

Bibliometric Analysis of Sports and Gender Equality Studies in the Context of Sustainable Development Goals

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ABSTRACT:

Academic studies indicate that the topic of sport and sustainability is increasingly taking a prominent role in social life and is accepted as a societal norm, since sustainable development efforts play a crucial role in enhancing social well-being, promoting gender-inclusive participation, and empowering women. Accordingly, examining research trends on these topics over time constitutes an important area of study. This study investigates the growing number of scientific publications on gender equality in sport, produced within the framework of the SDGs and published between 1992 and 2025, through a bibliometric analysis. A total of 801 research records were obtained from the Web of Science Core Collection and analysed with VOSviewer, focusing on productivity and collaboration networks across authors, universities, countries, and publishers. The findings highlight the dominance of the United States, followed by the United Kingdom, Australia, and Canada, and show that research has gained momentum since the 1990s, with a marked increase particularly after the United Nations announced the SDG vision in 2015. Moreover, the results reveal that conceptual focuses in the field of sport and gender equality have diversified, with themes such as “inclusivity” and “feminism” gaining prominence. By identifying gaps in the literature, this study offers strategic opportunities for emerging researchers and contributes to a deeper understanding of the role of sport in advancing gender equality goals within sustainable development.

Keywords: bibliometric analysis, sports studies, sustainability, gender equality, SDGs

1. Introduction

Sustainability is a multidimensional approach that aims to ensure the balanced and equitable development of societies across economic, environmental, and social dimensions, leaving a liveable world for future generations (WCED, 1987). Over the years, the concept of sustainability, initially framed through its environmental dimension, has evolved to encompass social and economic perspectives, reflecting a broader understanding that sustainability must be both "protected and developed" (Leiserowitz et al., 2005). More recently, integrative approaches, such as Doughnut Economics, which balance planetary boundaries with human well-being, have gained prominence (Raworth, 2017). This framework envisions policymaking that creates a "safe and just space" between a lower threshold that secures the fulfilment of basic human needs and an upper threshold that prevents environmental degradation. Although ongoing debates in the literature highlight varying perspectives on the position and objectives of social sustainability (Hellberg, 2023), there is a clear consensus that the concept is fundamentally centred on

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human and societal development. Efforts to ensure social sustainability constitute a multi-layered process shaped by complex and constantly evolving dynamics (Akpınar et al., 2019). In this context, SDG-3 Good Health and Well-being (Hales & Birdthistle, 2023), SDG-5 Gender Equality (Wroblewski et al., 2023), and SDG-10 Reduced Inequalities (Camminatiello et al., 2024) constitute fundamental components of social sustainability (Biermann et al., 2022; Lemke, 2016). Recent reports and studies indicate that progress toward these goals has been slower than expected, mainly due to the impact of pandemics, social vulnerabilities, and increasing global inequalities (UN, 2025). Within the goal of achieving healthy and quality lives, regional disparities in access to healthcare services persist (WHO, 2020). In the field of gender equality, although women's participation in education and the workforce has increased in some countries, progress has been limited in societies affected by traditional and religious pressures (Assa, 2017). In such contexts, women's representation in decision-making mechanisms within social, political, and educational positions has not reached the desired level (Staab, 2025; Hancock et al., 2023). Regarding the reduce of inequalities, multi-layered policies are required to eliminate discrimination and exclusion in fundamental areas such as income distribution, education, and health. The alignment of these policy frameworks at both national and international levels is considered critical for social sustainability (UN, 2022). These dynamics necessitate the implementation of inclusive and responsive policies to ensure social sustainability.

Sport has acquired a unique international significance. Indeed, the “2030 Agenda for Sustainable Development,” which came into force in 2015, recognizes sport as a tool for achieving the 17 SDGs (UN, 2015) and serves as an effective platform for implementing the Sustainable Development Goals and transforming societies (Campillo-Sánchez et al., 2025; Lemke, 2016). From an environmental perspective, the sports industry makes efforts to minimise the ecological impacts of sports organisations, and eco-friendly sports practices and climate change mitigation initiatives are being promoted (Chaves-Castro et al., 2025; Orr et al., 2022). This integration is supported through practical measures, including green facilities, reducing carbon footprints, and increased environmental awareness (Cury et al., 2023). On the other hand, the social and economic benefits attainable through sport include the development of life skills among youth, increased social inclusion of individuals with disabilities (Burnett, 2021), job creation, economic growth, and contributions to local development processes (Annesi et al., 2023). Viewed within this context, broadening the scope of various policies and social awareness programs will strengthen the relationship between sustainable development and sport.

