

The evolution of gender studies in physical education: insights from a bibliometric analysis

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ABSTRACT

Background: Highlighting gender in physical education is particularly important due to the prevalence of gender inequalities and stereotypes in this context. **Research Objectives:** The purpose of this study is to analyse the development, trends, and patterns of research on gender in physical education. **Methods:** This research uses bibliometric analysis. The search was initiated using the Scopus and Web of Science (WoS) databases. The results of article findings on the Scopus database showed 242 articles, while the WoS database showed 252 articles. Pre-process bibliographic datasets generated with the ScientoPy tools. **Findings/Results:** This research shows a growing interest in the topic of gender in physical education since 2005, with a peak in 2023. Publications from different disciplines, such as education, social sciences, sport science, and psychology, demonstrate a multidisciplinary approach to addressing gender inequality. The analysis also identified influential authors, including Daniel Mayorga-Vega and Jesús Viciano, who wrote five articles each. Spain was the largest contributing country, with 105 articles. The keyword “physical activity” appeared 15 times, highlighting the focus on the relationship between physical activity and gender. **Conclusion:** Bibliometric analyses indicate a strong and growing interest in gender research in physical education. Contributions from influential authors and support from key academic journals have fuelled this progress. Emerging patterns and themes highlight the complexity of gender issues in this context, emphasising the need for ongoing research and practical interventions to promote gender equality. This study provides a comprehensive overview of the evolution of gender research in this field, offering valuable insights for educators, policymakers, and researchers to create an inclusive and equitable physical education environment.

Keywords: Gender; physical education; scopus; web of science; bibliometric analysis

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INTRODUCTION

Discussions around gender in education, particularly in physical education, are important due to the prevalence of gender inequalities and stereotypes in this context. Research emphasises the need for inclusive and equitable approaches in physical education classrooms to promote equality between genders (Guerrero & Guerrero Puerta, 2023). Efforts have been made to address gender inequalities through co-education interventions, which aim to improve students' attitudes towards gender equality and encourage women's full participation in physical activity (Deng, 2023).

Despite progress, gender stereotypes persist in educational frameworks, including in physical education settings, emphasising the need for efforts to achieve equality and inclusivity in all aspects of education, including sport and physical education (Avraam & Anagnostou, 2022).

Research has consistently shown that gender disparities exist in various aspects of physical education. For example, studies show that there are significant differences in physical literacy and physical activity participation between boys and girls, potentially influenced by varying levels of parental support and cultural factors (Parpa et al., 2023; Sugimoto et al., 2023). Boys tend to be more physically active than girls, while girls show lower levels of participation in physical education classes and a lower prevalence of doing physical activity several times a week (Hong et al., 2020; Sugawara & Nikaido, 2014). Such findings emphasise the need for ongoing research on how these dynamics play out in different physical education contexts.

Gender research in physical education has produced many important findings. Literature shows that gender stereotypes still dominate and influence student participation (Avraam & Anagnostou, 2022), while effective teaching strategies can help reduce gender bias (Parri & Ceciliani, 2019). A content analysis of physical education textbooks in Spain also showed differences in gender representation in the images used (Táboas-Pais & Rey-Cao, 2012). Furthermore, studies have demonstrated that inclusive teacher training enhances gender equality and diminishes stereotypes in physical education lessons (Guerrero & Guerrero Puerta, 2023; Păuțu et al., 2024). However, despite numerous studies examining this issue, there hasn't been a thorough bibliometric analysis of the evolution of gender studies in physical education.

This article aims to close the literature gap and offer new perspectives on creating more inclusive learning environments by mapping the trends and developments in gender research in physical education. This study is important to understand the evolution of gender research over time, identifying trends, patterns, and gaps in the literature. Through bibliometric data analyses, this study uncovers relationships between studies, pinpoints areas that have received less attention, and recommends future research directions. This approach is unique in that it combines quantitative and qualitative data, providing new insights into the development of gender research in physical education as well as answering some key research questions. The study aims to address the following research questions:

1. **RQ1.** How has the trend and growth of gender research in physical education changed over time?
2. **RQ2.** Who are the most influential authors in research on gender in physical education?
3. **RQ3.** Which journals publish the most research on gender in physical education?
4. **RQ4.** What are the main patterns and themes emerging in research on gender in physical education?

