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The Official Journal of the International Society for Comparative Physical Education and Sport

EDITORIAL

Special Issue on Gender, Physical Education and Sport: Voices from the 20th IAPESGW World Congress

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In November 2025, members of the International Association of Physical Education and Sport for Girls and Women (IAPESGW) gathered in Cebu, Philippines, for the 20th IAPESGW World Congress. Held with the theme, "*Equity in Action: A Global Dialogue on the Advancement of Women and Girls in Physical Education and Sport Innovation*," the Congress convened scholars and practitioners from around the world to share research and knowledge aimed at improving the experiences of girls and women through physical education (PE) and sports participation. Through webinars, publications, global events, and a range of collaborations with other global organisations such as UNESCO, the United Nations, Women Sport International and the International Working Group (IWG) on Women in Sport, IAPESGW continues to advance policies, practices, and actions that ensure women and girls have equitable access to PE, sport, and dance.

Delegates from the Congress were invited to submit full papers of their oral presentations for publication in this Special Issue on Gender in the *International Sports Studies* (ISS) journal. Those accepted involved research spanning gender studies, sport pedagogy, sport sociology, sport management, sport physiology and medicine, sport nutrition, and sport technology. Core thematic areas included: active cities; health through physical activity, PE, sport and dance; high performance sport; inclusion in PE and sport, leadership and good governance in sports; Paralympic sports and Parasport; physical activity throughout the lifespan; PE in schools; Sport-for-all; Sport for development and peace; technologies and innovation; and traditional sport, dance, and leisure activities.

Gender Inequalities in Sport and Physical Education

As IAPESGW members and guest editors of this Special Issue, we acknowledge that women and girls have made significant strides in sports worldwide while also recognising that persistent gender inequalities and inequities manifest differently across regions. Geographic, political, cultural and social differences around the globe impact women's access to and experience of sport and PE. Gender inequalities intersect with race (Maxwell et al., 2022; Stewart-Withers, 2024), sexuality (de Camargo & Altmann, 2021; McGuckian & McEvilly, 2025; Neary & McBride, 2024), social class (Hextrum et al., 2024; Martins et al., 2021), religion (Maxwell et al., 2013; Maxwell & Taylor, 2010), and disability (Culver et al.,

2022), amongst others. For instance, the first Latin American woman to compete in the Olympic Games was a white woman, the Brazilian swimmer Maria Lenk, in 1932, while European and American women began competing in 1900. It took a further decade for the first black Brazilian woman to compete in the Olympics: Melânia Luz in 1948. Melânia Luz competed in track and field, a more accessible and less elitist sport than swimming–a reflection not merely of individual choice, but of the structural hierarchies of race and class that have long shaped women's opportunities in sport.

Despite being recognised as a human right in various legal frameworks, access to sports is not always guaranteed. Gender remains a significant social marker that influences disparities in access. Studies conducted in different countries indicate a lower prevalence of active play among girls (Altmann et al., 2018; de Jesus et al., 2024; Arenas et al., 2025; Işıkgöz et al., 2025). Girls also participate less and are offered lower-quality opportunities in PE classes and university sports. They are more likely to opt out of participation, often remaining on the sidelines (Jacó & Altmann, 2017; Wenetz & Rivero, 2021). Furthermore, women remain underrepresented in sports leadership worldwide (Evans & Pfister, 2021). Reading the articles published in this special issue provides new insights into these issues.

Gender as an Analytical and Political Concept

Gender is an important social marker in the scientific field, and its impact on political action, pedagogical practices, and other areas is profound. The concept of gender was created within the framework of feminist assumptions. The dissemination of the idea of equality in the exercise of rights boosted feminist mobilisation in different fields. Faced with the fact that inequalities were neither fair nor natural, feminists began to build tools to understand how they were produced and how they could be overcome. In this process, the concept of gender became an important analytical tool, making it possible to question the naturalisation of sex. From the second half of the 20th century, the category of gender became central to political action and feminist theory (Mayorga et al., 2013; Scott, 2008). Today, we can affirm its unquestionable importance in scientific production.

The increasing priority given to feminist thought in the second half of the twentieth century is reflected in the creation of IAPESGW in 1949, 77 years ago. This milestone in feminist thinking is evident in the association's name: International Association of Physical Education and Sport for Girls and Women. It began as an avant-garde association that preceded the formulation of the concept of gender and sought to promote greater participation by women in the field. The association's name, when referring to girls and women, also indicates that generational issues are at work in this field. Thus, the first formulations of gender, influenced by the feminist movement and shaping social theory, date back to the 1970s. However, it was from the 1980s onwards that the concept of gender spread, offering a new perspective on reality and placing the distinctions between characteristics considered feminine and masculine at the heart of social hierarchies (Meyerowitz, 2008; Piscitelli, 2009).

Moving beyond biological determinism to understand gender relationships has been crucial, especially in fields such as sport and PE, which are part of the health sector and often adopt a biological view of the body and its subjects. To give another example before moving on, it was with this justification that, for a long time, and in some places even today, girls and boys were separated at school for PE classes. The concept of gender was important in questioning this dichotomous way of thinking about bodies and classes. Subsequently, studies linked to the field of sexuality have helped to problematize the binary nature of this classification.

Therefore, reflections on the concept of gender contributed to the creation of a horizon of social transformation in which difference could no longer be understood as a casual act of nature, but rather as an action of differentiation in which the distinction is socially constructed, imposing a hierarchy of sex and sexuality.

Overview of the Special Issue

Given all of the above, several key questions motivate this Special Issue: Why are gender considerations critical in sports, PE, and research? Why is gender still important to reach equity in sport and PE? Why should the *International Sports Studies* journal publish a dedicated issue on this theme?

We expect that the importance of gender in sport and PE, as embodied in this special issue, will inspire our readers to reflect on contemporary challenges in this field and encourage new research and practices. The research articles in this special issue present original contributions on a variety of gender-related topics, focusing on the participation of girls and women in sports and PE settings. These studies examine sports and activities, such as basketball, volleyball, dance, and martial arts. Participants include elementary and secondary school students, college students, athletes, and coaches. In particular, the concept of gender is explored at the intersection with disability and sexual diversity.

A scoping review by Selina Khoo and colleagues examines community-led physical activity programs for women and girls. Their study builds on an impactful keynote presentation at the 2025 IAPESGW World Congress. Their findings align with those of this special issue, indicating that context-sensitive models based on local needs, readiness, and capacity are more effective than one-size-fits-all approaches.

Enrico Manalad and colleagues examine the low participation rates of female college students in PE and analyse the challenges and barriers to greater inclusion. They highlight the importance of applying feminist pedagogical principles to enhance autonomy, confidence, and sustained participation among female students. Participation in PE is also shaped by concerns related to body image, which may discourage women from engaging in sports and physical activity. After examining how self-concept, environmental influences, and social relationships interact to shape confidence, involvement, and attitudes toward PE, Antonette Roxainne Roque and her team emphasise the urgent need to create inclusive environments that value body diversity. From a similar perspective, Michael Santos highlights the importance of innovative and inclusive practices in PE. He presents a Gender-Just PE Framework encompassing inclusive curricula, faculty development, institutional policy, and student agency. His findings reveal both persistent inequities and actionable pathways for reform in higher education.

Basketball is identified as a space for feminist pedagogy, where gender hierarchies can be challenged, agency can be developed, and inclusive participation can be fostered. Participants in Jumel Miller's study reported a transition from self-doubt to greater physical confidence. The article concludes with recommendations for university administrators, curriculum developers, and educators. Volleyball is another sport examined from a gender perspective. Allan Antalan discusses how gendered dynamic shape female students' experiences in coeducational college volleyball. The findings suggest that educators should adopt practices that ensure meaningful and equitable participation, including targeted social-emotional support for students who are shy, less skilled, or less motivated.

The diversification of physical activities offered to girls and women has been identified as a key factor in increasing women's participation. From this perspective, Jennifer De Jesus examines the health effects of *Indayugan* classes, a structured exercise program inspired by Philippine folk and ethnic dances. The study shows

that culturally grounded interventions can improve health-related fitness while fostering cultural engagement among female college students. Pathways toward gender equity are further explored in research conducted in four junior high schools. David Pascual argues that structural and curricular changes–integrating feminist pedagogy, inclusive design, and participatory governance–are essential to achieving gender equity in PE.

The inclusion of Arnis in school curricula, following its recognition as a national martial art in the Philippines, has opened new opportunities for female instructors in a traditionally male-dominated field. Melane Fernandez finds that women coaches demonstrate strong competence and engagement in promoting Arnis, though their effectiveness is constrained by systemic challenges in resources, training, and institutional support. Norielyn Ramos and team address challenges in teaching girls with disabilities. As suggested by their article title, "*I Had to Learn on My Own*: Intersections of Gender and Disability in Teaching Adapted Physical Education in Philippine Special Education," female educators in special education face three major challenges: limited specialised training, insufficient facilities and resources, and the complexity of addressing diverse student needs, often compounded by gender dynamics.

Haynes Angelo Narciso examines the experiences of cisgender women who identify as lesbian, bisexual, or queer. Their findings show that PE is not only a site of physical activity but also a space where identity is negotiated, managed, and sometimes constrained. Participants recommend gender-inclusive curricula, safer and more flexible physical spaces, supportive school cultures, and participatory teaching practices to foster inclusion. In the final article of this special issue, Pierosario Giuliano and colleagues analyse gender differences in a fatigue monitoring protocol used to assess athletes' post-competition readiness. Their findings indicate that subjective readiness is perceived differently across genders.

Conclusion

This past March, as the world celebrated International Women's Day, IAPESGW and ISS jointly published this Special Issue on Gender, PE, and Sport. On this occasion, as we simultaneously celebrate achievements and reaffirm the principles of feminism, this publication contributes to ongoing scientific and social initiatives to overcome persistent gender inequalities in these fields. We hope you find the articles in this Special Issue an enjoyable and insightful read.

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INTERNATIONAL SPORTS STUDIES

REVIEW ARTICLE

Community Innovations in Physical Activity for Women and Girls: A scoping review

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Abstract

Community-led programmes are increasingly recognised as effective approaches to promote physical activity among women and girls. Evidence on how these programmes are informed by cultural context and local knowledge remains fragmented. This scoping review aimed to identify and synthesise evidence on culturally grounded, community-led physical activity programmes for women and girls embedded within community settings. We conducted the review in accordance with the Joanna Briggs Institute methodology and the Arksey and O'Malley framework. The findings were reported using the PRISMA-ScR guidelines. The literature search included Web of Science, Scopus, PubMed, and CINAHL, covering studies from database inception to August 2025, and was supplemented by a forward citation search. We included peer-reviewed articles on community-led physical activity programmes targeting women and girls across their lifespan. Eight studies were included, mapped, and thematically synthesised, yielding three models of community-led programmes, differentiated by programme design and community engagement characteristics. Our findings highlight that varying levels of community involvement can be effective depending on the context, with culturally grounded and gender-sensitive approaches demonstrating the potential to enhance participation, social inclusion, and local ownership. These findings underscore the importance of culturally informed and community-responsive designs in physical activity initiatives for women and girls.

Keywords:
physical activity, gender equality, community-led programmes, cultural responsiveness, local knowledge

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Introduction

Women and girls consistently participate less in physical activity than men and boys, highlighting a persistent gender inequality in the participation of physical activity. Globally, levels of physical inactivity have increased from 23.4% in 2000 to 31.3% in 2022, with 34.0% of women not meeting recommended physical activity levels compared with 29.9% of men (Strain et al., 2024). This gender difference is also evident among children and adolescents. Guthold et al. (2020) reported that 84.7% of girls aged 11–17 years were physically inactive, compared with 77.6% of boys of the same age.

Regular physical activity is widely recognised for improving both physical and psychological health. In adults, physical activity reduces the risk of cardiovascular disease, type 2 diabetes, and some cancers, while also improving mental health by reducing anxiety and depression, and enhancing cognitive function and sleep (Centres for Disease Control and Preven-

tion, 2025). Similarly, children and adolescents experience improved physical fitness, cardiometabolic health, bone health, improved academic performance, and reduced symptoms of depression (Li et al., 2023; Ni et al., 2025).

Women and girls face unique challenges to participating in physical activity, reflecting a complex interaction of individual, social, and environmental factors. Individual factors include lack of time, motivation, and interest in physical activity (Batalha et al., 2025). Social factors include family obligations, lack of social support, and gender norms that prioritise housekeeping and childcare (Amiri-Farahani et al., 2021). Environmental factors include safety concerns, inadequate infrastructure, and limited accessibility (Batalha et al., 2025).

Traditional physical activity programmes usually have limited success in increasing participation because they often fail to account for the realities of women and girls. Top-down interventions that focus solely on health and individual behaviour change may not achieve long-term success because they ignore structural determinants (Wallerstein & Duran, 2010). Hence, it is necessary to shift towards more holistic and context-sensitive approaches. The community is a potential setting for interventions as it leverages local social networks and support, which are key predictors of physical activity adherence for women (Keane et al., 2020).

Community-based programmes have shown promise in addressing some of the barriers faced and sustaining participation by adapting social cohesion (Amiri-Farahani et al., 2021). These programmes involve participatory approaches and include women in the planning and implementation stages (Cargo & Mercer, 2008). Despite this potential, the existing evidence base remains fragmented. Farahani et al. (2015) previously concluded that there was insufficient evidence to suggest that community-level interventions effectively increase physical activity levels among women and called for a more comprehensive examination of intervention features that ensure sustainability. While more recent reviews have emerged, they have often focused on specific domains, such as health outcomes or embodied sport experiences (Pedersen & King, 2023; Vidaurreta et al., 2025), without specifically synthesising how community-led governance and local cultural knowledge are integrated into programme design.

Community-led programmes refer to initiatives in which community members or local organisations take the primary role in identifying needs, making decisions, planning activities, and implementing solutions to improve social, economic, or environmental conditions (Jarvis, 2015; Nel, 2020; Moore et al., 2025). This definition distinguishes community-led initiatives from community-based programmes delivered in community settings but primarily designed or governed by external organisations.

Studies were classified as community-led when programme descriptions indicated active community involvement in leadership or decision-making processes. Specifically, indicators of community-led programmes included community participation in programme initiation, shared or community-led decision-making, involvement in design and delivery, and evidence of local ownership or capacity-building. We acknowledge that there may be conceptual overlap with related terms such as community-based programmes; however, this review distinguishes community-led initiatives based on the degree of community leadership and control.

Building on this understanding of community-led programmes, this scoping review examined innovations in community-based physical activity for women and girls. Specifically, it focused on how these initiatives were shaped by cultural context and local community knowledge. A scoping review approach was used to map the range and characteristics of initiatives reported in the literature. Our research questions are:

1. How are community-led programmes conducted to promote participation in physical activity for women and girls?
2. In what ways do community-led programmes demonstrate gender sensitivity to address barriers specific to women's and girls' physical activity participation?
3. How do community-led physical activity programmes for women and girls incorporate local knowledge, practices, or cultural understanding in their design and implementation?
4. What factors contribute to or hinder the sustainability of community-led physical activity programmes for women and girls?
5. Beyond physical activity levels, what other physical, psychological, social, and academic outcomes are measured and reported as effective in community-led physical activity programmes for women and girls?

Methods and Materials

The scoping review was conducted in line with the Joanna Briggs Institute Guidelines for scoping reviews (Peters et al., 2020) and the five-stage framework of Arksey and O'Malley (2005). The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) was used to report the review process (Tricco et al., 2018).

Identifying relevant studies

To identify relevant studies for our scoping review, we conducted structured searches across four major interdisciplinary and health science databases: Web of Science, Scopus, PubMed, and CINAHL. These databases were selected for their broad coverage of public health, PA, and community-based research (Falagas et al., 2008). The search was limited to peer-reviewed studies published in English since the inception of the databases. Additionally, forward citation searching was performed for all included studies using citation indices in Web of Science and Scopus. This step was conducted to identify additional studies that may not have been captured through database searching alone. The following search terms were used, applied to the article topic field: (women OR woman OR girl* OR female* OR gender) AND sport* AND (community OR communities OR local* OR neighbour-hood* OR neighbourhood* OR grassroots) AND (program* OR programme* OR initiative*). A uniform search strategy was applied across all databases, with minor adaptations to accommodate database-specific syntax (e.g., truncation symbols and field tags), while maintaining consistency in the core keywords and their Boolean structure.

Study selection

In line with the Joanna Briggs Institute methodology for scoping reviews, the eligibility was based on the Population, Concept, Context criteria. The population are women and girls across the lifespan. The concept is community innovations in physical activity (including sport, leisure-time physical activity, and exercise). Innovations include (but are not limited to) technological, process, or structural approaches. The context is community settings. The physical activity programmes must be organised in community-based settings (neighbourhoods, grassroots organisations, local clubs, informal groups) and be non-institutional and non-professionalised at the delivery level. This review included studies that implemented physical activity programmes initiated at the community or grassroots level to increase physical activity among women and girls. Studies were excluded if programmes included all genders, were managed by international or educational institutions, focused on sport performance, or had participants who were not programme recipients. We included qualitative, quantitative, or mixed-methods studies. Reviews, book chapters, abstracts, and conference proceedings were excluded.

The search was performed between 2025, August 1 and 16. All electronic search results (n = 2,983) were imported into Rayyan, and duplicates were removed

(n = 1221). Two independent reviewers (LJY and LMY) screened the titles and abstracts in Rayyan. Disagreements were resolved through discussion, and if consensus could not be reached, a third reviewer (YYC or SK) was consulted. Full texts of potentially relevant studies were retrieved and assessed independently by two reviewers (LJY and LMY). Disagreements at the full-text screening stage were also resolved through discussion with consultation from a third reviewer (YYC or SK) when necessary. The number of articles at each screening stage is shown in Figure 1.

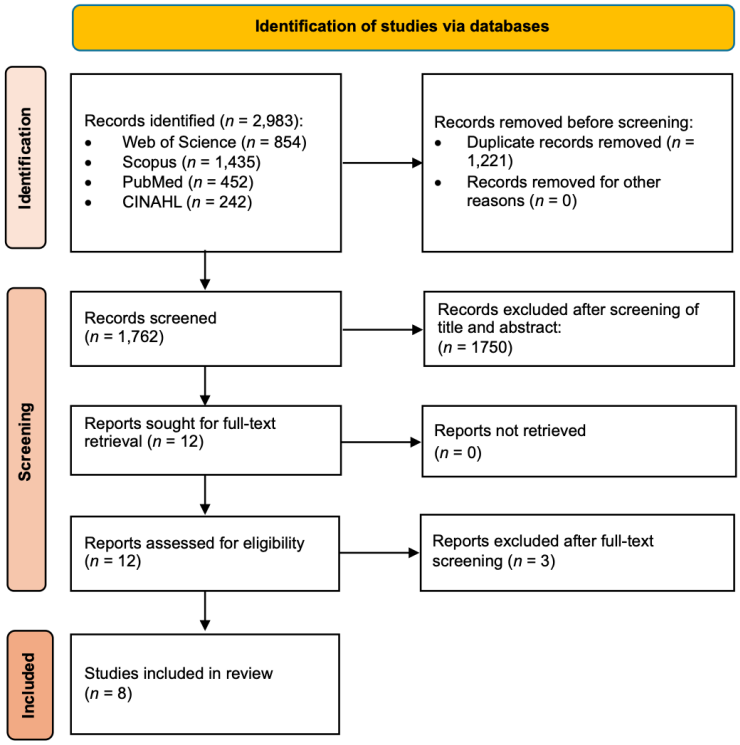

Figure 1. PRISMA flow diagram

Results

Selection of Evidence

An overview of these studies and their corresponding programmes is provided in Table 1.

The evidence base is relatively recent, with six of the eight studies published in or after 2020, indicating an increasing scholarly focus on this topic. The studies originated from diverse geographical contexts, namely Ireland, the United Kingdom, Greece, the United States, New Zealand, Iran, Tonga, and Samoa. Six of the eight studies reported funding sources, most commonly from national research councils or sport-related agencies such as the Irish Research Council, Sport England and Netball Australia. Methodologically, the studies employed a range of designs, including quasi-experimental, mixed-method, qualitative, and participatory approaches. Outcome measures primarily focused on physical activity participation, with secondary outcomes including physical literacy and psychosocial indicators such as confidence, motivation, and well-being. Overall, this increasingly structured body of evidence reflects the methodological diversity and practical complexity of evaluating community-led physical activity interventions in real-world contexts.

Table 1. Overview of Included Studies and Corresponding Programmes by Model Type

Author, Year	Author's Country/ Funding Source	Study Design	Outcomes and Key Findings	Programme Model	Programme, Country, Target Population, and Components	Community Role in Programme Development and Delivery	Gender-Sensitive and Culturally Responsive Strategies/ Reported Factors for Sustainability
Farmer et al., 2020	Country: Ireland Funding: Irish Research Council	Quasi-experimental, non-randomized controlled trial	Outcomes: PA levels, FMS proficiency, psychological correlates (e.g., self-efficacy) Findings: Significant increases in PA, FMS, and psychological correlates in the intervention group	Model 1	Programme: Gaelic4Girls, a modified Ladies Gaelic Football intervention Country: Ireland Population: 87 girls aged 8-12 in community sports clubs Components: Ladies Gaelic Football; coach and parent workshops; take-home skill cards	Role: Community (clubs/coaches) as implementers. Design was top-down from external experts (Ladies Gaelic Football Association/researchers) Impact: Ensured faithful implementation of the theory-informed curriculum	Gender: Girls-only programme to combat drop-off in sport; focused on psychological needs critical for girls' retention Cultural: Used a culturally significant Irish sport delivered through established local clubs Sustainability: Not mentioned
Kinnafick et al., 2021	Country: England, UK Funding: England Netball and Sport England	Mixed-methods (RE-AIM evaluation)	Outcomes: RE-AIM framework (reach, effectiveness on PA/health, etc.) Findings: Significantly improved PA, mental health, and physical function; reached many inactive women	Model 1	Programme: Walking Netball, an adapted version of netball Country: England, UK Population: Middle- to older-aged women, members of the Women's Institute Components: Walking Netball; training for volunteer hosts; resource provision (videos, booklets)	Role: Community (Women's Institute) as implementation partner. National organisations as designers Impact: Established a volunteer-led delivery model	Gender: Delivered through a nationwide women-only organisation; adapted for older women's physical needs Cultural: Partnered with the culturally significant Women's Institute; leveraged its social culture Sustainability: Built-in model: training local hosts; maintained via inter-WI competitions; adapted to virtual delivery

Table 1. (Continued)

Author, Year	Author's Country/ Funding Source	Study Design	Outcomes and Key Findings	Programme Model	Programme, Country, Target Population, and Components	Community Role in Programme Development and Delivery	Gender-Sensitive and Culturally Responsive Strategies/ Reported Factors for Sustainability
Kaioglou et al., 2025	Country: Greece Funding: Not mentioned	Quasi-experimental (pre–post comparison)	Outcomes: PA level, total PL score Findings: No significant change in actual or perceived PA; significant improvement in total PL level, especially in Physical Competence and Knowledge domains	Model 1	Programme: A theory-based PL intervention within gymnastics Country: Greece Population: 44 girls in a community gymnastics programme Components: Integrated all PL domains (affective, cognitive, behavioural)	Role: Community (coaches) as activity selectors/implementers. Researchers as designers Impact: Ensured feasibility and relevance by selecting appropriate activities	Gender: All-girls programme; focused on motivation and confidence, critical factors for retaining girls in sport Cultural: Embedded within an existing, non-competitive community athletic centre Sustainability: Not mentioned
Bernabe & Block, 1994	Country: USA Funding: Not mentioned	Mixed-method case study	Outcomes: PA participation (batting and on-base average), game performance, social and sport skills Findings: Modifications were successful; participant was well-received and improved skills	Model 2	Programme: A rule modification initiative within a regular girls' fast-pitch softball league Country: USA Population: A 12-year-old girl with severe disabilities and her softball league Components: Fast-pitch softball; preseason coaches' meeting and player surveys	Role: Community (parents, coaches, players) as co-decision makers Impact: Rule modifications were suggested by and approved by the community	Gender: Focused on inclusion within a pre-existing girls-only sports league Cultural: Worked within existing community league structures, valuing input from local figures Sustainability: Co-decision model involving all stakeholders presented as a sustainable practice

Table 1. (Continued)

