

SYSTEMATIC REVIEW

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Challenges and successes in promoting gender equality through physical education and sports: a systematic review

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Abstract

Background Physical education and sport can contribute to gender equality by supporting physical, mental, and social well-being. However, persistent challenges, including social norms, gender discrimination, and structural barriers, continue to limit progress in these areas.

Methods This study used a systematic review methodology following the PRISMA protocol. A thematic analysis of 65 relevant studies was carried out to examine the progress and ongoing challenges in advancing gender equality through physical education and sports.

Results The analysis indicates that educational programmes, progressive policies, and innovative teaching methods have contributed to advancing gender equality, particularly through increased representation of female athletes and leaders, who serve as influential role models. However, these positive developments face challenges, including limited resources, educators' insufficient awareness of gender issues, and the short-term nature of many interventions.

Conclusion The findings highlight the essential need for long-term systemic strategies aimed at amplifying educator awareness, fortifying women's leadership opportunities, and dismantling structural inequities. Future research must prioritize the development of culturally responsive interventions and an in-depth examination of varied socioeconomic contexts to forge more inclusive and sustainable pathways to achieving gender equality in physical education and sports.

Trial registration The completed PRISMA checklist is provided as a supplementary file and is also available via the Figshare repository: <https://figshare.com/s/a088d4ef6e3b26cfd987>

Keywords Gender equality, Physical education and sport, Sports policy, Successes, Challenges, Discrimination

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Introduction

Physical education and sport are fundamentally crucial to the holistic development of individuals, playing a pivotal role in shaping health, enhancing resilience, and forging strong, adaptable communities. Their influence on the advancement of gender equality is uniquely manifested in different regions, indicating a wide spectrum of impacts. Gender equality, the imperative for human rights, is intricately linked to the Sustainable Development Goals (SDGs) outlined by the United Nations (UN) in 2015 [1]. In particular, SDG 5 is dedicated to promoting gender equality and empowerment of women, while SDG 4 advocates the cause of inclusive and equitable education for all. Recent research by Vaquero-Cristóbal et al. [2], provides compelling evidence from European women athletes and sports professionals, highlighting persistent gender disparities in sport participation and leadership roles that require systemic intervention.

Several studies highlight the role of physical education in promoting gender equality. As reported by United Nations Educational, Scientific and Cultural Organization (UNESCO) [3, 4], sports hold a decisive role in elevating awareness and challenging entrenched gender norms, significantly shaping students' perceptions and attitudes towards gender roles. This aligns with del Castillo Andrés et al.'s [5], findings on how information systems can be leveraged to promote gender equality in physical education settings. Furthermore, UNESCO's "Quality Physical Education (QPE)" guidelines [6], published in 2015, tirelessly advocate for restructuring educational practices to support gender equality, emphasizing sport's instrumental role in developing critical social skills and persistently challenging societal norms.

Talbot's [7] critical examination of gendered practices in physical education underscores how institutionalized sexism continues to shape curricular and pedagogical approaches, a concern that becomes particularly salient when considering the World Economic Forum's [8] sobering revelation about the glacial pace of progress towards gender equality, projecting full parity a daunting 134 years away. The stagnation in gender parity within education, stubbornly lingering at 94.9%, demands immediate and vigorous efforts, especially in the world's low- and middle-income countries. Shehu et al. [9] highlight a troubling negative correlation between the participation of girls in sports and egalitarian attitudes in Botswana, painting a grim picture. This echoes Lock's [10], early observations about systemic barriers to women's participation in sport and physical education that persist decades later. Guerrero and Guerrero Puerta [11] shine a light on the crucial role of empowering educators to promote gender equality within the realms of physical

education, while Ribeiro-Silva et al. [12] call for strategies and the promotion of equal play opportunities.

The barrier of established gender norms stifles progress; as Staurowsky et al. [13], these barriers manifest in policy, practice and pedagogy in both physical education and athletics. Organista [14] reveals the widespread impact of heteronormative communication within Polish physical education, and Devine [15] on the androcentric bent of sports politics in the UK. Dewar's [16] foundational work on the social construction of gender in physical education remains remarkably relevant today, explaining how these systemic biases become institutionalised. Adding to this landscape of challenges, Lynch et al. [17] examine government policies that negatively affect girls' sports participation. The study by Iglesias and Fernandez-Rio [18] documents female under-representation in academia. However, hope flickers as Salazar [19] observes a promising surge in female sports participation in Mexico, a movement buoyed by the constant support of the International Olympic Committee (IOC) [20] and UNESCO [6].

The study proposes significant transformations in sports policy to prioritise gender equality, focussing on reform of teacher training, prompt policy execution, and substantial cultural transformation. It advocates innovative policies and dynamic curricula to authentically achieve gender parity. The study examines both progress and challenges in physical education, contributing to the existing literature and informing policy and practice. This study uses a theoretical framework and methodology to analyse empirical evidence on gender equality in sports. Examines key research questions on the successes and challenges of inclusive policies, offering evidence-based recommendations for future research. The findings contribute to discussions about improving inclusivity in sports and may inform policymakers and educators' decisions. The paper concludes with actionable suggestions for further investigation into equitable practices.

Conceptual framework

Strengthening gender equality and changing gender norms

Gender equality is a powerful catalyst for the promotion of equal rights and equitable resources for all genders, boldly challenging and destroying established social norms [21–23]. The movement works to advance women's rights and reduce barriers for individuals across the sex spectrum [24]. Deep-seated cultural norms often cast men as determined and women as submissive, thus amplifying inequalities [25, 26]. These pervasive stereotypes confine women to domestic roles while positioning men in leadership, consequently obstructing women's leadership aspirations, as evidenced by the 'think man-ager-think male' hypothesis [26, 27]. Furthermore, these

limiting stereotypes stifle emotional expression and caregiving roles of men, thus maintaining a rigid social framework [24]. Gender equality to break down these barriers and cultivate an environment of inclusion and equal opportunities.

Stereotypes persistently impede women's career progression, particularly through the 'double bind' that forces women to balance warmth and authority, often leading to unjust scepticism of their abilities [28, 29]. These challenges are mirrored in the fields of science, technology, engineering, and mathematics (STEM), where inequality continues to thrive, limiting opportunities [30]. Moreover, domestic societal expectations present challenges to women's career advancement [31]. Overcoming these challenges demands the courage to confront norms and the advocacy for inclusive policies. Advancing gender equality expands women's leadership potential, while educational initiatives are essential pillars to empower the younger generation against established stereotypes [3, 4]. Addressing and conquering gender stereotypes is imperative for the attainment of genuine equality, integrating egalitarian principles into the very fabric of the education and employment sectors.

Intersectionality and gender inequality

Intersectionality, as conceptualised by Crenshaw [32], explores the labyrinthine nature of discrimination that intersects ethnicity, class, and sexual orientation. Black women experience multiple forms of sexism and racism, necessitating an approach to gender inequality that incorporates nonwhite perspectives. Economic status worsens gender inequality by restricting rights and reducing job security [33]. Transgender women of colour endure particularly harsh discrimination, shining a spotlight on the desperate need for an intersectional approach [34]. Debalkew [35] underlines the vital importance of ethnicity and class, while the UN Population Fund [36] brings attention to the growing discrimination against women with disabilities, highlighting the urgency of an inclusive feminist theory. Historically, feminism has often focused on white middle-class women while marginalising other identities. Intersectionality requires recognising this broader spectrum of inequalities. Black feminism highlights the experiences of black women, and queer feminism addresses discrimination against the LGBTQ+ community [37, 38].

The deep gender inequality in sports permeates participation, invading curricula, and manipulating media portrayal [39–41]. Restrictive branding of sports through a gender lens reduces participation and increases social pressure [42, 43]. The obvious lack of role models coupled with established stereotypes prevents girls from progressing [44]. The media obsession

with the appearance of female athletes on their achievements irreversibly impacts careers [39, 45]. Education systems are skewed, privileging male athletes and steering women toward underappreciated domains [40, 46]. Sports leadership is an unyielding bastion of male dominance, supported by towering barriers against women leaders [47–49]. Realising gender equality is contingent on incorporating more women into leadership roles, implementing curriculum reform, ensuring adequate financial support, and removing these embedded barriers. Addressing gender inequality in sport is an imperative that demands comprehensive social and political reforms [3, 4, 22, 23].

