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Active Methodologies and Gender Equality in Physical Education: A Systematic Review

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Abstract

Various studies have discussed the existence of gender inequality in physical education (PE) classes, pointing to lower motivation and participation among female students. It is essential to reflect on teaching practice to achieve a more equitable education free from gender stereotypes. Our objective was to perform a systematic review analyzing the influence of pedagogical models on gender equality in PE sessions in elementary and high school education, as well as to describe and analyze these interventions. For this purpose, a systematic review was conducted, based on the PRISMA method, using the databases Web of Science, Scopus, SportDiscus, and Eric, analyzing the scientific literature between 2000 and 2024 relating pedagogical models in PE with gender equality. A total of 521 articles were found, of which 16 studies were included after applying the inclusion and exclusion criteria. The findings indicated that active methodologies had a positive impact on the promotion of gender equality in physical education classes, with female students' motivation, participation, and commitment on a par with that of their male peers. The main conclusion of the research found that models such as Cooperative Learning, Teaching Games for Understanding, and certain hybrid models promoted a more equitable scenario, enhancing female students' satisfaction and involvement and positively modifying perception of them among their peers.

Keywords: gender education, gender equality, pedagogical models, physical activity pedagogy, physical education

Introduction

Gender Equality in Physical Education

Physical education (PE) represents a positive setting for addressing social needs (Baena-Morales et al., 2023) and integrating both social and personal aspects (Fernández-Rio, 2015; Manzano et al., 2020a).

In that regard, innovative trends in PE transcend solely motor-related content and aim to consolidate interdisciplinary learning and more comprehensive education for students based on perspectives such as neuroscience (Pellicer et al., 2015), new technologies (García et al., 2020), or active methodologies (Blázquez, 2017; León-Díaz et al., 2023). Furthermore, some of those innovations are based on simultaneous use of multiple perspectives to obtain better results and enhance the specific benefits of method, as is the case with hybrid pedagogical models (Guijarro et al., 2020).

On the other hand, within the scope of its 2030 Agenda, the United Nations (UN) has defined 16 goals related to achieving a fairer and more sustainable world. Those include Sustainable Development Goal (SDG) 5 "Achieve gender equality and empower all women and girls" (UN, 2015).

Multiple studies have discussed the unequal participation, interest, and motivation among female students in PE due to traditional teaching methods that reinforce stereotypes or emphasize physical qualities associated with the male sex (Arenas et al., 2022; Fernández-García et al., 2007; Llanos-Muñoz et al., 2022). On that topic, Blández-Ángel et al. (2007) offer a particularly illustrative example regarding stereotypes in physical activity and sports. They demonstrated how instrumental traits and activities related to strength, risk, endurance, or a higher level of aggression continue to be associated with the male sex, while affective and expressive traits and activities involving rhythm, expression, or flexibility continue to be associated with the female sex. The study also concluded that female students encounter significant obstacles to access the world of physical activity—traditionally associated with the male sex—and that both male and female students who manage to overcome stereotypes and access activities classified as of "the opposite sex" are subject to sexist comments (Blández-Ángel et al., 2007).

In light of these issues, the *Guía para una educación física no sexista [Guide to Non-Sexist Physical Education]* (Vázquez & Álvarez, 1996) and works by Fernández-García et al. (2007), and Sánchez Hernández et al. (2022) later on, had already identified the need to broach PE classes through a co-ed approach that eliminates the universal masculine archetype, corrects sexist stereotypes, and develops all qualities regardless of sex or gender (Fernández-García et al., 2007; Sánchez-Hernández et al., 2022; Vázquez & Álvarez, 1996). In that sense, certain aspects such as teacher training, language, and teachers' own beliefs and expectations of their students can impact whether PE is practiced with gender equality in mind or whether it perpetuates sexist stereotypes (Vázquez & Álvarez, 1996). Thus, it seems that some progress, albeit slow, has been made in overcoming certain stereotypes and beliefs regarding PE and gender, and there are coexisting realities that negatively affect both men and women (Alvariñas-Villaverde & Pazos-González, 2018). Along those lines, PE teachers' involvement is a deciding factor in reducing and eliminating gender stereotypes, as is the participation and engagement of female students in PE classes and the incorporation of physical activity into their everyday lives (Reyes et al., 2024).