Author, Year	Author's Country/ Funding Source	Study Design	Outcomes and Key Findings	Programme Model	Programme, Country, Target Population, and Components	Community Role in Programme Development and Delivery	Gender-Sensitive and Culturally Responsive Strategies/ Reported Factors for Sustainability
Guerin et al., 2003	Country: New Zealand Funding: Foundation for Research, Science and Technology and other agencies	Qualitative study	Outcomes: PA participation and barriers; social, physical, and cultural effects Findings: Increased willingness to engage in PA; highlighted the importance of women-only spaces and addressing cultural barriers	Model 2	Programme: Somali Women's Physical Activity Programme Country: New Zealand Population: Refugee Somali women aged 17-67, 75% had children Components: Exercise classes, gym workouts, walking groups, sports with cultural adaptations	Role: Community (local Somali women) as initiators and co-designers Impact: The entire programme was designed in direct response to the community's expressed needs	Gender: Women-only environment was reported as a prerequisite for involvement; addressed barriers like childcare Cultural: Highly responsive; activities held after dark for privacy; facilities adapted for modesty Sustainability: Limited by loss of external funding; facilitated by peer networks enabling informal, self-organised activity
Amiri-Farahani et al., 2021	Country: Iran Funding: Tehran University of Medical Sciences	Mixed method action research	Outcomes: Total PA score; qualitative experiences Findings: Significant increase in PA score post-intervention	Model 2	Programme: BELIEVE, a multi-component intervention Country: Iran Population: Women aged 18-65 with insufficient PA Components: Exercise, health promotion, cognitive behavioural therapy	Role: Community (participants, leaders, etc.) as primary co-creators through a participatory action research process Impact: Community co-created the programme's vision, name, and strategies	Gender: Women-only environment; addressed psychosocial barriers (e.g., family obligations) Cultural: Used local health promotion methods (e.g., lectures in mosques) Sustainability: Collaborative strategies and the action research approach were identified as positively affecting PA

Table 1. (Continued)

Author, Year	Author's Country/ Funding Source	Study Design	Outcomes and Key Findings	Programme Model	Programme, Country, Target Population, and Components	Community Role in Programme Development and Delivery	Gender-Sensitive and Culturally Responsive Strategies/ Reported Factors for Sustainability
Keane et al., 2020	Country: Australia Funding: Australian Government	Mixed-methods; Quasi-experimental pre-post design	Outcomes: Recreational PA levels, netball participation, mediators of PA Findings: Programme significantly increased PA levels	Model 3	Programme: A netball-based "low-engagement village programme" Country: Kingdom of Tonga Population: 301 women aged 18-64, primarily homemakers Components: Netball; skill development workshops (coaching, umpiring); structured competition	Role: Community (leaders, participants) as key informants for the design process Impact: Community input directly informed the final programme	Gender: Women-only netball programme; addressed female-specific barriers (e.g., body image) Cultural: Engaged with key local figures (town officers, church leaders) to secure support Sustainability: Included capacity building by training local "focal points", coaches, and umpires to ensure long-term development
Richards et al., 2022	Country: Australia Funding: Netball Australia	Natural experiment; pre-post measures	Outcomes: Netball participation, recreational MVPA, BMI, mental wellbeing Findings: Significant improvements in PA, body weight, and mental wellbeing	Model 3	Programme: One Netball Pacific initiative Country: Samoa Population: 47 women aged 15-35+ in rural villages Components: Netball; volunteer coaching course; provision of equipment and uniforms	Role: Community (stakeholders) as key informants for the design process Impact: Programme design directly addressed key determinants of participation identified by the community	Gender: Established a new programme for women in rural villages with historically fewer sporting opportunities Cultural: Utilised a "champions" model, empowering local volunteers to lead Sustainability: Built local capacity by training local volunteers ("champions") to lead long-term development

Note: BMI = body mass index, FMS = fundamental movement skill, MVPA = moderate to vigorous physical activity, PA = physical activity, PL = physical literac

Overview of Included Programmes

The included programmes demonstrated wide variation in geographical setting, implementation context, and target population, reflecting the diversity of community-led physical activity initiatives for women and girls (Table 1). They were implemented across eight countries, spanning diverse cultural and socio-economic contexts. These ranged from urban, high-income settings to rural and resource-limited communities. Culturally, the programmes span varied social norms, from Western sport systems that promote gender inclusion to religious and community-based contexts where women's participation requires culturally appropriate adaptation. Across these contexts, target populations ranged from school-aged girls to adult and older women, including specific underserved groups such as refugee women and individuals with disabilities. This range highlights the adaptability of community-led initiatives to distinct demographic and cultural contexts.

The findings related to these eight programmes are presented thematically in the following sections. We identified recurring patterns inductively across programmes through full-text review and a structured data extraction process. Initial codes were generated from key programme features, including programme design, community involvement, delivery, responsiveness, and sustainability. Then we iteratively grouped these codes into broader categories through constant comparison across studies.

These categories were further refined into three final models that capture distinct patterns in programme design, leadership, and community involvement. For example, programmes described as externally designed and facilitated by professionals were grouped into an "externally driven" category, which contributed to a model with limited community leadership. In contrast, programmes involving co-creation and local leadership were grouped into a "community-driven" category, which informed a model with greater community ownership. This categorisation is consistent with established frameworks on community participation and empowerment, (Arnstein, 1969; Cargo & Mercer, 2008; O'Mara-Eves et al., 2015).

Studies were assigned to each model based on the dominant characteristics of programme initiation, level of community involvement, and leadership in decision-making and delivery. In cases with mixed features, classification was guided by the predominant programme approach described. The three models are: (1) Structured Programme Adaptation and Implementation, where existing interventions were adapted for local settings; (2) Grassroots Co-creation and Responsive Design, where programmes were developed collaboratively with community members; and (3) Externally Supported Capacity-Building, where external organisations provided resources or training to enable local delivery in underserved contexts. The subsequent sections describe each model in detail, examining how they addressed gender sensitivity and cultural responsiveness through different pathways.

Three Models of Community-Led Programming

Model 1: Structured Programme Adaptation and Implementation

The three programmes grouped under Model 1 demonstrate how existing sports were systematically adapted by external experts to enhance accessibility for specific populations (Farmer et al., 2020; Kaioglou et al., 2025; Kinnafick et al., 2021). As detailed in Table 1, these interventions modified Gaelic football (Farmer et al., 2020), netball (Kinnafick et al., 2021), and gymnastics (Kaioglou et al., 2025) using established theoretical frameworks such as self-determination theory and physical literacy concepts.

The interventions were carefully tailored to the needs of specific age groups, namely young girls (mean age 9–10 years) (Farmer et al., 2020) and older women

(mean age ~70 years) (Kinnafick et al., 2021), with the role of community-level implementers limited to programme delivery rather than co-creation.

Delivery in this model relied on partnerships with established community organisations, which contributed local infrastructure, resources, and social networks that enabled programme implementation. Gaelic4Girls was implemented through Ladies Gaelic Football clubs in Ireland (Farmer et al., 2020), Walking Netball through the Women's Institute in the UK (Kinnafick et al., 2021), and a physical literacy-based gymnastics programme through local sport clubs in Greece (Kaioglou et al., 2025). A central delivery strategy was to train local coaches or volunteers to deliver theory-informed curricula, enabling continuity beyond external expert involvement. In some cases, local coaches selected activities within the researcher-provided framework, ensuring contextual fit (Kaioglou et al., 2025). Overall, delivery in this model was characterised by a structured, top-down approach that relied on formal partnerships and the transfer of theory-informed curricula, allowing only limited opportunities for local adaptation.

Gender and cultural responsiveness were embedded through professional design choices. Gaelic4Girls created girls-only opportunities in a traditionally male-dominated sport (Farmer et al., 2020), Walking Netball adapted existing rules to meet the needs of ageing women (Kinnafick et al., 2021), and the gymnastics programme enhanced children's confidence and physical literacy (Kaioglou et al., 2025). Cultural responsiveness was achieved by embedding programmes within trusted community institutions or culturally significant sport. Outcome evaluations focused on physical activity, health and wellbeing, and skill development (Table 1). Sustainability was rarely addressed in this model. The Walking Netball programme was the only study to report strategies to support its longevity, including training Women's Institute hosts, integrating activities into competitions between Women's Institute groups, and adapting delivery during COVID-19 (Kinnafick et al., 2021). In contrast, the other two studies provided little evidence of long-term maintenance.

Model 2: Grassroots Co-creation and Responsive Design

In contrast to the structured, expert-driven adaptations described in Model 1, the programmes grouped under Model 2 exemplify a bottom-up approach grounded in grassroots co-creation and responsive design. This model includes three community-initiated programmes developed in diverse settings, including a modified community softball league in the United States (Bernabe & Block, 1994), a culturally tailored physical activity initiative for Somali refugee women in New Zealand (Guerin et al., 2003), and the BELIEVE programme co-developed with women in Iran (Amiri-Farahani et al., 2021). These interventions were not pre-designed by external experts but originated from within the respective communities in response to specific local needs or challenges. As detailed in Table 1, community members served as initiators, co-creators, and co-decision-makers throughout the programme lifecycle. The primary objectives of these initiatives centred respectively on inclusion (Bernabe & Block, 1994), cultural safety (Guerin et al., 2003), and local feasibility (Amiri-Farahani et al., 2021). Taken together, these examples demonstrate how locally driven participation shaped both the content and process of programme design, distinguishing Model 2 from the externally led adaptations described in Model 1.

Programme delivery in Model 2 was grounded in collaboration and continuous dialogue rather than the transfer of a predefined curriculum. In the United States, in the community softball league (Bernabe & Block, 1994), coaches, parents, and league officials collectively modified game rules

to include a girl with severe disabilities, establishing a shared decision-making framework.

Similarly, the Somali refugee women's physical activity initiative in New Zealand (Guerin et al., 2003) was co-designed through sustained consultation with community leaders and participants, resulting in culturally appropriate sessions such as women-only classes and after-dark activities to ensure privacy and safety.

In Iran, the BELIEVE programme (Amiri-Farahani et al., 2021) applied a participatory action research approach and the Mobilising for Action through Planning and Partnerships (MAPP) process, allowing women to identify key barriers such as family responsibilities and limited access to facilities, and to co-develop multi-component strategies to address them. Across these programmes, implementation evolved through iterative feedback and negotiation within trusted local networks, which thereby reinforced participation, empowerment, and collective ownership.

Gender and cultural responsiveness were embedded through participatory processes rather than pre-defined frameworks. Gender sensitivity was evident in the creation of safe, women-only spaces and in flexible approaches that considered women's family and social roles. Cultural responsiveness was expressed using familiar institutions and locally meaningful activities. Outcome evaluations in this model often reflected this focus on lived experience, emphasising qualitative data on participation barriers and social outcomes, alongside physical activity levels. Sustainability was closely linked to community ownership, particularly where co-decision models and collaborative strategies were embedded in programme design (Amiri-Farahani et al., 2021; Bernabe & Block, 1994). Guerin et al. (2003) noted that the withdrawal of external funding limited programme continuation. However, the development of enduring peer relationships and social networks among participants suggested potential for informal, peer-led continuity. Collectively, these findings demonstrate how empowerment through participatory processes can generate contextually grounded, gender-sensitive, and potentially sustainable approaches to women's and girls' physical activity.

Model 3: Externally Supported Capacity-Building

Building on the participatory approaches of Model 2, Model 3 represents a hybrid approach in which external organisations provide funding, training, and resources to help underserved communities develop and sustain physical activity programmes. This model included two netball-based initiatives implemented in the Pacific Islands, specifically in Tonga and Samoa, supported by the Australian government and regional sport agencies (Keane et al., 2020; Richards et al., 2022). In both cases, community members were not the primary co-creators of programme content but contributed as key informants during the early stages of design. Their local insights, gathered through consultation and formative evaluation, guided the development of culturally appropriate and locally relevant programme components. Overall, these initiatives demonstrate how external facilitation, combined with community engagement, can extend the reach of sport-based programmes in low-resource contexts.

Programme delivery in this model centred on building local capacity through structured collaboration between external agencies and community organisations. In Tonga, the Low-Engagement Village Programme enhanced women's participation in netball by developing local leadership through workshops on coaching, umpiring, and programme coordination, and by providing essential equipment and uniforms (Keane et al., 2020). Local "focal points" were identified and trained to coordinate village-level activities and ensure continuity after external support concluded. In Samoa, the One Netball Pacific initiative adopted a similar capacity-

building approach by training community volunteers, known as "champions," to lead weekly sessions and organise competitions with guidance from the Oceania Netball Federation (Richards et al., 2022). In both programmes, leadership gradually shifted from external coordination to local ownership as community members took on responsibility for ongoing delivery. External input thus functioned as a short-term catalyst to initiate and embed sustainable structures for local participation.

Gender and cultural responsiveness in this model were achieved through early community consultation and the strategic use of a culturally familiar sport. Netball was deliberately chosen for its strong association with women and its social acceptance across the Pacific Islands, which helped address gender-specific barriers to participation while strengthening social cohesion. Cultural alignment was reinforced through partnerships with local leaders, such as town officers and church representatives, ensuring that activities were locally endorsed and embedded within existing community structures. Sustainability was integrated into programme design through the ongoing mentorship and empowerment of local leaders, enabling them to sustain delivery beyond the initial funding period. Together, these initiatives illustrate how externally supported yet locally grounded programmes can create gender-sensitive, culturally responsive, and enduring opportunities for women's and girls' participation in physical activity.

Summary of Findings Across Programme Models

Across the three models, a gradual shift was evident from externally facilitated delivery toward participatory and community-owned approaches. The level of community involvement expanded from implementtation only (Model 1), to co-creation and shared decision-making (Model 2), and ultimately to capacity-building and local leadership (Model 3). This continuum reflected increasing com-munity agency in the design, delivery, and long-term stewardship of women's and girls' physical activity programmes.

Patterns of delivery and responsiveness also evolved across models. Model 1 relied on externally structured curricula, whereas Models 2 and 3 emphasised participatory dialogue, collaboration, and leadership development. Gender responsiveness varied across models, embedded by professional design in Model 1, emerging organically through participation in Model 2, and achieved through strategic activity selection in Model 3. Similarly, cultural responsiveness progressed from alignment with local institutions to participatory co-design and, finally, to culturally congruent leadership.

Differences in outcomes and sustainability mirrored this progression. Model 1 evaluations focused primarily on short-term physical activity outcomes, such as physical activity levels and movement skills. Model 2 highlighted experiential and social outcomes, including inclusion, empowerment, and confidence. Model 3 adopted broader public health measures, assessing physical, psychological, and wellbeing indicators. Sustainability was rarely addressed in Model 1, emerged through community ownership in Model 2, and was explicitly embedded in Model 3 through leadership training and local capacity-building. Collectively, these findings illustrate a continuum of approaches reflecting increasing participation, contextual responsiveness, and sustainability in community-led physical activity promotion.

Discussion

This scoping review aimed to explore and synthesise existing evidence on community-led physical activity programmes for women and girls. In the subsequent sections, we interpreted our results in relation to the study characteristics, the synthesised models derived from the included programmes, and the review

outcomes that addressed our research questions.

Study Characteristics

Six of the eight studies included in this review were published after 2020, indicating an increasing awareness of community-led women's and girls' sport programmes within the academic field. This trend is further corroborated by the limited number of similar reviews conducted by scholars focusing on community women's and girls' programmes in the last 10 years (Farahani et al., 2015; Pedersen & King, 2023; Vidaurreta et al., 2025). In contrast to our review, these other reviews did not specifically focus on community-led programmes that ensure gender sensitivity and incorporate local and cultural knowledge.

Farahani et al. (2015) concluded that there was insufficient evidence in the field (2000-2013) to support the claim that community-level interventions can enhance physical activity among women. The researchers called for a comprehensive examination of the intervention features to ensure their sustainability and impact on women's physical activity, an objective we addressed in our review. Pedersen & King (2023) found four studies based on two women's programmes that aimed to enhance health outcomes reported through participatory action research. The two women-only programmes were preceded by and developed from men-only or mixed-gender interventions, indicating a strategic shift towards achieving health equity through sport. Our review further corroborates this finding, as we identified eight distinct studies that used sport to enhance physical activity. Vidaurreta et al. (2025) focused on women's embodied pathways in sport experience, covering high-performance and community sport. They suggested that future programmes for women and girls should incorporate considerations of cultural and gender influences in their design, aligning with the objectives of our current review, which were reflected in most of the study designs.

Our review identified eight studies conducted across seven countries spanning three continents, with Iran the sole nation not included in the Organisation for Economic Co-operation and Development (OECD). Non-OECD countries often face heightened socioeconomic challenges and thinner institutional safety nets; consistent with evidence from Global South settings, community-led sport programmes are especially warranted there to expand participation, wellbeing, and social cohesion (Svensson & Woods, 2017). The studies predominantly applied mixed-methods and pre-post comparison approaches. The use of mixed-methods research facilitated a nuanced understanding of marginalised populations, such as women and girls, through qualitative exploration. Addition-ally, triangulating data from qualitative and quantitative methods corroborated findings from multiple perspectives, thereby mitigating the biases inherent in a single-method approach.

All studies included in this review reported increased physical activity among participants, along with improved interpersonal and psychosocial outcomes. Considering the community-driven nature of these studies, it would be valuable to consider whether outcomes at the Community-level social cohesion and community empowerment are being articulated in the research objectives. However, these community-level outcomes appear under-examined, despite the programmes being explicitly framed as community-based. Overall, the diverse methodological design and reported outcomes may hint at the contextual factors and community dynamics that influence both the implementation and effectiveness of physical activity interventions.

Programme Characteristics and The Three Models

To extract themes from the programmes, we referred to three foundational frameworks in community participation and engagement, as well as participatory research involving the community. Arnstein's (1969) Ladder of Citizen Participation conceptualises participation as a hierarchy of power, ranging from non-participation to full citizen control, and is useful for assessing the extent of community authority in decision-making. O'Mara-Eves et al.'s (2015) typology of community engagement focuses on the level and nature of engagement in public health interventions identify stages such as informing, acting together, and supporting independent community interests. Cargo and Mercer's (2008) participatory research framework outlines the principles of community-based participatory research, emphasising co-learning, shared ownership of the research process, and the integration of local knowledge to foster empowerment and mutual benefit.

Model 1 refers to Structured Programme Adaptation and Implementation, in which the programme's delivery to the target community relied on partnerships with well-established community organisations in the areas. This model embodies a community engagement approach at the 'acting together' level, as described by O'Mara-Eves et al. (2015). It corresponds to the 'Partnership' stage on Arnstein's ladder (1969), where power is shared during implementation but not necessarily in the design phase, which was reflected in the three programmes under this model.

It is important to acknowledge that programmes within this model do not ensure complete community leadership or decision-making as recommended by Arnstein (1969) or participatory research frameworks (Cargo & Mercer, 2008). Nevertheless, these programmes may still play a significant role in promoting women's empowerment and health equity, particularly when their design is developed and validated by experts and researchers in the field, as exemplified by the three programmes (Farmer et al., 2020; Kaioglou et al., 2025; Kinnafick et al., 2021) in question. In this context, partnership and collaborative action signify advanced community engagement, with careful attention to gender sensitivity and the local context in all instances.

In Model 2, the concepts of grass-roots co-creation and responsive design were evident in three programmes (Amiri-Farahani et al., 2021; Bernabe & Block, 1994; Guerin et al., 2003) that prioritised bottom-up, community-driven approaches to developing sport initiatives for their target populations. These programmes were either newly established or adapted to the expressed needs of the communities, without relying on external experts.

Beyond promoting physical activity, they explicitly addressed inclusion, cultural safety, and local feasibility, highlighting gender and cultural considerations more strongly than the other two models. These programmes illustrate how sport can serve as a cost-effective platform for achieving multiple social outcomes, including social cohesion, empowerment and community capacity-building, as seen in sport-for-development programmes (Morgan & Parker, 2023). Integrating these social dimensions into outcome reporting or conducting additional investigation would be valuable, as demonstrated by the three studies.

Each study included a qualitative component that foregrounded human experiences and contextualised programme outcomes. The use of participatory action research also introduced potential for participants' empowerment, especially for women and girls, a dimension that merits further evaluation. Notably, while one programme (Guerin et al., 2003) experienced disruption due to funding discontinuation, its co-creation approach fostered a sense of community ownership, which in turn enabled local women to

seek solutions and sustain momentum independently.

This kind of indirect impact, where communities build resilience and agency, underscores the longer-term value of grassroots, participatory design (Laverack, 2006; Popay, 2021). Unlike the 'acting together' level of engagement evident in Model 1, where implementation is shared but design remains externally led, Model 2 reflects deeper community leadership and ownership, which may lead to more sustainable, locally driven outcomes.

In Model 3, the Externally Supported Capacity-Building programmes retain the has autonomy to develop its initiatives independently. The distinction from the preceding two models lies in the involvement of external stakeholders who facilitate capacity building, enabling local implementers to execute programmes for women in need. Local informants, selected from within the women's community, serve as the source of local knowledge and provide a nuanced understanding of the women participants.

While the programmes retained community leadership in delivery, external actors played a guiding role in shaping programme structure and supporting implementation logistics. Model 3 occupies a middle ground between top-down adaptation and fully community-led design, leveraging external expertise to strengthen local capacity without displacing community agency (O'Mara-Eves et al., 2015). The implementation of culturally familiar and gender-sensitive sport, such as netball, demonstrated the significant impact of local focal points.

The sustainability of these programmes was maintained through the development of these focal points and the ongoing mentorship of other women as focal points. This indicates that the programmes were successfully renewed through the empowerment of the implementers, which is both a means and an end in community programmes (Laverack, 2006; Popay, 2021). However, it remains uncertain whether empowerment was observed among the participants.

A key consideration is whether the externally introduced support structures are designed with a pathway for local transition and autonomy once the initial funding or technical support is withdrawn.

Implications

Historically, there has been a lack of reviews concerning community sport programmes for women and girls. This scoping review emphasises a community-led approach, suggesting that communities can collaborate to design and implement sport initiatives to enhance physical activity levels and achieve additional outcomes. Our review indicated that varying levels of community engagement, from structured partnerships to grassroots co-creation, can be effective depending on context. Policy-makers and programme designers should select or adapt engagement models based on local needs, readiness, and capacity, rather than applying a one-size-fits-all approach.

Programmes categorised under Models 2 and 3 demonstrated varying degrees of effectiveness. Programmes that were explicitly gender-sensitive and culturally grounded (Model 2) not only reported increased physical activity but also facilitated social inclusion and community ownership. To effectively advance participatory research and address the specific needs of participants, it is imperative that funding and implementation frameworks incorporate gender and cultural considerations from the initial planning stages, particularly in underserved or marginalised contexts (Wallerstein & Duran, 2010).

Programmes supported through capacity-building models (Model 3) demonstrated the potential for local sustainability when women are empowered as focal points. Future programmes may embed clear exit strategies that include leadership handover, skills training, and peer mentorship to reduce dependency on external actors.

Our review highlights persistent research gaps in the study of community sport, particularly regarding underserved communities and various intersectional identities, such as ethnicity, ability, and socioeconomic status (Lee et al., 2023). Most studies have focused on measuring physical activity level and psychosocial impacts at the individual level. However, outcomes such as community empowerment, social cohesion, and agency have either been inferred or insufficiently evaluated (Theeboom et al., 2023).

Future evaluations should incorporate frameworks capable of capturing collective and structural outcomes, rather than solely focusing on individual behaviour change. Programmes that integrated participatory action research and qualitative methodologies have demonstrated a more profound understanding of lived experiences and local agency. This underscores the significance of collaborative knowledge production in enhancing the relevance, legitimacy, and impact of programmes, an approach that should be more widely adopted in sport-based public health interventions.

Limitations and Recommendations for Future Research

This scoping review has certain limitations. The limited number of included studies may not adequately capture the actual patterns or characteristics of community-led sport programmes for women and girls. Even though we did not aim for generalisation, most studies were conducted in OECD contexts, with only one from a non-OECD country. This limits the generalisability of findings to Global South settings, where community-led sport initiatives may operate under different resource constraints and sociopolitical dynamics (Svensson & Woods, 2017).

Uncertainties around the "community-led" element and insufficient reporting on governance structures or decision-making processes made it difficult to categorically determine the level of community engagement in some studies. This may have led to classification bias across the three models. As a scoping review, our findings are constrained by the scope and quality of the included primary studies. Many studies did not report on community-level or structural outcomes such as empowerment or leadership development, limiting our ability to draw strong conclusions on these dimensions, which are essential in a "community-led" context.