Additionally, sustainable development efforts emphasise the importance of accessible sports and recreational activities, which play a crucial role in enhancing social well-being and promoting gender-inclusive participation, as well as empowering women (Lyras & Human, 2009). Projects developed through sport with the specific aim of empowering women and girls are significant. Topics related to gender equality were initially addressed in the 1990s mainly through the lens of biological sex-based discrimination and exclusion. However, during the subsequent SDGs period, the focus shifted toward understanding gender as a social construct (Dilli, Carmichael & Rijpma, 2019). FIFA and UEFA have introduced various policies in recent years aimed at promoting gender equality in sports, particularly in football (FIFA, 2024; UEFA, 2024). Academic researches demonstrate that sport serves as a significant means for empowering women and girls,

breaking gender-based stereotypes and inequalities (Paterson & Scala, 2024; Bekker et al., 2023; Stoor et al., 2022). For instance, participation in community sports in Australia has been shown to strengthen women's social identities and effectively challenge gender norms (Timperley & Phillips, 2025). Indeed, the UN emphasises that regular participation in sports and physical activity enables women and girls to strengthen themselves both physically and psychologically (Lemke, 2016). Moreover, despite the male-dominated structures in sports, female athletes develop not only physical but also social and psychological resilience, positioning sport as a transformative force for gender equality (McManama et al., 2021). Consequently, the right of individuals to participate in sporting activities, regardless of their demographic characteristics, is now recognised as a global norm (Council of Europe, 2023). In summary, the participation of women in sport poses a structural challenge to traditional gender norms and stereotypes (Engin, 2024; UNESCO, 2017), and it has a positive impact on individual self-confidence (UN Women, 2021).

Academic studies indicate that the topic of sport and sustainability is increasingly taking a more prominent role in social life and is accepted as a societal norm (Alma, 2024; Boros et al., 2024). Furthermore, research on gender equality seeks to contribute to social progress by generating knowledge (Vaquero-Cristóbal et al., 2024). Accordingly, examining research trends on these topics over time is an important field of study (Engin, 2025; Zhang et al., 2025; Kataeva et al., 2024). This study investigates the growing number of scientific publications on gender equality in sport, produced within the framework of the SDGs and published between 1992 and 2025, through a bibliometric analysis. The first research question is stated as follows:

RSQ-1: How is the relationship between sport and gender equality addressed in the literature within the context of the SDGs?

The second era of Sustainable Development Goals, initiated in 2015 (UN, 2015), is characterised by a growing recognition that the impacts of these goals vary significantly across countries and regions due to differing technological advances, social dynamics, and cultural contexts (Foroudi et al., 2024; Barron et al., 2023). It is widely acknowledged in the literature that the SDGs do not represent a uniform set of priorities applicable globally; instead, their interpretation and implementation are contingent upon localised needs and societal priorities (Warchold, Pradhan, & Kropp, 2021). For instance, while access to clean water remains an urgent priority in North African countries, most European nations emphasise social justice and social capital development as key sustainable development targets (Tavares et al., 2025). Similarly, until a few decades ago, policies aimed to encourage female athlete participation in the Olympics; however, at the last Paris Olympics, quantitative gender equality was fully achieved (Donnelly, 2025). This evidence highlights the evolving and context-dependent nature of the SDGs, highlighting the significance of exploring how, particularly, the social sustainability dimension will further expand in diverse contexts. Accordingly, the second research question as follows:

RSQ-2: What future directions should be pursued to enhance knowledge in sport and gender equality literature in the context of SDGs?

RSQ-1 addresses a significant gap in the existing literature by systematically mapping how sport's role in promoting gender equality has been conceptualised within the framework of the SDGs. This mapping is essential for identifying prevailing themes and underexplored dimensions, which can inform future empirical and theoretical research efforts. RSQ-2 extends the inquiry by identifying strategic directions for future research, thereby providing a roadmap to enrich academic dialogue and inform policy interventions. As such, it can provide findings that support evidence-based decision-making in promoting gender equality in sports governance and policymaking.

2. Methodology

2.1 Research design

This study employs a bibliometric analysis, a quantitative methodological approach using statistical techniques to identify emerging patterns in the literature. Bibliometric analysis is a widely recognised method for providing a comprehensive overview of academic output in a specific field, revealing collaboration networks at the levels of countries, authors, universities, and journals (Moral-Munoz et al., 2020; Donthu et al., 2021). Through this approach, gaps in the literature can be detected, providing emerging researchers with opportunities to contribute to the field.

2.2 Data source choice and justification

The data source's credibility is significantly influenced by its relatively high recognition and respectability among research institutions, particularly universities, and other stakeholders producing scientific content. For this reason, metadata access for the research was obtained from the Web of Science (WOS) database provided by Clarivate Analytics (Web of Science, n.d.). This database was preferred due to its reliability in terms of publication ethics and its inclusion of high-impact journals through a curation process encompassing a wide range of disciplines.

2.3 Data collection

Initially, various searches were conducted using different variations of the key concepts underlying the study, namely "sport" and "gender equality." This process ensured that the inclusion/exclusion criteria and the most precise keywords were established. On August 13, 2025, a search was performed in the Web of Science Core Collection using the "AND" operator with the terms "sport*" and "gender *equ*", selecting TOPIC as the search field. This allowed the retrieval of results where both terms appeared together within the title, abstract, keywords, or Keyword Plus fields (keywords generated by WOS). The asterisks (*) placed at the beginning and end of the keywords were intended to capture various contextual forms of the terms (e.g., sport, sporting, sports, equal, equity, equality, inequity, inequality, inequalities). The "TOPIC" filter was chosen instead of "all fields" to exclude results matching terms irrelevant to the research context, such as the publisher's name, author address, or affiliation. The search yielded 871 results across various disciplines. In the next phase, manual screening was conducted to eliminate duplicate records and verify the relevance of the studies with the role of the Sustainable Development Goals. Following this evaluation, 70 records were excluded. It was

confirmed that all remaining studies pertained to the field of sport and addressed phenomena including discrimination, inequality, disparities, challenges, gender boundaries, gender barriers, gender justice, diversity, integrity, inclusion, and gender support. Consequently, 801 qualified studies constituted the final unit of analysis.