To connect SDG 5 with PE, given the psychosocial possibilities (Baena-Morales et al., 2023; Fernández-Rio, 2015; Manzano et al., 2020a) and innovative approaches of the latter (Blázquez, 2017; León-Díaz et al., 2023; Pellicer et al., 2015), critical reflection is essential to achieving gender equality in education and eliminating stereotypes related to physical activity and sports (Arenas et al., 2022; Fernández-García et al., 2007; Martos-García et al., 2020; Sánchez-Hernández et al., 2022; Vázquez & Álvarez, 1996).

PE Teaching Methods and Models and Their Relation to Gender Equality

The methodologies used in PE classes, with their pedagogical complexity, play a crucial role in the teaching-learning process (Fernández-Rio et al., 2021). Active methods, models (Fernández-Rio et al., 2021), and/or methodologies that are student-centered and whose curricula are adapted to students' needs, abilities, and interests promote competency-based learning that fosters student autonomy and agency (Paños, 2017; Pérez-Pueyo, 2015; Pérez-Pueyo, 2010).

Likewise, different methods can impact student involvement considering that teacher engagement varies according to whether traditional or more participatory methods are used, with the focus mainly placed on students in the latter method (Hortigüela & Hernando, 2017, Méndez-Giménez et al., 2012; Pérez-Pueyo et al., 2020).

Multiple studies have shown how certain models, such as the Teaching Games for Understanding (TGfU) Model, foster gender equality. González-Espinosa et al. (2019) found that using this model in elementary school improved the performance of female students, compared to direct instruction. Cañabate et al. (2023) also showed that cooperative methodologies encourage equality, as opposed to competitive methods that tend to produce gender inequality.

Along those lines, Llanos et al. (2022) and Aparicio et al. (2024) pointed to improved motivation and reduced gender inequality when using the Sport Education Model and hybrid methodologies in high school settings. These results agree with other studies that address the need to tackle gender stereotypes in sports and physical activity (Amado et al., 2017; Gutierrez & García-López, 2012; Manzano-Sánchez et al., 2020b; Oliveros & Fernández-Río, 2022).

Therefore, the objectives of this study were as follows: 1) perform a systematic review to analyze the impact of pedagogical models on gender equality in PE classes in elementary and high school, 2) describe and analyze those interventions.

Method

Via a systematic review, this research analyzed studies on the impact of gender perspective-based teaching methodologies in PE classes using PRISMA (Page et al., 2021) and other systematic review guidelines (Moher et al., 2015).

Eligibility Criteria

The inclusion criteria were as follows: a) studies published between 2000 and July 2024; b) full text had to be available; c) systematic reviews and meta-analyses were excluded; d) written in English, Spanish, or Portuguese; e) experimental or quasi-experimental intervention; f) scientific studies focused on the effects of applying an active methodology or pedagogical model with a gender-based perspective; and g) conducted in elementary or high school students. We also checked the references of the selected articles to ensure our search was thorough.

Search Strategy

The systematic review followed the PRISMA guidelines (Page et al., 2021). We agreed to use the following search phrase: (pedagogic models OR teaching models OR educational models OR pedagogical models OR active approaches OR active methods OR active methodologies) AND (physical education) AND (primary education OR elementary education OR secondary education OR high school OR middle school) AND (intervention OR experimental OR quasi-experimental OR randomized controlled trial OR RCT OR controlled trial) AND (gender OR sex). We searched for articles across four databases (Web of Science, Scopus, SportDiscus, and Eric) from 1 June to 10 July 2024. After searching, any duplicate articles were removed.

Study Selection and Data Processing

The articles were selected after reviewing their titles and abstracts. We obtained a total of 521 records. We ruled out 505 and selected 16 articles that met the inclusion criteria, focused on active methodologies and their relationship to gender equality in PE (see Figure 1). We also reviewed the references of said articles but identified no additional eligible studies. Two researchers reviewed the manuscripts independently and resolved any discrepancies by consensus. If no consensus could be reached, a third expert person was consulted.

On the following page is a flow chart that visually describes the process used to select the articles included in the review (Figure 1).