METHOD

Research Design

This research used bibliometric analysis. Kadirhanogullari and Kose (2024) use bibliometric analysis as a quantitative approach to analyse bibliographic data. This technique provides a comprehensive overview using various parameters, such as the total number of publications and citations of an author, topic, university, and country. This bibliometric has been analysed in various fields of physical education (Gazali & Saad, 2023; Perdima, Hadiwinarto, et al., 2022; Perdima, Suwarni, et al., 2022; Pérez-Gutiérrez

et al., 2021). Pre-process bibliographic datasets generated with the ScientoPy tools (Ruiz-Rosero et al., 2019).

Resources

The search was initiated using the Scopus and Web of Science (WoS) databases, which are considered the leading indexing systems for citations (Farid et al., 2020). These two databases are frequented by researchers worldwide and are used for bibliometric analyses (Perdima, Suwarni, et al., 2022; Sweileh, 2020; Yang et al., 2021).

Identification

The identification stage involved searching for synonyms, related terms, and variations of the study's main keywords in relation to gender in physical education. This identification process relied on an online thesaurus and keywords used by previous studies (Arias et al., 2021; Păuțu et al., 2024). After the development, the authors managed to enrich the keywords and develop a very complete search string based on the boolean operator function (OR, AND) on two databases, Scopus and Web of Science (see table 1).

Table 1. The Search String

Database	Search String
Scopus	TITLE-ABS-KEY= ("gender" OR "gender equality" OR "gender differences") AND ("physical education" OR "sports education")
Web of Science (WoS)	TOPIC= ("gender" OR "gender equality" OR "gender differences") AND ("physical education" OR "sports education")

Using these developed keywords, we conducted article searches on the Scopus and WoS databases, finding 274 articles for the Scopus database and 313 articles for the WoS database. We used the results of this finding to filter and evaluate the articles.

Inclusion and Exclusion Criteria

We use inclusion and exclusion criteria at this stage to decide which studies to include in the bibliometric analysis. These criteria are usually based on the research question and purpose of the study and can be justified in terms of content, methods, or quality of publication. Firstly, we selected only journal articles and proceedings as the type of literature, excluding review articles, book series, and books. To avoid translation issues, the search results focused only on articles published in English and did not include non-English publications.

Table 2. The Inclusion and Exclusion Criteria

Criterion	Inclusion	Exclusion
Literature type	Journal and Conference Proceeding	Journals (systematic review), conference review, book, book chapter, thesis, and not any other document.
Language	Non-English	Non-English

Screening and Eligibility Assessment for Data Analysis

The screening and eligibility process strives to apply eligibility criteria consistently and impartially, thereby minimising the risk of error or bias. At this stage, the screening and eligibility assessment process is carried out on articles that have been searched and found in the Scopus and WoS databases on June 10, 2024. We conducted the screening process systematically, applying predetermined eligibility criteria to ensure the selected

articles were relevant to the current systematic literature review study. The eligibility criteria included the suitability of the title, abstract, keywords, and the complete reading of the article with the research topic (gender in physical education). The results of article findings on the Scopus database showed 242 articles, while the WoS database showed 252 articles.