It should be noted that sustainable development represents a vision that has evolved over time, initially introduced by the United Nations in 2000 as the Millennium Development Goals (UN, 2000) and redefined in 2015 as the Sustainable Development Goals. Limiting the SDG concept to a specific time frame from its theoretical inception to the present could exclude diverse contextual perspectives and cause discontinuities in citation networks. To prevent this, no restriction was placed on the publication year, and the entire 33-year period was comprehensively included in the study.

2.4 Data analysis

To analyse the current state of the literature and provide an overall panorama, bibliometric analysis tools such as CiteSpace II (Chen, 2006), VOSviewer (van Eck & Waltman, 2010), and Biblioshiny (Aria & Cuccurullo, 2017) are commonly employed. In line with the aim and objectives of this study, the VOSviewer software was selected (v. 1.6.20). This method is widely accepted in the literature for analysing large volumes of scientific records due to its capacity to reduce human error and minimize researcher bias (Donthu et al., 2021). Within software, relationships among authors, countries, and institutions of the analysed works can be visualized, and intersections are mapped through citations. Additionally, Microsoft Word and Excel (MS Office Professional Plus 2021 for Windows) were utilized for statistical calculations and tabulation.

3. Results and discussion

This section presents the statistical descriptions of the metadata and the results of bibliometric analyses conducted using the VOSviewer software.

Table 1: Descriptive information of studies (figures represent the number of items.)

Research Area	Publisher	Languages
Social Sciences Other Topics (410)	Taylor & Francis (223)	English (740)
Sport Sciences (155)	SAGE Publications (93)	Spanish (42)
Sociology (145)	Human Kinetics (81)	Portuguese (8)
Education Educational Research (107)	Springer Nature (48)	French (4)
Business Economics (104)	Elsevier (35)	Icelandic (2)
Women's Studies (92)	Frontiers Media SA. (28)	Bulgarian (1)
Psychology (68)	MDPI (28)	Croatian (1)
Communication (42)	Emerald (24)	German (1)
Public Environ. Occupational Health (22)	FEADEF (21)	Italian (1)
Government Law (19)	Routledge (20)	Turkish (1)
History (17)	Wiley (17)	
<i>List continued...</i>	<i>List continued...</i>	

As detailed in Table 1, the most prominent research areas identified are Social Sciences Other Topics (410), Sport Sciences (155), and Sociology (145), each constituting a substantial portion of the reviewed literature. With respect to publishers, Taylor & Francis (223) is the most productive publisher, followed by SAGE Publications (93). It should be noted that the distribution of journals indexed in WOS and Scopus may introduce biases in favour of Natural Sciences and Engineering, as well as Biomedical Research. This may potentially disadvantage the Social Sciences and the Arts and Humanities, from a disciplinary perspective (Mongeon & Paul-Hus, 2016).

This limitation has been emphasised in the methodological section, identified as a constraint of the present study, and has concurrently enabled it to serve as one of the study’s recommendations. In addition, publisher names were classified strictly according to the formal titles provided in each article’s bibliographic information. Since Routledge operates as an imprint under the Taylor & Francis Group, it is possible to merge these data, if needed, in the interpretation phase of the results. Regarding language, English (740) is the most widely used language of publication, followed by Spanish (42) and Portuguese (8). This distribution highlights the advantages (Amano et al., 2023; Ferguson, Pérez-Llantada, & Plo, 2011) and widespread acceptance of English (Drubin & Kellogg, 2012; Ortiz, 2004) as the language of science in academia today.