Future research on community-led women's and girls' physical activity programmes should consider both methodological enhancements and broader conceptual frameworks to capture the full scope of programme impact.

First, we encourage researchers to incorporate qualitative or complementary mixed-methods designs to evaluate not only PA-related outcomes but also unintended or non-health outcomes, such as shifts in self-perception, social inclusion, or local leadership. This includes moving beyond individual-level metrics to integrate longitudinal assessments of community empowerment, ownership, leadership retention and social capital.

Second, the use of participatory research approaches, including participatory action research, may be expanded to ensure that community voices, particularly those of women and girls, are meaningfully included in both programme design and evaluation. These approaches can surface indirect impacts and contextual insights that are often missed by standard evaluation tools.

Third, the adoption of standardised engagement frameworks, such as Arnstein's (1969) Ladder of Citizen Participation and the typology by O'Mara-Eves et al. (2015), is recommended to enable clearer reporting on the depth, type, and progression of community participation. This will enhance the comparability and transferability of findings across different programmes and settings.

Last, there is a critical need for greater geographic and socioeconomic diversity in

the evidence base. Future studies can be conducted in non-OECD and low-resource contexts, where the structural and cultural dynamics of women's and girls' participation may differ substantially. Researchers are urged to incorporate intersectional analyses, considering how ethnicity, class, age, disability, and other social factors influence access, engagement, and programme outcomes.

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Notes on Contributors

Selina Khoo is a professor at Universiti Malaya. Her research focuses on participation in sports and physical activity among various populations, including older adults, people with disabilities, women, and cancer survivors. This includes determining the prevalence of physical activity, motives for participation, and interventions to increase physical activity.

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ORIGINAL RESEARCH

'It Felt Like Something to Endure': A Feminist Phenomenological Inquiry into Low PE Motivation Among Filipino Female College Students

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Abstract

Low motivation in Physical Education (PE) remains a persistent concern among female college students, often resulting in minimal engagement and participation. This study was grounded in feminist pedagogy, which emphasises student voice, agency, and equitable learning environments, to examine the experiences of female students with low motivation in PE at a state university in the Philippines. Twelve participants shared their perspectives through semi-structured interviews, and the data were analysed using thematic analysis. Findings indicate that participants frequently perceived PE as disengaging, monotonous, and emotionally uncomfortable, often regarding it primarily as a course requirement rather than a meaningful learning experience. Contributing factors included repetitive activities, discomfort with uniforms and limited privacy, and feelings of exclusion in mixed-gender settings. Participants emphasised the need for more inclusive and responsive PE practices, including diverse activities, flexible attire policies, greater instructor sensitivity, and emotionally and physically safe learning environments. The study highlights the importance of applying feminist pedagogical principles to enhance autonomy, confidence, and sustained participation among female students.

Keywords:
female college students, gender equity, good health and well-being, motivation, quality physical education

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Introduction

Sedentary lifestyles among female college students pose significant health risks, including obesity, cardiovascular disease, and mental health challenges (Duncan et al., 2023; Huang et al., 2022). While regular physical activity has been shown to enhance fitness, strength, and overall well-being (Kramer, 2020; Mahindru et al., 2023), women worldwide remain less active than men. In the Philippines, this disparity is compounded by body image concerns, which can undermine confidence, self-esteem, and health-promoting behaviours (Espino et al., 2020; Pituk & Cagas, 2019).

Physical Education offers an important avenue for fostering fitness, social well-being, and lifelong healthy habits; however, its impact is often limited among female students due to low motivation (Sáez et al., 2021). The traditional focus of PE on competitive sports and performance-oriented activities can feel repetitive or culturally misaligned, leading participation to be compliance-driven rather than intrinsically enjoyable. To address this, fostering intrinsic motivation through inclusive, culturally relevant activities is essential to promoting sustained engagement (Aljehani et al., 2022; Vasconcellos et al., 2020).

Motivation is a key determinant of PE participation. Self-Determination Theory (SDT) emphasises that fulfilling the psychological needs of autonomy, competence, and relatedness strengthens intrinsic motivation and supports long-term involvement (Ryan & Deci, 2020). PE environments that nurture autonomy and inclusivity enhance satisfaction and well-being, whereas compulsory, performance-focused approaches often evoke negative emotions and withdrawal (Laukkanen et al., 2020; Nogg et al., 2021). These findings underscore the importance of adopting student-centred approaches that prioritise engagement over obligation.

Cultural and gender norms further shape female students' experiences in PE. In many Asian contexts, societal expectations, family pressures, and institutional practices constrain participation (Peng et al., 2023), and programmes modelled on Western ideals may fail to align with local practices (Shen et al., 2022). Across Southeast Asia, additional barriers include heavy academic workloads, social stigma, restrictive uniforms, and safety concerns (To et al., 2020). Within the Philippine context, pressures related to body image and the transition to college life further diminish motivation and self-efficacy, reducing engagement in PE (Cagongon & Osorno, 2022).

PE motivation interventions benefit from autonomy-supportive, student-centred instruction and diverse activity options. Programs emphasising choice and self-improvement enhance enjoyment and long-term adherence (Oldervik & Lagestad, 2021; Vasconcellos et al., 2020), while student-led, supportive structures promote sustained engagement (Kinsella et al., 2022; Millard et al., 2021). In Southeast Asia, culturally responsive programs combining structured activities, behavioural strategies, and social support outperform counselling alone (Lee et al., 2022; Rizal et al., 2019). In the Philippines, flexible, culturally relevant interventions improve adherence, reduce stress, and increase satisfaction (Dulatre et al., 2025; Liad, 2020), highlighting the value of gender-sensitive, contextually adapted approaches.

Despite regional and national commitments to gender equity, a persistent gap exists between policy and classroom practice. The Philippine Commission on Women (PCW, 2025) and UNESCO (2024) stress the importance of inclusivity and well-being in PE, yet implementation often falls short. Espino et al. (2020) found that female students perceive PE as competitive and performance-driven, discouraging participation. Similarly, Pituk and Cagas (2019) noted that policies promoting equal access frequently overlook the cultural and personal needs of female learners. This gap highlights the challenge of translating gender-equity goals into contextually relevant educational practices that reflect students' lived experiences.

Feminist theories illuminate the gendered dynamics shaping female students' experiences in PE. Objectification theory suggests that women internalise societal standards of appearance, leading to body surveillance, shame, and avoidance of evaluative contexts. In PE, performance assessments, uniforms, and peer comparison intensify these pressures and can provoke anxiety. Feminist pedagogy, in contrast, emphasises student voice, collaboration, and critical reflection. Cameron and Humbert (2020) argue that such approaches foster inclusive spaces where female students feel respected and supported. Likewise, Chiva-Bartoll et al. (2021) and Guerrero and Guerrero Puerta (2023) contend that feminist-informed pedagogy challenges hierarchical norms, promotes respect for diversity, and enhances women's engagement and confidence in PE.

As Cameron and Humbert (2020) argued, inclusive and autonomy-supportive teaching can counter the marginalisation that women often experience in performance-driven PE environments. Building on this premise, the present study contributes to the feminist PE literature by demonstrating how culturally grounded,

student-centred, and autonomy-supportive teaching can foster confidence, motivation, and lifelong participation in physical activity.

The literature consistently shows that, despite policy reforms and motivational interventions, female students in higher education remain less active and engaged in PE. Research informed by SDT highlights autonomy, competence, and relatedness as key factors in sustaining motivation. However, much of this research uses quantitative measures, focusing on participation rates or intervention outcomes instead of exploring how these constructs are experienced in gendered classroom contexts.

Studies on Filipino women's inactivity show that reforms often fail because they overlook cultural expectations, body image pressures, and institutional practices that affect students' sense of comfort and belonging. Feminist PE scholarship critiques these shortcomings by showing that performance-oriented assessment, uniforms, and competitive sport structures can perpetuate body surveillance and marginalisation, thereby undermining the autonomy and relatedness identified as essential by motivational theories. Despite these contributions, feminist perspectives are rarely integrated with mainstream motivational frameworks, especially in Southeast Asian higher education. A significant gap remains in understanding how gendered and cultural dynamics specifically shape motivational processes in PE. This research integrates feminist pedagogy with motivational theory, reframing disengagement as a result of intersecting gender norms, cultural expectations, and pedagogical practices rather than as an individual deficit. This approach extends existing scholarship by providing contextually grounded evidence.

In response to these gaps, the present study seeks to explore the lived experiences of female university students in the Philippines who report low motivation toward PE. Rather than assuming the causes of disengagement, the study focuses on how students articulate their perceptions, challenges, and proposed solutions for improving PE participation. By situating these perspectives within the Philippine cultural context, the research aims to illuminate how pedagogical practices, classroom environments, and sociocultural norms shape motivation and engagement. The findings are expected to offer valuable implications for educators and policy-makers seeking to design equitable, motivating, and culturally responsive PE programs for female students in higher education. Specifically, this research addresses the following question: What are the lived experiences of female college students with low motivation in PE classes at a state university in the Philippines?

The conceptual framework in Figure 1 positions female students' motivation and engagement in PE as the result of the interplay among their lived experiences, pedagogical practices, and sociocultural and contextual factors within Philippine higher education. Sociocultural and contextual factors include gender norms, cultural expectations, family and community influences, and institutional policies. Pedagogical and classroom factors include teaching practices, classroom environment, inclusivity, and assessment structures. Students' lived experiences capture challenges and barriers, as well as their suggestions to enhance engagement and inclusivity. The framework shows how sociocultural and pedagogical influences shape lived experiences, highlighting obstacles and informing practical solutions, providing a foundation for culturally responsive, student-centred, and motivating PE programs. By incorporating feminist-informed and student-centred pedagogical principles, the framework highlights student voices as both an analytic lens and a practical guide for understanding and enhancing female participation in PE.

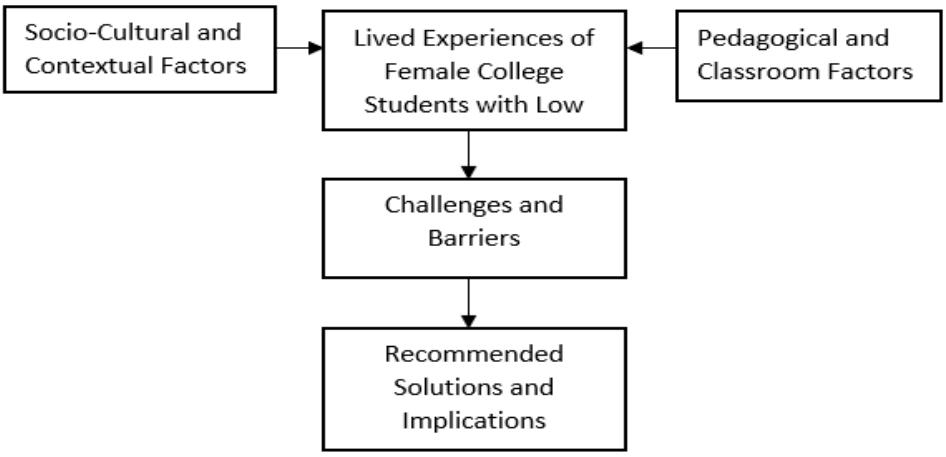

Figure 1. The conceptual framework of the study

Methods and Materials

This research utilised a descriptive phenomenological design to investigate the lived experiences of female college students who experienced low motivation in PE. Descriptive phenomenology was used to describe the essence of these experiences, allowing participants' perspectives to encapsulate the meaning of their motivation (Creswell & Poth, 2018). This approach enabled the researcher to capture rich, detailed narratives of students' emotions, perceptions, and engagement that cannot be fully understood through quantitative methods.

This study focused on participants who identified as having low motivation toward PE. All 12 participants were female college students from a state university in the Philippines, aged 22 to 25, with a mean age of 23.4. They represented various academic disciplines and were enrolled in PE courses during the data-collection semester. By intentionally selecting students with low motivation, the study aimed to explore their experiences in depth, ensuring participants' focus was explicit. Identification of participants involved a two-step process: a pre-survey assessing motivation in PE and review of performance records to confirm low engagement and achievement. Providing this participant background clarifies the recruitment process and contextualises the findings within the perspectives of students most affected by low motivation in PE. Limiting participation to one institution allowed for consistency in environmental and policy factors, while the small, purposively selected sample enabled detailed, contextually grounded insights. Data collection continued until data saturation was achieved, supporting methodological rigour.

Data were collected through semi-structured interviews guided by an interview protocol guide reviewed by experts in qualitative research for clarity and appropriateness. Given the exploration of topics related to body image, emotional discomfort, and exclusion, measures addressed potential emotional risks. Before each interview, participants were informed about the topics and reminded of their right to skip questions or withdraw without consequences.

During interviews, the researcher created a respectful, open atmosphere to foster participant comfort. Voluntary participation and informed consent were emphasised, and interviews were paused to check on participants and only continued if the participant allowed. Afterwards, all received information about mental health

resources. Interview data were audio-recorded with written consent supported by verbal informed consent.

The study was conducted in full accordance with established ethical standards for research involving human participants (Belmont Report, 1979). Written informed consent was obtained from all participants, and strict measures were implemented to ensure confidentiality, anonymity, and voluntary participation throughout the research process. All procedures were classified as minimal risk, with appropriate safeguards in place to protect participants' safety, well-being, and rights. Although institutional guidelines did not mandate formal ethical clearance, the study was reviewed and authorised by Central Luzon State University, ensuring full compliance with institutional policies and national standards for the ethical conduct of research involving human subjects.

Data analysis followed Colaizzi's (1978) phenomenological method. The process included extracting significant statements and formulating meanings. Each transcript was read several times for immersion. The researcher identified meaningful statements, coded them, and grouped them into pattern clusters. Broader thematic categories were formed by constantly comparing and interpreting the data. Data saturation was reached when no new codes or insights appeared. Final themes were checked against transcripts to ensure accuracy, coherence, and fidelity to participants' experiences.

Rigour in qualitative research was ensured by adhering to the criteria of credibility, transferability, dependability, and confirmability (Gunbayi, 2024). Credibility was achieved through member checking, transferability through thick descriptions, dependability through clear documentation of procedures, and confirmability through an audit trail and reflexivity throughout the research process. To minimise research bias during theme generation, the researcher engaged in reflexive practices to acknowledge and manage personal assumptions that could influence data interpretation. Expert validation was conducted to ensure that emerging themes accurately reflected participants' perspectives rather than the researcher's preconceptions.

Results

The thematic analysis illuminated the complex and multifaceted experiences of female college students who reported low motivation in PE. The analysis was organised into three major dimensions: (1) Personal Experiences of Participation in PE, (2) Challenges Related to PE Participation, and (3) Suggestions to Address Challenges in PE Participation. Each dimension encompasses several themes that capture distinct yet interconnected aspects of the students' lived experiences. Each theme is further explained through detailed descriptions and representative participant quotations, highlighting the depth and authenticity of their perspectives (see Table 1).

Table 1. Summary of Dimensions and Themes

Dimensions	Themes
Personal experiences of participation in PE	1. Disengagement and perceived obligation 2. Boredom from lack of variety 3. Body image and self-consciousness
Challenges related to PE participation	1. Gender-based exclusion and unequal participation 2. Emotional and psychological discomfort 3.Body- and privacy-related discomfort

Table 1. (Continued)

Dimensions	Themes
Suggestions to address challenges in PE participation	1. Diversify activities and allow student choice 2. Improve teacher sensitivity and encouragement 3. Adjust uniform requirements for comfort 4. Improve changing facilities for privacy 5. 5. Create a safe and supportive class culture

Personal Experiences of Participation in PE

Theme 1: Disengagement and Perceived Obligation

Students primarily perceived PE as an academic requirement rather than a source of meaningful or enjoyable experiences. Attendance was often driven by necessity rather than motivation or perceived personal benefit. Many reported a sense of disconnection, engaging in activities out of obligation rather than genuine interest. These findings indicate a lack of intrinsic motivation and a weak association between PE, students' daily lives, and overall well-being. Consequently, PE was regarded as an experience to be endured rather than an opportunity for positive development.

Sample Responses:
"Honestly, I felt like PE was just another subject I had to get over with, not something I looked forward to."

"Sometimes I just participated because it was required, not because I liked it."

Theme 2: Boredom from Lack of Variety

Monotony remains a persistent concern in PE. Students identified it as a primary factor contributing to low motivation. Many reported that classes focused exclusively on traditional sports such as basketball and volleyball, failing to accommodate the diverse interests and abilities of the student body. The limited, repetitive curriculum restricted opportunities for variety and creativity, resulting in unengaging, monotonous classes. Consequently, motivation and participation declined. Students perceived the content as uncreative and irrelevant, further contributing to their disinterest. These findings suggest a need for a more diverse, student-centred curriculum to enhance motivation.

Sample Responses:
"It was the same games over and over again."

"I didn't really enjoy the activities. Most of the time, they felt repetitive and not suited to what I'm interested in."

"We just kept doing volleyball and basketball. I got tired of it."

Theme 3: Body Image and Self-Consciousness

Concerns regarding body image and appearance represented the primary barrier to full participation. Female students reported discomfort during physical activity with peers and experienced anxiety about being observed or ridiculed. This heightened self-awareness reduced their confidence and led to avoidance behaviours, including reduced effort, restricted movement, and class absenteeism. A preoccupation with appearance during activity diminished opportunities for enjoyment. This theme demonstrates that

insecurities related to body image negatively affected motivation. In some cases, emotional distress surpassed the desire to participate. These findings illustrate the significant role of body image in driving disengagement from PE.

Sample Responses:
"I often felt embarrassed about how I looked when doing physical activities, especially with others watching."

"There were times I skipped PE because I didn't feel confident in my body or my abilities."

Challenges Related to PE Participation

Theme 1: Gender-Based Exclusion and Unequal Participation

A significant concern for female students in co-educational settings is the persistent inequality in participation and involvement. Activities are frequently dominated by male students, which restricts opportunities for others to engage. Despite efforts by many female students to participate actively and foster collaboration, they often remain marginalised. Such exclusion limits their opportunities for engagement and negatively influences their self-perception as students. It also contributes to heightened feelings of neglect and inferiority within the classroom environment. Female students report feeling devalued when their abilities or willingness to participate are disregarded. The male-centred environment undermines their confidence and impedes the development of peer relationships. According to female students, gender dynamics significantly shape their experiences in PE, making it difficult to experience a sense of belonging or fairness in group contexts.

Sample Responses:
"When we played sports, the boys would take over and not pass the ball to the girls. It made me feel excluded."

"There was an obvious focus on the more athletic students, especially the boys."

Theme 2: Emotional and Psychological Discomfort

The majority of students perceived PE as emotionally unsafe, expressing concerns about public embarrassment, ridicule, and harsh criticism. The resulting stress often outweighed any potential enjoyment. Correction or comparison in front of peers intensified anxiety and discouraged participation, frequently resulting in disengagement and avoidance. Rather than viewing PE as an opportunity for personal growth, students regarded it primarily as a source of fear and ridicule. These findings underscore the importance of a supportive environment, as negative emotions significantly diminish motivation and engagement.

Sample Responses:
"The fear of being laughed at or failing in front of everyone made me want to avoid PE altogether."

"I didn't feel safe emotionally. I was afraid to be judged or compared.

Theme 3: Body and Privacy Related Discomfort

Physical education uniform requirements and insufficient privacy in changing spaces contributed to student discomfort. Many participants reported that standard uniforms did not accommodate diverse body types, modesty preferences, or comfort needs. These factors diminished students' confidence and willingness to participate in PE. The lack of privacy in changing areas led to feelings of vulnerability and embarrassment, prompting some students to change clothes in advance to avoid these situations. These findings demonstrate that attire and the physical environment significantly influence students' comfort, body confidence, and emotional readiness for PE. Providing flexible uniform options and private, secure changing areas were identified as effective strategies to enhance inclusivity, confidence, and active participation.

Sample Responses:
"The uniform made me feel uncomfortable. It didn't fit well, and I didn't feel confident wearing it."

"I didn't feel comfortable in the clothing we had to wear, especially during certain activities."

"Changing in the change room was uncomfortable. There was no privacy."

"We had to change so quickly, and in front of others, I hated that."

Suggestions to Address Challenges in PE Participation

Theme 1: Diversify Activities and Allow Student Choice

Students highlighted the importance of PE programs that include a broader range of activities beyond traditional sports. Suggested alternatives included dance, yoga, fitness, and walking, which could address diverse interests and abilities. Allowing students to choose among various activities may enhance inclusivity and enable individuals to engage in options that align with their preferences and capabilities. Expanding the range of activities can make PE more meaningful, transforming it from a perceived obligation into an experience that is comforting, supportive, and motivating.

Sample Responses:
"It would help if PE included more choices like dance, yoga, or even walking. Not everyone likes competitive sports."

"More variety and flexibility would make the class feel more inclusive and less intimidating."

"I think it would be great if students could suggest activities they're interested in."

Theme 2: Improve Teacher Sensitivity and Encouragement

Students saw that teacher attitudes shape motivation and experience. They preferred teachers who valued effort as much as, or more than, performance. When teachers encouraged students or recognised their situations rather than just focusing on the most skilled, students felt supported. Respondents viewed supportive feedback about effort or improvement as necessary for inclusion. It made less confident learners feel visible and capable. This theme suggests teachers should adopt more empathetic and inclusive practices. By considering diverse backgrounds and adjusting their beliefs, teachers can foster a sense of belonging in the classroom.

Sample Responses:
"PE teachers should be more understanding and not just focus on the best performers."

"Encouragement goes a long way. Even small praise can help us feel more included."

"Teachers should recognise that not everyone is confident in PE."

Theme 3: Adjust Uniform Requirements for Comfort

Students suggested greater flexibility in PE attire to accommodate comfort, body type, and modesty. Suggestions included allowing students to choose or modify their uniforms to meet specific needs. Students regarded this as a simple yet effective way to address body image concerns and to engage students as active participants among their peers. Many students suggested that wearing comfortable attire would increase their confidence and make them feel less self-conscious. The increase in confidence also boosted students' motivation. This theme suggests that the overall policy surrounding PE uniforms has implications for students that extend beyond physical comfort; it also fosters emotional readiness to participate in PE.

Sample Responses:
"We should have the option to wear uniforms that suit our body type and comfort."

"Uniforms should be flexible and allow for modesty and comfort, not just standard sizes."

"If we could wear our own chosen clothes, I would feel more comfortable."

Theme 4: Improve Changing Facilities for Privacy

One strong suggestion was to develop the locker room facilities with enhanced security and privacy. They suggested that completely or partially enclosed stalls would reduce discomfort in the locker room and allow them to prepare for PE without apprehension. Such spaces were considered crucial for creating an environment where students felt safe and respected. Meeting this need for privacy would reduce avoidance behaviours and tangibly demonstrate the institution's sensitivity to female students' needs, thereby promoting inclusion.

Sample Responses:

"Add more privacy in the changing rooms. Not everyone is comfortable changing in front of others."

"Having rooms or separate spaces would really help."

"I would feel safer if we had better changing rooms and private spaces."

Theme 5: Create a Safe and Supportive Class Culture

The students envisioned a PE culture that emphasised cooperation, support, and emotional safety within a non-competitive sports environment. They suggested a structure in which groups of students with different skill levels could work together, emphasising the importance of effort over outcomes to create opportunities for peer learning and support. The students viewed a sense of community and belonging in the classroom as paramount in reducing anxiety associated with sport, while also increasing participation. The theme represented the cultural change students sought: to frame PE as a place to develop resilience, belonging, and confidence rather than anxiety and exclusion.

Sample Responses:
"Group work should mix skill levels so we can learn from each other, not just compete."

"The culture should value trying, not just winning."

"There should be a better sense of community in class. It would make it less scary to participate."

Discussion

Thematic analysis of female college students with low PE motivation shows that personal, social, and environmental factors collectively undermine intrinsic motivation. Many viewed PE as a compulsory requirement rather than a source of growth or enjoyment, reflecting low autonomy, competence, and relatedness central to SDT (Ryan & Deci, 2020). Motivation was largely externally driven, especially when activities were repetitive, teachers disengaged, and choice was limited (Vasconcellos et al., 2020; Wentzel, 2020). Narrow, culturally irrelevant curricula further reduced interest and connection (Ward et al., 2021; Zhang et al., 2021), highlighting the role of learning environment design in engagement.