RESULTS AND DISCUSSION

RESULTS

Research Trends and Growth

In this analysis, we examined the development of gender research trends in physical education based on various subject areas. Research in the field of Education and Educational Research (120 articles) showed that the topic of gender in physical education received considerable attention from education researchers. In Social Sciences (86 articles), research focuses on the social and cultural aspects that influence gender perceptions and participation in physical education. In Sport Sciences (67 articles), research on gender in physical education tends to focus on physical performance, motivation, and sports participation between men and women. Research in Psychology (32 articles) provides perspectives on how gender differences affect mental and emotional aspects of physical education, such as self-esteem, body image, and student motivation. In Public, Environmental, and Occupational Health (9 articles), research highlighted the relationship between physical activity, health, and well-being by gender in the context of physical education. Studies in Women's Studies (6 articles) explored the role of physical education in empowering women and overcoming gender barriers. Studies in Environmental Sciences and Ecology (5 articles) explored how physical and ecological environments influence gendered participation in physical education. Research in History (3 articles) analyses the development of physical education policy and practice from a gender perspective, while research in Science and Technology (3 articles) focuses on how new technologies can be used to support gender-inclusive physical education. These research trends show that the topic of gender in physical education has gained attention from various disciplines, each contributing a unique perspective to understanding and addressing gender inequalities in physical education.

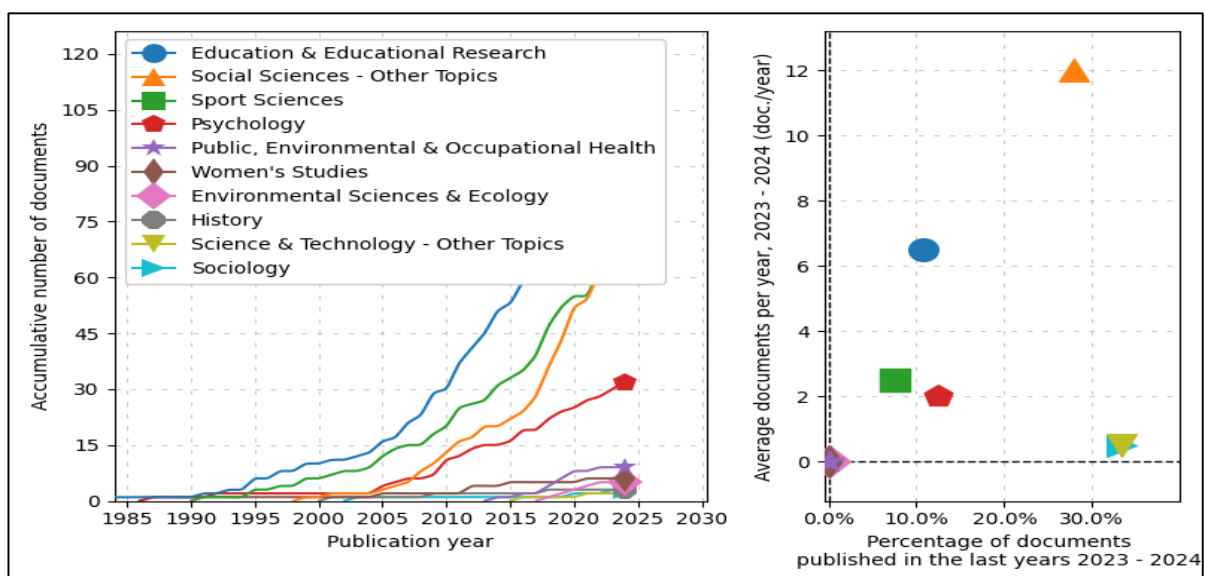


Figure 2. Number of Documents in Each Subject Area and their Proportion in the Analysed Dataset

According to the presented data, there has been a clear trend and growth in research on gender and physical education from 1984 to 2024. In 1984, there was only one published article, signalling a very low interest in this topic. The number of published articles remained relatively low until the mid-1990s, with only a few articles each year. However, a significant increase began in 2005, with nine articles published in a single year. This trend cover the next decade, this trend continued to increase, culminating in a significant spike in 2011 with the publication of 17 articles. It shows that the topic of gender in physical education is attracting more and more attention from researchers. The peak in publications occurred in 2023 with 38 articles, indicating the highest peak in research in this area. After that, although there was a slight decrease in 2024 with 15 articles, this number remained significantly higher than in previous years. Overall, this data shows a strong and consistent growth trend in research on gender and physical education, reflecting the increasing awareness and attention to these issues within the academic community.