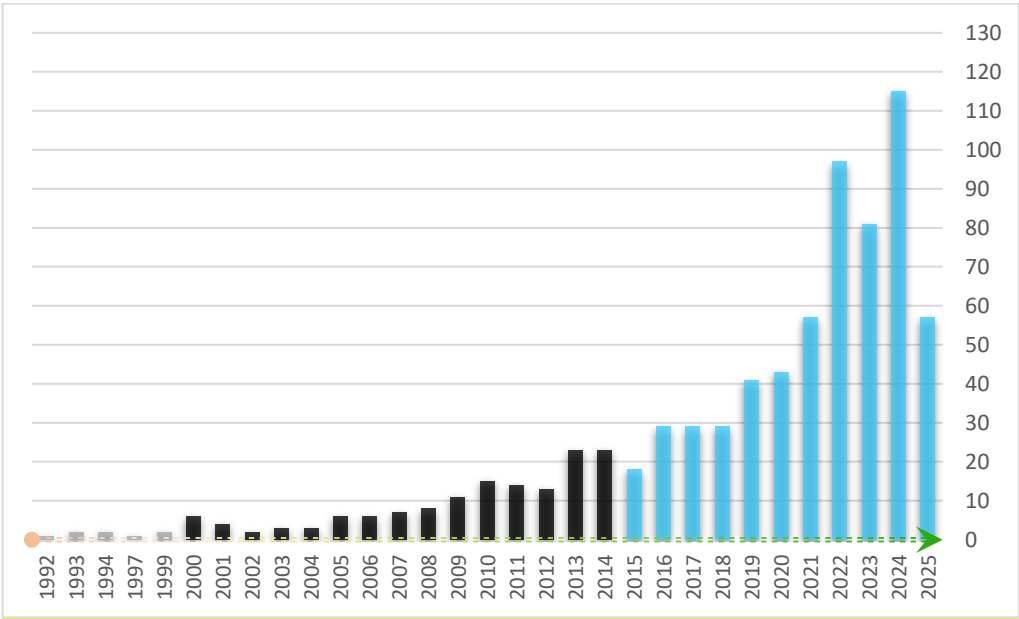


Figure 1: Trend graph of studies by year

Figure 1 presents the trend graph of the studies within the metadata over time. The black columns represent the period of the Millennium Development Goals (UN, 2000), whereas the blue columns correspond to the era of the Sustainable Development Goals, covering the years 2015-2030 (UN, 2015). Beginning in the early 1990s, issues related to sport and gender equality within the context of sustainable development have

gradually garnered scholarly attention. This line of research gained substantial momentum after 2015 (18), largely coinciding with the adoption of the UN SDGs, and ultimately peaked in 2024 (123). The data for 2025 includes studies conducted in the first eight months of the year, and it is anticipated that by the end of 2025, the number will likely reach a point close to the number of studies in 2024.



Figure 2: Distribution of studies according to SDG targets

The findings presented in Figure 2 not only map the numerical distribution of research on sport and gender equality across specific SDGs, but also underscore the multidimensional role of sport in advancing social sustainability objectives. Particularly, the strong association with SDG-3 Good Health and Well-being with 595 instances (Fröberg & Lundvall, 2022; Adami & Fitch, 2021) and SDG-5 Gender Equality with 60 cases (Bekker et al., 2023; Marashi et al., 2023) highlights how sport is conceptualised as both a public health enabler and an agent of gender empowerment. This aligns with theoretical perspectives emphasising the intersection of sport, policy, and social inclusion. Additionally, the prominence of SDG-4 Quality Education with 51 instances (Baena-Morales & Ferriz-Valero, 2025; Jones, 2017) and SDG-10 Reduced Inequalities with 31 cases (Skewes & Kroløkke, 2024; van Tubergen & Molteni, 2024) indicates an increasing scholarly focus on the transformative and integrative power of sport to foster equitable, inclusive, and sustainable societies. This distribution highlights both internationally accepted trends in the social function of sport and how the perspectives on supporting women and girls through physical activity are reflected and integrated into scientific research. Indeed, the unifying and integrative power of sport has also been recognised at the level of the United Nations (UN, 2015).

Furthermore, at UNESCO's 6. International Conference of Ministers and Senior Officials Responsible for Physical Education and Sport, sport was defined as a functional mechanism for advancing eight specific sustainable development objectives which are

SDG3, SDG4, SDG5, SDG8, SDG10, SDG11, SDG12 and SDG16 (UNESCO, 2017). As can be observed, the functionality of sport is also highlighted in relation to a wide range of societal issues, such as education, economic growth, the reduction of social inequalities, and the promotion of peace and justice. In this context, it can be stated that the studies carried out and the evaluations of the UN and UNESCO on the role of sports in development largely coincide with the academic literature. In summary, these results offer a nuanced response to RSQ-1, highlighting how the relationship between sport and gender equality is examined through the lens of multiple, interrelated sustainable development priorities.