Pedagogical approaches to the promotion of gender equality

Promoting gender equality in education supports the development of improved teaching practices [50]. Educational systems possess the power to perpetuate or revolutionise gender norms, requiring the adoption of dynamic models to address established gender disparities [51]. Feminist, critical, and student-centred pedagogies are at the forefront of the dismantling of obsolete gender norms and nurturing societal transformation [51, 52]. Feminist pedagogy defies conventional norms, invigorates critical thinking, and enriches classroom heterogeneity [53]. Revitalise educational materials to resonate with gender diversity and fortify equality [3, 54]. Based on the visionary ideas of Paulo Freire, critical pedagogy confronts social inequities head on, emphasising gender issues to ignite awareness and catalyse tangible change [52]. It empowers students to face challenges such as gender-based violence and wage disparities [3, 55]. Student-centred pedagogy prioritises the diverse needs of learners, transforming education into an inclusive experience [56].

This approach is expertly adaptable to various learning styles and cultural backgrounds, showcasing the vibrancy of diversity [3, 57]. By cultivating safe spaces for identity expression and dismantling stereotypes, it propels inclusivity forward. Strategic STEM initiatives are critical to increase the participation of under-represented groups, particularly women [58]. Extending beyond classroom boundaries, feminist pedagogies defy traditional gender roles, critical approaches promote social justice, and student-centred techniques expand diversity, building equitable communities. Genuine gender equality requires transformative reforms that transcend mere opportunities. Education policies must weave these pedagogical approaches to confront the roots of gender inequalities and pave the way for authentic equality [3, 4, 59]. Through these robust strategies, we can effectively promote gender equality, dismantle social norms, and cherish diversity, creating an inclusive future for all.

Physical education and sports policy

The policy promotes physical activity (including, but not limited to, physical education and sport) to support healthy lifestyles and advance gender equality, despite challenges such as limited resources and persistent gender norms [44, 60]. Evidence demonstrates that these interrelated domains collectively benefit wellbeing, justifying investments in educational and sporting contexts [61]. The UN, WHO and IOC staunchly highlight the transformative power of sport in fostering health and equality, particularly among marginalised groups [1, 20, 62].

The Agenda 2020 of the IOC triumphantly elevated women's sports on the global stage at the Tokyo Olympics [20, 63, 64]. In the same vein, the Women and Sport Commission is relentlessly driving towards achieving gender parity in leadership. However, barriers continue to impede women's participation in sports and media visibility [39, 65]. By innovating curricula and expanding women's leadership roles, the European Commission (EU) initiative aims to eliminate anti-male policies [66]. The WHO is actively committed to amplifying participation, with a particular focus on women and disadvantaged groups [62].

Sport policies must steadfastly ensure gender equality, serving as a dynamic catalyst for change in the international arena [3, 4, 63]. Innovative programmes that provide access and education for women's sports are crucial to address deep-seated inequalities that persist [22, 67]. Leadership development programmes and targeted quota systems can help address gender disparities in sports management by increasing women's representation and creating more inclusive organisational structures [21, 22, 47]. Critical to advancing gender equality is the increased coverage in the media of female athletes and the relentless fight against pervasive sexism [39, 67]. The 2024 Paris Olympics herald an era of unprecedented gender parity, showcasing an equal number of male and female participants on this illustrious global stage [20, 63]. Transformative change in gender norms within sports policies is not only essential but urgent [68, 69]. Strategic partnerships with global and local entities are key to significantly improving access and driving forward the agenda of equality [3, 4, 6, 21, 23].

The main objective of this systematic review is to analyse successful interventions and persistent challenges in advancing gender equality within physical education and sports, with particular focus on the effectiveness of policy implementation, participation barriers and enablers, sociocultural influences (eg, media representation and norms) and resource limitations.

Method

Research design

This study examines the successes and challenges in achieving gender equality in physical education and sport. Following the PRISMA protocol [70], it uses a systematic framework to ensure transparency and credibility. The research aims to analyse a range of evidence through thematic analysis, identifying key issues and contributing to progress in this field.

The data collection process

This systematic review analyses the literature on gender equality in physical education and sport, drawing exclusively from Web of Science (WoS) [71] and Scopus [72]. These databases were selected for three key reasons: (1) they provide extensive coverage of high-impact journals in education and social sciences, (2) their interdisciplinary scope aligns with our research focus, and (3) they offer robust citation tracking and indexing features that ensure comprehensive retrieval of core literature in this domain.

Although specialised databases like PubMed, ERIC, PsycInfo, and SPORTDiscus contain literature, our study focused on Web of Science (WoS) and Scopus. The selection was based on the strong representation of peer-reviewed literature in these databases in our field of study. Between December 10–16, 2024, the search was set in motion, deploying keywords “physical education,” “sport,” “gender,” and “equality” within “title, abstract, keyword” fields, and 138 entries: 17 from the WoS and 121 from Scopus.

The selection process was centred on English studies, ensuring that no temporal limits restricted its scope. Inclusion criteria required: (1) empirical studies addressing gender equality in physical education/sport, (2) clear methodology descriptions, and (3) measurable results related to participation, policy or pedagogy. Excluded were non-English texts, inaccessible full texts, conference papers, books, chapters, notes, and scale development studies. A systematic screening process removed eight duplicate or incomplete data sets and 39 non-English records. The selection process resulted in 65 studies, comprising 61 articles (93.85%) and 4 reviews (6.15%), as documented in the PRISMA flow chart (Fig. 1).

Data analysis

To support the findings of the study, the robust efficiency of Excel was used for data analysis [73, 74], where data was systematically organised and themes elucidated using pivot tables [75]. This study analysed key concepts including gender equality and social norms to identify both progress and ongoing challenges. Themes

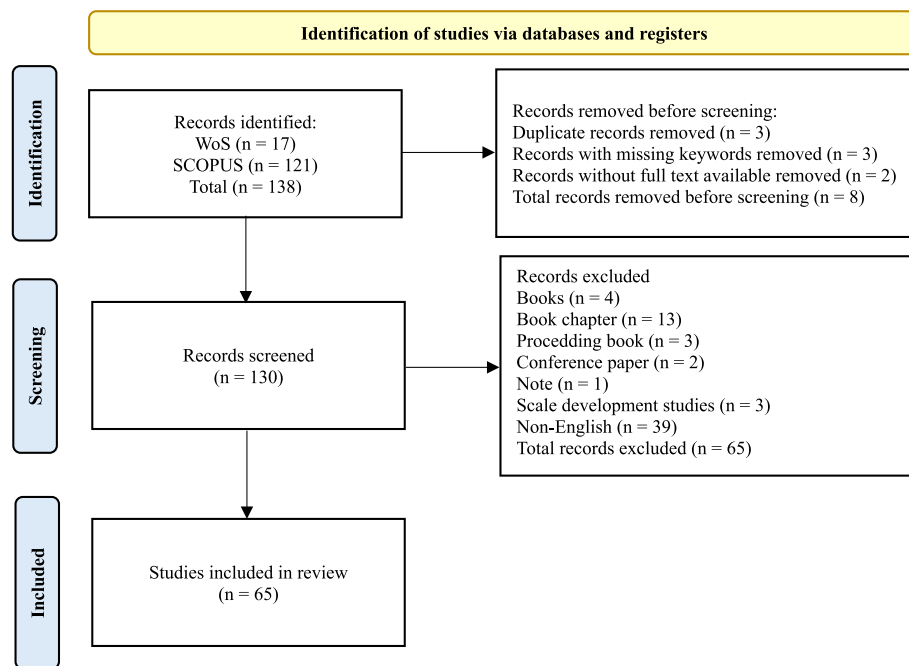


Fig. 1 Prisma flow chart

manifested in distinct categories such as ST1: Awareness programmes' and 'CT1: Social norms, offering significant insights. The implementation of Braun and Clarke's [76] thematic analysis, which involved detailed coding and frequency analysis, was vital in determining significance, an approach widely adopted in the social sciences [77]. Data were carefully categorised into successes (ST1-ST6) and challenges (CT1-CT6), excluding simplified codes, with a detailed description presented in Fig. 2.

We significantly improved the reliability of thematic analysis through the use of coding techniques, all firmly grounded in the foundational framework established by Lincoln and Guba [78]. The strategic implementation of thorough documentation and rigorous self-evaluation processes not only increased transparency, but also effectively diminished bias. The diversity of our research team contributed to the reliability of the evaluations, as reflected in the interresearcher agreement (Cohen's Kappa values ranging from 0.85 to 0.92). Using the PRISMA 2020 framework [70] of Page et al., we systematically reviewed 65 studies, examining their design, data collection, analysis, and ethical considerations. Our methodology was informed by established guidelines from Higgins and Green [79], Miles et al. [80] and Resnik [81]. Each study underwent a stringent rating process from 1 to 10, while those of lower quality faced stringent critique as per Lincoln and Guba [78]. Four authors conducted independent and collaborative evaluations to ensure consistency in the methodology.