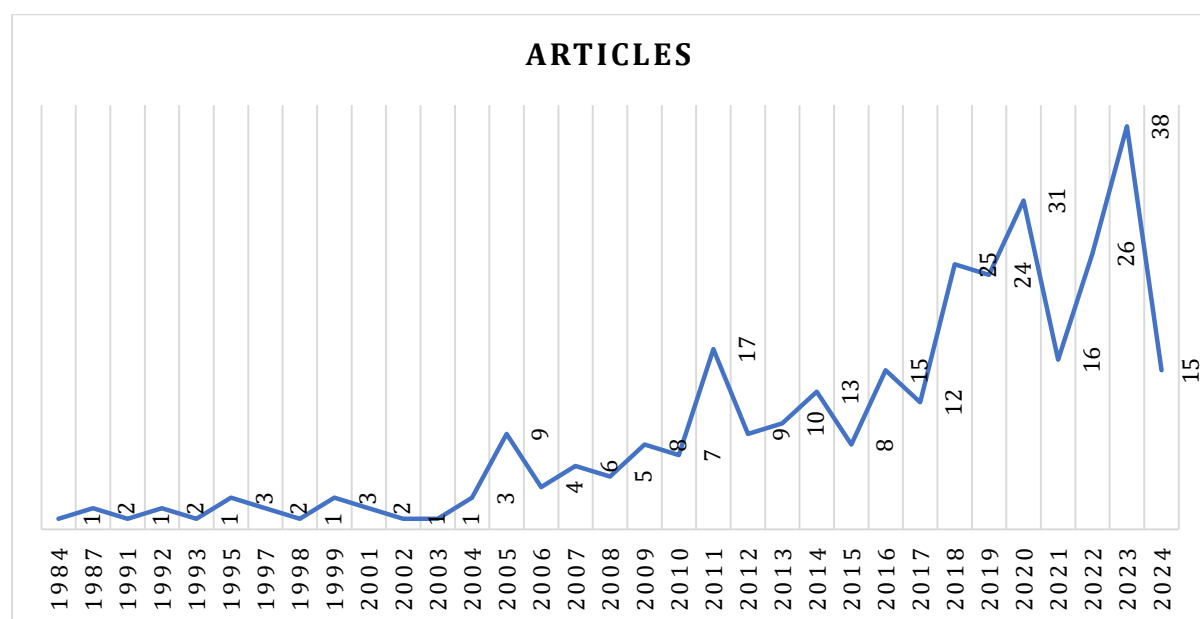


Figure 3. Annual Growth in Publications on Gender in Physical Education

Authors

The bibliometric analysis identified several influential authors in the field of gender in physical education. Among them, Daniel Mayorga-Vega and Jesús Viciano authored five articles each, demonstrating their significant contributions to this research. These two authors' research is likely to significantly influence the understanding and addressing of gender issues in physical education, emphasising inclusive teaching strategies and enhancing student participation. In addition, other authors, including Chihuailaf-Vera, M.L., Garcia-Gonzalez, L., Julian, J.A., Lodewyk, K.R., Navarro-Paton, R., and Soler, S., have made significant contributions with four articles each. They have conducted research on various aspects such as physical performance, motivation, and gender participation in physical education. On the other hand, Manzano-Sanchez, D., and Sawicki, Z., wrote three articles each, also showing their important contributions to the study. Overall, these authors provide a strong foundation in the literature on gender and physical education, helping to advance our understanding of how gender differences affect physical education and how to address existing inequalities.