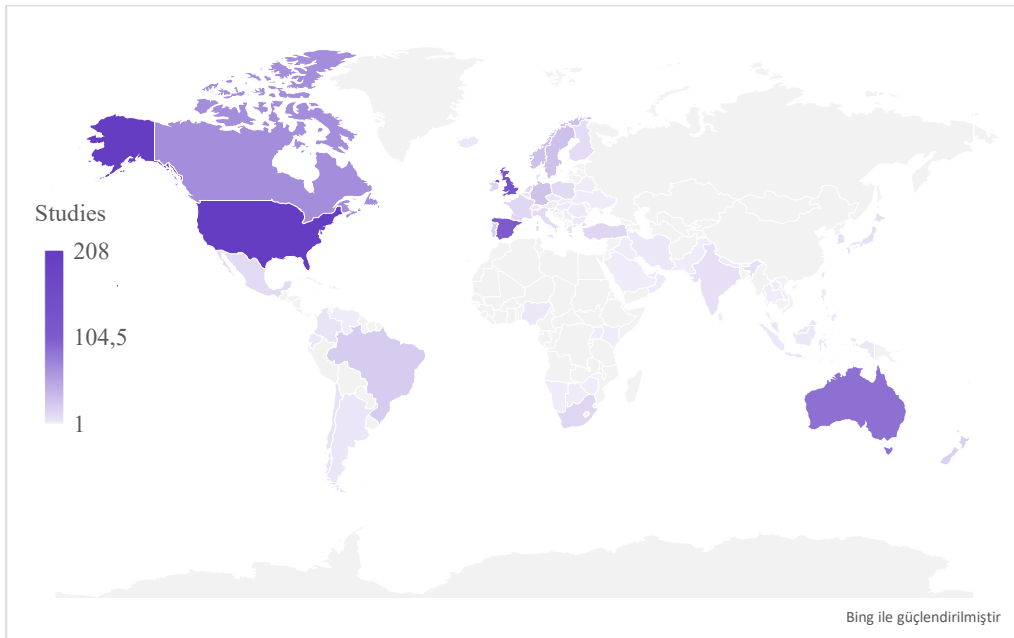


Figure 3: Distribution of studies by country

As illustrated in Figure 3, the United States (208) stands out as the country contributing the highest number of studies in this field. The subsequent productive countries are: England (118) (Pope, Williams & Cleland, 2022), Spain (107) (Moya & González-Rojas, 2025), Australia (90) (Pankowiak et al., 2024), Canada (69) (Patil & Doherty, 2023), Norway (32) (Tjønndal, 2021), Sweden (32) (Larsson, 2021), Germany (30) (Hartmann-Tews, 2018), Brazil (23) (Bertollo & Schwengber, 2017), Portugal (22) (Silva et al., 2017), New Zealand (21) (Lutherus & Lyons, 2024), Ireland (18) (McSharry, 2017), People's Republic of China (18) (Yang & Montez de Oca, 2025), Türkiye (16) (Karaçam & Koca, 2018), South Africa (15) (Adom-Aboagye & Burnett, 2023), and continues with other countries. Such a concentration in a limited set of countries highlights the importance of supporting research efforts in underrepresented regions.

From this point onward, information regarding the analyses conducted using the VOSviewer software and the corresponding results are presented.

3.1 Co-authorship of authors

The co-authorship analysis demonstrates a collaborative structure comprising 81 authors, organized into 11 clusters with 167 co-authorship links and a cumulative link strength of 189. Within the network, node size is proportional to each author's total link strength -representing cumulative collaborations- while link thickness corresponds to the number of joint publications between any two authors.

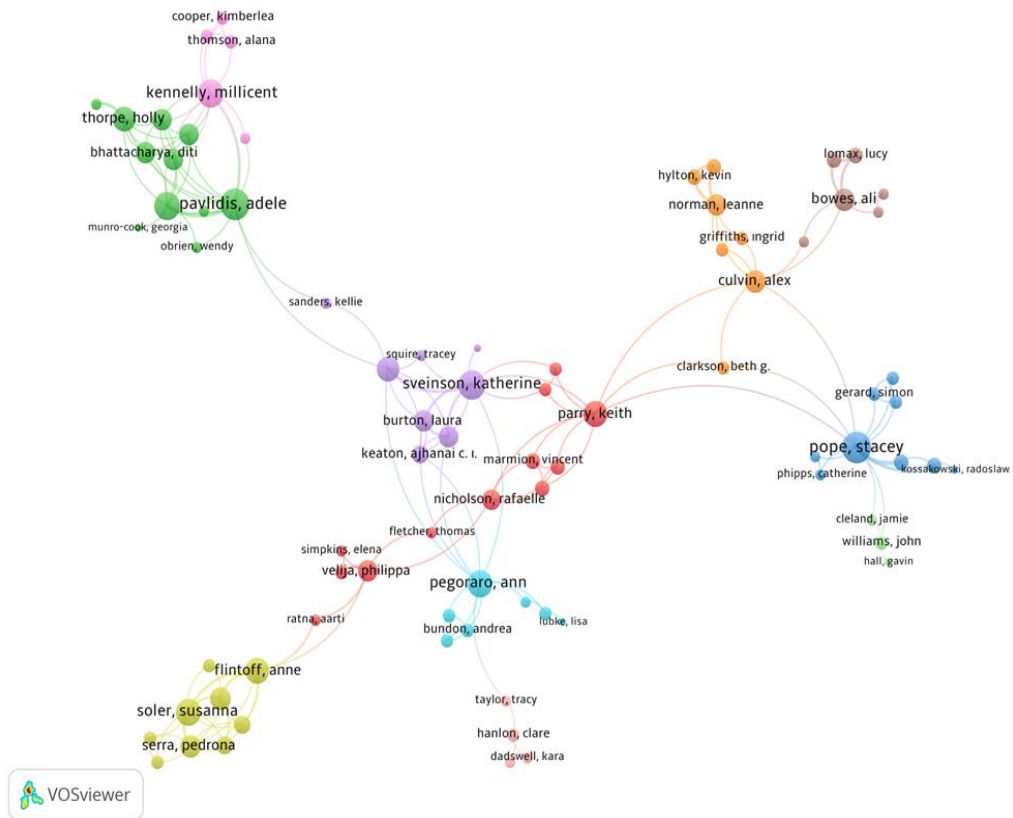


Figure 4: Co-authorship of authors

Adele Pavlidis (12 connections, total link strength 15) and Stacey Pope (12 connections, total link strength 15) emerge as the most prominent nodes in the co-authorship network. They are followed by Katherine Sveinson, (10 connections, total link strength 13), Ann Pegoraro (11 connections, total link strength 11), and Keith Parry (10 connections, total link strength 10). These authors occupy key positions in terms of inter-community interaction and the sustainability of the scientific network. Collaboration relationships across the network predominantly occur within clusters. This structure is consistent with the "clustering" phenomenon frequently discussed in the literature (Thanoon et al., 2021) and highlights the need for new strategies to strengthen interdisciplinary or inter-institutional collaboration.