Quality Assessment

We evaluated the quality of the 16 selected articles using the Standard Quality Assessment Criteria tool (Kmet et al., 2004). Two researchers rated each study for design, sample, methodology, analysis, and presentation, obtaining a final quality score.

The quality scores for the articles were expressed as percentages ranging between 0 and 100% and varied from .58 to .91. The raters' agreement was calculated using the intraclass correlation coefficient, resulting in a score of .853 ($p = < .001$), indicating a "good" agreement level (Koo & Li, 2016). After implementing the raters' agreement, a conservative cut-point was agreed on for article selection, resulting in the inclusion of studies with scores above 55%. The overall scores ranged between .58 and .85 (first reviewer) and between .61 and .91 (second reviewer).

Figure 1
Flow chart (PRISMA, 2020)

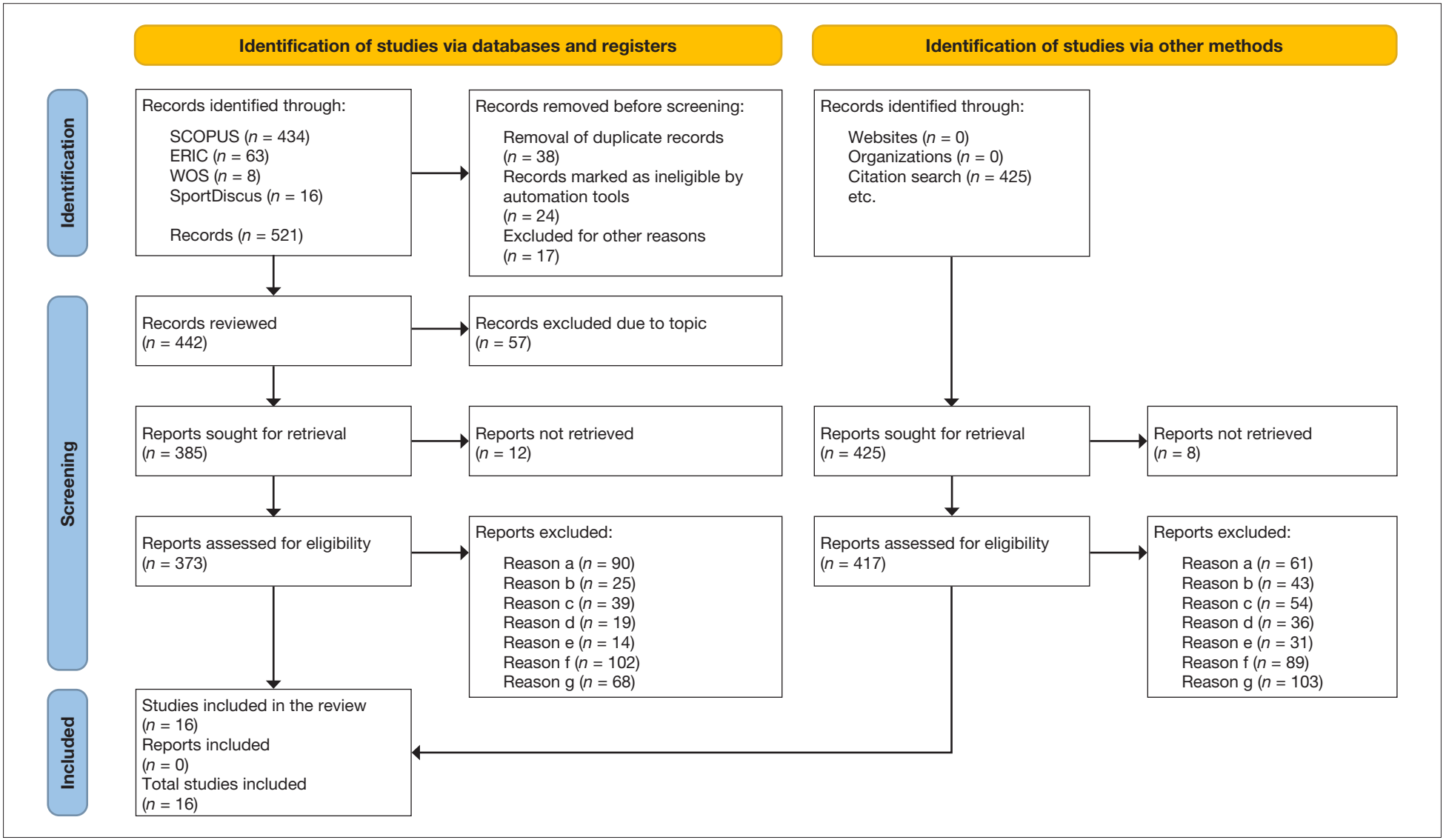

Table 1
Main characteristics of the analyzed research

Author(s)	Setting	Methodology Study type	Pedagogical model	Variables	Objectives	Primary outcomes
Gutierrez & García-López (2012)	Elementary school High school	Quantitative Experimental	Teaching Games for Understanding	• Offensive behavior	To evaluate gender differences in participation and offensive tactical behavior in invasion games with mixed teams in PE.	The results confirmed participation stereotypes in invasion games: male students focused on the ball and the goal while female students took on more passive roles. These differences, which are in line with prior studies, increase during adolescence.
Smith et al. (2015)	Elementary school	Quantitative Quasi-experimental	Tactical Games	• Health-related physical activity • Levels of physical activity • Motivation	To independently determine the levels of moderate-to-vigorous physical activity and the self-determined motivation of boys and girls during participation in units of invasion games with direct instruction and the Tactical Games Model.	Boys in the Tactical Games Model displayed significantly higher levels of physical activity in rugby and soccer, but no differences in motivation. The girls had similar levels in soccer but displayed lower activity levels in netball and no significant differences in motivation.
Amado et al. (2017)	High school	Quantitative Quasi-experimental	Learning with Dance (International Consortium of School and Art)	• Basic psychological needs for support and satisfaction • Intrinsic motivation • Identified regulation • Introjected regulation • External regulation • Amotivation • Usefulness • Enjoyment • Effort • Respect for facilities • Effort evaluation • Tolerance • Cooperation • Self control	To evaluate gender differences in motivational processes, and cognitive and behavioral consequences for the students after receiving a dance program based on creativity, support for autonomy, competence, and relatedness.	Significant differences were found (unrelated to the program) in the support perceived by the female students, who showed higher motivation, needs satisfaction, and more positive behavior towards dance as compared to the male students.
Sánchez-Hernández et al. (2018)	High school	Qualitative Experimental	Cooperative Learning	• Student roles • Class climate • Commitment to PE	To examine how student participation in a pedagogical intervention can transform understanding of gender, sexism, and social relations in PE.	The inclusion of critical pretexts on gender was important to the success of the intervention, providing a space for the female students to reflect on soccer and sexism, and for the male students to listen. Cooperative learning improved the classroom climate, enhanced engagement, and shifted attitudes towards the female students.