The results of the evaluation of methodological quality, which includes design, data collection, analysis, and ethical rigour, are shown in Table 1. As emphasised, there exists an identified trajectory to augment our methodologies by augmenting sample size and ensuring greater representativeness. This, in turn, would optimise resource allocation and promote gender equality within the sports domain.

Results

General characteristics of the included studies

The review analysed 65 studies that met the inclusion criteria. Figure 3 shows that the publication output peaked in 2023 ($n = 13$ studies), followed by 2022 ($n = 9$) and 2024 ($n = 8$). Subsequent years showed lower output, reflecting variable research activity in this field.

Figure 4 presents the distribution of research contributions by country. Spain accounts for the largest share (32.88%), followed by the UK (17.81%) and Sweden (12.33%). Norway (8.22%) and the United States (6.85%) also contribute notable proportions. Italy and New Zealand each represent 4.11% (3 studies per country), while Greece, Finland, Ireland, and Ukraine contribute 2.74% each (2 studies per country). The remaining nations each account for 1.37% (1 study per country), reflecting a geographically diverse research landscape.

Figure 5 shows the distribution of publications by research field. Social sciences represent the largest proportion (72.60%). Within this category, the health

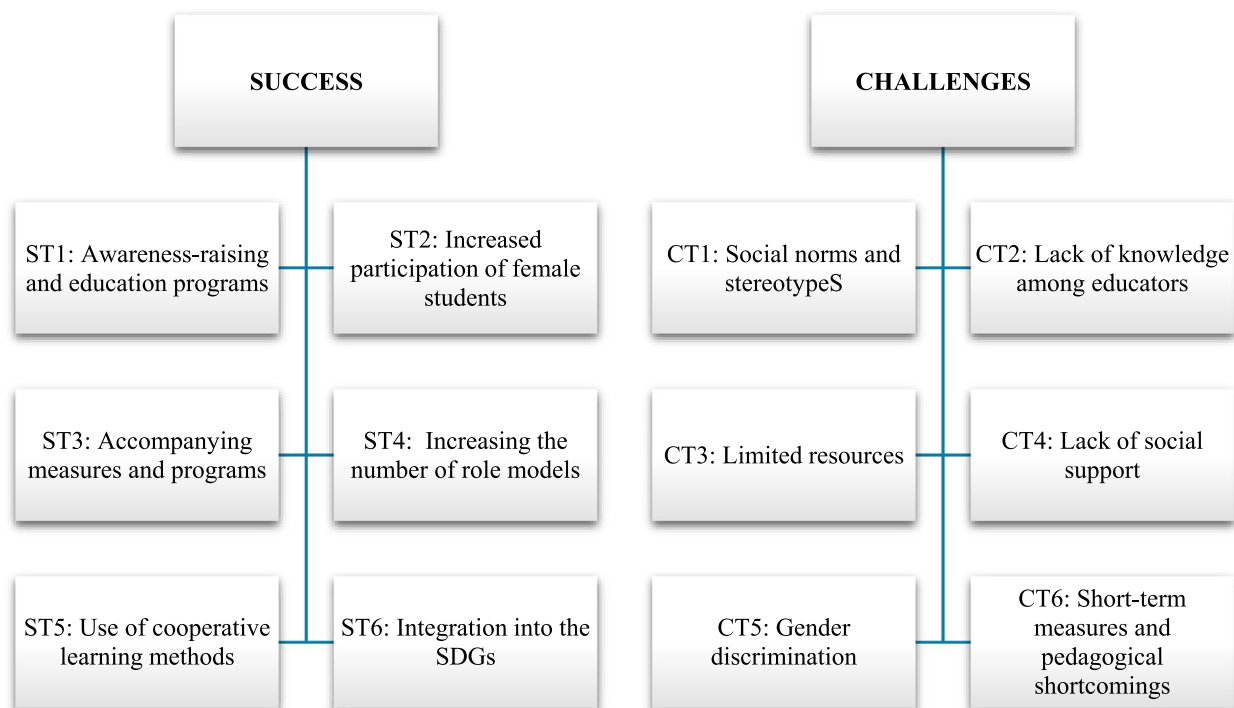


Fig. 2 Distribution of successes (ST1–ST6) and challenges (CT1–CT6). Note. ST/CT codes reflect original synthesis, not prior frameworks

Table 1 Results of the assessment of methodological quality

Criteria	High quality (%)	Medium quality (%)	Low quality (%)
Research design	90.77	9.23	0.00
Data collection methods	83.08	16.92	0.00
Sample size	73.85	26.15	0.00
Data analysis	84.62	15.38	0.00
Ethical considerations	92.31	7.69	0.00

Quality categories: High (8–10 points), Medium (5–7 points), Low (1–4 points)

professions account for 57.53% (42 publications), and medicine contributes 45.21% (33 publications). Arts and humanities, psychology, computer science, environmental sciences, and energy collectively represent 6% of publications, with individual shares of 8.22%, 5.48%, and 2.74%, respectively. Sports science constitutes 1.37% (1 publication). Data indicate a strong focus on social sciences and health-related research.

Figure 6 shows a word cloud of 341 keywords extracted from the reviewed studies. The visualisation highlights frequently occurring terms through font size variation.

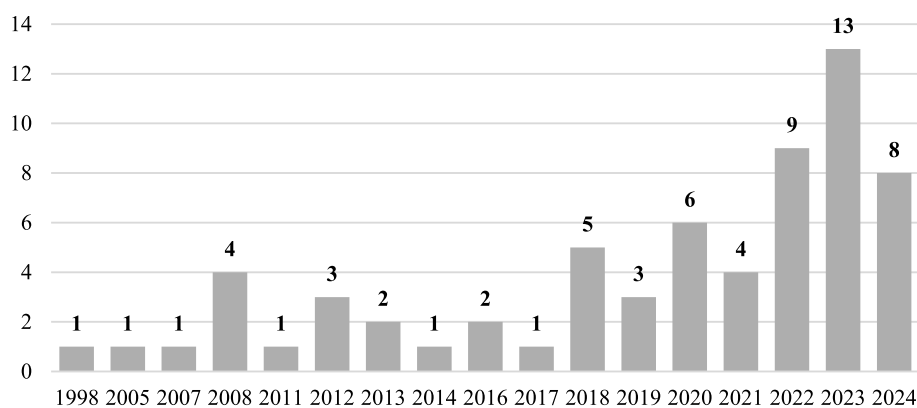


Fig. 3 Development of studies by year

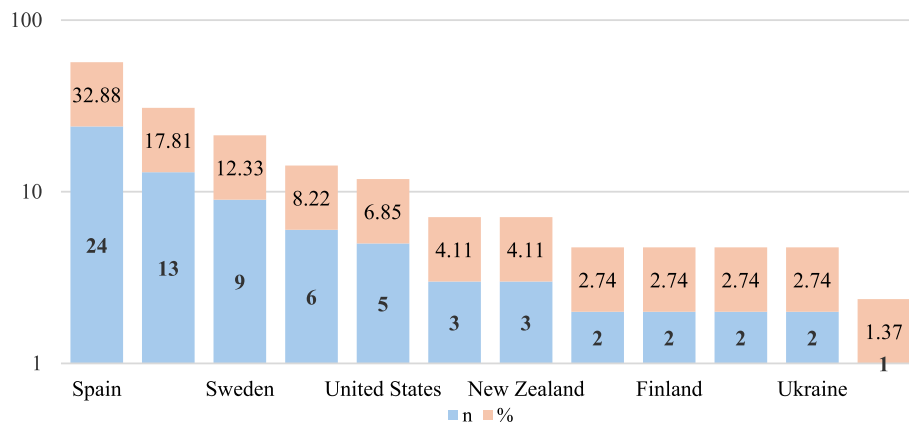


Fig. 4 Distribution of studies by country

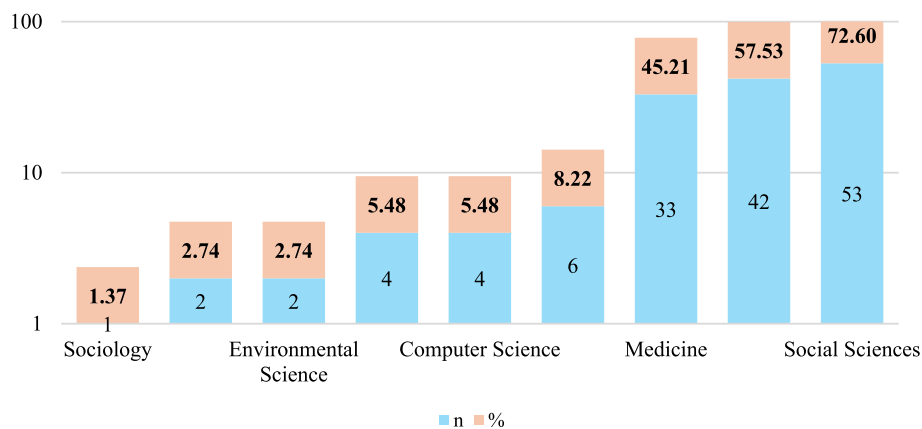


Fig. 5 Distribution of studies by subject area. Note. Percentages exceed 100% as studies were classified under multiple relevant subject areas