Body image and appearance-related concerns emerged as significant challenges to participation. Participants frequently reported feeling self-conscious when performing in public or wearing ill-fitting uniforms, and some described discomfort at being observed by peers, which often led to avoidance or absenteeism. These experiences are consistent with Objectification Theory, which proposes that women

internalise an observer's perspective of their bodies, leading to increased self-surveillance and anxiety (Beadle, 2020; Fredrickson & Roberts, 1997; Sabiston et al., 2021). The physical exposure inherent in PE, combined with institutional factors such as strict uniform policies, limited privacy in changing areas, and public scrutiny, amplified these concerns. Addressing body-related anxieties requires interventions that consider both psychological and structural influences on participation.

Gender dynamics and teaching practices shape students' PE experiences. Many reported marginalisation in mixed-gender activities dominated by male students and perceived teacher preference for more athletic peers, reducing belonging among less confident students. Feminist pedagogy critiques such power imbalances and gender inequalities in education (Gore, 1993). When instruction emphasises competition over collaboration, gendered disparities are reinforced (Cañadas, 2024; Pedersen et al., 2021; Pereira Ribeiro et al., 2024). These findings underscore the need for teacher training that fosters inclusion, values diverse abilities, and promotes collaborative engagement.

Participants recommended strategies to enhance PE motivation, including offering diverse activities that allow choice, providing supportive teacher feedback, and improving uniforms and changing facilities to reduce body- and environment-related barriers. Emphasising cooperation over competition and fostering a safe, inclusive class culture were also highlighted. These approaches, aligned with SDT, support autonomy, competence, and relatedness, and research shows they increase engagement, persistence, and sustained participation in PE (Ryan & Deci, 2020; Taylor, 2024; Vasconcellos et al., 2020).

In summary, female students' motivation in PE is shaped by personal, social, and institutional factors. Promoting an inclusive environment requires addressing body-image concerns, gender dynamics, and teaching practices. Curricula should offer diverse, culturally relevant activities, and teacher training should emphasise encouragement and equity. Institutional policies on uniforms, facilities, and assessments should prioritise comfort, privacy, participation, and effort over competition. Together, these measures can transform PE from a compulsory activity into a meaningful experience that fosters lifelong motivation and well-being.

The findings further indicate that low motivation in PE develops cumulatively through repetitive curricula, culturally irrelevant activities, limited autonomy, gendered classroom dynamics, appearance concerns, and restrictive institutional policies. These factors undermine students' perceptions of competence, autonomy, and relatedness, gradually diminishing intrinsic motivation and encouraging externally regulated participation. Recognising this cumulative effect enables educators and policymakers to address the root causes of disengagement.

Although this study offers valuable insights, its findings are limited by a small, specific sample of female college students, which restricts generalisability to other populations, including male students and those from different institutions. Future research should incorporate larger, more diverse samples and employ mixed-methods to integrate subjective experiences with measurable outcomes. Experimental or comparative studies could evaluate interventions such as flexible uniforms, diversified curricula, and autonomy-supportive teaching. Including perspectives from male students, teachers, and administrators would yield a more comprehensive understanding of motivation in PE.

In conclusion, low motivation among female college students in PE stems from repetitive curricula, gendered socialisation, body image concerns, and institutional policies that compromise comfort and safety. Addressing these challenges requires an integrated approach encom-

passing pedagogy, curriculum design, institutional policy, and facility planning. Establishing a safe, inclusive, and supportive environment can transform PE into a setting that fosters empowerment, personal growth, and lifelong engagement in physical activity, thereby enhancing physical, emotional, and social well-being.

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this manuscript, the authors used Grammarly to improve language clarity, grammar, and phrasing. The authors carefully reviewed and revised the output to ensure accuracy and take full responsibility for the final manuscript's content.

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ORIGINAL RESEARCH

Hiya and the Gymnasium: Body Image, Shame, and Self-Perception among Filipino Female College Students in Physical Education

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Abstract

Despite extensive research on body image in Western contexts, a significant gap remains in understanding how Filipino cultural values influence female college students' participation in Physical Education. This study aimed to understand the lived experience of female college students regarding body image in PE classes at a state university in the Philippines. Using a qualitative phenomenological design, the study engaged ten female college students who experienced body image concerns in physical education. Data were gathered through semi-structured interviews to gain insights into their bodily perceptions, challenges, and the social dynamics of PE activities. The data were analysed using Braun and Clarke's six-phase thematic analysis to identify recurring themes and patterns. Results revealed three primary dimensions of influence: self-perception (mixed emotions and self-consciousness), environmental factors (uniform discomfort, teasing, and spatial insecurity), and social influences (peer judgment, comparison, and instructor behaviour). Findings show that the combined effects of self-concept, environmental conditions, and social dynamics shape body image concerns among female college students. These dynamics significantly diminish student confidence and performance, highlighting the urgent need for inclusive PE environments that value body diversity. By situating these experiences in a localised context, this study contributes to Filipino PE literature by providing an empirical basis for culturally sensitive pedagogical shifts that prioritise student well-being. The findings underscore the need for a more inclusive and supportive PE environment that values body diversity and reduces judgment, ultimately promoting student well-being and engagement.

Keywords:
female body image, inclusive physical education, gender equity, cultural values, good health and well-being

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Introduction

Physical Education (PE) serves as a vital pedagogical platform in higher education, promoting physical fitness, holistic well-being, and sustainable health behaviours. Nevertheless, the effectiveness of PE curricula is frequently compromised by complex psychosocial barriers that disproportionately impact female college students, influencing both their participation and motivation. Key among these barriers are sociocultural norms and internalised ideals of body standards, often leading to heightened self-consciousness in performance-oriented environments (Cagas et al., 2022; Haug et al., 2023). Body image, conceptualised as the multidimensional perception and emotional evaluation of one's physical

self, is a primary determinant of engagement (Vani et., 2021). Evidence demonstrates that women are especially susceptible to body dissatisfaction due to peer-driven norms and pervasive media representations (Cash & Smolak, 2011; Nuriana et al., 2024). In PE settings, where bodies are subject to explicit peer evaluation and increased visibility, these concerns are frequently amplified, rendering the gymnasium a site of psychological vulnerability rather than empowerment (Barker et al., 2022; Kerner et al., 2022).

In Southeast Asia, body dissatisfaction is exacerbated by the convergence of regional peer norms and pervasive media imagery, both of which significantly affect self-esteem and exercise behaviours (Al Riyami et al., 2024; Kwon, 2020). Studies in Malaysia and Thailand demonstrate that media-driven beauty ideals are closely linked to behavioural restraint and increased body-related anxieties among young women (Aparicio-Martinez et al., 2019; Chua et al., 2023). In the Philippines, this issue is further complicated by the indigenous psychological construct of hiya, which refers to shame or social propriety. Empirical evidence suggests that hiya mediates the relationship between Body Mass Index (BMI) and body image, fostering embarrassment that contributes to physical restraint in PE contexts (Brebante & Cagas, 2015). These culturally specific dynamics reveal a significant research gap and underscore the need for contextually grounded investigations into how female students in Philippine higher education navigate the interplay among traditional values, self-confidence, and participation (Tuazon et al., 2019).

The implications of body image extend beyond immediate academic participation to encompass broader mental health and behavioural outcomes. Negative body image is strongly correlated with social anxiety, persistent physical inactivity, and the avoidance of group-based activities (Sabiston et al., 2019; Regencia et al., 2023). In contrast, fostering a positive body image is linked to greater resilience against appearance-based pressures and increased self-efficacy (Ouyang et al., 2020; Tylka & Wood-Barcalow, 2015). These relationships underscore the extensive influence of body-related perceptions on key developmental domains, including self-concept and long-term health outcomes (Bucchianeri et al., 2013; Macêdo et al., 2020). Addressing these psychosocial determinants is therefore critical to developing inclusive PE frameworks that accommodate the diverse health and developmental needs of female students.

Empirical studies indicate that targeted interventions, such as body positivity workshops, media literacy programs, and inclusive pedagogical approaches, are effective in reducing appearance-based stigma and promoting positive self-perceptions among students (Craddock et al., 2024; Garbett et al., 2023). In Indonesia, Craddock et al. (2024) demonstrated that culturally adapted school interventions significantly decreased appearance-related social anxiety and improved body satisfaction. In the Philippines, local initiatives highlight the necessity of structural and policy-level reforms. Key strategies include teacher training, the creation of accommodating PE environments, and the adoption of flexible uniform policies, all of which are critical for enhancing inclusivity and student comfort (Laborte & Mejarito, 2025; Regencia et al., 2023; Tagare et al., 2025).

The study is grounded on Social Comparison Theory (Festinger, 1954), Objectification Theory (Fredrickson & Roberts, 1997), and the lens of intersectionality (Piran, 2017; Richburg, & Stewart, 2024). Social Comparison Theory explains how individuals evaluate themselves relative to others, influencing body satisfaction and motivation for physical activity. Objectification Theory builds on this by describing how women internalise external evaluations, leading to body monitoring and appearance-related shame, especially in settings where the body is

publicly visible, such as physical education. Through intersectionality, body image is understood as shaped by the overlapping social and cultural factors of gender, class, and media influence. Ultimately, these theoretical perspectives reveal that body image in the Philippine PE context is not just an individual psychological concern, but a complex construct shaped by the internalisation of external gaze and the tension between traditional Filipino cultural values and modern social comparisons. This phenomenon moves from peer-level physical comparisons to systemic self-objectification, in which the body is seen as an object to be scrutinised rather than a vehicle for physical literacy. The intersection of Filipino class standards, rigid gender roles, and enduring colonial beauty ideals shapes this experience.

Despite extensive research, a significant gap persists regarding the influence of distinct Filipino cultural values on the PE participation of female college students. The existing literature is largely framed within Western paradigms that emphasise individualism and self-expression, which may not fully capture the sociocultural realities of Filipino women. In the Philippines, collectivist values and modesty norms intersect with the cultural construct of hiya (shame) and globalised beauty ideals, uniquely shaping how women perceive and present their bodies. Many current theoretical models do not adequately address these culturally embedded dynamics, resulting in a limited understanding of how body image relates to motivation and participation in the local context (Campoamor-Olegario et al., 2025). By situating these variables within Filipino conceptions of femininity, competence, and social belonging, this study aims to provide a more contextually grounded understanding of female engagement in physical education.

Therefore, this study explores body image concerns among female students in Physical Education (PE) to understand how these perceptions influence their experiences and participation. By examining these dynamics, the research aims to contribute to the broader literature on physical activity, gender, and self-perception and serve as a reference for developing inclusive, gender-sensitive PE environments. The aim is to establish an empirical foundation for culturally grounded pedagogical shifts in Philippine higher education. By situating these findings in a local context, the study advocates for educational practices that prioritise student well-being and account for the unique sociocultural factors shaping female engagement in physical activity.

Figure 1 presents the conceptual framework of the study, illustrating the dynamic relationship between student psychology and the classroom environment. It shows that PE Participation and Body Image Concerns exist in a reciprocal, bidirectional cycle: a student's self-perception influences their willingness to engage in activity, and their engagement or lack of it reinforces those self-views. These factors define the student's lived experience in PE class, encompassing emotional and social dimensions during physical activity. The model suggests that this lived experience should inform how Physical Education is taught, encouraging educators to adapt curricula, instructional strategies, and learning environments to support female students better.

Methods and Materials

To explore the lived experiences of female college students regarding body image concerns in Physical Education (PE), a qualitative phenomenological design was employed. A purposive sample of 10 participants was selected from a state university in the Philippines. All participants were female, aged between 22 (M = 23.1), and were third-year college students enrolled in various academic programs across different colleges within the university. This range of academic backgrounds

ensured broad representation of perspectives while maintaining comparability across year levels and educational experiences. Inclusion criteria specified female third-year students who had completed all required tertiary Physical Education (PE) courses and maintained a full-time academic load. Exclusion criteria eliminated students with incomplete PE requirements, medical conditions that limited participation in physical activities, or those currently on academic probation.

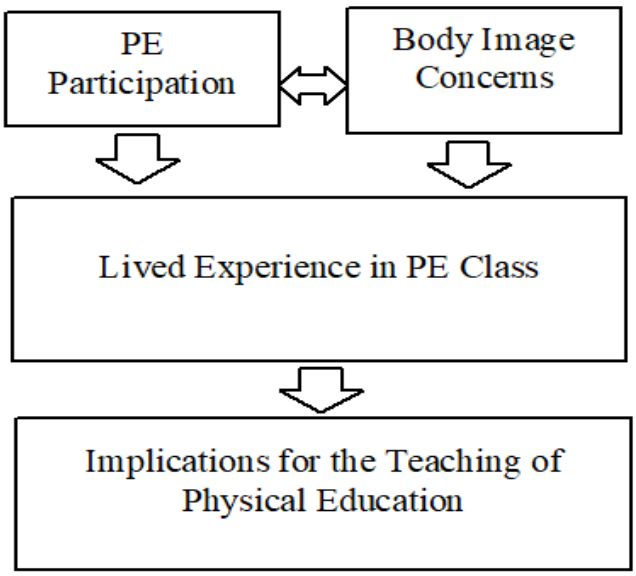

Figure 1. The Conceptual Framework of the Study

Data collection was guided by a semi-structured interview protocol that experts in research and physical education reviewed. The interview guide focused on three primary areas: self-image, experiences in physical education (PE) contexts, and the influence of social factors. This approach provided structure while allowing participants to articulate their experiences and perspectives in detail. Each session began with rapport-building and demographic questions, followed by open-ended prompts aligned with the study's objectives. Probing questions were employed to encourage elaboration and clarify responses. Interviews were conducted individually, each lasting approximately 30 to 40 minutes. With participants' consent, all sessions were audio-recorded and transcribed verbatim to ensure data accuracy and completeness. The interviews, conducted in Filipino by the primary researcher, explored participants' lived experiences of body image within the PE context. Each interview was held in a private, neutral setting to maintain confidentiality and encourage open discussion. Recordings were subsequently translated into English for comprehensive analysis.

Participation in the study was strictly voluntary, with written informed consent obtained from all participants prior to data collection. Ethical rigour was maintained in accordance with the Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research [NCPHS], 1979), upholding the principles of respect for persons through voluntary engagement, beneficence by prioritising participant well-being, and justice through equitable selection criteria. To ensure confidentiality, all personal identifiers were removed, transcripts were anonymised, and data were stored in a secure, encrypted environment. At the time

of the study, institutional protocols permitted self-initiated, minimal-risk research to proceed with administrative approval instead of a full Institutional Review Board (IRB) review. While this procedural context is acknowledged as a limitation, providing this clarification underscores the study's commitment to ethical transparency and academic accountability.

The data were analysed using Braun and Clarke's (2006) six-phase approach to thematic analysis, which involves familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. To ensure the trustworthiness and rigour of the study, the researchers used bracketing, documenting and setting aside preconceived notions to maintain a neutral phenomenological stance. Reflexivity procedures included an ongoing audit trail of the researchers' influence on the data. To confirm accuracy, transcribed interview data were returned to participants for verification and approval (member checking). Thematic analysis and interpretation of findings were also reviewed by a qualitative research expert to ensure coherence of the identified themes and to mitigate potential researcher bias.

Results

The analysis highlighted eight themes in three broad dimensions–self-concept, environment, and social influences–which contributed to female students' body-image-related concerns and experiences in their involvement in Physical Education (PE). Together, the themes illustrate how self-concept, environmental influences, and social relationships can intertwine to shape confidence, involvement, and attitudes towards PE. Table 1 summarises the dimensions and themes.

Table 1. Summary of Dimensions and Themes

Dimensions	Themes
Self-Concept	Mixed Emotions Toward Their Bodies, Self-Consciousness During Physical Activities
Environment	Uniform-Related Discomfort, Teasing in PE Settings, Insecurity in PE Spaces
Social influences	Peer Judgment, Social Comparison, Instructor Behavior

Self-Perception

Within the area of self-concept, two interconnected themes emerged: ambivalence towards their bodies and self-awareness while moving. These themes demonstrated how students' subjective evaluations of their bodies affected their Physical Education experience, where students often felt tension between feeling their bodies were moving well and feeling insecure about their bodies.

Theme 1: Mixed Emotions Toward Their Bodies

Students frequently expressed a combination of pride and dissatisfaction regarding their bodies. They felt capable and sometimes even accomplished when they demonstrated skills, kept up with others, or showed athletic progress. These brief times of success felt good, and sometimes they felt good about themselves.

On the other hand, when students have these positive feelings, they are often followed by lingering insecurities regarding their appearance, body shape, and imperfections. The attitudinal clash between feeling proud of their performance and

dissatisfied with their appearance contributed to students' ambivalence toward participating in PE. In many instances, students felt that, while they could experience their bodies as strong and functional in practice, the mental focus on their appearance prevented them from sustaining that confidence.

"Sometimes I feel proud when I do the activity, but I still feel insecure about how I look." (P3)

"I like that I can keep up in class, but I keep thinking people are looking at my body." (P7)

"Even if I do well, I feel conscious about my shape and uniform." (P10)

Theme 2: Self-Consciousness During Physical Activities

The evaluated visibility and performative aspects of PE classes increased student self-awareness. Activities such as running, dancing, or participating in group sports positioned students' movements and bodies under others' scrutiny, increasing their awareness of their own bodies and movements. Visibility heightened discomfort, anxiety, and avoidance of active participation. Students recounted holding back effort, refraining from taking risks, or hesitating to attempt new skills due to fear of being perceived as awkward or of being evaluated by others. Even during play, students shifted their focus from enjoying the game to monitoring their performance image, undermining both inquiry-learning opportunities and excitement about PE. Additionally, increased attention to images further illustrates how insecurities about body image can inhibit and limit the developmental and experiential benefits of physical education.

"I can't help but feel everyone is watching me whenever I move." (P1)

"I become too shy to try new skills because I think I'll look awkward." (P9)

"During games, I focus less on playing and more on whether I look okay." (P5)

Environmental Factors

From the environmental factors, discomfort due to uniforms (within the categorisation of bodily experience), teasing (within the category of social experiences), and insecurities about Physical Education (PE) spaces were three overall themes that emerged. These findings suggest that the environment not only influences students' concerns about body image but also impacts their willingness to participate.

Theme 1: Uniform-Related Discomfort

Instead of supporting functionality and freedom of movement, PE uniforms were described as a significant source of discomfort and body image distress. Many students described their uniforms as tight, short, or revealing, which exacerbated their insecurities and made them reluctant to participate. For some, simply wearing the uniform made them feel as though every flaw would be on display for all their classmates to see, intensifying their reluctance to participate in activities fully. Others admitted to skipping the class, or at least considering it, because they did not want to wear the uniform. This issue, repeated throughout these first- and second-person narratives, highlights the role of clothing design and choice in influencing not only physical comfort but also psychological ease in participating in activities. A lack of alternative or choice in uniform was recognised as a barrier to engagement and inclusion, demonstrating how institutional practices may perpetuate any anxieties related to body image and injury.

"The PE uniform is too tight, and I feel everyone can see my flaws." (P8)

"I feel uncomfortable wearing shorts; it makes me want to skip class." (P2)

"I wish we had options for uniforms because I don't feel confident in mine." (P6)

Theme 2: Teasing in PE Settings

A frequent negative experience described by students in PE was teasing and comments about their bodies from peers. Students reported that jokes or comments, whether explicitly critical or disguised as "just kidding," made them feel embarrassed, discouraged, and, in some cases, disengaged from the material. Some participants reported that even the most innocent teasing made some students feel insecure about their participation. Students suggested that they chose to stay quiet, avoid drawing attention to themselves, or completely disengage or withdraw after experiences with teasing. This finding illustrates that peer interactions are just as important in a PE setting as the formal curriculum in shaping school-based experiences. When teasing becomes routine, it indicates an environment where vulnerability and shame are the norm rather than confidence and enthusiasm.

"Some classmates tease about weight, and it makes me not want to join." (P4)

"Even if it's a joke, comments about my body hurt." (P10)

"I just stay quiet when they make fun of me during activities." (P7)

Theme 3: Insecurity in PE Spaces

Students characterised physical education (PE) contexts (e.g., gymnasiums and outdoor courts) as intimidating spaces that intensified their bodily insecurities and anxieties. Due to the spaciousness of these environments and the visibility of peers, students felt as though they were constantly being watched and could not hide or leave the room to escape attention. This sensation of being seen usually manifests as students not wanting to move, learn new skills, or participate. The physical design of PE settings, which was intended to be welcoming or helpful to students with body image issues, becomes a barrier to participation for students with body image issues. The space will emphasise self-consciousness and vulnerability rather than freedom of movement. Having awareness of bodily movement and of when they felt inadequate or anxious was heightened as a design feature in PE contexts.

"The gym feels like a place where everyone is watching." (P9)

"I feel more insecure in open areas because I can't hide." (P6)

"I don't enjoy PE spaces; they make me anxious." (P2)

Social Influences

As part of the social influence domain, three themes emerged from data analysis: peer judgment, social comparison, and instructor behaviour. The themes demonstrated that students' confidence, body image, and level of participation in Physical Education were significantly shaped by peer interactions and teacher interactions.

Theme 1: Peer Judgment

Students often reported feeling evaluated by their peers based on their performance and the appearance of their bodies. Such an evaluation process exerted pressure to comply with someone's standards of fitness or athleticism, thereby generating anxiety and reducing enjoyment. Students reported varying degrees of concern that they might make a mistake or lack skilfulness, which could result in them being perceived as worse than their peers or otherwise "bad," regardless of whether their performance accurately reflected their skill. Others felt that, whether they were performing poorly or not, students were directing their attention to their bodies. Being evaluated by one's peers for outcomes rejected the idea of participation and promoted exclusion. Whether students were aware of how they compared to their peers, it served to demonstrate how the peer-to-peer character

of social environments works in relation to a student's experience in physical education or sport settings and into education.

"I feel like classmates are judging me if I do not do well." (P1)

"I get nervous because I think people are looking at my body." (P8)

"Peer judgment makes me feel left out in activities." (P5)

Theme 2: Social Comparison

Another recurring theme that eroded students' self-esteem and body satisfaction was the tendency to compare themselves to peers. Many students reported that they constantly compared their appearance, fitness, or sports performance to that of classmates whom they believed were fitter, thinner, or more skilled than they were. Usually, the comparative process left them feeling deficient, upset, or less willing to try. The comparison process reasserted internalised body ideals, making students feel they were not meeting expectations. Social comparison, a natural human tendency, was shown in this context to be especially problematic in a PE setting where appearance and physical performance are central to being involved.

"I always compare myself to classmates who look fitter." (P3)

"Seeing others perform better makes me feel bad about myself." (P4)

"I lose confidence when I compare my body with others." (P7)

Theme 3: Instructor Behaviour

The role of educators was identified as either alleviating or exacerbating body image issues. Educators who were supportive, inclusive, and nurturing helped students feel valued and confident, regardless of ability or body type. Conversely, educators who focused on physical appearance or only gave positive comments to students with slim or athletic body types may have facilitated insecurities among participants. Comments about students' sizes or physical fitness, regardless of intent or casual meaning, were particularly harmful; in fact, students reported that such comments made them feel judged and discouraged. Alternatively, educators who encouraged every student and emphasised effort over appearance motivated students and helped them feel more comfortable in PE, regardless of ability. Findings demonstrate the importance of educators' sensitivity and equitable practices in fostering a positive, inclusive atmosphere.

"When the teacher praises only slim or athletic students, I feel discouraged." (P10)

"Sometimes the teacher's comments about weight make me self-conscious." (P9)

"It helps when the teacher encourages everyone, not just the best athletes." (P2)

Thematic Diagram on the Dimensions and Themes of Female Students' Body Image Related Concerns in Physical Education

Figure 2 illustrates the triadic relationship between the study's three primary dimensions: Self-Concept, Social Influences, and Environment. This visual synthesis maps the eight constituent themes identified in the findings. Self-Concept, which comprises mixed body emotions and self-consciousness, functions as the psychological core. Social Influences, such as peer judgment, social comparison, and instructor behaviour, dynamically shape this internal state. Simultaneously, these perceptions are filtered through Environmental Factors, specifically uniform discomfort, teasing, and spatial insecurity. The bidirectional arrows denote a reinforcing feedback loop in which external stressors and social evaluations mutually exacerbate internal body-image concerns.