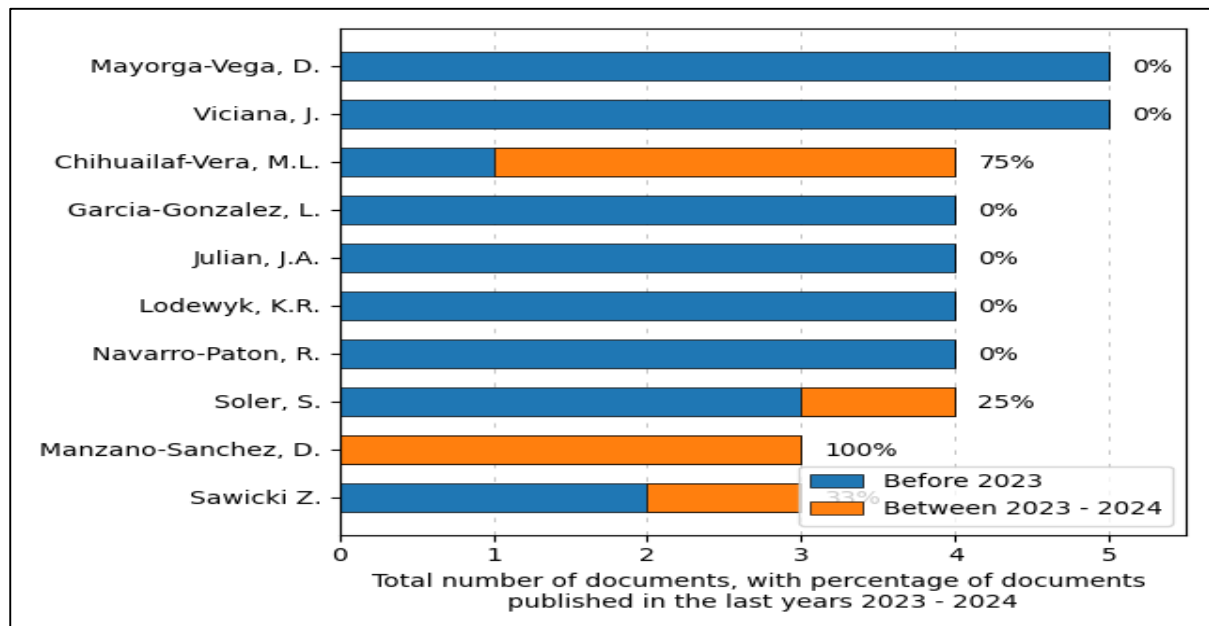


Figure 4. Ten Authors who Have Contributed to Gender Research in Physical Education

Journal

According to bibliometric analysis, "Retos-Nuevas Tendencias En Educacion Fisica Deporte Y Recreacion" took the top spot as the journal that published the most research on gender in physical education with a total of 27 articles. This shows that the journal is a major platform for researchers to publish their findings on this topic. Other journals that play an important role are "Journal of Teaching in Physical Education" and "Sport Education and Society," each with 19 articles, reflecting their significant contribution in advancing the discussion and research on gender in the context of physical education. Furthermore, other journals, such as the "Journal of Physical Education and Sport" (13 articles) and the "European Physical Education Review" (10 articles), made significant contributions to the literature on gender in physical education. The journals "Educacion Fisica y Ciencia" (9 articles), "Movimento" (7 articles), and "International Journal of Environmental Research and Public Health" (6 articles) also contribute to enriching this discourse. On the other hand, "Physical Educator-US" and "South African Journal for Research in Sport Physical Education and Recreation" published five articles each, showing that despite their smaller contributions, they still play a role in disseminating gender-related research in physical education. Overall, these journals provide a broad and diverse platform for researchers to develop understanding and solutions to gender issues in physical education.