Fig. 6 Word cloud with the keywords from the identified studies



Fig. 7 Frequency distribution of recurring keywords

Figure 7 shows the frequency distribution of keywords across the 65 studies analysed. The keyword “Physical Education” appeared more frequently (15.94%, $n = 55$), followed by “Gender” (11.30%, $n = 39$), “Equality” (6.67%, $n = 23$), “Sport” (4.64%, $n = 16$) and “Sustainable Development” (3.19%, $n = 11$). Together, these five keywords represented 41.74% of all keyword occurrences in the dataset. The remaining keywords (not individually specified) collectively represented the balance of occurrences.

Gender equality in sport and physical education: success and challenges

This study analysed 65 research studies to examine gender equality in physical education and sports, identifying six success themes (ST) and six challenge themes (CT). The findings provide a comprehensive overview of current progress and persistent barriers in this field. The analysis revealed six key success themes: awareness programmes and training (ST1, 98.46% of the studies), initiatives to increase female participation (ST2, 92.31%), and implementation of supportive policies (ST3, 96.92%). Additional success themes included efforts to promote role models (ST4, 23.08%), application of cooperative learning methods (ST5, 69.23%), and integration with Sustainable Development Goals (ST6, 26.15%).

Six main challenge themes were identified: restrictive social norms and stereotypes (CT1, 95.38%), systemic gender discrimination (CT5, 95.38%), and education knowledge gaps (CT2, 93.85%). Other significant challenge themes included reliance on short-term solutions (CT6, 98.46%), resource constraints (CT3, 33.85%), and lack of social support (CT4, 63.08%). The cross-analysis demonstrated important relationships between these themes. Although policy adoption (ST3) was common, its effectiveness was frequently limited by educators’ knowledge gaps (CT2) and resource constraints (CT3).

Increased participation (ST2) showed a strong association with the availability of social support (CT4). These patterns indicate that sustainable progress requires coordinated efforts across policy, capacity building, and cultural transformation. For complete data visualisations and detailed results, see Fig. 8 in the main text. Detailed results and Table 2 (reference table of codes) can be found in the supplementary materials. The supplementary materials contain the complete data set and methodological documentation.

Discussion

Examining gender equality in physical education highlights the complex and multifaceted nature of this critical issue. Notable progress has been observed in this regard, attributed to increased awareness, the implementation of sound policies, and the adoption of suitable teaching methods. However, despite these advancements, challenges such as deeply ingrained societal norms, the persistent scarcity of vital resources, and the pervasive presence of discrimination continue to thwart progress. This chapter examines these contributing factors and recommends sustained efforts to promote progress.

ST1: awareness raising and training programs

Initiatives can support gender equality in physical education by promoting inclusion and addressing stereotypes [11, 82–84]. These programmes embark on a significant mission to redefine ingrained gender norms and galvanise widespread participation, fundamentally reshaping social perceptions and attitudes [15, 18, 85–90]. Teacher training contributes to the effectiveness and sustainability of these courses, supporting their long-term implementation [88, 91–93]. The depth of expertise of educators remains crucial to achieving unparalleled success. Meanwhile, the integration of digital platforms

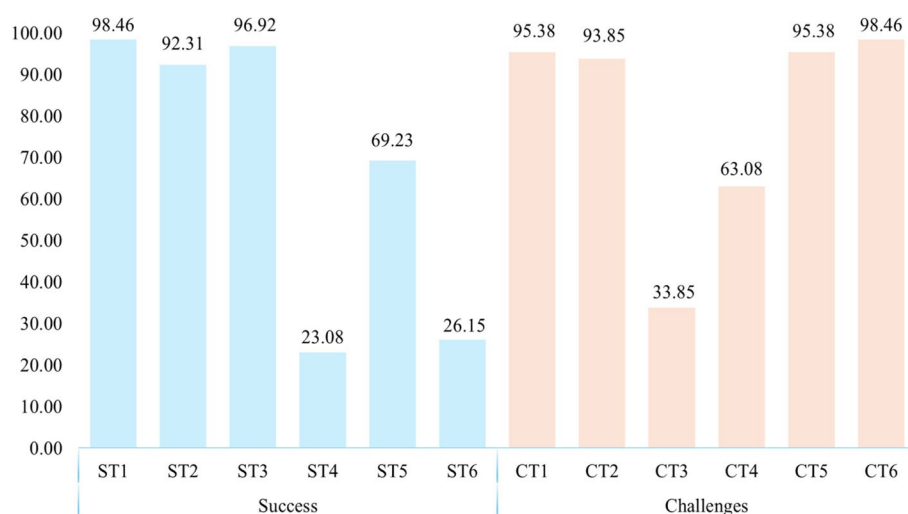


Fig. 8 Gender equality successes and challenges in physical education/sport. Note. Percentages reflect the proportion of included studies coded for each theme (ST: Successes, CT: Challenges)

alongside ingenious strategies, such as the expressive art of body percussion, helps to raise engagement levels, promoting a dynamic and gender neutral means of expression [44, 94–97].

Community sports serve as a powerful catalyst for the promotion of equality, as highlighted by Martinez et al. [98]. The essential role that educators play cannot be overstated, as their skills are crucial to fostering inclusivity [89, 99]. Traditional games provide a unique platform to propel societal progress forward, overcoming challenges, especially notable in regions like Poland [82, 100, 101]. Through comprehensive dedicated training and the application of innovative teaching methods, such as body percussion, we can significantly enhance inclusivity [11, 102, 103]. Adopting gender-neutral teaching practices is imperative [104, 105]. These transformative programmes not only challenge ingrained societal norms, but also foster empathy and collaboration among participants. The sustainability of these initiatives is highly dependent on the continuous embrace of cutting-edge practices and strong national support. Ultimately, comprehensive strategies remain the cornerstone of achieving gender equality in physical education.

ST2: increasing the participation of female students

Elevating women's sports emerges as a cornerstone for advancing gender equality and driving societal transformation [106, 107]. It catalyses a change in established social norms, fostering an empowering surge in girls' confidence and autonomy [12, 108, 109]. Despite this, cultural and structural barriers, exemplified by persistent stereotypes among Chilean students, continue to pose challenges [110, 111]. The foundation of family

and community support remains critical, but targeted interventions are imperative to remove stereotypes and address resource disparities. Local community initiatives and dynamic sports clubs serve as pivotal bridges between policy and practice [112, 113]. To achieve inclusivity, particularly for marginalised immigrant students, it is essential to counteract the preoccupation of some male teachers with appearances that hinder participation [101, 114].

There is an urgent need for innovative teaching strategies aimed at increasing active participation of girls, as sports have the potential to revolutionise social dynamics [115, 116]. Furthermore, the use of digital platforms and the art of body percussion play a significant role in enhancing well-being and encouraging participation [91, 95, 96]. To achieve sustainable results, societal interventions are needed [105, 117]. Robust infrastructure and ample resources lay the foundation for success [83, 112]. Changes in gender norms require programmes designed for sustainability [113, 118, 119]. In fact, participation in sports contributes significantly to the notable improvement in health, boosting confidence, and cultivating leadership, while developing critical social skills among girls [89, 106, 120].