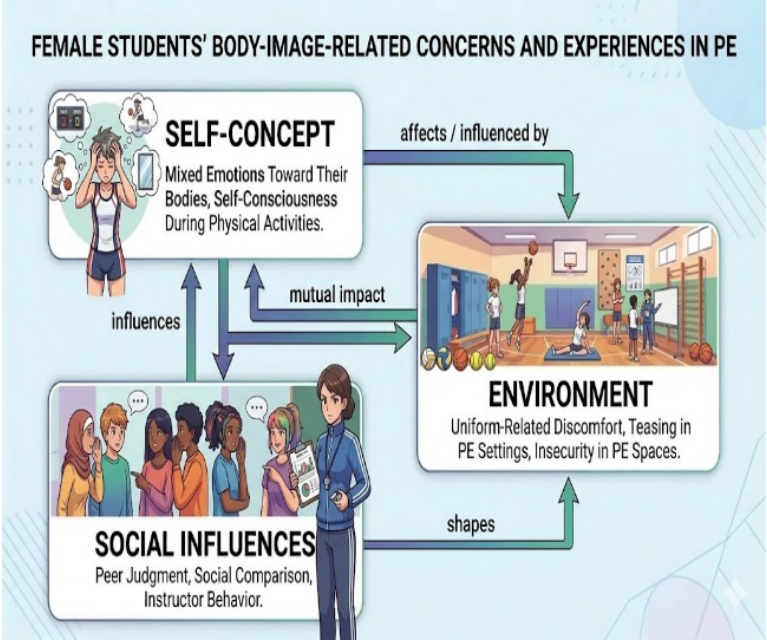

Figure 2. Dimensions and themes of female students' body image-related concerns in Physical Education

Discussion

The results of this study show that body image concerns among female college students arise from the interplay of internal body perceptions, environmental contexts, and social influences. Students' self-concept centres on a conflict between valuing physical competence and conforming to sociocultural expectations of appearance (Andersen & Smith, 2022). This tension aligns with Objectification Theory (Fredrickson & Roberts, 1997), which holds that performative environments where the body is viewed and evaluated, such as visible PE spaces, trigger heightened self-consciousness, increased self-surveillance, and risk aversion (Slater & Tiggemann, 2010). The findings show that these appearance-based anxieties are primary barriers to participation, as students often prioritize aesthetic standards over a functional appreciation of movement (Prownpuntu et al., 2025; Regencia et al., 2023). The practical implication is that physical competence does not guarantee a positive body image. PE curricula must shift toward pedagogical models that promote body positivity and self-compassion, focusing on the body's functional capabilities rather than aesthetic surveillance.

Beyond individual psychological factors, environmental and institutional structures, such as required PE uniforms and exposure in open activity spaces, play a critical role in shaping student insecurity. Research identifies both restrictive and revealing uniforms as significant sources of body dissatisfaction and avoidance behaviour (Porter et al., 2024; Escoton et al., 2023). These structural triggers are often worsened by an institutional climate where teasing, weight-related stigma, and body-shaming contribute to student withdrawal and disengagement from physical activity (Nathan et al., 2021; Escoton et al., 2023). The results suggest that a student's willingness to participate depends on a sense of safety and inclusivity within the learning environment, a finding reinforced by local evidence of the harmful impact of cultural and institutional practices (Cagas et al., 2022; Tagare et al., 2025). The policy implication is that educational institutions must re-evaluate uniform requirements by offering flexible clothing options and

designing activity spaces that are less socially risky to minimise performative pressures on female students.

Finally, the social dimension of the PE experience underscores how peers and instructors function as gatekeepers of student confidence through mechanisms of social comparison. The social dimension of the PE experience underscores how peers and instructors function as gatekeepers of student confidence through mechanisms of Social Comparison Theory. Consistent with Festinger's (1954) framework, students evaluate their self-worth against classmates perceived as thinner or fitter, which undermines self-esteem and motivation (Rojo-Ramos et al., 2022). Instructor behaviour emerged as a decisive factor in this dynamic. At the same time, a focus on physical performance or appearance-based praise intensifies self-imposed pressure; supportive and inclusive instruction that prioritises effort over aesthetics significantly mitigates student insecurity (Slater & Tiggemann, 2010; Barker et al., 2022). These findings reveal that inclusive teaching strategies reduce self-consciousness and promote sustained engagement (Pestano et al., 2024; Su et al., 2025). Consequently, teacher education requires professional development focused on body image sensitivity to dismantle harmful comparison standards and foster a body-positive learning climate aligned with Intersectionality Theory (Crenshaw, 1989), accounting for the overlapping cultural and institutional pressures students face.

The synthesis of the findings resulted in the development of a Thematic Model of Body Image in Physical Education, shown in Figure 3. The thematic visual model represents the interconnected dynamics that influence participation in physical education and its subsequent effects on body image. Body image serves as a central construct, shaped by the continuous interaction among self-concept, social influences, and environmental factors. The model demonstrates a reciprocal relationship in which internal identity and self-perception inform the interpretation of social cues, which in turn guide engagement with both physical and institutional contexts. This cyclical process supports the outputs at the base of the framework, translating these dimensions into actionable policy and pedagogical implications. These outputs provide a foundation for structural reform and the development of inclusive teaching practices within physical activity settings

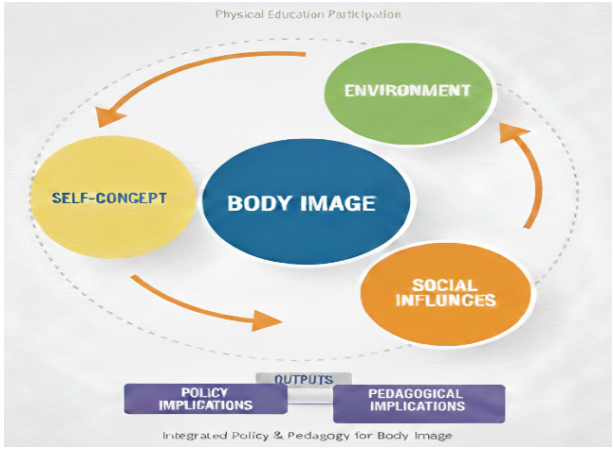

Figure 3. Thematic Visual Model in Physical Education

This study reveals that body image in physical education (PE) is a multifaceted synthesis of internal perceptions, institutional structures, and social dynamics. Female college students navigate a tension between physical competence and aesthetic

standards (Slater & Tiggermann, 2010), where Objectification Theory explains how performative PE spaces trigger self-surveillance and anxiety (Fredrickson & Roberts, 1997). These pressures are reinforced by environmental barriers, such as restrictive uniforms and exposed activity spaces (Porter et al., 2024), as well as weight-related teasing and social comparison (Nathan et al., 2021; Rojo-Ramos et al., 2022). Ultimately, body image is situated within structural contexts that dictate a student's sense of safety (Cagas et al., 2022; Tagare et al., 2025), necessitating policy reforms and pedagogical shifts that prioritize functional effort over aesthetic surveillance (Pestano et al., 2024).

To address these challenges, educational institutions must implement comprehensive policy reforms and pedagogical shifts to foster a body-positive learning environment. This requires re-evaluating PE dress codes to offer flexible clothing options that prioritise student comfort, and designing activity spaces that minimise the performative visibility that can lead to self-consciousness (Escoton et al., 2023). Teacher education should also shift toward inclusive instruction that emphasises effort and functional appreciation rather than physical performance or appearance-based metrics (González-Calvo et al., 2022; Nguyen-Michel et al., 2021). By embedding principles of body positivity and self-compassion into the curriculum and enforcing strict anti-teasing policies, schools can reduce the harmful effects of social comparison and weight stigma (Pestano et al., 2024; Su et al., 2025). These changes shift the focus of physical education from aesthetic surveillance to the functional capabilities of the body, ensuring the PE environment supports equitable participation and long-term health-oriented development for all female students.

While this research offers valuable insights into the body image concerns of female college students in Physical Education, its findings are bounded by several key limitations. Specifically, the study's focus on a single institution limits its generalizability to broader cultural or academic contexts. At the same time, its reliance on subjective self-perceptions introduces the potential for recall bias or social desirability. Furthermore, the exclusive focus on female participants excludes the perspectives of male and gender-diverse individuals, and the qualitative design prioritises depth over the broader statistical prevalence that quantitative measures could provide. Despite these constraints, the study remains a significant contribution to understanding how environmental structures and social factors intersect to influence body image and PE participation.

Future research should build on these findings by using mixed-methods designs to quantify the prevalence of body image concerns while preserving the depth of lived experience from qualitative studies. Given the influence of institutional factors, comparative analyses across diverse educational settings, such as private, public, and vocational institutions, are needed to assess whether differences in uniform policies and facility designs produce distinct psychological outcomes. It is also essential to broaden participant demographics by recruiting more inclusive samples, including male students and gender-diverse individuals, and to examine these dynamics through an intersectional framework that considers socioeconomic status and physical abilities. Intervention-based studies are needed to assess the effectiveness of body-positive pedagogical training for physical education instructors, focusing on whether shifting curricular emphasis from performance-based metrics to functional appreciation reduces self-surveillance and social comparison among students.

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ORIGINAL RESEARCH

Reimagining College Physical Education in the Philippines: Advancing Gender Equity in Higher Education

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Abstract

University Physical Education (PE) shapes students' embodied experiences, leadership opportunities, and lifelong relationships with physical activity. Despite national gender-equality mandates, Philippine higher-education PE programs can reproduce gendered norms that marginalise women-identifying students and constrain inclusive participation. A qualitative multiple-case study was conducted across three universities in Central Luzon (two public and one private). Data comprised 24 semi-structured interviews (18 female-identifying undergraduate students, 6 PE faculty; interviews lasted 20–40 minutes, averaging ~28 minutes), 12 classroom observations, and 9 curriculum documents. Reflexive thematic analysis guided coding and theme development. Four interrelated themes were generated: (a) gendered curriculum tracking; (b) embodied discomfort and surveillance; (c) leadership exclusion; and (d) innovative practices and pockets of equity. The study presents an illustrative Gender-Just PE Framework encompassing inclusive curriculum, faculty development, institutional policy, and student agency. Findings highlight both persistent inequities and actionable pathways for reform in higher-education PE.

Keywords:
gender equity, inclusive education, quality physical education, feminist pedagogy

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Introduction

Physical Education (PE) at the university level is more than a set of motor skills or fitness objectives: it is a pedagogical site where norms about bodies, capability, leadership, and gender are taught, contested, and reproduced (Andersson et al., 2018). In many contexts, including the Philippines, PE curricula and practice continue to reflect and reinforce binary and gendered expectations channelling women toward activities coded as "feminine" (e.g., dance, aerobics) and men toward competitive, high-intensity sports (Stride et al., 2022; McRoy, 2022). These patterns have implications for who feels comfortable participating, who occupies leadership roles in campus sport and PE, and who is supported to maintain lifelong physical activity.

The Philippines has formal commitments to gender equality in education, most notably Republic Act No. 9710 (2009 Magna Carta of Women; Francisco, 2022) and the Commission on Higher Education (CHED) gender mainstreaming policies (CHED, 2015; Gil, 2021). Nevertheless, institutional implementation across specific disciplines, such as PE, is inconsistent. Studies in other national settings similarly document that without explicit attention to pedagogy, assessment, and institutional policy, well-intentioned equality commitments may not translate into equitable practice (Guerrero & Guerrero, 2023; Meier et al., 2022).

Comparative research across Asia underscores that this challenge is not

unique to the Philippines. In South Korea, research on curricula and institutional expectations has documented how performance pressure and cultural norms shape gendered participation in sport and PE (Kim & Hodge, 2021). In Japan, studies highlight the historical gendering of activities and persistent stereotyping even amid national health promotion efforts (Eweje et al., 2025). Within ASEAN contexts, recent work has identified variability in policy implementation and resource constraints as central barriers to gender-responsive PE (Bag & Barman, 2022).

For women in particular, university PE can be an alienating experience. They often encounter barriers ranging from subtle discouragement in leadership roles to overt forms of body surveillance and discrimination based on physical appearance (Wastell, 2024; Littlefair, 2021). Research in other national contexts confirms that PE is among the least inclusive areas of the educational system with respect to gender (Guerrero & Guerrero, 2023; Meier et al., 2022), and the Philippine experience echoes this pattern.

This study addresses three critical gaps in the literature. First, while gender equity in PE has been widely examined in basic education, there remains limited research focusing on higher education contexts in the Philippines, where institutional structures and student autonomy create distinct dynamics. Second, existing studies often lack a critical and intersectional perspective, overlooking how institutional culture, policy environments, and resource disparities may shape gendered experiences in PE. Third, there is a need for applied research that not only critiques inequities but also proposes actionable frameworks for institutional transformation.

While this study focuses primarily on women-identifying students, it acknowledges that exclusionary practices in PE may be further intensified for individuals who do not conform to dominant gender norms, including queer, trans, and gender-nonconforming students. These broader dynamics are considered in context to better understand how gender operates within university PE environments.

Guided by feminist pedagogy and gender performativity theory, this study examines how university PE in the Philippines reproduces or challenges gendered inequities. Specifically, it aims to analyse student and faculty experiences, identify structural and pedagogical barriers, and propose a context-responsive framework to advance gender equity in higher education PE.

Methods and Materials

Research Design

This study employed a qualitative multiple case study design to examine gendered dynamics in university PE. Case study methodology is appropriate for exploring complex social phenomena in real-life contexts, enabling in-depth, context-rich analysis across institutional settings (Bracco et al., 2019). Across multiple institutional contexts, the study examined how gender inequalities manifest and are contested. The study included lived experiences, such as student narratives and classroom dynamics, as well as formal structures, including policies and courses.

Based on a constructivist paradigm, the study was conducted under the belief that reality is socially constructed and shaped by social interactions and cultural contexts. This viewpoint is appropriate for research on gender because of the fluid, socially mediated nature of gender identities, performances, and norms in PE (William, 2024).

Site Selection and Participants

Three universities in Central Luzon were purposively selected to ensure diversity in institutional type and to capture varied approaches to inclusive education. The selected institutions, two public universities and one private university, all offered undergraduate PE programs and had established mechanisms for promoting gender equity and inclusion, either through

formal gender offices or active student organisations.

- University A (Public, mid-sized): Established a gender office and periodic gender-sensitivity training for staff. The PE program emphasises traditional team sports.
- University B (Public, regional): Recent student-led inclusion initiatives; PE curriculum includes elective dance and fitness modules.
- University C (Private, smaller): Active student clubs around wellness and inclusion; pilot policy on flexible PE uniforms.

Together, these institutions offered a cross-sectional view of how inclusive education is interpreted and enacted across different institutional contexts in the region.

Participants were 18 undergraduate students (ages 18–22) who self-identified as female and had completed at least 2 semesters of PE, and 6 PE faculty (3 male, 3 female) with responsibility for curriculum delivery or planning. Total n = 24. Participants were recruited through department contacts and snowball sampling. Snowball sampling helped identify students and faculty engaged in or knowledgeable about inclusion initiatives. However, it may have biased selection toward participants with more critical or equity-oriented perspectives (see Limitations). Table 1 shows the participant demographics.

Table 1. Participant Demographics (n = 24)

	Category	Sub-category	n	%
Students (n = 18)	Age group	18-19 years old	7	39%
		20-21 years old	8	44%
		22-above	3	17%
	University type	Public A	8	44%
		Public B	4	22%
		Private C	6	33%
	Gender identity	Female	18	100%
	Course year	1st year	4	22%
		2nd year	5	28%
		3rd year	5	28%
		4th year	4	22%
Teachers (n = 6)	Age group	25-34 years old	4	67%
		35-44 years old	2	33%
		45-above	0	0%
	Gender	Male	3	50%
		Female	3	50%
	Teaching experience	1-5 years	1	17%
		6-10 years	4	66%
		11+ years	1	17%

Note. All student participants self-identified as female. Percentages are rounded to the nearest whole number and may not total 100.

Data Collection Procedures

Data were collected over six months and comprised the following:

Semi-structured interviews (n = 24): Interviews lasted 20–40 minutes (average ~28 minutes), were audio-recorded with permission, and conducted in person or via secure online platforms when required. Interview topics included experiences of inclusion/exclusion in PE, perceptions of curriculum and assessment, leadership opportunities, and suggestions for reform. A full interview protocol is provided in Appendix A.

Classroom observations (n = 12): We used a structured checklist (Appendix B) focusing on activity selection, teacher prompts, gendered role assignment, spatial use, and assessment practices. Field notes captured critical incidents and illustrative interactions.

Document analysis (n = 9): Course syllabi, PE department guidelines, and excerpts from institutional policies were analysed for language, assessment structures, uniform policies, and references to inclusion or gender sensitivity.

Data Analysis

Interviews were transcribed verbatim. Transcripts and observation notes were uploaded to NVivo 12 for management. Analysis followed Braun and Clarke's (2021) six-phase reflexive thematic analysis. Repeated reading of transcripts, field notes, and documents generated initial analytic memos capturing early impressions. Line-by-line coding in NVivo 12 was data-driven but theoretically informed by gender performativity and feminist pedagogy, producing an initial code set that was subsequently grouped into candidate themes mapped visually to examine relationships. Themes were then tested against the full dataset; discrepant and contradictory data were actively interrogated rather than set aside, and subthemes were refined accordingly. Final themes were defined and named based on their prevalence, internal coherence, and analytic significance, then woven into an interpretive narrative linked to literature and practice implications.

Credibility measures included peer review of coding (two independent peers reviewed 20% of transcripts and NVivo nodes), reflexive journaling to record analytic decisions and researcher influence, and member checking with a subset of participants (n = 6) who confirmed that the interpretations resonated with their experiences.

Ethical Considerations

The researcher adhered to standard ethical practices, including voluntary informed consent, protection of participant anonymity, and secure data handling. The study involved adult participants and was designed to minimise potential risk. Prior to data collection, the research protocol was reviewed and endorsed at the departmental level within the participating institutions. It should be noted that this review constituted departmental endorsement rather than an independent institutional ethics board (IRB) or research ethics committee (REC) approval, which was not obtained.

Results

Four major themes were generated from the thematic analysis of interview transcripts, classroom observations, and curriculum documents. These findings highlight persistent gendered patterns in higher education PE while also revealing emerging inclusive practices across institutions. Table 2 summarises the themes, key features, and representative evidence supporting the analysis.

Table 2. Themes and Representative Quotes

Theme	Key Features	Representative Quotes
Gendered curriculum tracking	Activity allocation, binary coding of activities	"We don't ask girls to do martial arts unless they ask for it." - Faculty 4 (male)
Embodied discomfort & surveillance	Uniform policies, public testing, evaluative comments	"The shorts were too tight… it made me want to skip class." - Student 9
Leadership exclusion	Male-dominated leadership roles, norms discouraging female assertiveness	"Even when girls are more competent, boys tend to dominate." - Faculty 1 (female)
Innovative practices and pockets of equity	Student-led electives, gender-sensitive rubrics	"I felt more confident when I led our dance-for-change project." - Student 12

Gendered Curriculum Tracking and Stereotyping

Examining all three institutions revealed systematic gendered tracking in activity distribution and curriculum design. Female students were routinely directed toward courses such as yoga, aerobics, and rhythmic activities, which were culturally identified as feminine and less physically demanding. Men, on the other hand, mostly registered for high-intensity training, team-based games, and combative sports.

Faculty interviews verified that teaching assignments and instructional strategies were affected by gender stereotypes. *"We don't ask girls to do martial arts unless they ask for it,"* one male faculty member said. *"Usually, we offer them dancing*". Such remarks point to internalised prejudices and unawareness of how institutional policies affect female experience. This is consistent with Goffman's (1977) analysis of how institutions sort individuals according to culturally constructed notions of 'appropriate' physicality based on sex.

Classroom observations also revealed that whereas female-coded activities were seen as less important or optional, male-coded sports received more class time, structured feedback, and more rigorous assessment. Kettley-Linsell (2022) recorded that these trends marginalise not only female but also male students interested in non-normative physical practices, thus reinforcing binary gender expectations.

Embodied Discomfort and Surveillance

Students expressed strong dissatisfaction with public assessments and PE uniforms. Female students, in particular, expressed concern about being judged based on their athletic ability, body shape, or fitness level. Attire norms were frequently noted as a source of contention. One student described the impact of uniform policies: *"We were required to wear these shorts and shirts that were too tight . . . It made me want to skip class."*

This pattern is consistent with Foucault's (1977) concept of the "panopticon". It supports Scraton's (2018) findings, which investigated how PE can become a site of bodily punishment, particularly for female students. There were instances in which teachers unknowingly encouraged body monitoring by commenting on their students' appearance or fitness. This contributed to the perpetuation of an envi-

ronment in which the female body is a target of inspection.

Leadership Exclusion and Gendered Participation Norms

In PE programs, male students held leadership positions most of the time. They either took on leadership positions in group projects or team sports, or they allocated leadership roles to themselves. When female students attempted to take the initiative, they were sometimes labelled "bossy" or "too assertive," discouraging further participation. According to Collinson et al. (2023), this phenomenon reflects broader societal tendencies in which masculinity is culturally associated with leadership. A female faculty member stated: *"Even when girls are more competent, boys tend to dominate the group, and we [faculty] sometimes overlook it."* Disclosures of this nature bring to light the systemic invisibility of gendered leadership dynamics. Additionally, student organisations associated with sports and fitness exhibited gender disparities in leadership roles. The lack of representation of women and girls in the institutional sports scene further limits their sense of influence and belonging.

Innovative Practices and Pockets of Equity

Students exposed to inclusive and flexible PE practices reported increased confidence, engagement, and a sense of belonging. For instance, one student participant shared, “I felt more confident when I led our dance-for-change project” (Student 12). Such accounts highlight how inclusive pedagogies and student-centred approaches can foster empowerment and participation. These findings suggest that meaningful transformation in PE is possible through intentional restructuring of curriculum, policy, and teaching practices.

Discussion

This study investigates how university PE in three Central Luzon institutions both reproduces gendered norms and contains nascent practices for transformation. The four themes align with broader literature showing that PE is frequently a site of gendered sorting and bodily regulation (Scraton, 2018; Stride et al., 2022) while also confirming that intentional pedagogical and policy interventions can foster more inclusive participation (Guerrero & Guerrero, 2023).

Linking findings to theory and comparative literature

The findings reflect the concept of gender performativity, in which repeated institutional practices normalise gendered expectations for the body and participation (Butler, 1988). Within PE, routines such as activity allocation, uniform policies, and leadership roles reinforce these performances, making gender appear natural rather than socially constructed. Foucault’s (1977) work on surveillance provides a lens for embodied discomfort in public assessment and uniform enforcement. Comparative work from Southeast Asia and beyond suggests similar patterns wherein formal gender policy coexists with everyday practices that reproduce inequality, underscoring the need for contextualised institutional strategies (Meier et al., 2022; Cruz et al., 2021).

Intersectionality

While gender was central to this inquiry, a full intersectional analysis (Crenshaw, 1989) would require disaggregated data on class, ethnicity, disability, and sexuality. Participants came from varied socioeconomic backgrounds, but the current dataset did not systematically capture these axes. We therefore interpret the findings as gender-centred, recognising that intersecting marginalities likely amplify exclusion for some students; future research should be explicitly designed to capture intersectional experiences. Variations across institutional contexts further underscore this complexity: differences between public and private universities–including resource availability, institutional priorities, and religious

affiliation–appear to influence how inclusive practices are implemented. For instance, the private Catholic-affiliated institution demonstrated more flexibility in uniform policies, while public institutions showed stronger engagement through gender offices and student-led initiatives. These variations indicate that gendered experiences in PE are shaped not only byidentity but also by institutional culture and structural conditions.

Toward a Proposed Gender-Just PE Conceptual Framework

Building on the findings, a Gender-Just PE Conceptual Framework is proposed to advance gender equity in PE within the Philippine higher education context (See Figure 1).