NR: Not reported.

Table 1 *(Continuation)*
Main characteristics of the analyzed research

Author(s)	Setting	Methodology Study type	Pedagogical model	Variables	Objectives	Primary outcomes
Burgueño et al. (2019)	High school	Quantitative Quasi-experimental	Sport Education	• Motivational regulation • Achievement goals • Social goals	To analyze the impact of the Sport Education Model on high school students' motivation, considering the effect of gender.	Significant differences were observed in students of both genders in terms of regulation, approach-mastery goals, and responsibility. Female students increased their introjected regulation, responsibility and relationship goals, and significantly reduced amotivation.
González-Espinosa et al. (2019)	Elementary school	Quantitative Quasi-experimental	Tactical Games Approach (TGfU) Direct instruction	• Game actions • Performance indicators	To analyze the differences in basketball learning according to the teaching-learning methodology and gender.	The male and female students, independent of gender, displayed better performance with the Tactical Games Approach. Furthermore, the female students presented significant differences after applying the model, showing that it is more beneficial for female students than for their male counterparts.
Manzano-Sánchez et al. (2020b)	High school	Mixed Quasi-experimental	Personal and Social Responsibility	• Satisfaction with the methodology • Values promotion • Grades	To evaluate how high school students and teachers perceive implementation of the Teaching Personal and Social Responsibility model, and its relationship with PE grades and gender differences.	Students and teachers positively evaluated the Teaching Personal and Social Responsibility model, highlighting the promotion of values and functionality. In terms of PE performance, no significant differences between the genders were observed, however the male students did display higher performance than their female counterparts.
Cañabate et al. (2021)	Preschool Elementary school	Qualitative NR	Cooperative Learning	• Positive interdependence • Individual responsibility • Promotive interaction • Acquisition of social skills • Group processing	To analyze the foundations of Cooperative Learning in the implementation of contextualized cooperative psychomotor physical challenges.	The activities carried out encouraged behavior related to altruism, care for classmates, value for diversity, gender equality, and cooperation.
Gil-Arias et al. (2021)	Elementary school	Quantitative Quasi-experimental	Teaching Games for Understanding Sport Education	• Supports autonomy • Satisfaction of BPNs • Autonomous motivation • Friendship goals • Satisfaction with PE	To research the motivational outcomes of elementary school boys and girls during a unit of invasion games through two pedagogical models.	Significant differences in student motivation were observed for both boys and girls who participated in the hybrid TGfU/Sport Education Model, which promoted an equitable and inclusive learning environment that encouraged engagement, enjoyment, and social interactions regardless of sex or the unit content.