ST3: supporting policies and programs

Policies and programmes are vital pillars in the promotion of gender equality within the realm of sports, forging environments that are brimming with equality and directly challenging established social norms. Embracing SDG 5 and weaving it into the fabric of the Spanish curriculum serves as a catalyst for diversity, facilitating inclusive mixed gender activities that empower participants

Table 2 Reference table of codes

No	Studies reviewed	Related Codes
1	Abdullah et al., 2013	ST1, ST3, ST5, CT2, CT3, CT6
2	Alghamdi & Aldossari, 2024	ST1, ST2, ST3, ST6, CT1, CT2, CT3, CT4, CT5, CT6
3	Angelova-Igova & Naydenova, 2023	ST1, ST2, ST3, ST4, CT1, CT2, CT3, CT4, CT5, CT6
4	Alfonzo-Marín et al., 2024	ST1, ST3, ST5, ST6, CT2, CT3, CT6
5	Baena-Morales & Ferriz-Valero, 2023	ST1, ST2, ST3, ST5, ST6, CT1, CT2, CT3, CT5, CT6
6	Baena-Morales et al., 2020	ST1, ST2, ST3, ST5, ST6, CT1, CT2, CT5, CT6
7	Barr-Anderson et al., 2008	ST1, ST2, ST3, ST5, CT1, CT2, CT4, CT5, CT6
8	Berg & Kokkonen, 2022	ST1, ST2, ST3, ST5, CT1, CT2, CT4, CT5, CT6
9	Bofill-Herrero et al., 2022	ST1, ST2, ST3, ST5, ST6, CT1, CT2, CT5, CT6
10	Boned-Gómez et al., 2024	ST1, ST2, ST3, ST5, ST6, CT1, CT2, CT5, CT6
11	Camarasa et al., 2023	ST1, ST2, ST3, ST5, ST6, CT1, CT2, CT5, CT6
12	Capranica et al., 2005	ST1, ST2, ST3, CT1, CT2, CT4, CT5, CT6
13	Capranica et al., 2008	ST1, ST2, ST3, CT1, CT4, CT5, CT6
14	Cárcamo et al., 2020	ST1, ST2, ST3, CT1, CT2, CT4, CT5, CT6
15	del Castillo Andrés et al., 2013	ST1, ST2, ST3, ST5, CT1, CT2, CT5, CT6
16	Cuenca-Soto et al., 2024	ST1, ST2, ST3, ST4, ST5, CT1, CT2, CT4, CT5, CT6
17	Curran, 2020	ST1, ST2, ST3, ST4, CT1, CT2, CT3, CT4, CT5, CT6
18	Dashper, 2012	ST1, ST2, ST3, CT1, CT2, CT3, CT4, CT5, CT6
19	Del Valle et al., 2022	ST1, ST2, ST3, ST5, CT1, CT2, CT4, CT5, CT6
20	de Soysa & Zipp, 2019	ST1, ST2, ST3, ST4, ST6, CT1, CT2, CT3, CT4, CT5, CT6
21	Devine, 2016	ST1, ST2, ST3, CT1, CT2, CT3, CT4, CT5, CT6
22	Devine, 2018	ST1, ST2, ST3, CT1, CT2, CT3, CT4, CT5, CT6
23	Dowling, 2008	ST1, ST2, ST3, ST5, CT1, CT2, CT4, CT5, CT6
24	Fagrell et al., 2012	ST1, ST2, ST3, ST5, CT1, CT2, CT4, CT5, CT6
25	Flintoff, 2008	ST1, ST2, ST3, ST5, CT1, CT2, CT3, CT4, CT5, CT6
26	Fröberg & Lundvall, 2022	ST1, ST3, ST5, ST6, CT1, CT2, CT5, CT6
27	García-López & Kirk, 2022	ST1, ST2, ST3, ST4, ST5, CT1, CT4, CT5, CT6
28	Garcías de Ves & Beltran-Garrido, 2024	ST1, ST2, ST3, ST4, ST5, CT1, CT2, CT4, CT5, CT6
29	Gerdin et al., 2019	ST1, ST2, ST3, ST5, CT1, CT2, CT5, CT6
30	Gerdin et al., 2024	ST1, ST2, ST3, ST5, CT1, CT2, CT3, CT4, CT5, CT6
31	Gråstén et al., 2022	ST1, ST2, ST3, CT1, CT2, CT5, CT6
32	Gubby, 2019	ST1, ST2, ST3, ST5, CT1, CT2, CT5, CT6
33	Guerrero & Guerrero Puerta, 2023	ST1, ST2, ST3, ST4, ST5, CT1, CT2, CT4, CT5, CT6
34	Hall-López, 2020	ST1, ST2, ST3, ST5, ST6, CT1, CT2, CT5, CT6
35	Hill et al., 2018	ST1, ST2, ST3, ST5, CT1, CT2, CT5, CT6
36	Iglesias & Fernandez-Rio, 2023	ST1, ST3, ST4, CT1, CT2, CT3, CT4, CT5, CT6
37	Jansson et al., 2022	ST1, ST2, ST3, ST5, CT1, CT2, CT5, CT6
38	Jansson et al., 2024	ST1, ST2, ST3, CT1, CT2, CT4, CT5, CT6
39	Kastrup & Kleindienst-Cachay, 2016	ST1, ST2, ST3, ST5, CT1, CT2, CT4, CT5, CT6
40	Kitta & Cardona-Moltó, 2022	ST1, ST2, ST3, ST6, CT1, CT2, CT3, CT4, CT5, CT6
41	Lima et al., 2020	ST1, ST2, ST3, ST5, ST6, CT1, CT2, CT5, CT6
42	Lopez-Morales et al., 2023	ST1, ST2, ST3, ST4, CT1, CT2, CT5, CT6
43	Martínez et al., 2023	ST1, ST2, ST3, ST4, ST5, ST6, CT1, CT2, CT5, CT6
44	Mendez-Gimenez et al., 2023	ST1, ST2, ST3, ST5, ST6, CT1, CT2, CT3, CT5, CT6
45	Merma-Molina et al., 2023	ST6
46	Mozolev et al., 2020	ST1, ST2, ST3, ST5, CT1, CT2, CT5, CT6
47	O'Reilly et al., 2023	ST1, ST2, ST3, ST4, ST5, CT1, CT2, CT3, CT4, CT5, CT6
48	Olofsson, 2007	ST1, ST2, ST3, CT1, CT2, CT3, CT4, CT5, CT6
49	Organista et al., 2024	ST1, ST2, CT1, CT2, CT4, CT5, CT6

Table 2 (continued)

No	Studies reviewed	Related Codes
50	Ottogalli-Mazzacavallo & Szerdahelyi, 2018	ST1, ST2, ST3, ST4, ST5, CT1, CT2, CT5, CT6
51	Papaioannou, 1998	ST1, ST2, ST3, ST5, CT1, CT2, CT4, CT5, CT6
52	Petracovschi et al., 2011	ST1, ST2, ST3, ST5, CT1, CT2, CT4, CT5, CT6
53	Phipps & Blackall, 2023	ST1, ST2, ST3, ST5, CT1, CT2, CT3, CT4, CT5, CT6
54	Piedra et al., 2014	ST1, ST2, ST3, CT1, CT2, CT5, CT6
55	Ribeiro-Silva et al., 2023	ST1, ST2, ST3, ST4, ST5, ST6, CT1, CT2, CT3, CT4, CT5, CT6
56	Ros-Gamón et al., 2021	ST1, ST2, ST3, ST5, CT1, CT2, CT4, CT5, CT6
57	Schaillée et al., 2021	ST1, ST2, ST3, ST4, ST5, CT1, CT2, CT4, CT5, CT6
58	Smith Palacio et al., 2024	ST1, ST2, ST3, ST4, ST5, CT1, CT2, CT4, CT5, CT6
59	Suzanne Roberts et al., 2020	ST1, ST2, ST3, ST5, CT1, CT2, CT3, CT4, CT5, CT6
60	Tsyhura & Harkusha, 2023	ST1, ST2, ST3, ST5, ST6, CT1, CT2, CT3, CT4, CT5, CT6
61	Vega-Ramírez et al., 2021	ST1, ST2, ST3, ST5, CT1, CT2, CT4, CT5, CT6
62	Walseth et al., 2018	ST1, ST2, ST3, ST5, CT1, CT2, CT4, CT5, CT6
63	Walton-Fisette et al., 2018	ST1, ST2, ST3, ST5, CT1, CT2, CT3, CT5, CT6
64	Zaravigka & Pantazis, 2012	ST1, ST2, ST3, ST5, CT1, CT2, CT4, CT5, CT6
65	Zulbahri, 2024	ST1, ST2, ST3, CT1, CT4, CT5, CT6

ST1: Awareness-raising and education programs

ST2: Increased participation of female students

ST3: Supportive policies and programs

ST4: Increasing number of role models

ST5: Use of cooperative learning methods

ST6: Integration into the Sustainable Development Goals

CT1: Social norms and stereotypes

CT2: Lack of knowledge among educators

CT3: Limited resources

CT4: Lack of social support

CT5: Gender discrimination

CT6: Short-term interventions and pedagogical inadequacies

on new levels [95]. Initiatives such as It Grows and CFSL rise to confront gender disparities head on, championing the cause of social justice with vigour [121, 122]. Adapting pedagogical approaches emphasise the importance of equality and nurturing meaningful relationships [114]. Cooperative sports serve as a front line in the battle against restrictive gender norms, tirelessly advocating for equality. On the global stage, the Brighton Declaration [123] together with the Kazan Action Plan [124] is steadfast in its support of women's participation and inclusion in sports, cementing a worldwide commitment to gender equality [125].