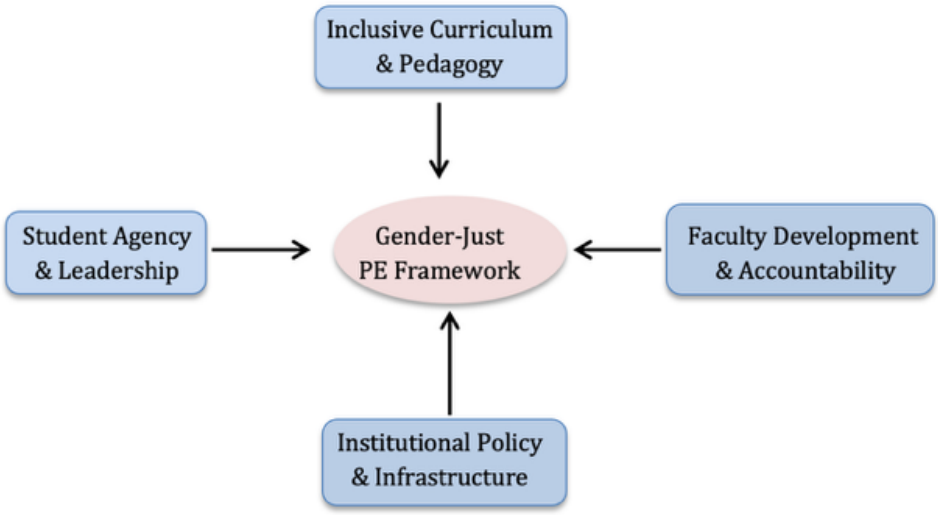

Figure 1. Gender-Just PE Framework

The conceptual framework illustrates four pillars that support the reimagining of university-level PE toward greater gender equity in the Philippine higher education context. At the centre is the Gender-Just PE Framework, which serves as the guiding principle for inclusive and equitable practice. Surrounding this core are four pillars: (1) Inclusive Curriculum and Pedagogy, which emphasises dismantling gendered assumptions in activity design and adopting universal learning design; (2) Faculty Development and Accountability, which focuses on capacity-building through training, mentorship, and inclusive evaluation mechanisms; (3) Institutional Policy and Infrastructure, which ensures recognition of gender-diverse identities in uniforms, facilities, and participation monitoring; and (4) Student Agency and Leadership, which prioritises student-led indicatives and pathways for leadership among women and marginalized groups. This illustrative pilot framework aims to inform policy, pedagogy, and practice in PE, aligning with global commitments to the Sustainable Development Goals (SDGs) on gender equality and inclusive education.

The data suggest each pillar is necessary and interdependent:

- *Inclusive Curriculum and Pedagogy:* Introduce elective options, rotate activity offerings, and adapt assessment to multiple embodiments (UDL principles). Example action: revise syllabi to mandate at least one student-designed module per semester.
- *Faculty Development and Accountability:* Implement gender-sensitivity and inclusive pedagogy training; integrate inclusivity metrics into teaching evaluation. Example action: mandatory annual workshop plus peer observation focusing on inclusive practices.

- *Institutional Policy and Infrastructure:* Adopt flexible, uniform policies; gender -neutral facilities where possible; and transparent participation monitoring disaggregated by gender. Example action: create uniform guidelines that permit alternatives and anonymise fitness assessments.
- *Student Agency and Leadership:* Support student-led initiatives, leadership pipelines for women and marginalised students, and channels for feedback on classroom climate. Example action: seed funding for student inclusion projects and student representation on curriculum committees.

Implementation and monitoring indicators

To pilot the framework, institutions might adopt a 2-year demonstration project with measurable indicators:

- Participation rates by gender per activity (baseline and annual comparison).
- Leadership representation in PE-related student organisations (per cent female leadership positions).
- Student satisfaction and sense of belonging (survey instrument administered annually).
- Number of faculty completing inclusive pedagogy training and implementation evidence (teaching portfolios).

These indicators offer pragmatic ways to monitor change while allowing local adaptation.

Limitations and Reflexivity

The sample size and purposive selection of three universities in Central Luzon limit generalisability beyond similar contexts. Snowball sampling may have biased the sample toward participants who engage in or are aware of inclusion work. The study did not collect systematic data on class, ethnicity, disability, or sexuality, limiting the ability to make intersectional claims. Finally, as noted in the Ethical Considerations section, formal IRB or REC approval was not obtained; departmental-level endorsement served as the oversight in place. This is a recognised limitation in contexts where independent ethical clearance is a standard requirement for publication and peer review; thus, future research should seek such oversight from the outset.

The researcher is a PE faculty member in the region; this positionality provided access and subject matter familiarity but may also influence interpretation and participant disclosure. Reflexive journaling recorded these influences; peer debriefing and member checking were used to mitigate bias. Quotations were selected to represent recurring patterns rather than single anomalous statements.

Conclusion

This study demonstrates that university PE in the Philippines remains a site where gendered norms are reproduced through curriculum design, embodied practices, and leadership structures. The findings directly address the issues identified in the introduction, particularly gendered curriculum tracking, experiences of discomfort and surveillance, and the exclusion of women from leadership opportunities.

At the same time, the presence of innovative and inclusive practices across institutions highlights the potential for meaningful reform. The proposed Gender-Just PE Framework provides a structured, practical response to these challenges by identifying four key areas for intervention: inclusive curriculum and pedagogy; faculty development and accountability; institutional policy and infrastructure; and student agency and leadership.

Addressing gender inequities in PE requires not only awareness but sustained institutional commitment. By aligning policy, pedagogy, and practice, higher education institutions can transform PE into a more inclusive and empowering space. Future research should further test and refine this framework across diverse contexts and incorporate more explicitly

intersectional data to deepen understanding of equity in PE.

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The author declares no conflicts of interest. Any personal circumstances or interests that could influence the interpretation of the research have been disclosed.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this manuscript, the author used Quillbot to improve language clarity, grammar, and phrasing. The author carefully reviewed and revised the output to ensure accuracy and took full responsibility for the content of the final manuscript.

Note on the Contributor

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ORIGINAL RESEARCH

Empowerment Through the Court: Basketball-Based PE and Female Student Development

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Abstract

Grounded in liberal and intersectional feminist frameworks, this study investigates the impact of collegiate Physical Education (PE) basketball on female college students' physical fitness, team cohesion, and self-confidence. The central objective was to determine whether structured participation in a basketball-based PE program enhances both physical and psychosocial development, while providing an inclusive learning environment that empowers women in sport. It was hypothesised that regular engagement in PE basketball would yield significant improvements in agility, endurance, coordination, perceived team cohesion, and self-confidence. A mixed-methods sequential explanatory design was employed, combining quantitative assessments of physical performance and psychosocial variables with qualitative focus group discussions (FGDs). Sixty female students aged 18-22 from a state university in the Philippines participated in a 12-week basketball intervention. Physical tests measured agility, endurance, and coordination, while validated scales, the Group Environment Questionnaire (Carron et al., 1985) and the Rosenberg Self-Esteem Scale (Rosenberg, 1965), assessed team cohesion and confidence. Thematic analysis of FGDs explored perceptions of empowerment, social belonging, and gender norms. Results showed significant pre–post improvements in agility ($p < .01$), endurance ($p < .05$), and coordination ($p < .01$), alongside increased team cohesion and self-confidence ($p < .01$). Qualitative findings revealed three interrelated themes: empowerment through movement, social belonging, and breaking stereotypes. Together, these results demonstrate that collegiate basketball can function as a feminist pedagogical space challenging gender hierarchies, building agency, and fostering inclusive participation. The study contributes to global and regional dialogues on gender equity in education, aligning with Sustainable Development Goals (SDGs) 3, 4, and 5, and advocates integrating women-centred, inclusive frameworks into PE curricula to promote holistic empowerment in higher education.

Keywords:
gender equality, good health and well-being, quality education, collegiate physical education, feminist pedagogy, women's basketball.

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Introduction

Basketball, as one of the most globally recognised team sports, has become an integral part of collegiate Physical Education (PE) curricula. Beyond its physical demands, basketball fosters teamwork, resilience, and confidence, making it a rich pedagogical tool in higher education. Universities worldwide increasingly recognise PE not only as a means of promoting physical activity but also as a platform for

shaping identity, inclusion, and empowerment (Ribeiro et al., 2024; Chaudhry et al., 2024). This study aims to determine whether participation in structured basketball activities leads to measurable improvements in both physical and psychosocial domains. It hypothesises that female students participating in a semester-long PE basketball course will demonstrate significant gains in agility, endurance, and coordination, along with increased team cohesion and self-confidence. The study also explores how women interpret these experiences through empowerment, social belonging, and resistance to gender stereotypes.

Unlike many team sports, basketball uniquely combines continuous play, rapid decision-making, and equal participation opportunities within a confined space, requiring constant interaction among players. Its fast-paced, inclusive nature ensures that all participants are actively engaged, thereby maximising opportunities for skill development, communication, and leadership. These characteristics make basketball particularly effective as a pedagogical tool for fostering both physical competence and psychosocial empowerment among female students.

Extensive research underscores the positive impact of sport participation on women's physical and psychosocial development (Hopkins et al., 2022; Sunarti et al., 2024). Recent studies indicate that women participating in team sports experience heightened self-esteem, peer support, and leadership development (Wheatley et al., 2023; Wang et al., 2021). However, persistent barriers ranging from unequal access to facilities to entrenched cultural stereotypes continue to limit women's full participation (Mann & Hacker, 2024; Fraser & Kochanek, 2023). These challenges highlight the importance of adopting feminist-informed approaches to PE that go beyond skill development to address equity and representation.

This study is grounded in liberal feminist ideology, which advocates for equal access and opportunities for women in male-dominated domains such as sports (Ravn, 2023). Additionally, it incorporates an intersectional perspective (Crenshaw, 1991; Collins et al., 2021), recognising that multiple factors, including socioeconomic status, cultural background, and institutional support, influence female students' basketball experiences. Santillan et al. (2018) demonstrated that cultural adaptation processes shape engagement in unfamiliar contexts, a process that parallels female students' adaptation to structured sports environments. While feminist-informed sport studies have examined gender identity and participation broadly (Adom-Aboagye & Burnett, 2023; Ersöz, 2023), few have investigated the fusion of physical, psychological, and social outcomes of collegiate PE basketball for women in Southeast Asia. By combining quantitative measures of fitness and psychosocial growth with qualitative insights into lived experiences, this study extends existing scholarship. It also draws on localised perspectives, linking to prior research on students' motivation for physical activity (Martin et al., 2017), barriers to exercise participation (Martin & Santos, 2015), and recent innovations in PE assessment (Santos, 2024).

This study contributes to global education and development agendas by aligning with the United Nations Sustainable Development Goals (SDGs), particularly SDG 3 (Good Health and Well-Being), SDG 4 (Quality Education), and SDG 5 (Gender Equality), highlighting how inclusive Physical Education can promote holistic empowerment for women in higher education.

The main objective of this study is to investigate the effects of collegiate PE basketball participation on female students' (1) physical fitness, (2) team cohesion, and (3) self-confidence. Specifically, the study hypothesises that:

- H1: Female students will demonstrate significant improvements in agility, en-

durance, and coordination after participating in a 12-week basketball program.
- H2: Female students will report enhanced perceptions of team cohesion and self-confidence following the program.
- H3: Participation in PE basketball will be associated with qualitative themes of empowerment, social belonging, and resistance to gender stereotypes.

Methods and Materials

Research Design

This study employed a sequential explanatory mixed-methods design (Creswell et al., 2018), in which quantitative data were collected and analysed first, followed by qualitative data to explain and enrich the quantitative findings. The quantitative component measured pre–post changes in physical and psychosocial outcomes, while the qualitative component, conducted through Focus Group Discussions (FGDs), explored participants' lived experiences of empowerment, social belonging, and identity formation. Integration occurred during the interpretation phase, in which qualitative insights were used to contextualise and explain the quantitative results.

Participants and Sampling

Sixty (n = 60) female undergraduate students enrolled in a basketball-based Physical Education course at a public university in the Philippines participated in the study. Participants were non-varsity students with no prior formal basketball training, ensuring a relatively homogeneous baseline in skill proficiency. A purposive sampling approach was utilised, targeting students who had voluntarily enrolled in the PE basketball course and consented to participate in both the physical fitness and psychosocial assessments.

Intervention

The intervention spanned twelve weeks, with two 90-minute sessions per week. Each session included warm-up drills, skill development, scrimmages, and reflective cool-downs. The duration was balanced with practical semester constraints and provided evidence that significant fitness and psychosocial outcomes can emerge within similar time frames (Herbert, 2022; Burton et al., 2023).

Instruments

Physical Fitness Tests

Three fitness dimensions were evaluated: agility, endurance, and coordination, each chosen for its relevance to basketball performance and alignment with PE learning outcomes.

Agility: measured using the 5-10-5 Shuttle Run Test, which evaluates rapid directional change and neuromuscular coordination (Škorik et al., 2023).

Endurance: assessed through the 12-Minute Cooper Run Test, a validated field measure of aerobic capacity (Cooper, 1968). *Coordination:* evaluated using the Wall Toss Test, which measures hand–eye coordination and timing precision (Hodgetts et al., 2021).

These standardised tests were selected because they represent essential components of basketball proficiency: speed, stamina, and control, consistent with PE objectives emphasising holistic physical competence (Santos, 2024; Martin & Santos, 2015). Previous studies have demonstrated their validity and test–retest reliability (Beato et al., 2023), ensuring credible measurement of physical gains throughout the intervention.

Psychosocial Measures

Two validated instruments were used to assess team cohesion and self-confidence, reflecting both individual and collective psychological growth.

Group Environment Questionnaire (GEQ) (Carron et al., 1985) measured team cohesion across four dimensions: individual attraction to group-task (ATG-T), individual attraction to group-social (ATG-S), group integration-task (GI-T), and group integration-social (GI-S). The

Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965) assessed general self-confidence and self-worth. The RSES has strong cross-cultural validity, as demonstrated by Schmitt and Allik (2005) across 53 countries. This validates its application in the current study to gauge shifts in students' self-esteem and confidence.

The adapted instrument consisted of 20 items rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Cronbach's alpha values obtained during pilot testing with 20 female students (excluded from the main sample) demonstrated strong internal consistency, 0.89 for team cohesion and 0.87 for self-confidence, indicating high reliability.

Both scales were selected for their strong psychometric properties and cross-cultural applicability in sport and educational settings (Ciampolini et al., 2021; Santos, 2024). The GEQ captures the social and task-oriented bonds that develop in group-based activities. At the same time, the RSES measures confidence as a stable psychological trait, making them well-suited to assess feminist and empowerment-oriented learning outcomes.

Procedures

The study spanned twelve weeks, aligning with the university's regular PE schedule. Sessions were held twice weekly, each lasting 90 minutes. The structure followed a progressive pedagogical sequence:

Weeks 1-4: Foundational skills and conditioning-warm-ups, body coordination, and rule familiarisation.

Weeks 5-8: Team-building, passing drills, and collaborative tactical exercises.

Weeks 9-12: Modified competitive games and reflective discussions emphasising teamwork, communication, and self-assessment.

Instruction followed the principles of feminist pedagogy, emphasising cooperation, inclusivity, and reflection over competition (Azzarito & Solomon, 2005). Throughout the intervention, the instructor encouraged open dialogue and peer feedback, fostering an environment where women could express leadership and agency without fear of judgment.

Rationale for the Twelve-Week Duration

The twelve-week duration was established to balance pedagogical, physiological, and institutional considerations. Research indicates that perceptible improvements in physical and psychosocial outcomes typically manifest after 8-12 weeks of structured sport participation (Andersen et al., 2019). From an educational standpoint, this duration coincides with the semester cycle in Philippine higher education, enabling integration into regular coursework without disrupting students' schedules. The timeframe thus ensured both ecological validity and pedagogical feasibility.

Qualitative Component: Focus Group Discussions

Following the quantitative assessments, three Focus Group Discussions (FGDs) were conducted to provide qualitative depth and interpretive insight. Each session included 6-8 participants, totalling 20 across all discussions. Selection was voluntary, based on participants' willingness to share reflective experiences.

A semi-structured discussion guide was developed around three thematic areas:

- Experiences of empowerment and self-discovery through basketball participation.
- Team belonging and social connection.
- Perceptions of gender norms, stereotypes, and equality in sport.

Each session lasted approximately 60-75 minutes and was held in a quiet, accessible classroom. The discussions were audio-recorded, transcribed verbatim, and analysed using Braun and Clarke's (2006) thematic analysis. Coding involved six steps: familiarisation, generation of initial codes, theme identification, review, definition, and naming. Two independent researchers coded the transcripts and

resolved discrepancies through discussion, ensuring inter-coder reliability. To enhance credibility, member checking was conducted by sharing the synthesised themes with participants for confirmation.

Data Analysis

Quantitative data were analysed using IBM SPSS Statistics 26. Descriptive statistics (mean and standard deviation) were computed for all variables. Paired-sample t-tests compared pre–post changes in physical fitness and psychosocial scores, with statistical significance set at $p < .05$. Qualitative data were integrated during the interpretation phase in alignment with a sequential explanatory design (Creswell & Plano Clark, 2018). The integration phase involved juxtaposing numerical trends with thematic narratives to provide a cohesive understanding of how female students' physical and psychological transformations coexisted within the feminist learning space.

Ethical Considerations

All participants provided informed consent prior to data collection and were explicitly informed of their right to withdraw from the study at any time without penalty. Confidentiality was ensured using anonymised identifiers and the storage of data in password-protected files accessible only to the research team. Participants who joined focus group discussions provided additional consent for audio recording and were informed of how recordings would be stored, transcribed, and used solely for research purposes.

Results

Statistically significant improvements were observed across all physical fitness indicators following the intervention. Participants demonstrated enhanced agility, endurance, and coordination, indicating the effectiveness of the basketball-based PE program in improving functional movement capacity. These findings are consistent with earlier evidence that structured basketball training improves cardiovascular efficiency, agility, and neuromuscular performance in youth (Hassan et al., 2023; Sunarti et al., 2024). The results also mirror those from similar studies in Southeast Asia, which highlight the benefits of sport-based PE in improving female students' physical literacy and motor competence (Martin & Santos, 2015).

From a feminist lens, these improvements go beyond physiological enhancement; they signify women's reclamation of physical agency in environments where athleticism is often coded as masculine (Hayhurst et al., 2021). As participants improved their coordination and stamina, they simultaneously challenged internalised notions of weakness, aligning with Mann and Hacker's (2024) assertion that inclusive PE spaces can dismantle gendered expectations.

Physical Fitness Outcomes (*See Table 1.*)

Statistically significant improvements were recorded across all three physical domains:

- *Agility:* $t(59) = 7.62$, $p < .01$, $d = 1.23$
- *Endurance:* $t(59) = 4.21$, $p < .05$, $d = 0.73$
- *Coordination:* $t(59) = 8.55$, $p < .01$, $d = 1.42$

Significant gains were also recorded in psychosocial variables. Participants reported higher perceptions of team cohesion and self-confidence following the program, underscoring the social and psychological value of cooperative, feminist-informed PE instruction. These findings echo prior studies emphasising the psychosocial benefits of cooperative, movement-based learn learning among women (Slutzky & Simpkins, 2009; Hopkins et al., 2022; Martin et al., 2016).

Table 1. Pre- and Post-Test Scores on Physical Fitness Measures (n = 60)

Fitness Component	Pre-Test Mean (SD)	Post-Test Mean (SD)	t-value	p-value
Agility (sec)	6.1 (0.42)	5.6 (0.38)	7.62	< .01
Endurance (meters)	1400 (185.4)	1600 (210.7)	4.21	< .05
Coordination (catches)	18 (3.5)	25 (4.2)	8.55	< .01

Participants' increased sense of team belonging can be attributed to feminist pedagogical strategies embedded in the intervention, such as collaborative drills, peer-led discussions, and reflective journaling, which emphasised empowerment over competition (Azzarito & Solmon, 2005; Pavlidis et al., 2023).

This aligns with Santos's (2024) recent validation study on fitness centre engagement, which found that cooperative and inclusive environments increase intrinsic motivation and confidence among women participants. The results affirm that basketball, when taught as a social and reflective experience rather than a purely performance-based activity, can strengthen interpersonal bonds and self-efficacy (Martin et al., 2017).

Moreover, these psychosocial gains align with Sustainable Development Goal 5 (Gender Equality) and SDG 3 (Good Health and Well-Being) by promoting equal opportunities in physical education and fostering self-esteem among women in higher education (UNESCO, 2015). Through this lens, the program serves not just as a physical fitness intervention but as a transformative social practice that cultivates leadership and agency in female learners.

Psychosocial Gains (*See Table 2.*)

Team cohesion increased by 0.8 points on a 5-point scale ($p < .01$), while self-confidence improved by a similar margin ($p < .01$). Statistical analysis of survey results showed a significant positive change in participants' perceptions of team cohesion and self-confidence.

Survey results showed marked improvements:

- *Team Cohesion:* Mean increase of 0.8 points on a 5-point scale ($p < .01$)
- *Self-Confidence:* Mean increase of 0.8 points ($p < .01$)

Qualitative Themes

Focus group discussions revealed three dominant themes (*See Table 3.*)

Empowerment Through Movement

From a feminist perspective, participants' narratives reflect the reclamation of bodily agency through sport. Improved physical competence enabled women to challenge internalised beliefs about weakness and athletic incapacity, aligning with liberal feminist assertions that access and participation foster empowerment. The participants typically reported a transition from self-doubt to greater physical confidence. A student said, *"Before I took this class, I believed that I was not cut out for sports." "Now I have a powerful and quick feeling."* According to Adom-Aboagye & Burnett (2023), these testimonies reflect a broader feminist discourse on the reclaiming of bodily agency through sport. It was also noticed that students

experienced moments of empowerment when they reported feeling proud of themselves for learning technical skills such as dribbling and shooting. Even though they were relatively insignificant in the perspective of competition, these milestones signified major personal accomplishments.

Table 2. Mean Scores on Team Cohesion and Self-Confidence Measures (n = 60)

Psychosocial Construct	Pre-Test Mean (SD)	Post-Test Mean (SD)	Mean Difference	p-value
Team Cohesion	3.4 (0.58)	4.2 (0.63)	0.8	< .01
Self-Confidence	3.1 (0.65)	3.9 (0.60)	0.8	< .01

Table 3. *Emergent Themes from Focus Group Discussions*

Theme	Description	Sample Quote
Empowerment Through Movement	Students felt stronger and more confident physically and mentally.	"I used to feel weak in sports, but now I feel capable."
Social Belonging	Peer support and team bonding enhanced class enjoyment.	"It felt like we were a team, not just classmates."
Breaking Stereotypes	Participants expressed pride in challenging gender norms.	"It feels good to show that girls can play just as hard."

Social Belonging. The theme of social belonging illustrates how collective movement experiences function as sites of relational empowerment. Intersectional feminist theory helps explain how shared experiences reduced feelings of marginalisation and fostered mutual support among women navigating gendered sport spaces. As one participant put it, *"We supported each other through both our successes and our failures.*" That was the deciding factor in the event. According to Chaudhry et al. (2024), this underscores the significance of group activities for developing connections among peers and promoting mutual respect. Co-experienced athletics may have had long-term benefits for relational development, as evidenced by ties that extended into social networks beyond the confines of the physical education class.

Challenging Gender Norms. One participant stated, *"People did not expect us to be this good."* Another shared, *"It was a tremendously enlightening and empowering experience."* These narratives illustrate how participation in basketball enabled students to challenge prevailing gender

expectations and reframe their capabilities. These kinds of experiences, as described by Collins et al. (2021), Hayhurst et al. (2021), and Sherry et al. (2024), are examples of how sports can function as environments that call into question the dominant gender norms in terms of how individuals present themselves in relation to their gender. In addition, students discussed instances in which they felt male classmates or family members grossly misjudged them.

Additionally, they discussed how their basketball performance became a powerful channel through which they reestablished their potential. These impacts are amplified within secure, welcoming environments that affirm women's experiences.

Interpretation and Integration of Quantitative and Qualitative Data

The study integrates quantitative and qualitative data to reveal how physical gains and psychosocial growth interact. The measurable improvements in fitness (see Table 1) were complemented by participant narratives of empowerment and increased agency (see Table 3), showing how enhanced physical strength bolstered self-recognition and collective confidence. Parallel increases in team-cohesion scores (see Table 2) aligned with lived experiences of belonging and equality among peers, supporting the view that physical competence, social cohesion and self-confidence are interdependent outcomes of a feminist-informed pedagogy. Crucially, the findings extend prior work by illustrating how intersectional and cultural factors, such as modesty norms, peer judgement, and resource limitations, in a Southeast Asian educational context shape how female students experience empowerment through sport. Through collaborative instruction, reflection-based assessments, and student-led activity planning, basketball served not only as a tool for physical education but also as a socio-political medium for engaging leadership, agency, and critical dialogue about gender. The model aligns with global efforts toward gender-transformative education.