NR: Not reported.

Table 1 *(Continuation)*
Main characteristics of the analyzed research

Author(s)	Setting	Methodology Study type	Pedagogical model	Variables	Objectives	Primary outcomes
Llanos-Muñoz et al. (2022)	High school	Quantitative Quasi-experimental	Sport Education	• Perceived inequality and gender difference • Satisfaction and frustration of the need for novelty • Self-determined motivation • Behavioral and emotional involvement in PE classes	To analyze the impact of a didactic unit of ultimate frisbee, based on the Sport Education Model, on the psychosocial variables of high school students, and to examine differences according to gender.	The results showed a significant reduction in perceived gender inequality, frustration, and demotivation, as well as increased satisfaction of novelty and behavioral and emotional involvement. Significant differences were observed between male and female students, which suggests that this model promotes an inclusive and equal environment in PE.
Oliveros & Fernández-Rio (2022)	High school	Quantitative NR	Hybrid model (Sport Education and TGfU)	• Level of participation in terms of physical activity	To investigate whether a hybrid pedagogical model can impact girls' in-class physical activity levels.	The results showed significantly lower scores for female students, low physical activity based on the assigned roles (playing vs. not playing), and the hybrid model increased participation among the older students. However, it did not help students achieve the recommendations for moderate-to-vigorous physical activity. Single-sex classes, specific sports, and social influences are discussed.
Cañabate et al. (2023)	Elementary school	Mixed Quasi-experimental	Cooperative methodology vs. Competitive methodology	• Participation in the activity • Throw quality • Motor skill level achieved when throwing	To look at gender differences in the efficiency of learning throwing as a fundamental motor skill using two different intervention methods: cooperative and competitive.	The results showed more notable differences between male and female students with the competitive methodology, though these decreased with the cooperative methodology. Both genders improved, with female students showing greater progress with the cooperative methodology, and male students improving with both methodologies.
Lamoneda et al. (2023)	High school	Qualitative with narrative analysis NR	Sport Education	• Satisfaction of basic psychological needs • Equal practice • Motivation • Satisfaction with performance	To evaluate an intervention program promoting gender equality in PE using a multidimensional methodology based on Self-Determination Theory, the Sport Education Model, and Socio-Critical Pedagogy.	The opinions of the teachers confirmed the efficacy of the It Grows program in achieving its objectives. In terms of gender equality, the students positively reported equal participation. It boosted equal participation and a reduction in sexist stereotypes. The mixed groups presented better social affective results.

NR: Not reported.