In parallel, initiatives such as gender equality in sports and the inclusive physical education framework drive the effort to cultivate inclusive sports environments and empower educators with the necessary tools [126]. Sensing awareness of gender equality among educators and administrators marks a significant step forward in educational practices [127, 128]. Swedish physical education teachers, through collaborative efforts, demonstrate how cooperation is the engine that propels transformative

change [114]. Well-crafted policy frameworks are instrumental in enhancing gender equality in sports, paving the way for progressive transformations [115, 116]. The advent of digital technologies injects vitality into gender initiatives, making them more captivating and broad-reaching [91, 95]. In Saudi Arabia, systemic support is crucial for policy makers to invigorate physical activity of women [83].

The focus on supportive pedagogy underscores the importance of continuous professional development as a cornerstone of change [88, 92]. Nullifying gender norms is critical to forging truly inclusive environments [15, 87]. The ambitious pursuit of gender equality demands planning, agile action, and synergistic collaboration [93, 94, 105, 113, 118, 119, 122]. These efforts can increase women's participation in sports and help shape gender norms [83, 112, 117].

ST4: increasing the number of role models

The visibility of female athletes serves as a vital cornerstone for gender equality, sparking inspiration among

girls worldwide. Prestigious events, such as the Olympic Games, shine a spotlight on women's remarkable success, capturing the awe of global audiences [118]. The achievement of sustainable gender equality requires developed strategies that are both effective and robust [115]. In this digital age, social networks act as a powerful catalyst, enhancing visibility and dismantling age-old stereotypes. Provides an expansive platform where the compelling stories of female athletes are shared and celebrated, reaching audiences far and wide [129]. Campaigns and mentorship programmes are instrumental in fostering a sense of community spirit and establishing strong support networks. It is imperative that the media prioritise and celebrate these successes to advance the cause of gender equality [130, 131]. The representation of female athletes and their inspiring stories serve as a beacon, motivating girls to strive for excellence in the world of sports [132]. Women in leadership positions within sports are seen as powerful role models, playing a crucial role in advancing gender equality. Initiatives such as 'This Girl Can' stand as empowering forces for women in sports, encouraging participation, and celebrating female strength and resilience [133, 134].

Education systems are at the forefront of the fight for equality, playing a pivotal role in fostering increased female participation in sports by shaping societal attitudes [135]. Through dynamic events and innovative teaching methods, we engage and attract girls, drawing them into the world of sports [96]. Teachers and coaches have the power to shape the self-perception of young athletes, guiding them towards their true potential [136, 137]. The media and social networks, by celebrating the triumphs of female athletes, boldly confront and upend existing norms [107, 108]. Inspirational figures in both sports and educational fields serve as role models, setting a path for female students to follow [11, 12, 137]. The visibility of female athletes not only empowers individuals but also catalyses sweeping cultural transformations towards a more equitable landscape in sports and far beyond.

ST5: use of cooperative learning methods

In the realm of physical education, cooperative learning is a powerful catalyst for fostering inclusion and advancing gender equality. By actively encouraging a spirit of cooperation, tolerance, and mutual respect between students, it cultivates empathy and confronts established gender norms, thus paving the way for genuine equality [86, 91, 93, 138]. Meanwhile, the dynamic nature of online learning responds seamlessly to modern demands, promoting gender equality through its adaptive support systems [94].

Despite facing challenges along the way, educators are integral in strengthening student relationships and instilling democratic values [88]. In particular, the increase in female participation coupled with enhanced social skills underscores the transformative impact on gender dynamics [106, 113]. Furthermore, the integration of traditional games is crucial, as they significantly improve motor skills, ignite motivation, and instil a sense of responsibility [82, 99]. The promotion of female expression and the rigorous treatment of gender norms remain quintessential for achieving inclusivity [44]. Furthermore, examining gender issues improves students' understanding [139].

Inclusive curricula are the cornerstone of educational advancement, which demands a dynamic partnership between educators and students to achieve genuine equality and authentic representation. Through the ever-evolving landscape of collaborative learning, we ignite the flame of sustainable development, fuelled by the power of meaningful social interactions [92, 140]. Innovative programmes such as Colpbol and Girls Active revolutionise the approach to teamwork and participation, vividly illustrating the transformative impact of cooperative learning on gender equality [98, 107]. These initiatives not only advance equality and empathy, but also significantly increase awareness of the Sustainable Development Goals [12, 138, 141]. Through cooperative learning within the realm of physical education, we cultivate an environment where gender equality flourishes by cherishing cooperation and respect, empowering students not only to succeed, but to boldly challenge societal norms and forge a path toward a more equitable future.

ST6: integration into the sustainable development goals

Incorporating the Sustainable Development Goals (SDGs) [1] into physical education programmes can support equality, inclusion, and sustainability while developing students' critical thinking and social responsibility. Innovative games, such as Ultimate Team, powerfully advocate inclusion, perfectly in sync with the SDGs aimed at enhancing education and diminishing inequalities [86]. The forward-thinking Spanish curriculum ardently advocates comprehensive development and the spirit of inclusion [95]. Essential teacher training in alignment with the SDGs is paramount [92, 142]. To incorporate these values, curriculum reforms should include equality and sustainability components, while educators address environmental responsibility [143]. Education supports responsible consumption (SDG 12) by increasing awareness of environmental and social justice issues among students. Additionally, gender-equitable pedagogy intricately weaves connections between SDGs for gender

equality and responsible consumption, vividly illustrating the environmental impact of sports materials [138].

The Green Sports Initiative serves as a beacon of transformation, vividly illustrating how physical education inspires active participation, cultivates environmental awareness, and boldly confronts established gender stereotypes [144]. This dynamic initiative aligns seamlessly with the visionary UN SDGs by fervently advancing gender equality and improving the quality of education [12, 98, 138]. Notably, Baena-Morales and Ferriz_Valero. [84] highlight its significant impact on SDG 4 (quality education) and SDG 5 (gender equality), highlighting a commitment to social advancement. Researchers claim the crucial role of physical education in the promotion of gender equality and the SDG vision [113, 139].

By improving social skills and valiantly challenging outdated gender norms [86, 94], physical education is a cornerstone of change. Educators are at the forefront of this movement, ardently promoting equality and inclusivity by integrating the SDGs into their teaching philosophies [125, 145]. The infusion of cutting-edge digital tools and innovations is critical to revolutionising educational landscapes [91, 95]. By firmly embedding these transformative goals within education, we cultivate environments of unparalleled equality, inclusivity, and sustainability. This is achieved through strategic programme overhauls, robust teacher development, and the integration of digital tools [12, 94, 141]. Collectively, these comprehensive initiatives pave the way towards crafting an equitable and sustainable future, empowering every student to thrive in an increasingly complex world.

CT1: social norms and stereotypes

Entrenched gender stereotypes within the realm of sports paint men as inherently strong and women as naturally graceful, perpetuating a glaring inequality with far-reaching impacts [87, 115, 116, 137]. Revolutionary education reforms are poised to dismantle these damaging stereotypes, paving the way for genuine equality [11, 86]. The widespread dominance of men in sports education exacerbates this inequality, systematically marginalising and eroding the visibility of women [111, 146]. The confidence gap, a byproduct of uneven recognition, highlights how boys are culturally conditioned to seek recognition far more than girls, stifling female ambition and empowerment [147, 148]. Breaking these restrictive norms is not only essential but urgent for the expansion of female participation in sports [84]. Forward-thinking programmes such as Girls Active are at the forefront of promoting inclusion and obliterating outdated gender norms [107].