3.2 Citation of authors

Figure 5 presents the network structure of citation links among the authors. This analysis was conducted under the condition that authors have at least two publications and have received at least one citation.

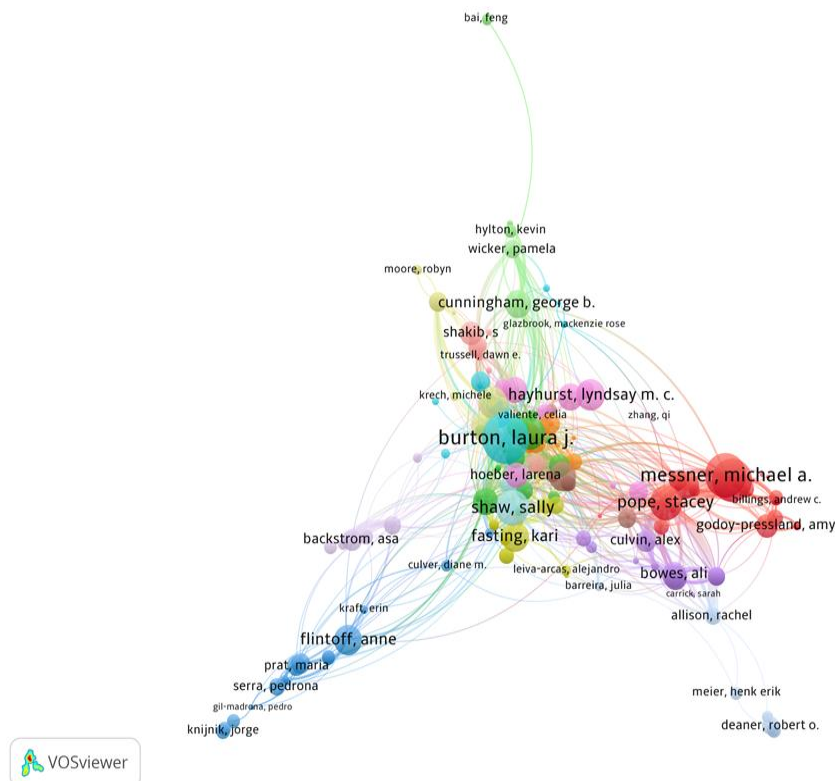


Figure 5: Citation of authors

The citation network comprises 178 authors organized in 15 clusters, collectively forming 941 links and reaching a total link strength of 1385. One of the most central and powerful nodes is Laura J. Burton, who leads with 64 links and a total link strength of 111; other key nodes include Sally Shaw (55 links, total link strength 82) and Michael A. Messner (21 links, total link strength 36). Other noteworthy authors include Stacey Pope, Adele Pavlidis, George B. Cunningham, and Anne Flintoff. Clustering within the network is quite distinct, and relationships are predominantly concentrated within clusters. The coloured lines and multilayered inter-cluster connections indicate that some authors play an important role not only within their own clusters but also in facilitating collaboration between clusters.

3.3 Citation of countries

Figure 6 presents the network structure of citation links among the countries.