Table 1. The total, AGR, ADY, PDYL, and H-index for the Top 10 Journals that Publish Literature on Gender in Physical Education are Presented

Pos.	Journal Title	Total	AGR	ADY	PDLY	h-Index
1	Retos-Nuevas Tendencias En Educacion Fisica Deporte Y Recreacion	27	5.0	8.5	63.0	7
2	Journal of Teaching in Physical Education	19	1.0	2.5	26.3	12
3	Sport Education and Society	19	1.0	2.0	21.1	12
4	Journal of Physical Education and Sport	13	1.5	3.0	46.2	4
5	European Physical Education Review	10	0.0	0.0	0.0	9
6	Educacion Fisica Y Ciencia	9	-1.5	0.0	0.0	0
7	Movimento	7	0.5	0.5	14.3	4
8	International Journal of Environmental Research and Public Health	6	1.0	1.5	50.0	4

Pos.	Journal Title	Total	AGR	ADY	PDLY	h-Index
9	Physical Educator-US	5	0.0	0.0	0.0	4
10	South African Journal for Research in Sport Physical Education and Recreation	5	0.0	0.0	0.0	3

Countries

According to the bibliometric data presented, Spain is the country with the largest contribution to research on gender in physical education, with a total of 105 articles. This suggests that gender issues in physical education are receiving a lot of attention in Spain, possibly due to government policies or high academic awareness of gender equality. Brazil and the United States contributed 32 articles each, showing significant but lower interest compared to Spain. Contributions from the UK (19 articles) and France (17 articles) also reflect a consistent focus on gender research in physical education in Europe. Other countries, such as Chile (16 articles), Germany (12 articles), Canada (9 articles), and Sweden and Turkey (8 articles each), also showed considerable participation in the research. Although these countries do not have as many publications as Spain, Brazil, or the United States, their contributions are still important in enriching the global literature on gender and physical education. The overall data reflects that attention to gender issues in physical education is a global phenomenon, with contributions coming from different parts of the world.