Furthermore, the disproportionate focus of the media on men's sports significantly decreases women's representation, thus deepening the chasm of gender inequality

[115, 116, 137]. This ingrained bias shapes societal perceptions, sparking an imperative for radical media reforms and educator interventions. The bias ingrained in male educators represents a challenge to achieving gender parity [149, 150]. However, innovative cooperative learning approaches can effectively dismantle these stereotypes [91]. Unfortunately, male educators' bias often deters female participation, limiting potential talent and growth [151]. Additionally, immigrant female students often face challenges imposed by established social norms [140, 152]. A clarion call for urgent social transformation reverberates across these issues, revealing that, generally speaking, teachers do not harbour biases against men [102].

Transgender students face significant hurdles due to established gender norms [153]. It is imperative to push for urgent and transformative reforms in inclusive education to dismantle these oppressive norms, focusing intensely on comprehensive teacher training and increased awareness [89, 114, 154, 155]. The overhaul of curricula with essential reforms is critically necessary [92]. The treatment of these norms is absolutely vital to achieve true equality [105]. Support networks are key in championing equality, particularly for disadvantaged children who are the most vulnerable [156]. Innovative models, such as the self-made material model, play a groundbreaking role in the advancement of gender equality in sports [103]. Ignoring the quest for gender equality only serves to establish harmful stereotypes, underlining the pressing need for bold and creative initiatives [145]. A concerted collaboration among educators, policymakers, and media representatives is absolutely essential to foster a culture of inclusivity and advance gender equality.

CT2: gaps in knowledge among educators

The glaring lack of gender-sensitive training by educators continues to instil damaging stereotypes in physical education, as brilliantly captured by Baena-Morales and Ferriz-Valero [84]. There is an urgent need for comprehensive training programmes designed to foster inclusivity at every level. Camarasa et al. [86] underscore the transformative power of gender equality training in forging pathways to effective teaching. Del Castillo Andrés et al. [147] passionately call for elevated standards in teacher training, essential for deepening understanding of gender equality and sparking increased motivation among students, particularly those marginalised.

The poignant challenges faced by female students, unveiled by Fagrell et al. [146], are crucial in crafting an education that truly supports and empowers. Meanwhile, Fröberg and Lundvall [92] shine a spotlight on the seamless integration of sustainable development and gender equality into curriculum as a beacon of progress.

Gerdin et al. [89, 114] advocate for a bold and proactive stance toward embracing social justice and tackling gender issues head on. Gubby [154] champions the inclusive nature of co-educational sports such as korfbal, a vital cog in the journey towards inclusion. The insightful observations of Smith Palacio et al. [108] provide valuable guidance on bridging pervasive equality gaps. Zulfahri et al. [105] remind us of the pressing importance of not only understanding student experiences but also committing to ongoing professional development, crucial to navigate the ever-evolving landscape of equality challenges.

The persistent lack of comprehensive knowledge of gender equality fundamentally obstructs the advancement of education. Dowling [149] underscores the impact of the emotions of physical education teachers on gender dynamics and stresses the need for continuous professional development. The cultivation of emotional intelligence and greater awareness is essential to effectively navigate complex gender dynamics within the classroom environment. Piedra et al. [150] and Cárcamo et al. [117] identify this knowledge gap as a barrier to both gender equality and increased sports participation. In the absence of focused and deliberate efforts, the pursuit of gender equality within sports is doomed to falter. Dashper [87] passionately advocates for the necessity of equestrian coaches to gain a deep understanding of the different challenges faced by women and to receive customised specialised training tailored to these needs. Hill et al. [155] argue that by neglecting the principles of social justice in physical education, we inadvertently disregard existing inequalities and the diverse needs of students, ultimately perpetuating systemic disparities.

The prevailing educational system predominantly promotes competitive sports imbued with traditional masculine values, often marginalising female students. Abdullah et al. [82] propose a groundbreaking overhaul of teacher training, highlighting the integration of traditional games and refined motor skills as a transformative approach. Angelova-Igova and Naydenova [112] advocate passionately for transformative coaching methods that truly empower female soccer players, marking a pivotal shift toward fair and equitable physical education.

These transformations are undeniably essential for the establishment of a just and balanced physical education landscape. Baena-Morales et al. [138, 157] and Bofill-Herrero et al. [91] underscore the critical importance of fostering cooperative learning within teacher training, thereby fostering a richer tapestry of inclusivity. Barr-Anderson et al. [106] focus on the imperative to overcome the many hurdles that female students face within physical education settings. Gråstén et al. [151] urge a continuous professional development regimen designed

to confront and eliminate inherent biases. Vega Ramírez et al. [119] place a strong emphasis on instilling respect and equality as foundational elements of educational practice. Additionally, digital tools emerge as catalysts to advance gender equality and inclusivity in educational endeavours. According to Alghamdi and Aldossari [83], Ribeiro-Silva et al. [12], and Zaravigka and Pantazis [111], relentless and progressive development is critically imperative to ensure that equitable access to physical education is universally attainable for every student.

CT3: limited resources

Gender equality in physical education in low-income communities faces challenges due to chronic underfunding and insufficient resources. Vázquez et al. [110] and Cooky et al. [65] poignantly observe that coeducational settings, coupled with imbalanced resource allocation, stifle girls' participation. Hall-López [113] starkly underscores the persistent prioritisation of men's sports, which drastically diminishes girls' participation, simultaneously establishing deleterious stereotypes. Furthermore, rotating schedules in rural schools act as a barrier, further demotivating girls from active participation [158]. De Soysa and Zipp [125], along with Devine [159], passionately call for a robust allocation of equitable resources to truly empower women athletes. Sweden, unfortunately, is struggling with the challenges of large class sizes and scarce resources [97, 114]. Olofsson [104] ardently advocates inclusion over the competitive paradigm.

The precarious scarcity of resources threatens the achievement of sport-related SDGs. To navigate these challenges, there is an urgent need to improve educator skills and improve infrastructure [141]. Northern Ireland's glaring resource disparity critically impacts the quality of education [118]. Kitta and Cardona-Molto [145] emphasise the paramount importance of investing in gender equality initiatives. Community initiatives and sports clubs are crucial to invigorating girls' involvement [160]. The trio of financial investment, seamless digital access, and comprehensive educator training form the foundation of sustainable education [161]. Effective educational equality requires coordinated efforts in three key domains: (1) community involvement, (2) evidence-based technological integration, and (3) research-based policy development. Studies demonstrate that sustained alignment of these factors improves equitable outcomes in education systems [12, 112, 153].

CT4: lack of social support

The promotion of gender equality in physical education faces challenges due to insufficient social support from students, parents, and educators. Smooth and

synergistic coordination between these key groups is not only beneficial but absolutely essential [12, 83, 101]. In the absence of this critical support, educators find themselves entangled in the struggle to implement equitable practices, thus aggravating existing inequalities. The role of social support is undeniably vital to unleash teacher creativity and enrich student experiences [162]. Although the ongoing advocacy for bolstering support for girls in sports has been long established [88], such support regrettably remains insufficient, particularly among male colleagues, which in turn precipitates a significant disengagement among students [163].

Strengthening support mechanisms for female teachers not only amplifies their job satisfaction but also significantly enhances student engagement, propelling the forward movement toward gender equality. The absence of adequate support for female students results in reduced participation [44]. Fostering environments that are supportive and inclusive is crucial, as they enhance teacher participation and increase student enjoyment [106]. Although mixed-gender groups offer a pathway to address social support, they often come with the challenge of marginalisation of women, thus exacerbating inequality [146, 148].

The achievement of gender equality in physical education is an urgent imperative that requires enhanced support structures. Ros-Gamón et al. [164] illuminate the necessity of implementing comprehensive school-wide strategies aimed at dismantling the pervasive gender stereotypes that stifle progress. Meanwhile, Angelova-Igova and Naydenova [112] highlight the critical lack of support provided to female soccer players, particularly during vulnerable periods such as pregnancy or injury, a gap that calls for immediate attention. Dashper [87] poignantly highlights the arduous challenges that female equestrian athletes face as they strive to balance demanding family commitments with career ambitions.

The burden of childcare weighs heavily, exacerbating existing gender inequalities and creating significant barriers. Offering steadfast support to female athletes is not only essential in boosting their performance, but also instrumental in transforming societal perceptions of gender equality. Devine [15, 159] passionately advocates for robust policy reforms that aim to significantly increase women's participation in sports. Curran [118] identifies a troubling deficiency in social support within the sports arena, with Knight stepping forward to propose potential solutions. Olofsson [104] provides a critical analysis of the inadequate support for gender equality that is prevalent in current systems, calling for the inclusion of sports as a critical element within educational frameworks. Papaioannou [99] emphasises the importance of support systems in fostering equality and motivation, stressing

that their absence severely impedes success. Thus, the critical review of sport policies to establish well-rounded and comprehensive support systems for the triumph of both educators and students.