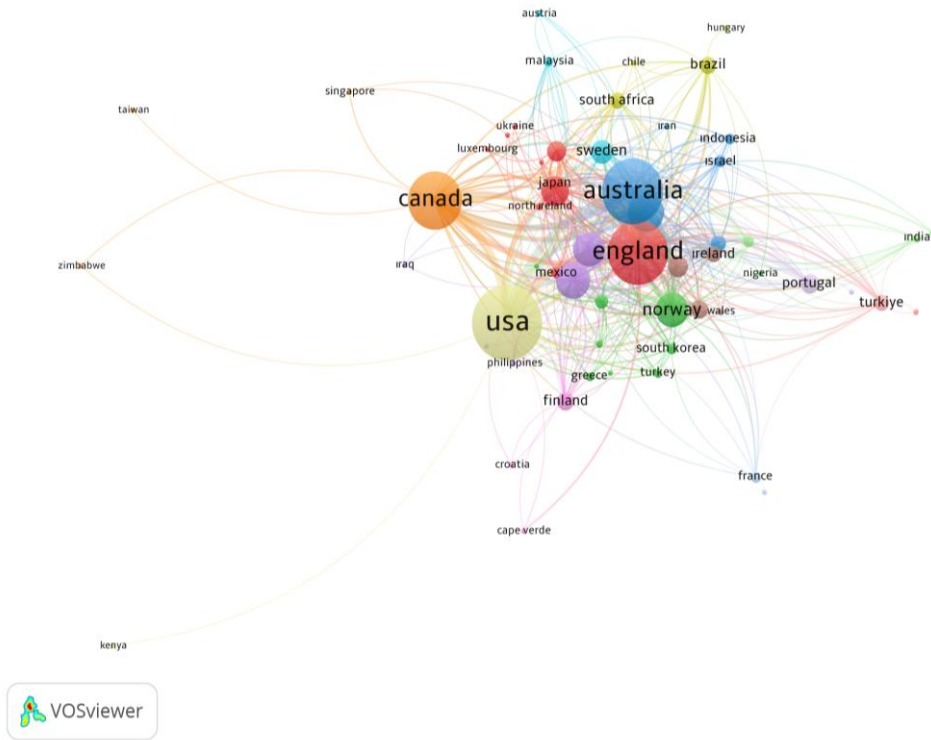


Figure 5: Citation of countries

Considering the network structure in Figure 6, the citation network among countries appears to be quite dense and centralised. The analysis includes a total of 62 countries (items), 14 clusters, 421 links, and a total link strength of 2004. At the centre of the network, the largest nodes are the USA, England, Australia, and Canada; these countries have both a higher number of links and greater total link strength compared to others. For instance, the USA has 44 links and a total link strength of 617, while England has 42 links and a total link strength of 468. Australia is also quite close to the centre, with 40 links and a total link strength of 485. Following these countries, Canada comes with 39 links and a total link strength of 399.

In conclusion, citation relations between countries mostly cluster around certain central countries, and the intensity of international interactions increases as these countries occupy central positions in the network. This structure indicates that both academic collaboration and global knowledge flow predominantly occur through a few major countries and their affiliated clusters. As a result, these central countries not only shape the direction of scientific discourse but also play a pivotal role in influencing policy formulation, allocating international research funding, and establishing global collaboration platforms within their respective fields.

3.4 Co-occurrence of all keywords

In this network analysis, the co-occurrence relationships among keywords are visualised.

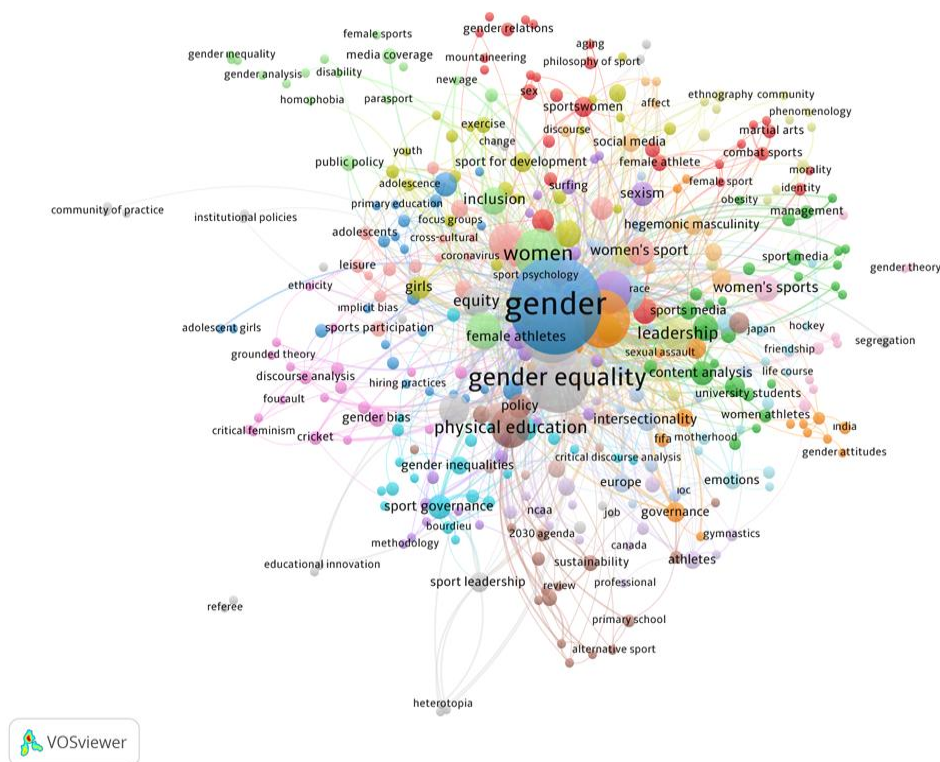


Figure 6: Co-occurrence network of all keywords

According to the co-occurrence network analysis of keywords, conducted with a criterion of at least two keyword matches, the most frequently recurring and strongly related keywords in the literature clearly emerge. The leading network comprises 376 keywords, 24 clusters, 2,033 links, and a total link strength of 2,697. Leading keywords such as "gender" (180 occurrences, total link strength 487), "sport" (94 occurrences, total link strength 292), and "gender equality" (85 occurrences, total link strength 207), "women" (48 occurrences, total link strength 140) are both the most cited and centrally positioned terms in the studies. The network map shows these keywords densely concentrated in the centre, with closely connected themes like "women", "gender equity", "physical education", "sports", and "equality." The coloured clusters in the network indicate thematic groupings of concepts with strong intra-cluster relations. At the same time, more specific topics, such as "leadership", "inclusion", "hegemonic masculinity", and "stereotypes", are also highly connected around the core keywords. In conclusion, the analysis reveals that the conceptual core of the field is strongly influenced by themes of gender, equality/equity, and sport. This network structure highlights the shift toward

broader conceptual diversity and the increasing association of emerging topics (e.g. leadership, inclusivity, feminism) with the field's core themes. This provides valuable information in response to the second research question (RSQ-2).