Discussion

The findings demonstrate that collegiate basketball serves not only as a physical training activity but also as a feminist pedagogical space where women negotiate identity, agency, and belonging. Using feminist and intersectional frameworks, this study demonstrates that inclusive PE instruction produces mutually reinforcing physical and psychosocial outcomes. Quantitative results revealed significant gains in agility, endurance, and coordination, consistent with prior research on structured sport participation (Burton et al., 2023; Sunarti et al., 2024), as well as increased self-confidence and team cohesion. Qualitative findings further highlighted empowerment through movement, strengthened social belonging, and the disruption of gender stereotypes, positioning basketball as a site of both skill development and identity formation. These findings align with feminist scholarship emphasising collective physical activity as a means for women to negotiate agency and reclaim space within male-dominated sport contexts (Crenshaw, 1991; Collins et al., 2021; Pavlidis et al., 2023). The sequential explanatory mixed-methods design enabled a deeper understanding of how quantitative improvements in fitness and psychosocial outcomes were reflected in participants' lived experiences (Fraser & Kochanek, 2023).

Conclusion

This study concludes that collegiate basketball courses in PE provide holistic benefits for female college students by simultaneously enhancing physical fitness, psychosocial development, and gender consciousness. The evidence confirms that structured sport interventions contribute not only to immediate health outcomes but also to broader processes of empowerment and inclusion in higher education. From a feminist perspective, the findings demonst-

rate that basketball can serve as a pedagogical tool to challenge entrenched stereotypes, foster solidarity among women, and promote gender equity in sport and educational institutions. While the 12-week intervention produced notable outcomes, limitations such as its relatively short duration and single-institution scope suggest that further research across diverse contexts is needed. Future studies could examine the sustainability of these benefits over longer periods and explore cross-cultural differences in how women experience empowerment through PE basketball.

Pedagogical Implications

The results of this study have significant implications for curriculum design and pedagogy in higher education. PE programs should not be restricted to the acquisition of technical skills but should intentionally incorporate strategies that foster critical reflection, collaboration, and empowerment. Basketball, when viewed through a feminist pedagogical lens, can serve as a vehicle for engaging students in discussions of gender equity, body image, and cultural diversity. Integrating reflective dialogues alongside physical training encourages students to connect their sporting experiences with broader social issues, thereby aligning PE with transformative educational goals. Additionally, the Inclusive PE Framework developed in this study illustrates how institutional inputs, program processes, and immediate outcomes can be linked to long-term societal impacts such as lifelong physical activity engagement and gender empowerment. This framework offers a practical model for educators seeking to align their courses with the United Nations Sustainable Development Goals, particularly those related to health (SDG 3), education (SDG 4), and gender equality (SDG 5). By adopting such approaches, universities can reposition PE as a critical space for advancing both student well-being and social justice.

Limitations and Future Directions

Several limitations should be acknowledged. First, the 12-week duration, while producing measurable gains, may not capture long-term sustainability. Future research should examine extended interventions and track whether benefits persist across semesters. Second, the use of a single-institution sample limits generalizability. Comparative studies across universities and regions are needed. Finally, while the study integrated quantitative and qualitative data, further exploration of intersectional differences, such as socioeconomic status or cultural identity, would provide richer insights. Future studies could also build on Martin & Santos (2015) by examining barriers to sustained sport participation and on Santillan et al. (2018) by analysing cultural adaptation in female athletes.

Policy Recommendations

It is advocated that university administrators, PE curriculum writers, and educators implement the following policy guidelines to maximise the beneficial outcomes that can be achieved by female students participating in collegiate basketball for physical education:

- For University Administrators

Increase funding to ensure equitable access to facilities, equipment, and instructional support for women's PE programs. Implement gender-sensitivity training for faculty and administrators. Integrate inclusive PE indicators into institutional evaluation metrics.

- For PE Curriculum Developers

Design curricula that integrate physical training with structured reflection on gender, culture, and empowerment. Encourage interdisciplinary collaboration with gender studies and social sciences. Conduct regular program evaluations using mixed-methods approaches.

- For PE Teachers and Coaches

Foster classroom environments grounded in respect, collaboration, and encouragement. Use differentiated instruction to accom-

modate diverse skill levels. Employ inclusive language and actively challenge gender stereotypes in sport contexts.

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this manuscript, the author used [Quill Bot and Grammarly] to assist with [e.g., improving language clarity, grammar, or phrasing]. The author carefully reviewed and revised the output to ensure accuracy and takes full responsibility for the content of the final manuscript.

Notes on Contributors

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ORIGINAL RESEARCH

Playing on Unequal Ground: Gender Exclusion and Barriers in Coeducational College Volleyball

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Abstract

Volleyball is a staple in the Physical Education (PE) curriculum in many higher education institutions in the Philippines. However, many female students often encounter challenges that hinder their participation, learning, and enjoyment of the sport. Grounded in Feminist Theory, which frames gender inequality as rooted in patriarchal structures and socially constructed norms that privilege masculinity, this study examined how gendered dynamics shape female students' experiences in volleyball classes. The study addressed the research question: How do non-elite female college students experience participation in volleyball classes at a public state university in the Philippines, and how do gendered structures shape the barriers and enabling processes that influence their engagement? A descriptive phenomenological design guided this qualitative inquiry. Semi-structured interviews were conducted with 10 purposively recruited female college students (mean age = 22) enrolled in Education, Psychology, and Agriculture courses, none of whom had prior volleyball experience. Data were analysed using Braun and Clarke's (2006) six-phase thematic analysis framework. The findings revealed three key themes that captured the students' gendered experiences in volleyball class: (1) feelings of inadequacy and self-doubt, (2) embarrassment and fear of judgment, and (3) perceived gender inequity and lack of belonging. Reported challenges included exclusion or undervaluation on the basis of gender, physical discomfort and injury, and unequal opportunities and limited playtime. To address the challenges, participants suggested promoting inclusion and equal participation, adopting gender-sensitive teaching approaches, and improving the structure and support system. The findings of the study underscore the critical need for gender-sensitive, inclusive, and supportive approaches in PE volleyball classes to enhance female students' confidence, participation, and sense of belonging.

Keywords:
female students, gender equity, good health and well-being, inclusive pedagogy, quality physical education

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Introduction

Sport participation is shaped by gendered cultural stereotypes and structural inequalities that perpetuate inequity. Female athletes frequently encounter discrimination and restricted opportunities, which can diminish self-efficacy and reduce long-term commitment to sports. For example, Bangayan (2023) documented persistent sex discrimination against women in male-dominated sports in the Philippines, highlighting the conflation of femininity with perceived weakness. Similarly, Betzer-Tayar et al. (2017) identified the underrepresentation of women in volleyball leadership roles and noted disciplinary barriers within educational settings that limit full engagement in sports. These issues underscore the barriers faced by women athletes, particularly in volleyball, within higher education physical education curricula.

Volleyball is among the most popular team sports in higher education due to its accessibility, collective nature, and wide-ranging benefits. The sport fosters physical fitness, social cooperation, resilience, and identity development. Wang (2022) reported that volleyball electives can positively influence physical health outcomes, while Panatier (2022) highlighted volleyball's role in enhancing effective group work and psychosocial development. Volleyball also contributes to identity development, particularly for women. For example, Pattison (2013) examined how collegiate female athletes negotiate personal and social identities through volleyball, and Graham and Blackett (2022) investigated women's experiences navigating gendered spaces in volleyball coaching contexts. Therefore, volleyball functions both as a health-promoting activity and as a platform for identity development.

Female students' experiences in volleyball are often complex and multifaceted. While participation can foster friendships and learning, it is also influenced by gendered behaviours and body image concerns. Kantanista et al. (2018) and Gualdi-Russo et al. (2022) reported that women frequently evaluate themselves against standards of femininity and athleticism, which can either encourage or hinder participation. In the Philippine context, Fernandez et al. (2023) demonstrated that confidence and instructional design significantly affect skill development, highlighting the interplay of internal and external factors. Additionally, Gamutin et al. (2024) examined mixed student-athlete perspectives on LGBTQIA+ participation, illustrating how broader cultural and social issues permeate the volleyball classroom. Collectively, these studies indicate that female students' experiences in volleyball extend beyond skill acquisition to encompass negotiations of gender, inclusivity, and belonging.

Persistent challenges exacerbate barriers to participation. Physical issues such as breast discomfort and body dissatisfaction have been identified as contextual constraints for female students engaging in physical activity (Scurr et al., 2016). Social factors, including peer acceptance, self-worth, and societal expectations, also significantly influence participation (Hopkins et al., 2022; Towobola, 2023). In higher education, these constraints manifest as feelings of inadequacy, social exclusion, and heightened sensitivity to peer perceptions. Research indicates that group acceptance and peer support are positively associated with sport commitment and continued participation (Garn, 2016; McDonough & Crocker, 2005). Motivation is central, with students participating for both intrinsic and social rewards. Female players draw on peer support, resilience, and a sense of belonging to motivate themselves (Martin et al., 2016). Nevertheless, unequal treatment and stereotypes can undermine motivation and contribute to disengagement.

Several related studies have examined gender inequities, motivation, and the physical benefits of volleyball participation (Fernandez et al., 2023; Sebold, 2020). However, most research has focused on

elite athletes (Panatier, 2022; Pattison, 2013) or broad adolescent cohorts (Duncan et al., 2015; Hopkins et al., 2022) and has left a gap in the literature to understand the everyday lived experiences of non-elite female students in college physical education contexts in the Philippines.

The literature on female participation in volleyball highlights both its benefits and the persistent barriers shaped by gendered structures. Volleyball is recognised as an accessible, team-oriented sport that promotes physical fitness, social cooperation, resilience, and identity development (Panatier, 2022), with studies demonstrating how female athletes negotiate personal and social identities (Pattison, 2013) and navigate gendered coaching spaces (Taylor-Toomay, 2024). Peer support, confidence, and instructional design further influence skill development, motivation, and belonging (Fernandez et al., 2023; Martin et al., 2016). Yet women continue to face discrimination, underrepresentation in leadership roles, and institutional constraints (Bangayan, 2023; Betzer-Tayar et al., 2017), as well as physical and psychosocial challenges, including body image concerns, peer evaluation, and societal expectations (Kantanista et al., 2018; Gualdi-Russo et al., 2022; Scurr et al., 2016; Hopkins et al., 2022; Daniels & Leaper, 2006). This creates a tension in the literature: while volleyball can facilitate empowerment, identity formation, and social development, structural inequalities and gendered expectations limit sustained engagement.

Much of the existing research focuses on elite athletes or adolescent cohorts, leaving a gap in understanding the everyday lived experiences of non-elite female students in higher education, particularly within the Philippine context.

To address this gap, the present study is grounded in Feminist Theory, which conceptualises gender inequality as rooted in patriarchal structures embedded within institutions such as sport and education. Gender is socially constructed through cultural practices that privilege masculinity and subordinate femininity (Butler, 1990). From this perspective, sport is not neutral, but a gendered institution shaped by power relations that advantage men and marginalise women (Knoppers et al., 2021). These inequalities are reproduced through leadership hierarchies, cultural expectations, and embodied standards that regulate women's participation and self-perception (Naidu-Young et al., 2024). Feminist theory further highlights how discrimination and normative ideals of femininity influence women's self-efficacy, identity formation, and sustained engagement in sport (Rind & Naz, 2025). Anchoring the study in this theoretical framework enables a critical examination of volleyball classes in higher education as both sites of structural constraint and potential spaces for resistance, empowerment, and inclusive pedagogical practices.

Building on this framework, the study addresses the following research question: How do non-elite female college students experience participation in volleyball classes at a public state university in the Philippines, and how do gendered structures shape the barriers and enabling processes that influence their engagement? This articulation explicitly positions the study within ongoing scholarly conversations about gender inequity in sport while clarifying its focus on lived experiences, structural constraints, and opportunities for empowerment in higher education physical education contexts.

Methods and Materials

This study employed a descriptive phenomenological approach to investigate the lived experiences of female students participating in volleyball classes, aiming to uncover the essence of their perspectives and experiences. Phenomenology was selected because it allows researchers to explore participants' subjective realities in depth, capturing the nuanced ways in which gendered structures, peer interactions, and instructional practices shape their engagement, self-efficacy, and identity develop-

ment (Faraji et al., 2024; Shorey & Ng, 2022).

The purposive sampling technique was employed to recruit ten female college students enrolled in coeducational, mandatory volleyball courses led by certified physical education instructors. The volleyball course within the institution's curriculum was structured to promote both fitness and skill development, with student performance evaluated using a competency-based rubric. This selection approach ensured that all participants had direct, firsthand experience with gender interactions in a structured sports environment, which was central to the study's focus on gender dynamics.

A total of 10 female college students ―aged 21–23, enrolled in their second year of Education, Psychology, or Agriculture courses, and with no prior volleyball experience―were purposively recruited to ensure a consistent baseline for examining initial experiences in a coeducational athletic context. By recruiting participants with comparable skill levels, similar year levels, and shared course experiences, the study minimised potential confounding variables associated with prior expertise. Table 1 presents the demographic characteristics of the participants, including age, year level, and course.

Data were collected through semi-structured interviews, which allowed participants to express their perspectives while guiding the discussion toward topics relevant to the study. Interviews were conducted in a conversational manner, using a combination of Filipino and English according to participants' preferences, and were audio-recorded with participants' informed consent.

Table 1. Participant Profile

Participant	Age	Course
P1	21	Education
P2	22	Education
P3	21	Agriculture
P4	23	Education
P5	22	Psychology
P6	24	Agriculture
P7	23	Agriculture
P8	22	Psychology
P9	23	Agriculture
P10	21	Education

To ensure that the original meaning, nuance, and emotional register of participants' responses were preserved, all Filipino responses were translated into English by a qualified Filipino-English translation expert. The translations were carefully reviewed to maintain fidelity to culturally specific expressions, idiomatic language, and the emotional tone of participants' responses, ensuring that their intended meanings and subtleties were accurately captured for analysis.

Ethical considerations were followed for all participants and procedures, with each participant receiving information about the research, its purpose, confidentiality, and their right to withdraw at any time, in accordance with ethical guidelines for qualitative research (Leahy, 2022). Participants were assigned a pseudonym for anonymity.

To ensure the trustworthiness, credibility, and rigour of the study, the researchers implemented several phenomenologically grounded strategies. Prior to data collection, the researchers engaged in bracketing, documenting and setting aside their own preconceived notions, assumptions, and biases to minimise their influence on participants' accounts. During

data collection, reflexive practices were maintained through an ongoing audit trail that captured decisions, interpretations, and reflections to monitor potential researcher influence on the interviews. Verbatim transcriptions of the interviews formed the primary dataset for analysis, which was guided by Braun and Clarke's (2006) six-phase thematic analysis framework. This iterative process involved familiarisation with the data, generating initial codes, identifying potential themes, reviewing and refining themes, providing clear definitions and labels, and producing the final report. Furthermore, to enhance trustworthiness and confirm accuracy, transcripts were returned to participants for verification and approval through member checking. Collectively, these procedures—bracketing, reflexive engagement, reliability checks, and systematic thematic analysis—strengthened the transparency, credibility, and analytic robustness of the study, facilitating the identification of key themes that captured the complex and gendered experiences of participants in volleyball classes.

Results

The study revealed detailed, multifaceted illustrations of female students' lives, experiences, issues, struggles , and suggestions for volleyball classes. Their recounting of experiences demonstrated emotional and social struggles, including feelings of inadequacy, being judged by fellow students, and experiencing gender inequity, while also signalling the potential for advancement stemming from equity structures, supportive teaching, and active participation. The findings illuminate how confidence, belonging, and motivation in playing volleyball are affected by personal insecurities, social context, and classroom practices.

Personal Experiences in Volleyball

Students' narratives emphasized that volleyball is not just a physical activity but also a layered social experience. While some participants found it enjoyable, positive moments were often overshadowed by insecurities, embarrassment, and exclusion. These experiences are reflected in three central themes.

Theme 1: Feelings of Inadequacy and Self-Doubt

A recurring theme among students was a lack of confidence, often linked to perceived skill deficits relative to peers, particularly male classmates. Several participants reported initial reluctance to play due to shyness and nervousness, which hindered full participation. For those with limited prior experience, the skill demands of volleyball intensified feelings of unpreparedness.

"It was fun and enjoyable, although I don't play volleyball as my male classmates do."

"Sometimes I feel shy or nervous, especially when I play with boys who seem to be more confident or play rough."

"I never played volleyball or a sport like it before, so it was hard and I didn't feel prepared."

Theme 2: Embarrassment and Fear of Judgment

In addition to concerns about their abilities, students recalled instances in which classmates ridiculed, teased, or ignored them. These experiences intensified embarrassment and decreased motivation. Being treated with ridicule or disrespect by male classmates was especially debilitating and even caused some students to disengage both socially and emotionally.

"Every time I don't hit the ball, my classmates laugh at me."
"Some of the boys in my class called me 'little' and said I wouldn't be able to hit the net."

"Sometimes I didn't get to play or nobody took me seriously."

Theme 3: Perceived Gender Inequity and Lack of Belonging

Entrenched with gender roles increased feelings of exclusion. In many instances, the boys led the games, held the ball, and took on the lead role while the girls, especially the quieter girls, were left out. This disparity led to a sense of not belonging.

“The boys didn’t really pass the ball to the girls. It made me feel like I was left out and not important.”

“I think sometimes girls, especially the quiet ones, were just ignored or weren’t passed the ball.”

“It felt like the boys were deemed more trustworthy to be leaders, or to take on stronger roles in the game.”

In bringing these experiences into the light, students recognised barriers of self-doubt, embarrassment, and inequity, but they began to identify and expose more tangible factors that limited their physical ability and sense of belongingness in volleyball.

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Challenges in Volleyball

Students mentioned obstacles that extended beyond emotional experiences and incorporated specific barriers to engagement. These obstacles demonstrated gendered dynamics, physical discomfort, and structural inequalities concerning playtime.

Theme 1: Exclusion or Undervaluation on the Basis of Gender

In line with their experiences, several students reported feeling excluded from or underestimated in mixed-gender games. The ways in which play was structured often placed boys in dominant roles such that girls were ignored, teased, or considered inferior and therefore had fewer opportunities to engage equally.

"The boys wouldn’t pass the ball to the girls. It made me feel like I didn’t matter."

"Some of the boys make fun of me because I can’t jump as high as they do."

"Sometimes I just wasn’t taken seriously because I was a girl."

Theme 2: Physical Discomfort and Injury

Playing volleyball was also difficult because they experienced physical pain. Students often cited hand pain, general pain from repeated ball contact, and fear of injury. All these factors further dampened enthusiasm and caused female students to hesitate during practice and competition.

"My hands hurt when we practice too long, and sometimes it just takes the fun out."

"When the ball hits in certain areas of the body, like in the chest it hurts, and I get nervous."

"The tension from the ball coming toward me froze me up."

Theme 3: Unequal Opportunities and Limited Playtime

Another notable issue was the unequal distribution of playtime. Students reported that opportunities to participate were often reserved for more vocal or skilled players, while quieter or less experienced players were frequently overlooked, contributing to feelings of exclusion and stagnation.

"I didn't get to play because the boys were leading all the time."
"The better players got the chance to stand out."

"I was often not paid due attention on the court, and it definitely sucked."

While challenges had created emotional, physical, and social barriers, students also suggested potential solutions. Their recommendations indicated they

wanted changes to class structure, teacher interventions, and cultural changes to promote greater equity and participation in volleyball classes.

Suggestions for Improvement

Students proposed ideas to improve volleyball classes, making them more inclusive and supportive. Their suggestions focused on creating environments that emphasise inclusiveness, promote equal opportunities, and implement and strengthen support systems to establish a positive learning environment.

Theme 1: Promote Inclusion and Equal Participation

The most common recommendation was to ensure that all students, regardless of skill or gender, had a fair opportunity to participate. Equal play opportunities were viewed as paramount to building confidence and team togetherness.

"Encourage equal teamwork and provide every student with a chance to play."

"Be sure that all students are treated equally and you are kind to them."

"Let girls have more opportunities, particularly in co-ed games."

Theme 2: Gender-Sensitive Teaching Approaches

Participants highlighted the role of teachers in addressing inequities. They called for better-balanced teams, more gradual progression of the basics (skills), and more constructive feedback. In addition, participants viewed teachers as role models who promoted fairness and discouraged gender-based comparisons.

"Teachers should use skill level to divide teams, not gender."

"Start with the basics, so that everyone learns equally."

"Offer motivational messages after class so all participants have the chance to grow."

Theme 3: Improved Structure and Support Systems

Finally, participants called for stronger structural and emotional support from teachers and classmates, emphasising the need for appropriate equipment, clear instructional guidelines, and consistent peer reinforcement. Establishing a safe and supportive classroom was considered essential to increasing participation and, ultimately, personal growth.

"There should be appropriate equipment and an instructor who uses a clear set of directions for dos and don'ts."

"Teachers should promote respect and continually remind students."

"Establish a classroom environment where all students feel safe to speak and freely participate."

Discussion

This study provides an in-depth analysis of female students' experiences, challenges, and recommendations in volleyball classes, emphasising the complex interplay among confidence, belonging, and motivation as shaped by personal, social, pedagogical, and intersectional factors. The narratives frame volleyball as a multidimensional social experience rather than merely a physical activity. Although some students reported enjoyment and engagement, many described feelings of inadequacy, anxiety, embarrassment, and exclusion. A considerable number experienced self-doubt, particularly in comparison to male peers, with those lacking prior experience being especially vulnerable to low confidence and withdrawal (Aguillon et al., 2020). These patterns are consistent with gender schema theory (Bem, 1981), which asserts that internalised social expectations regarding gendered abilities influence girls' perceptions of competence and their willingness to

participate in activities perceived as male-dominated. These reflections indicate that such experiences are embedded in broader socialised norms about gender and athleticism, highlighting the need for instructional approaches that address and mitigate internalised barriers.

Through a feminist theoretical lens, the findings indicate that volleyball classes function as socially and structurally gendered environments in which power relations shape visibility, leadership, and participation (Acker, 1992). Reports of marginalisation, ridicule, and exclusion, often initiated by male peers, illustrate how inequities in participation are sustained through peer dynamics and classroom structures. The concept of intersectionality (Crenshaw, 1989) further clarifies the diversity of experiences, as quieter, less skilled, or less experienced students are disproportionately affected by social and structural barriers. This layered vulnerability demonstrates that inequity is not uniform but is shaped by the intersection of gender, prior experience, skill, and social positioning, revealing nuanced mechanisms of marginalisation frequently overlooked in Physical Education research (Marqués-Sánchez et al., 2024).

The challenges identified by students included emotional, physical, and structural barriers. Gendered dynamics frequently limited girls' opportunities for meaningful engagement, as more vocal or skilled students, particularly boys, dominated gameplay and leadership roles. Physical discomfort and fear of injury further restricted participation, exacerbating feelings of exclusion and reducing engagement and motivation (Sheehan et al., 2024). Unequal playtime and the undervaluation of girls' contributions reinforced these challenges (Morgan, 2021). These findings align with previous research indicating that girls in coeducational Physical Education often experience marginalisation, peer surveillance, and limited access to meaningful play (Uğraş et al., 2025). Importantly, the students' accounts provide analytic detail by identifying specific mechanisms of marginalisation, including peer judgment, monopolisation of leadership, and exclusionary role assignments (Mazerolle et al., 2012). This evidence demonstrates that confidence, belonging, and motivation are shaped by social and pedagogical contexts rather than being inherent traits.

Students offered targeted recommendations for improvement, emphasising equitable, structured, and gender-sensitive pedagogical approaches. They advocated for deliberate role rotations, balanced teams, and sequenced skill instruction to facilitate meaningful participation for all students. These strategies directly address the gendered power dynamics identified in their experiences and are consistent with feminist and intersectional frameworks that seek to disrupt normative hierarchies in Physical Education classrooms (Acker, 1992; Crenshaw, 1989). Emotional and structural supports, such as adequate equipment, clear instructional guidelines, and reinforcement of respectful peer behaviour, were identified as essential for fostering confidence, belonging, and motivation (Su & Liu, 2025). Teachers' intentional feedback, encouragement, and facilitation of shared leadership opportunities between boys and girls further promoted inclusive participation and engagement (Miñao, 2024).

Collectively, these findings highlight the importance of gender-responsive pedagogy in establishing the social and motivational conditions necessary for equitable participation. In summary, the students' narratives converge on a clear pedagogical implication: confidence, belonging, and motivation in volleyball are shaped by the interaction of personal, social, and pedagogical factors (Jafarova, 2025). The study underscores the critical role of teachers in fostering equitable experiences, both by structuring participation and by identifying and addressing subtle mechanisms of exclusion in coeducational con-

texts. By centring students' lived experiences and integrating gender schema, feminist, and intersectional theories, this study advances theoretical and practical understanding of equity in Physical Education and offers educators actionable guidance to create inclusive, supportive, and motivating learning environments for all students.