Table 1 *(Continuation)*
Main characteristics of the analyzed research

Author(s)	Setting	Methodology Study type	Pedagogical model	Variables	Objectives	Primary outcomes
López-Lemus et al. (2023)	High school	Quantitative Quasi-experimental	Sport Education Teaching Games for Understanding	• Motivation regulation • Satisfaction of basic psychological needs • Intent to stay physically active • Satisfaction with PE	To evaluate the effect of a mini handball didactic unit using a hybrid model (TGfU Model/Sport Education Model) as compared to Direct Instruction on motivation, satisfaction of psychological needs, motivation to stay physically active, and satisfaction with PE classes, with gender as a variable of interest in a co-ed environment.	The experimental group showed significant improvements in almost all the variables, reducing or eliminating any prior gender differences. Both genders presented similar levels of motivation, greater satisfaction with PE classes, and greater intent to stay physically active, promoting a more equitable environment.
Aparicio et al. (2024)	High school	Qualitative NR	Hybrid model (Sport Education, TGfU, Cooperative Learning)	• Gender equality • Alliances to achieve goals	To present a learning situation involving BigBall-X using a hybrid pedagogical model to promote gender equality and teamwork.	The students highly rated the BigBall-X situation for promoting gender and the creation of alliances, highlighting the lack of stereotypes and cooperative approach of the pedagogical models and alternative sports.
Cochon et al. (2024)	High school	Quantitative Experimental	Cooperative methodology (Jigsaw)	• Engagement levels in physical activity (sedentary, light, moderate, vigorous)	To investigate the effect of Jigsaw on moderate-to-vigorous PA in PE classes in light of student sex and habituation.	Moderate-to-vigorous physical activity was greater in the control group. Long sequences of Jigsaw improved female students' physical activity, proving it to be useful in minimizing inequalities in PE.

NR: Not reported.

Data Collection

The data from the selected articles were collected and verified in accordance with the PRISMA guidelines (Page et al., 2021). Two researchers with expertise in elementary and high school PE, psychosocial factors in education, and systematic reviews, evaluated the coding consistency, and achieved a 94% agreement level in the data extraction (González-Valero et al., 2019) by calculating the number of coincidences multiplied by 100 and divided by the total number of categories defined for each of the studies. This was then multiplied by 100 again.

Results

Study Characteristics

The study information was coded according to the following units of analysis: (1) Author(s), (2) Context, (3) Methodology/Study type, (4) Pedagogical model, (5) Variables, (6) Objective, and (7) Primary outcomes. The main characteristics of the analyzed studies are presented in Table 1.

These studies show that pedagogical models in PE influence both male and female students' participation and motivation, and that of female students specifically. The Tactical Games and Cooperative Learning models help close the gender gap, as shown in the study by Gil-Arias et al. (2021).

Along the same line, Sánchez-Hernández et al. (2018) pointed out that Cooperative Learning promotes enhanced participation by female students and improves male students' attitudes towards their female classmates, thus questioning gender relations. Cañabate et al. (2023) found that this approach promotes gender equality in PE.

Burgueño et al. (2019) reported that Sport Education improves female students' motivation, while López-Lemus et al. (2023) stated that a hybrid model minimizes gender differences and promotes greater satisfaction and more physical activity.

The studies suggest that collaborative and tactical pedagogical models may positively influence inclusive learning and the handling of gender inequality in PE, thus fostering respect, cooperation, and student potential.

The analysis shows how pedagogical models like TGfU and Tactical Games may encourage behavior and motivation on a gender basis, thus minimizing inequality through cooperative approaches and promoting gender equality.

Discussion

The objective of this study was to perform a systematic review to analyze the impact of pedagogical models on gender equality in PE classes in elementary and high school and to describe and analyze those interventions. In elementary school, it has been shown that models like Cooperative Learning and TGfU contribute to minimizing gender stereotypes and promoting equal participation, motivation, and performance between male and female students (Cañabate et al., 2021; Gil-Arias et al., 2021; Gutierrez & García-López, 2012). These methodologies help foster an inclusive environment and promote equal participation and motivation between the genders (Baena-Morales et al., 2023; Hortigüela & Hernando, 2017, León-Díaz et al., 2023; Méndez-Giménez et al., 2012; Paños, 2017; Pérez-Pueyo et al., 2020).

Though awareness of gender stereotypes in high school is increasing, inequalities persist in certain physical activities, as seen in higher engagement by male students compared to female students (Gutierrez & García-López, 2012; Sánchez-Hernández et al., 2018). Nevertheless, some studies reported improved motivation and involvement among female students after implementing models such as the Sport Education Model or hybrid models (Aparicio et al., 2024; Guijarro et al., 2020; Lamoneda et al., 2023; López-Lemus et al., 2023; Pérez-Pueyo et al., 2020), which relates to the importance of teachers' awareness of female students' participation in PE (Reyes et al., 2024).