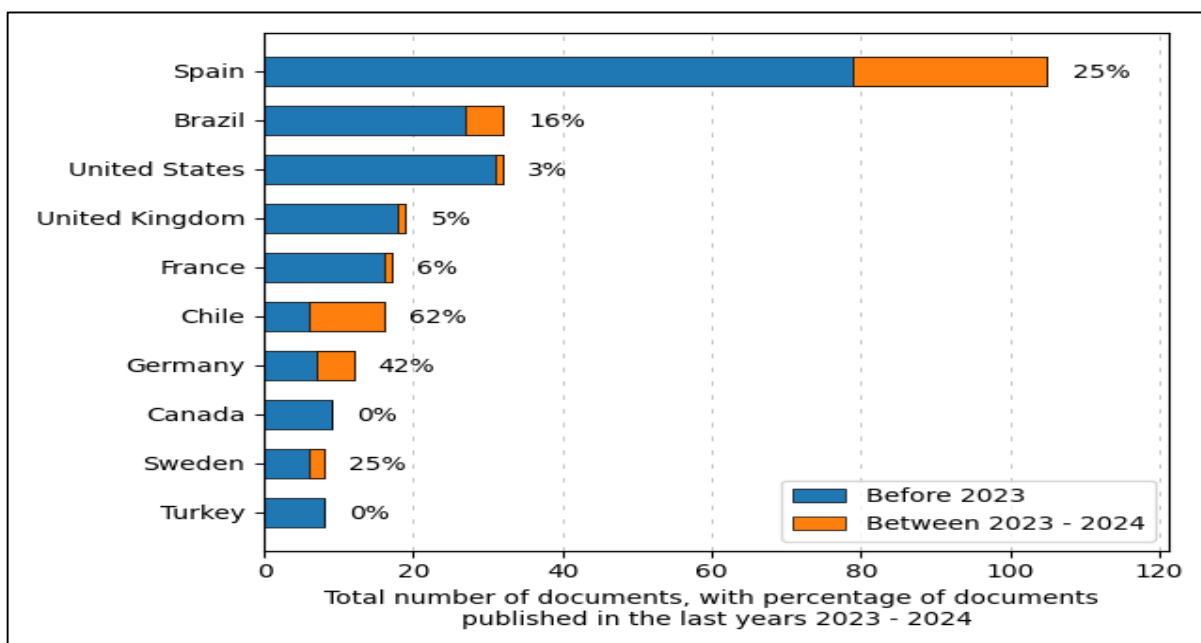


Figure 4. Ten Countries Contribute to Gender Research in Physical Education

Key Patterns and Themes

A bibliometric analysis of research on gender in physical education revealed several patterns and key themes that frequently emerged. The keyword “physical activity” appeared 15 times, indicating a strong focus on physical activity in terms of gender. This reflects researchers’ attention to the differential participation and physical performance of men and women in physical education. In addition, the keyword “gender equality” appeared 11 times, signalling that gender equality issues are an important theme in this research. This includes how physical education can be a tool to reduce gender disparities and promote equality. Other keywords “adolescents” and “motivation,” each appearing nine times, were also frequently used. hows that many studies focus on adolescents and the factors that motivate them to participate in physical activity. “Gender Stereotypes” appeared eight times, highlighting how gender stereotypes can affect participation and

perceptions in physical education. Other themes, such as “Gender Differences” and “Sexism,” show attention to gender differences and discrimination in this context. “Inclusion,” “coeducation,” and “gender identity” also emerged as important topics, reflecting efforts to create a more inclusive and equitable physical education environment for all genders.

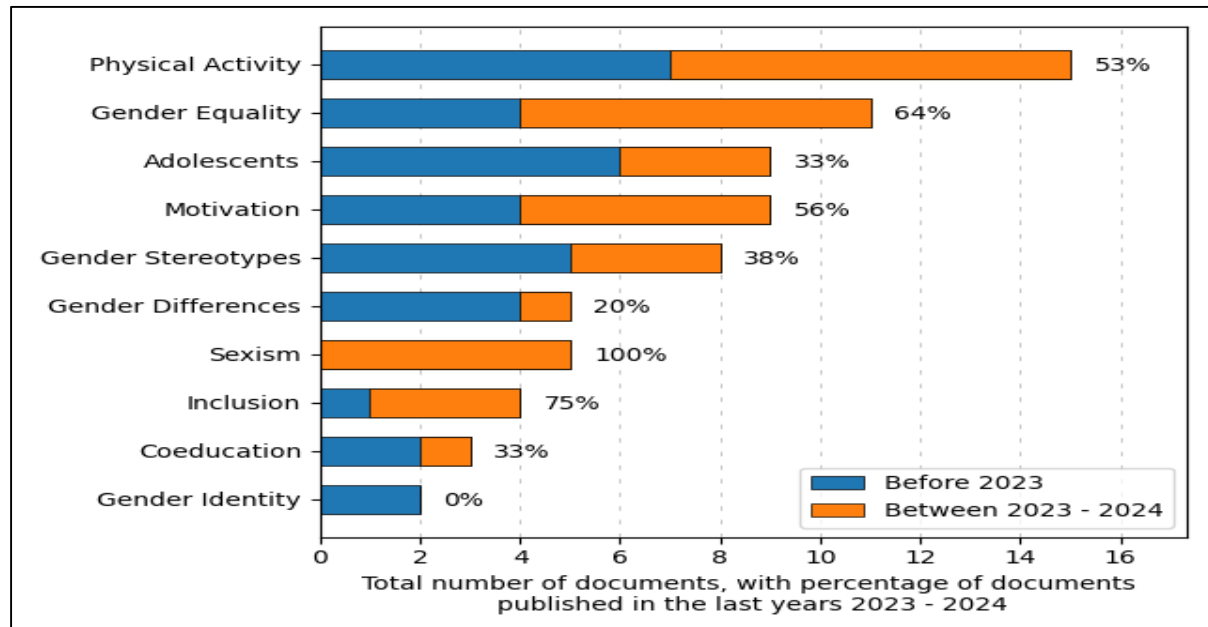


Figure 4. Ten Key Patterns and Themes Commonly Emerge

DISCUSSION

The results of this study offer some insight into the evolving landscape of gender studies in physical education. Initially, there was little interest in the topic, but a significant increase began in 2005 and peaked in 2023. This trend is in line with wider academic recognition of gender issues in physical education, mirroring similar developments in other fields such as social sciences and psychology (Scruton & Flintoff, 2013). The increase in publications across multiple disciplines—education, sport science, psychology, and social science—demonstrates a multidisciplinary approach, which is important for understanding and addressing gender inequalities in physical education.

