy. *Journal of sex research*, 50(2), 103-111.
- Elling-Machartzki, A. (2017). Extraordinary body-self narratives: Sport and physical activity in the lives of transgender people. *Leisure Studies*, 36(2), 256-268.
- Elsas, L. J., Ljungqvist, A., Ferguson-Smith, M. A., Simpson, J. L., Genel, M., Carlson, A. S., ... & Ehrhardt, A. A. (2000). Gender verification of female athletes. *Genetics in Medicine*, 2(4), 249-254.
- Foddy, B., & Savulescu, J. (2011). Time to re-evaluate gender segregation in athletics?. *British Journal of Sports Medicine*, 45(15), 1184-1188.
- Genel, M. (2017). Transgender athletes: how can they be accommodated?. *Current sports medicine reports*, 16(1), 12-13.



- Gooren, L. J., & Bunck, M. C. (2004). Transsexuals and competitive sports. *European Journal of Endocrinology*, 151(4), 425-430.
- Guadalupe-Diaz, X. L., & Jasinski, J. (2017). "I wasn't a priority, I wasn't a victim" challenges in help seeking for transgender survivors of intimate partner violence. *Violence against women*, 23(6), 772-792.
- Haizlip, K. M., Harrison, B. C., & Leinwand, L. A. (2015). Sex-based differences in skeletal muscle kinetics and fiber-type composition. *Physiology*, 30(1), 30-39.
- Hamilton, B. R., Guppy, F. M., Barrett, J., Seal, L., & Pitsiladis, Y. (2021). Integrating transwomen athletes into elite competition: the case of elite archery and shooting. *European journal of sport science*, 21(11), 1500-1509.
- Handelsman, D. J., Hirschberg, A. L., & Bermon, S. (2018). Circulating testosterone as the hormonal basis of sex differences in athletic performance. *Endocrine reviews*, 39(5), 803-829.
- Hargie, O. D., Mitchell, D. H., & Somerville, I. J. (2017). 'People have a knack of making you feel excluded if they catch on to your difference': Transgender experiences of exclusion in sport. *International Review for the Sociology of Sport*, 52(2), 223-239.
- Harper J. (2015) Race times for transgender athletes. *Journal of Sporting Cultures Identities*, 6:1Y9.
- Harper, J., Lima, G., Kolliari-Turner, A., Malinsky, F. R., Wang, G., Martinez-Patino, M. J., ... & Pitsiladis, Y. P. (2018). The fluidity of gender and implications for the biology of inclusion for transgender and intersex athletes. *Current sports medicine reports*, 17(12), 467-472.
- Harper, J., Martinez-Patino, M. J., Pigozzi, F., & Pitsiladis, Y. (2018b). Implications of a third gender for elite sports. *Current sports medicine reports*, 17(2), 42-44.
- Harper, J., O'Donnell, E., Khorashad, B. S., McDermott, H., & Witcomb, G. L. (2021). 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. *British Journal of Sports Medicine*, 55(15), 865-872.
- Herrick, S. S., Rocchi, M. A., & Couture, A. L. (2020). A Case Study Exploring the Experiences of a Transgender Athlete in Synchronized Skating, a Subdiscipline of Figure Skating. *Journal of Sport and Social Issues*, 44(5), 421-449.
- Hilton, E. N., & Lundberg, T. R. (2021). Transgender women in the female category of sport: perspectives on testosterone suppression and performance advantage. *Sports Medicine*, 51(2), 199-214.
- Ingram, B. J., & Thomas, C. L. (2019). Transgender policy in sport, a review of current policy and commentary of the challenges of policy creation. *Current sports medicine reports*, 18(6), 239-247.

- Jeffreys, S. (2014). The politics of the toilet: A feminist response to the campaign to 'degender' a women's space. *Women's Studies International Forum*, 45, 42–51.
- Jones, B. A., Arcelus, J., Bouman, W. P., & Haycraft, E. (2017). Sport and transgender people: a systematic review of the literature relating to sport participation and competitive sport policies. *Sports Medicine*, 47(4), 701-716.
- Jones, C., & Slater, J. (2020). The toilet debate: Stalling trans possibilities and defending 'women's protected spaces.' *The Sociological Review*, 68(4), 834–851.  
<https://doi.org/10.1177/0038026120934697>
- Karkazis, K., & Carpenter, M. (2018). Impossible "choices": The inherent harms of regulating women's testosterone in sport. *Journal of bioethical inquiry*, 15(4), 579-587.
- Karkazis, K., Jordan-Young, R., Davis, G., & Camporesi, S. (2012). Out of bounds? A critique of the new policies on hyperandrogenism in elite female athletes. *The American journal of bioethics*, 12(7), 3-16.
- Knox, T., Anderson, L. C., & Heather, A. (2019). Transwomen in elite sport: scientific and ethical considerations. *Journal of medical ethics*, 45(6), 395-403.
- Mahomed, S., & Dhai, A. (2019). Global injustice in sport: the Caster Semenya ordeal—prejudice, discrimination and racial bias—medicine and the law. *South African Medical Journal*, 109(8), 548-551.
- Martínez-Patiño, M. J., Vilain, E., & Bueno-Guerra, N. (2016). The unfinished race: 30 years of gender verification in sport. *The Lancet*, 388(10044), 541-543.
- Martínková, I., Parry, J., & Imbrišević, M. (2021). Transgender Athletes and Principles of Sport Categorization: Why Genealogy and the Gendered Body Will Not Help. *Sport, Ethics and Philosophy*, 1-13.
- McDonagh, E., & Pappano, L. (2008). Playing with the boys.(Vol. 1, pp. 1-349).
- Molotch, H. (2010). Introduction: Learning from the loo. In H. Molotch & L. Norén (Eds.), *Public restrooms and the politics of sharing* (pp. 1–20). New York University Press.
- Morris, J. F., & Van Raalte, J. L. (2016). Transgender and gender nonconforming athletes: Creating safe spaces for all. *Journal of Sport Psychology in Action*, 7(2), 121-132.
- Murray, T. H. (2010). Making sense of fairness in sports. *Hastings Center Report*, 40, 13–15.
- National LGB&T Partnership (2015) *Lesbian, Gay, Bisexual and Trans People and Physical Activity: What You Need To Know*, Retrieved from <https://nationallgbtpartnershipdotorg.files.wordpress.com/2016/02/lgbt-people-and-physical-activity-what-you-need-to-know.pdf>
- Newbould, M. J. (2016). What do we do about women athletes with testes?. *Journal of Medical Ethics*, 42(4), 256-259.