On the other hand, we observed that gender stereotypes were upheld in some cases, with higher participation by male students than by female students (Gutierrez & García-López, 2012; Manzano-Sánchez et al., 2020b; Oliveros & Fernández-Río, 2022), or vice versa (Amado et al., 2017), depending on the specific physical activity. In that regard, we found a larger number of studies indicating both the upholding of stereotypes and a lack of impact from the model applied, which promoted male students' participation by 3 to 1 compared to models that promoted female students' motivation or interest. This may be related to what Blández-Ángel et al. (2007) found regarding the two large sets of traits presented and the perception of PE, which portrays the masculine archetype as universal (Arenas et al., 2022; Fernández-García et al., 2007; Vázquez & Álvarez, 1996).

Pedagogical models such as Cooperative Learning, Sport Education, and TGfU and their hybrids were identified as having a positive impact on gender equality in PE (González-Espinosa et al., 2019; Gil-Arias et al., 2021). These approaches helped foster a more inclusive and equal

environment, encouraging participation and performance in both male and female students, which is in line with the current literature (Guijarro et al., 2020; Hortigüela & Hernando, 2017, León-Díaz et al., 2023; Méndez-Giménez et al., 2012; Pérez-Pueyo et al., 2020).

Based on the information presented above, we observed seemingly promising results regarding the impact of pedagogical models in PE to help achieve the SDG 5 "Achieve gender equality and empower all women and girls" and, therefore, help promote a fairer and more sustainable educational environment (UN, 2015). Nevertheless, we did identify some limitations in terms of the overall impact of the pedagogical models on moderate-to-vigorous physical activity in female students, who presented lower levels of engagement in physical activity, even when a hybrid model was used (Oliveros & Fernández-Rio, 2022).

Despite these promising findings, we observed certain limitations such as the lack of detail about the tasks performed and variability in the instruments and ages in the reviewed studies. The need for more in-depth research into specific variables was also apparent. Furthermore, it must be said that the idea to study pedagogical models in PE in relation to gender equality demonstrates the possibilities of these models but does not guarantee any improvement in this regard. The development of prosocial behavior in educational physical activity scenarios is thought to be shaped more by the adults responsible for the class than by the method used (Pelegrín et al., 2010). Fundamental variables in this sense include preparation, attitude, language, or hidden curriculum, as well as other aspects communicated by the teacher (Alvariñas-Villaverde & Pazos-González, 2018; Reyes et al., 2024; Sánchez-Hernández et al., 2022; Vázquez & Álvarez, 1996). Future lines of research could focus on the study of a single pedagogical model, or a single variable related to gender equality in PE. Likewise, it could be interesting to address reflection and critical thinking in PE, within the actual pedagogical models, as a transformative practice for gender equality.

Conclusions

After analyzing the reviewed studies, we can conclude that pedagogical models in PE influence performance and motivation in both male and female students and can also be useful for minimizing gender inequality. Models like Cooperative Learning, TGfU, and hybrid models (which pair these approaches with the Sport Education Model) promote an inclusive and equal environment, allowing male and female students to actively participate and improve their performance. In situations where female students present low participation, both the activities and environment must be adapted to promote gender equality.

Cooperative and tactical models increase female students' motivation and satisfaction, but also shift male students' perceptions of them, helping female students feel more valued and empowered in what is a traditionally male-dominated space. These approaches minimize the gender differences observed in competitive settings. The Sport Education Model and the TGfU Model contribute to reducing demotivation and foster the intent to stay physically active in the long term. Likewise, we must mention that pedagogical models in PE do not guarantee that gender equality will be achieved, as they must be implemented correctly and with a critical eye. In that regard, methodology is one of the keys to increasing gender equality in PE but it does not guarantee it alone. Nor should it be considered the only relevant factor when aiming to achieve greater gender equality in PE environments.

The main practical application of the study involves implementing models based on cooperation and tactical games, as these offer a clear opportunity to improve students' learning experiences and to foster an environment in which both male and female students can participate equally. This will help contribute to the students' overall development in terms of physical, cognitive, social, and emotional abilities.

Therefore, ongoing teacher training and adapting curricula according to these methodologies are essential to guaranteeing inclusive and effective PE experiences that meet the needs of all students, regardless of gender.

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