The inclusion of gender perspectives in physical education research reflects a growing awareness of the need to create inclusive learning environments, supported by a growing body of literature emphasising the importance of gender-sensitive pedagogy (Rarieya et al., 2024). This finding is in line with previous research showing that inclusive physical education teacher training can significantly improve gender equality in schools (Guerrero & Guerrero Puerta, 2023), as well as reduce gender stereotypes and promote equity in physical education learning (Păuțu et al., 2024). By fostering awareness of these dynamics, research is better positioned to advocate for more equitable educational practices.

The identification of influential authors such as Daniel Mayorga-Vega and Jesús Viciano demonstrates how academics contribute to advancing the field. Their work underscores the role of gender in physical education, particularly in adolescents' physical activity levels (Viciano et al., 2017, 2020). The consistent contributions of these and other scholars highlight the ongoing need to challenge gender stereotypes and advocate for gender equality in physical education practice. Journals such as *Retos: Nuevas Tendencias en Educación Física Deporte y Recreación*, *Journal of Teaching in Physical*

Education, and Sport, Education, and Society play an important role in disseminating research on gender in physical education. These journals have emerged as key platforms, contributing significantly to the scholarly discourse around gender issues in education and sport contexts. The variety of journals also demonstrates the growing academic interest in this area, which shows the critical nature of gender-related studies in different educational settings.

Spain's notable contribution, with 105 articles focused on gender in physical education, shows that this topic has attracted significant academic attention. This could be due to the fact that Spain has taken strong and decisive actions aimed at gender equality (Bustelo, 2016; Collado & Vázquez-Cupeiro, 2023). However, despite this increased attention, international collaboration remains limited, which limits the potential for a more unified global strategy to address this issue. Collaborative efforts across countries can capitalise on diverse perspectives and enable the development of more comprehensive strategies to promote gender equality in physical education. Analysis of the main themes revealed several recurring keywords, such as “physical activity”, “gender equality”, “adolescents”, and “motivation”. This is in line with previous research that emphasises the importance of physical education in shaping students’ perceptions of gender roles and their participation in physical activity (O’Reilly et al., 2023). The frequent mention of “gender stereotypes” and “sexism” underscores the ongoing challenge of addressing discriminatory attitudes that hinder gender equality (Hoi & Xuan, 2023). Themes such as “inclusion”, “co-education”, and “gender identity” reflect conscious efforts to create a supportive environment for all students, regardless of gender.

While this study provides valuable insights, it is not without limitations. Firstly, the bibliometric analysis only included articles from the selected journals, potentially excluding relevant research. Secondly, although the number of publications increased over time, this study did not thoroughly evaluate the quality of these articles. Future research should prioritise international collaborations, focus on the quality and impact of gender research in physical education, develop targeted interventions to address gender stereotypes, and promote inclusivity.

CONCLUSION

Overall, the bibliometric analysis demonstrates a robust and growing interest in gender research within physical education, driven by the contributions of influential authors and supported by key academic journals. The emergence of distinct patterns and themes highlights the multifaceted nature of gender issues in this context, underscoring the need for continued research and practical interventions to promote gender equity in physical education. This study provides a comprehensive overview of the evolution of gender research in this field, offering valuable insights for educators, policymakers, and researchers dedicated to fostering inclusive and equitable physical education environments.

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CONFLICT OF INTEREST

The authors state no conflict of interest.

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