Beyond this, to fully realise the global potential of emerging themes such as leadership, inclusivity, and feminism, future research must move beyond Western-centric perspectives. This entails examining how these concepts are operationalised in underrepresented regions and assessing their impact on sports governance and the implementation of gender equality policies. Such an approach will foster enhanced global inclusivity and inform evidence-based policymaking that addresses both local needs and international standards. In countries such as India (Das et al., 2023), China (Xu et al., 2019), Japan (Hatano, 2021), and Malaysia (Aman et al., 2019), issues of sport and gender equality are predominantly addressed and debated within specific socio-cultural and developmental contexts. In this regard, it is essential to acknowledge that the prioritisation of Sustainable Development Goals (SDGs) varies across countries and regions (Foroudi et al., 2024). Moreover, specific challenges, often framed as 'critical issues to be overcome,' are approached differently in various contexts and perspectives. This exemplifies the diverse ways in which SDGs are conceptualised and implemented globally, reflecting unique regional, cultural, and social dynamics (Warchold, Pradhan, & Kropp, 2021).

4. Conclusion

Although developments related to the concept of gender have been advancing in the academic field since the early 1900s, their manifestation in the field of sport has shown particular progress since the early 1990s. Notably, the Millennium Development Goals and the currently valid Sustainable Development Goals of the United Nations both include good health and well-being (SDG-3) and gender equality (SDG-5) as core objectives, which have been reflected in the academic research in this field. It has been observed that the implementation of the Sustainable Development Goals vision in 2015 has accelerated studies in this area. In this context, it is possible to divide the consideration of sport and gender issues into two periods (from the 1990s to 2014, and from 2015 to the present). The United Nations' recognition of sport as an instrument in the realisation of the Sustainable Development Goals has triggered thematic growth, also activating goals parallel to healthy living and gender equality, such as Quality Education, Reduced Inequalities, Sustainable Cities and Communities, Responsible Consumption and Production, and Peace, Justice, and Strong Institutions. Dozens of different issues, including digitalisation in education, lifelong learning, empowerment and social participation of disadvantaged groups, the development of accessible urban spaces and transportation, the widespread promotion of recycling awareness, and the adoption of participatory and democratic governance, have developed in the literature as elements evolving on the periphery of sport and gender equality.

Countries that have contributed the most to the field of sport and gender equality, including the USA, UK, Australia, and Canada, have been identified. Key authors such as Adele Pavlidis, Stacey Pope, Katherine Sveinson, Ann Pegoraro, and Keith Parry occupy essential positions in the inter-community interaction and sustainability of the scientific network. In recent years, the concepts of sport and gender have become increasingly

interconnected, with related terms such as inclusion, feminism, and transgender athletes, reflecting a transformative progression in the field. This study demonstrates that the sustainability perspective is becoming increasingly central in the relationship between gender and sport, and research in this area is diversifying both theoretically and practically.

4.1 Implications

Considering the findings of this study, certain publishers stand out in terms of productivity in publishing research on sport and gender equality. This may assist researchers during the submission process by reducing the likelihood of encountering "out of scope" rejections and facilitating the identification of journals that align well with their study's scope, thereby preventing unnecessary delays. Gender equality topics were initially addressed in the 1990s primarily through the lens of biological sex-based discrimination and exclusion. However, in the subsequent SDGs period, the focus has shifted toward the perspective of gender as a social construct. This transition has made it easier to address the demands and visibility of marginalised groups in society, such as transgender athletes. The data obtained can directly contribute to the development of strategies that enhance gender equality, especially for sports organisations and policymakers.

4.2 Limitations and recommendations for future studies

This study presents certain limitations inherent to the bibliometric approach and the selection criteria applied. The conscious delimitation of inclusion and exclusion criteria within the bibliometric framework resulted in a focus solely on sport and gender equality studies, potentially limiting the breadth of the sustainable development literature covered.

Additionally, the use of the Web of Science database as the data source introduces the possibility of selection bias. While WOS provides access to a vast array of high-quality, peer-reviewed journals, its coverage is not exhaustive and exhibits inherent biases. Specifically, WOS tends to favour publications in English and journals from Western countries, which may result in underrepresentation of research published in other languages or originating from regions such as the Global South, Eastern Europe, and parts of Asia and Africa. This linguistic and regional bias can consequently narrow the scope of the bibliometric analysis, potentially limiting the generalizability of findings and the interpretative breadth. Future studies should consider integrating additional bibliographic sources, such as Scopus or regional indexes like TR Dizin, to enhance database diversity, increase representativeness, and thereby strengthen the robustness and inclusiveness of bibliometric assessments related to sport, gender equality, and sustainable development.

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This research does not involve human participants or personal data; thus, ethical approval was not required. Data were obtained from publicly accessible databases without any manipulation, and the study is limited to descriptive analyses based on existing information.

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