- Newman, H.J.H. & Witcomb G.L. (in press) Ripping up the rulebook: Challenges and opportunities in moving beyond the binary. In G. L. Witcomb & E. Peel (eds.) *Gender Diversity and Sport: Interdisciplinary perspectives on increasing inclusivity*. London: Routledge.
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Bmj*, 372.
- Pearce, R., Erikainen, S., & Vincent, B. (2020). TERF wars: An introduction. *The Sociological Review*, 68(4), 677-698.
- Pereira-García, S., Devís-Devís, J., Fuentes-Miguel, J., Sparkes, A. C., & Pérez-Samaniego, V. (2021). Exploring Trans People's Narratives of Transition: Negotiation of Gendered Bodies in Physical Activity and Sport. *International Journal of Environmental Research and Public Health*, 18(18), 9854.
- Pike, J. (2021). Safety, fairness, and inclusion: transgender athletes and the essence of Rugby. *Journal of the Philosophy of Sport*, 48(2), 155-168.
- Pryor, R. E., & Vickroy, W. (2019). "In a Perfect World, You Wouldn't Have to Work the System to Get the Things You Need to Survive": A Pilot Study About Trans Health Care Possibilities. *Transgender health*, 4(1), 18-23.
- Ramster, G., Greed, C., & Bichard, J. A. (2018). How inclusion can exclude: The case of public toilet provision for women. *Built Environment*, 44(1), 52-76.
- Ritchie, R., Reynard, J., & Lewis, T. (2008). Intersex and the Olympic games. *Journal of the Royal Society of Medicine*, 101(8), 395-399.
- Rizzone, K. (2022). World in transition: sport and transgender athletes. *British journal of sports medicine*, 56(3), 125-126.
- Sánchez, F. J., Martínez-Patiño, M. J., & Vilain, E. (2013). The new policy on hyperandrogenism in elite female athletes is not about "sex testing". *Journal of sex research*, 50(2), 112-115.
- Sandbakk, Ø., Solli, G. S., & Holmberg, H. C. (2018). Sex differences in world-record performance: the influence of sport discipline and competition duration. *International journal of sports physiology and performance*, 13(1), 2-8.
- Teetzel, S. (2020). On transgendered athletes, fairness and doping: An international challenge. In *Doping in Sport* (pp. 51-75). Routledge.
- Torres, C. R., Lopez Frias, F. J., & Patiño, M. J. M. (2020). Beyond physiology: Embodied experience, embodied advantage, and the inclusion of transgender athletes in competitive sport. *Sport, Ethics and Philosophy*, 1-17.
- Travers, A. (2006). Queering sport: Lesbian softball leagues and the transgender challenge. *International Review for the Sociology of Sport*, 41(3-4), 431-446.

- Travers, A. (2013). Thinking the unthinkable: Imagining an “un-American,” girl-friendly, women-and trans-inclusive alternative for baseball. *Journal of Sport and Social Issues*, 37(1), 78-96.
- Travers, A., & Deri, J. (2011). Transgender inclusion and the changing face of lesbian softball leagues. *International Review for the Sociology of Sport*, 46, 488–507. doi:10.1177/1012690210384661
- Tucker, R., & Collins, M. (2010). The science of sex verification and athletic performance. *International journal of sports physiology and performance*, 5(2), 127-139.
- Wahlert, L., & Fiester, A. (2012). Gender transports: Privileging the “natural” in gender testing debates for intersex and transgender athletes. *The American Journal of Bioethics*, 12(7), 19-21.
- Wall, J. (2020). Caster semanya and a level playing field. *Journal of Medical Ethics*, 46(9), 563-564.
- Wiesemann, C. (2011). Is there a right not to know one's sex? The ethics of ‘gender verification’ in women's sports competition. *Journal of Medical Ethics*, 37(4), 216-220.
- Winkler, M., & Gilleri, G. (2021). Of Athletes, Bodies, and Rules: Making Sense of Caster Semenya. *Journal of Law, Medicine & Ethics*, 49(4), 644-660.
- Xavier, N. A., & McGill, J. B. (2012). Hyperandrogenism and Intersex controversies in Women's Olympics. *The Journal of Clinical Endocrinology & Metabolism*, 97(11), 3902-3907.
- Zwickl, S., Wong, A., Bretherton, I., Rainier, M., Chetcuti, D., Zajac, J. D., & Cheung, A. S. (2019). Health needs of trans and gender diverse adults in Australia: A qualitative analysis of a national community survey. *International journal of environmental research and public health*, 16(24), 5088.