CT5: gender discrimination

The pernicious nature of gender discrimination significantly curtails the array of opportunities in physical education for female, transgender, and nonbinary students, shackling them with chains forged by societal norms and stifling policies. To break these oppressive barriers and foster a culture of inclusion, collaboration between educators, policy makers and the broader society is imperative [11, 12, 84, 102, 141].

Curricula insidiously perpetuate stereotypes, categorising sports into labels of 'vigorous' pursuits reserved for boys and 'aesthetic' activities relegated to girls. This antiquated dichotomy is further scrutinised by Suzanne Roberts et al. [44], who illuminate how men are offered greater opportunities, systematically marginalising women. Hill et al. [155] promote the promotion of inclusive strategies, while Ottogalli-Mazzacavallo and Szerdahelyi [136] call for the eradication of gender bias, advocating for universally equal opportunities. The incisive work of Walseth et al. [109] aims at deconstructing established male dominance, while Walton-Fisette et al. [97] envision a transformative pedagogical landscape teeming with gender equality. In a stance, Devine [15] endorses robust anti-discrimination initiatives to guarantee women's unimpeded access to sports, laying bare the detrimental impact of male-centric sports activities on female educators, as articulated by Kastrup and Kleindienst-Cachay [163].

The educational system must fully commit to advancing gender equality and significantly improving women's representation in sports. Dowling [149] and Flintoff [88] compellingly identify gender discrimination as a barrier to creating truly enriching experiences, underscoring the urgency for change. Olofsson [104] crucially points out systemic biases that persistently favour males over females, an inequity that cannot be ignored any longer. Piedra et al. [150] emphasise the importance of raising awareness of gender issues, with a particular focus on cultivating egalitarian views among female educators. del Castillo Andrés et al. [147] starkly warn against entrenched male-centred motivations that perpetuate discrimination, fervently advocating for the development of equitable content that dismantles these biases. Dashper [87] compellingly links the limited opportunities available to women in equestrian sports with ongoing discriminatory practices, highlighting the need for transformational change in the field. Fagrell et al. [146], Zaravigka and Pantazis [111], and Petracovschi et al. [148]

collectively note the chronic lack of adequate support for female students and suggest the potential of mixed gender groups to overcome systemic barriers. These insightful findings resoundingly highlight the imperative need for strategic and robust initiatives to achieve genuine gender equality.

Barr-Anderson et al. [106] underscore the crucial role of active participation of women in physical activities as a powerful tool to combat deep-rooted gender discrimination. Capranica et al. [115, 116] investigate the pervasive media bias that female athletes endure, advocating for the transformative potential of the Olympics to bridge the glaring disparities. Papaioannou [99] addresses the pressing issue of gender inequality in education, fervently calling for equitable and just practices. Del Valle et al. [162] pinpoint gender discrimination as a barrier to educational access, passionately advocating for equality. Gerdin et al. [89] support inclusive practices to reduce marginalisation of women in sports. Gubby [154] compellingly demonstrates that mixed-gender korfbal serves as an antidote to discrimination. Vega Ramírez et al. [119] compellingly connect the vigorous fight against sports discrimination with the pursuit of gender equality. Gråstén et al. [151] emphasise the paramount importance of excellence in teaching to diminish gender bias, with a keen focus on improving teacher training.

Collectively, these studies champion the cause of female participation, equitable representation in the media, and comprehensive teacher training as crucial strategies to effectively reduce discrimination within the spheres of sports and education.

CT6: short-term measures and pedagogical shortcomings

Short-term solutions and inadequate teaching dramatically obstruct the path to gender equality in physical education, offering only fleeting and superficial improvements [11, 98, 102, 105]. These ephemeral strategies require relentless efforts and the implementation of urgent revolutionary programmes to instigate lasting change [15, 18, 86, 87, 107, 119, 146, 151, 159]. Baena-Morales and Ferriz-Valero [84] make a compelling case for long-term solutions, emphasising that effective short-term interventions are pending thorough research. Traditional games are valuable for improving motor skills, but they require robust long-term evaluation. Cooperative education must penetrate and address deeply embedded inequities [82]. Crafting a transformative curriculum requires fortifying it with robust frameworks [12, 92, 141]. The application of outdated traditional norms undermines new strategies, highlighting an urgent need for equity-focused training [88, 92]. The pressing issues of under-representation of female leaders and the neglect

of emotional education in men call for immediate action and rectification [89, 108, 120].

Revolutionary reforms are imperative to catapult women's sports into a new era of excellence by embedding robust and effective teaching methods [11, 105, 112]. The notion 'It grows' falls short and fails to advance equality [108]; however, the power of adaptive sports lies in their ability to significantly decrease inequalities [156]. Although models developed during pandemics hold promise, they require refinement [103]. The quest for equality is obstructed by challenges: financial and logistical hurdles stand in its way [91, 109, 113, 117]. To incite transformation, we must deploy innovative teaching and visionary strategies as beacons of change. A steadfast commitment to continuous and sustainable education is essential [118, 138, 157] for the achievement of gender equality [11, 108]. Education should be an important aspect of social justice [114].

The strategic use of digital tools can spark impactful short-term interventions [84]. Both UNESCO and the Kazan Action Plan must rally to promote sustainable development [3, 4, 124]. Strategic research accelerates problem-solving abilities within teacher education [94]. The establishment of outdated methods and the reliance on short-lived solutions must be disrupted as they stifle true equality. We must commit to inclusive physical education backed by long-term strategies and a commitment to enhancing skills [11, 105, 112].

Limitations and suggestions for future studies

This study looks at the critical issue of gender equality in physical education and sports, highlighting both successes and challenges that must be addressed to effective future strategies. However, it is important to acknowledge certain limitations that could impact its power: 1) A predominant European-centric viewpoint significantly diminishes its cross-cultural relevance. 2) An overreliance on databases such as Web of Science and Scopus might inadvertently cause oversight of pivotal findings from other academic platforms. 3) The inherent language bias systematically excludes pivotal non-English and unpublished studies. 4) Disparities in the methodologies pose substantial challenges to comparing the results effectively. 5) Subjective analyses introduce potential bias in drawing conclusions.

To pave the way for transformative research, future inquiries must: 1) encompass a wider array of cultural and socioeconomic contexts, with a focus on increasing women's participation in less privileged regions. 2) By integrating field studies, a more robust and applicable framework can be created. 3) Review the influential role of the media in promoting gender parity. 4) To strengthen the analysis, future research should

incorporate data from additional sources. Addressing these key issues through evidence-based strategies is important for advancing gender equality in sports.

Conclusion

This study systematically analyses the successes and challenges in achieving gender equality in physical education and sports. The findings reveal that, despite significant progress, firmly established social norms and resource limitations continue to hinder equitable outcomes. However, successful initiatives stand out as they actively raise awareness, significantly bolster women's participation, and provide support. Bridging educators' knowledge gaps, crafting inclusive curricula, and fostering robust social support networks are of paramount importance. Innovative strategies and collaborative learning play a critical role in the dismantling of established gender norms. A thorough policy review, coupled with dynamic collaboration among educators, policymakers, and the public, is absolutely essential. Inspirational female athletes serve as beacons of empowerment, motivating countless young girls to aspire to achieve equality.

Moreover, ensuring women's access to leadership positions remains integral. The domains of physical education and sport are crucial to achieving the Sustainable Development Goals of the United Nations, requiring comprehensive programme restructuring, the development of advanced teaching skills, and the integration of cutting-edge digital tools to facilitate sustainable living and the promotion of gender equality.

Abbreviations

EU	European Commission
IOC	International Olympic Committee
SDG	Sustainable Development Goals
STEM	Science, Technology, Engineering, and Mathematics
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
WHO	World Health Organization

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Authors' contributions

MEI: Conceptualization, Methodology, Formal Analysis, Investigation, Data Curation, Writing – Original Draft, Writing – Review & Editing, Visualization. MŞ: Investigation, Data Curation, Writing – Original Draft, Writing – Review & Editing. MED: Investigation, Data Curation, Writing – Original Draft, Writing – Review & Editing. MÖ: Writing – Review & Editing, Supervision, Validation. All authors read and approved the final manuscript.

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Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This systematic review used publicly available data and adhered to the PRISMA guidelines. All sources were properly cited in accordance with academic integrity standards. Although no ethics committee approval was required for this review of the literature, the study followed international guidelines for ethical research work.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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