Based on these findings, it is recommended that Physical Education educators design volleyball activities to ensure meaningful participation for all students, regardless of skill level or gender. Implementing role rotation and structured opportunities for equal participation can help reduce disparities in engagement. Strategies rooted in gender-sensitive pedagogy, including balanced teams, progressive skill sequencing, and intentional, constructive feedback, are likely to further address inequities and foster inclusiveness. Fostering both structural and emotional supports is crucial. Providing adequate equipment, clearly communicating instructional expectations, and normalising respectful peer interactions can create an environment where students feel safe taking risks and building confidence. For quieter or more reserved students, targeted encouragement, opportunities for leadership in small group tasks, and positive reinforcement for effort can strengthen self-efficacy and motivation. These approaches collectively sustain participation, support social-emotional growth, and help prevent marginalisation, ensuring that all students experience a sense of competence and belonging in physical education settings.

While the results offer valuable insights into female students' experiences in volleyball, they are limited by reliance on self-reported accounts from a specific subset of participants. Self-report data may be subject to recall bias or personal interpretation, limiting the generalizability of the findings to broader student populations and different cultural and institutional contexts. Additionally, the study primarily reflects the female perspective, omitting male students' experiences and potentially overlooking aspects of mixed-gender dynamics from both viewpoints.

Future research should include more diverse and representative samples, incorporate observational methods, and utilise mixed-method designs to achieve a more comprehensive understanding of participation dynamics in volleyball classes. Studies should also examine the effectiveness of pedagogical strategies to address feelings of inadequacy, discomfort, and gender inequity. Evaluating inclusive teaching models, cooperative learning structures, and gender-transformative practices will generate evidence for approaches that enhance students' confidence, sense of belonging, and sustained engagement in physical education. Research that includes both male and female participants and employs mixed-methods approaches can yield a deeper, more nuanced understanding of how supportive teaching practices foster equitable participation and cultivate inclusive learning environments.

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this manuscript, the author used Grammarly to improve language clarity, grammar, and phrasing. The author carefully reviewed and revised the output to ensure accuracy and takes full responsibility for the content of the final manuscript.

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Notes on Contributors

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ORIGINAL RESEARCH

Indayugan: A Culturally Grounded Dance Intervention for Improving Health-Related Physical Fitness in Female College Students

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Abstract

Optimal physical fitness is essential for the health and well-being of female college students. However, many have low engagement in Physical Education (PE) because the activities do not match their interests and identities. This quasi-experimental two-group design examined the effects of Indayugan. This culturally inspired dance exercise integrates Filipino folk and ethnic dances to examine the health-related fitness of female college students at a state university in Nueva Ecija, Philippines. The experimental group with 31 students participated in an eight-week Indayugan intervention, while the control group with 30 students took traditional PE classes. The study assessed health-related fitness components before and after the intervention using paired t-tests and independent-samples t-tests. Results showed no significant differences between groups at baseline (all p-values > .05). Between-group post-test comparisons indicated that the experimental group outperformed the control group in cardiorespiratory endurance ($t = –5.64$, $p < .001$), sit-ups ($t = 4.45$, $p < .001$), sit-and-reach ($t = 3.07$, $p = .003$), and BMI ($t = –3.64$, $p < .001$), while changes in push-ups remained non-significant ($t = –0.81$, $p = .420$). These findings show that the Indayugan intervention can improve health-related fitness and cultural expression, highlighting the importance of culturally relevant practices in physical education to enhance student health-related fitness.

Keywords:
Indayugan, cultural dance, female, dance exercise, physical fitness, good health and well-being

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Introduction

Sedentary behaviour among college women is a growing public health concern, particularly due to the increasing use of gadgets and prolonged screen time. Studies indicate that greater reliance on digital devices correlates with reduced physical activity, elevated obesity rates, poor posture, and negative cardiometabolic outcomes (Pengpid et al., 2015; Rogayan & Padre, 2025). The transition to college frequently intensifies these patterns, as academic pressures, social adaptation, and increased autonomy contribute to more sedentary lifestyles (Corder et al., 2019; Deforche et al., 2015). In the Philippines, female students report lower levels of physical activity and higher engagement with social and digital media (Martin et al., 2016). In contrast, regular physical activity is closely linked to improved mental health, positive body image, and enhanced quality of life, underscoring the importance of interventions that encourage sustained physical activity (Beisecker, 2025; Ramos-Jiménez et al., 2017).

Motivation and personal interest significantly influence participation in physical activity. Female students are more likely to engage in activities that are enjoyable, socially interactive, or culturally meaningful (Martin et al., 2016; Raven &

Pels, 2021; Vasconcellos et al., 2020). Dance is frequently preferred because it combines physical exertion, self-expression, rhythmic movement, and opportunities for social interaction (Barranco-Ruiz et al., 2020; Ngo et al., 2024). Interventions that align with participants' cultural identities and interests demonstrate greater adherence and improved long-term outcomes than generic exercise programs (Du et al., 2025; Fong Yan et al., 2024; Yu et al., 2025). Therefore, dance offers both physical benefits and cultural relevance as a strategy to reduce sedentary behaviour among female students.

Methods and Materials

A quasi-experimental two-group pretest–posttest design (Park et al., 2020) was utilised to examine the effects of *Indayugan.* This culturally inspired dance exercise incorporates Filipino folk and ethnic dances, focusing on the health-related physical fitness of female college students. Participants were assigned to the experimental group (n=31) or control group (n=30) using cluster assignment of intact class sections to minimise disruption to academic schedules and preserve the natural classroom setting. This approach improved feasibility and reduced interaction between groups that could affect outcomes. Bias was minimised through blind assessment of outcomes, statistical control for baseline differences, and steps to limit cross-group contamination.

The experimental group participated in an eight-week *Indayugan* intervention, conducted three times per week for approximately 45 minutes per session. In contrast, the control group continued with conventional Physical Education classes. Each *Indayugan* session comprised three phases: a 10-minute warm-up featuring low-intensity rhythmic movements and dynamic stretching based on fundamental folk dance steps; a 25-minute main exercise segment incorporating sequenced Philippine folk and ethnic dance movements; and a 10-minute cool-down with slower dance sequences, controlled breathing, and static stretching. The intervention followed the principle of progressive overload, beginning with simple, low-intensity routines in the initial weeks to support skill acquisition and movement familiarisation. As the program progressed, dance combinations increased in length, complexity, tempo, range of motion, and repetition, elevating exercise intensity to moderate and then high levels in later weeks. This structured progression aimed to optimise improvements in cardiorespiratory endurance, muscular stamina, coordination, and overall health-related fitness, while maintaining cultural authenticity and participant engagement.

During the intervention, the experimental group performed only the *Indayugan* dance routine and did not participate in any other physical activity programs from the standard PE curriculum. In contrast, the control group continued with regular PE content focused on individual and dual sports, specifically badminton and table tennis. These activities followed existing curriculum guidelines and served as the comparison for evaluating the effects of the *Indayugan* dance-based intervention on students' physical fitness outcome.

Baseline assessments were conducted before the intervention, and post-test evaluations were administered immediately after its completion to determine changes in fitness outcomes. Health-related physical fitness was measured using the Physical Fitness Test prescribed by the Department of Education, which assessed cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition using Body Mass Index (BMI).

Previous studies have demonstrated high reliability for the 3-minute step test (Bohannon et al., 2015), sit-ups (Ojeda et al., 2020), push-ups (Kellner et al., 2021), and the sit-and-reach test (Henriques-Neto et al., 2020). Additionally, BMI measurements obtained using standardised protocols have exhibited strong consistency (Carsley et al., 2019). Collectively, these

findings support the use of these instruments as reliable measures of health-related physical fitness outcomes in intervention research. The study adhered to established ethical standards for research involving human participants. Written informed consent was obtained from all participants, and confidentiality, anonymity, and voluntary participation were strictly maintained throughout the research process. All procedures were classified as minimal risk, and appropriate safeguards were implemented to ensure the safety, well-being, and rights of participants. Although institutional guidelines did not require formal ethical clearance, Central Luzon State University reviewed and authorised the study, ensuring adherence to institutional policies and national standards for protecting human research participants. Data were analysed using paired t-tests to examine within-group changes over time and independent-samples t-tests to assess post-intervention differences between groups (Okoye & Hosseini, 2024). Statistical significance was set at $p < .05$.

Results

Baseline comparisons

Independent-samples t-tests were conducted to compare the pre-test scores of the experimental and control groups across all outcome measures. As presented in Table 1, there were no statistically significant differences between groups at pre-test, indicating baseline equivalence. Specifically, cardiorespiratory endurance, push-ups, sit-ups, sit-and-reach, and BMI did not differ significantly ($p > .05$), with effect sizes ranging from small to negligible (Cohen's $d = 0.14–0.15$).

Table 1. Independent-Samples t-Tests on Pre-test Scores: Experimental vs Control

Measure (unit)	Control group Pre-Test Mean	Experimental roup Pre-Test Mean	t	p	d
Cardio-respiratory Endurance (3-min Step Test, bpm; lower = better)	96.00	95.20	–0.60	.551	0.15
Push-ups (count)	8.00	7.80	–0.33	.742	0.09
Sit-ups (count)	13.20	13.60	0.55	.585	0.14
Sit-and-Reach (cm)	21.80	22.40	0.55	.586	0.14
BMI	25.40	25.50	0.16	.872	0.04

Within-Group Pre-Test to Post-Test changes

Paired-samples t-tests were performed to examine within-group changes from pre-test to post-test (Table 2). In the experimental group, significant improvements were observed in cardiorespiratory endurance ($t = –14.42$, $p < .001$, $d = 1.66$), sit-ups ($t = 10.95$, $p < .001$, $d = 1.92$), sit-and-reach ($t = 7.00$, $p < .001$, $d = 1.01$), and BMI ($t = –8.20$, $p < .001$, $d = 1.50$). The change in push-ups was not statistically significant ($t = 0.87$, $p = .390$, $d = 0.12$). Similarly, the control group demonstrated significant improvements from pre-test to post-test in cardiorespiratory endurance ($t = –4.22$, $p < .001$, $d = 0.76$), sit-ups ($t = 3.50$, $p = .001$, $d = 0.63$), sit-and-reach ($t = 2.21$, $p = .035$, $d = 0.28$), and BMI ($t = –3.23$, $p = .003$, $d = 0.63$). Changes in push-ups were not significant ($t = 1.13$, $p = .270$, $d = 0.23$).

Table 2. Descriptive Statistics (Pretest and Posttest) by Group (N = 61)

Measure (unit)	Group	Pre-Test Mean	Post-Test Mean	*t*	*p*	*d*
Cardio-respiratory Endurance	control	96.00	92.40	–4.22	.001	0.76
	experimental	95.20	86.00	–14.42	.001	1.66
Push-ups (count)	control	8.00	8.50	1.13	.270	0.23
	experimental	7.80	8.00	0.87	.390	0.12
Sit-ups (count)	control	13.20	14.10	3.50	.001	0.63
	experimental	13.60	17.20	10.95	.001	1.92
Sit-and-Reach (cm)	control	21.80	23.50	2.21	.035	0.28
	experimental	22.40	26.60	7.00	.001	1.01
BMI	control	25.40	24.20	–3.23	.003	0.63
	experimental	25.50	23.10	–8.20	.001	1.50

Between-Group Post-Test comparisons

Independent-samples t-tests were conducted to compare post-test outcomes between the experimental and control groups (Table 3). The experimental group exhibited significantly greater improvements than the control group in cardiorespiratory endurance ($t = –5.64$, $p < .001$, $d = 1.03$), sit-ups ($t = 4.45$, $p < .001$, $d = 1.01$), sit-and-reach ($t = 3.07$, $p = .003$, $d = 0.72$), and BMI ($t = –3.64$, $p < .001$, $d = 1.00$). **T**here was no significant change in either group for push-ups ($t = –0.81$, $p = .420$, $d = 0.21$).

Table 3. Independent-Samples t-Tests on Post-test Scores between control group and experimental group

Measure (unit)	Control group Post-Test Mean	Experimental group Post-Test Mean	t	p	d
Cardiorespiratory Endurance (3-min Step Test, bpm; lower = better)	92.40	86.00	–5.64	.001	1.03
Push-ups (count)	8.50	8.00	–0.81	.420	0.21
Sit-ups (count)	14.10	17.20	4.45	.001	1.01
Sit-and-Reach (cm)	23.50	26.60	3.07	.003	0.72
BMI	24.20	23.10	–3.64	.001	1.00

In summary, the results showed no significant differences between the experimental and control groups across all fitness measures before the intervention. Post-test comparisons showed that the experimental group achieved significantly greater improvements than the control group in cardiorespiratory endurance, sit-ups, sit-and-reach, and BMI. Push-up performance showed no significant differences. These findings highlight the superior effectiveness of the *Indayugan* intervention over traditional PE classes in improving cardiovascular fitness, core muscular endurance, flexibility, and body composition among female college students. Figure 1 presents a bar chart comparing post-test scores across fitness outcomes.

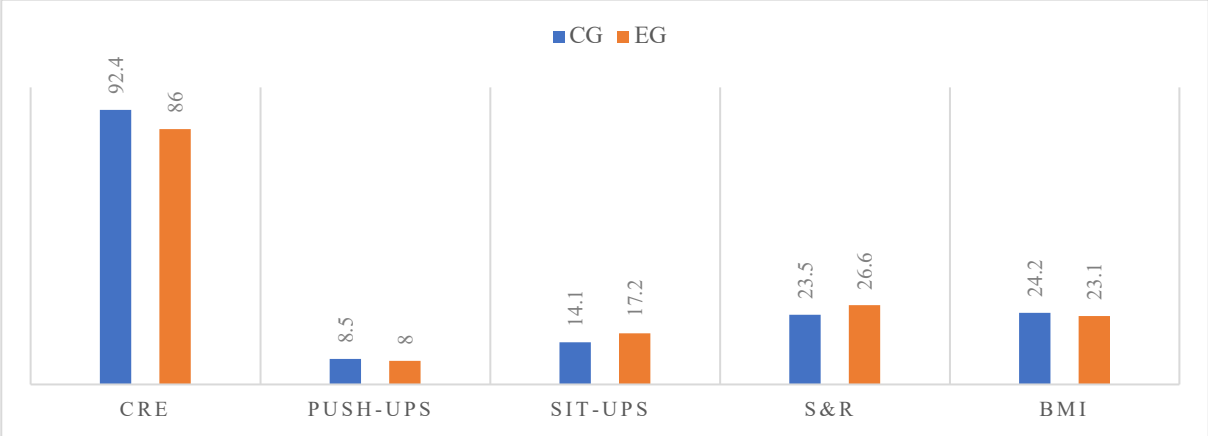

Figure 1. Bar Graph on the Post-test Scores between control group and experimental group

Discussion

This study examined the effectiveness of *Indayugan*, a culturally grounded Philippine dance intervention, on selected fitness indicators among female college students. Participants in the experimental group showed significantly greater improvements than the control group from pre-test to post-test. Baseline measures were comparable between groups, confirming initial equivalence.

Cardiorespiratory endurance improved markedly in the experimental group, as evidenced by significant reductions in post-exercise heart rate, indicating enhanced cardiovascular efficiency. In addition, the experimental group demonstrated greater gains in muscular endurance, flexibility, and body composition, while push-up performance showed minimal change in both groups.

These results align with prior research indicating that culturally relevant dance and aerobic programs enhance aerobic capacity and cardiovascular function across diverse populations (Dube et al., 2025; Fong Yan et al., 2018). These findings suggest that *Indayugan* elicits greater physiological adaptations than routine exercise, confirming the effectiveness of culturally relevant approaches to cardiovascular fitness.

Flexibility also improved significantly in the experimental group compared to the control group. Gains in sit-and-reach scores support the literature showing that low-impact aerobics and dance enhance joint mobility, muscle elasticity, and functional movement capacity (Chen et al., 2025; García, 2024; Mathai & Balasubramanian, 2022). This demonstrates that *Indayugan* contributes meaningfully to musculoskeletal health and daily functional ability.

Muscular endurance improved in the core, with the experimental group showing notable gains in sit-ups. These findings are consistent with previous research showing that dance-based interventions emphasising core and lower-body movements can effectively enhance muscular endurance and functional strength among young adults (Joung & Lee, 2019; Noopud et al., 2019; Vordos et al., 2017). Such programs improve the ability to sustain repeated movements over time, which contributes to overall physical fitness and functional capacity. Push-up performance, which reflects upper-body muscular strength, did not show significant changes in either the experimental group or the control group. This aligns with prior research indicating that aerobic- or dance-focused programs primarily target endurance, flexibility, and core strength. Without specific resistance training, they typically produce minimal improvements in upper-body strength (Ngo et al., 2024). These findings suggest that while *Indayugan* effectively enhances core endurance, additional or complementary

upper-body resistance training may be necessary to improve push-up performance.

Body composition, as assessed by BMI, improved significantly in the experimental group, whereas it remained relatively unchanged in the control group. This pattern is consistent with the existing literature, which indicates that culturally grounded dance interventions can effectively enhance body composition and support weight management. Such improvements are particularly relevant for promoting long-term cardiometabolic health (Douka et al., 2019; Loo et al., 2019; Malkogeorgos et al., 2020).

Overall, these findings indicate that *Indayugan* effectively enhances multiple aspects of physical fitness, including cardiovascular endurance, muscular endurance, flexibility, and body composition, through a culturally meaningful and structured exercise program. The intervention demonstrates that traditional dance can serve as an evidence-based approach to improving physiological health in female college students. Beyond its physical fitness benefits, the *Indayugan* intervention has important implications for cultural preservation. By incorporating traditional Filipino folk and ethnic dance movements into a structured exercise program, the intervention promotes awareness, appreciation, and engagement with the country's intangible cultural heritage.

Participation in *Indayugan* allows female college students to experience cultural practices in a meaningful, embodied way, reinforcing the transmission of traditional movements, rhythms, and expressions that might otherwise be underutilised in contemporary settings. This integration of physical activity and cultural education demonstrates that culturally grounded interventions can simultaneously support health promotion and the preservation of heritage, fostering both individual well-being and collective cultural identity, which is consistent with previous studies (Guo & Li, 2025; Luque Suárez et al., 2023).

The findings further highlight the distinct advantages of the *Indayugan* dance intervention over conventional Physical Education in promoting optimal fitness outcomes. The routine specifically engages key health-related fitness components through culturally anchored movements, such as rhythmic stepping, sustained lower-body stances, and repeated upper- and lower-body actions that build muscular endurance and strength. These exercises require the continual activation of major muscle groups while maintaining coordination and rhythm, thereby fostering cardiovascular endurance, muscular endurance, flexibility, and improved body composition. In contrast, conventional sport-based instruction may lack consistent physical involvement and balanced exercise intensity, as these activities often emphasise skill performance rather than ongoing movement.

These results extend both theory and practice by demonstrating that culturally grounded dance interventions, such as *Indayugan*, can enhance health-related fitness and foster cultural engagement among female college students. Embedding exercise within familiar cultural frameworks offers a practical way to promote physical activity that aligns with culturally responsive pedagogy and health promotion. These results have important implications for curriculum design and educational policy. Integrating cultural dance into Physical Education programs can increase student participation, encourage sustained engagement in physical activity, and support the preservation of intangible cultural heritage.

Combining physical development with cultural awareness fosters a more holistic model of student well-being. Including *Indayugan* Dance as an elective in the college Physical Education curriculum supports the broader goals of higher education to advance comprehensive student development through culturally meaningful physical activities. Rooted in Philippine culture, *Indayugan* Dance also

provides educators and curriculum planners with a practical framework for incorporating culturally grounded activities into academic programs, promoting both educational enrichment and cultural preservation.

Limitations of this study include the absence of systematic measures of psychosocial or mental health outcomes, such as stress reduction, mood, or self-efficacy, which previous research suggests may also benefit from dance-based interventions. The study also used a short-term follow-up, limiting the ability to determine whether the observed improvements in physical fitness and engagement are sustained over time.

Future studies could incorporate qualitative methods, such as interviews or focus groups, to explore participants' subjective experiences and perceptions of cultural engagement. Including physiological markers, such as blood pressure and heart rate variability, would clarify the clinical and biological effects of culturally grounded exercise programs. Combining quantitative and qualitative approaches would provide a more comprehensive understanding of the multidimensional benefits of traditional dance interventions and inform strategies for culturally inclusive fitness promotion in higher education settings.

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Disclosure statement

The author declares no conflict of interest.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this manuscript, the author used Grammarly to improve language clarity, grammar, and phrasing. The author carefully reviewed and revised the output to ensure accuracy and takes full responsibility for the content of the final manuscript.

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ORIGINAL RESEARCH

Gendered Physical Education Facilities in Philippine Junior High Schools: Pathways Toward Gender Equity

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Abstract

Despite national commitments to gender mainstreaming in Philippine education, physical education (PE) and sports facilities in junior high schools often reproduce structural inequalities that disadvantage girls. This study critically examines how PE facilities promote or hinder gender equity and identifies pathways for transformation. A qualitative multi-site case study was conducted in four junior high schools in Southern Luzon, Philippines, using purposive and snowball sampling. Participants included 20 female students (Grades 7-9) and eight PE teachers. Data were generated through 28 semi-structured interviews, facility audits using a validated gender-responsiveness assessment tool (Santos, 2024), and document analysis. Data were analysed using Braun and Clarke's reflexive thematic analysis. Four major themes were generated through reflexive thematic analysis: (1) institutional prioritisation of boys' sports limited girls' access; (2) inadequate privacy and safety infrastructure contributed to discomfort and absenteeism; (3) facilities were culturally constructed as male-dominated spaces; and (4) student-led initiatives demonstrated agency and demand for inclusive reform. The findings indicate that spatial arrangements function as a hidden curriculum, reinforcing gender hierarchies. However, participatory and student-driven practices offer viable pathways toward gender-responsive transformation. The study contributes to international scholarship on gendered sport spaces and advances context-specific recommendations aligned with Sustainable Development Goals 4 and 5.

Keywords:
gender equity, physical education, inclusive facilities, junior high school, Philippines

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Introduction

In recent years, gender equality in education has gained momentum globally, with schools expected to provide equitable opportunities across curricular and extracurricular domains. Physical education (PE), however, continues to reflect entrenched gender disparities, particularly in the area of infrastructure and facility access. Santillan et al. (2018) reported that school-based physical spaces such as gymnasiums, locker rooms, and courts, play a critical role in shaping students' physical activity patterns, confidence, and engagement. For junior high school girls, access to safe, inclusive, and gender-sensitive facilities is not merely a logistical concern but a fundamental equity issue (Guerrero & Guerrero, 2023; Martin & Santos, 2015). Despite policy-level com-mitments to gender fairness, the design and allocation of PE and sports facilities often reproduce gendered hierarchies, margin-alising women-identifying students in both subtle and overt ways.

Philippine education policy has embraced gender mainstreaming through instruments such as the Magna Carta of Women and DepEd's gender-responsive mandates. However, gaps remain between national policy and on-the-ground implementation, especially within public junior high schools (CHED, 2015). Facility usage often favours boys' sports, with prime schedules, larger spaces, and newer equipment allocated to traditionally male-dominated activities such as basketball and football.

Meanwhile, girls are either pushed into secondary spaces or limited to "feminine" activities like aerobics or dance, which are frequently under-resourced and undervalued (Stride et al., 2022; Martin et al., 2017). These perpetuate gender stereotypes and dissuade equal involvement in physical education - further entrenching the cycle of exclusion and disengagement.

To these issues is added the physical discomfort and safety concerns reported by many female students: not only the lack of care and maintenance, but also the lack of attention to good design. Studies have reported that the lack of private changing rooms, poor lighting, and the presence of surveillance or harassment contribute to girls' withdrawal from PE classes (Meier et al., 2022; Streetman et al., 2023).

Furthermore, when infrastructure neglects the needs of gender-diverse learners, including non-binary and transgender students, it reinforces normative assumptions about bodies and participation (Kelly et al., 2019). These spatial barriers are not neutral; they actively shape students' relationships with movement, health, and self-esteem during a formative stage of life.

While international research has made strides in examining gendered space and inclusion in school sports, significant gaps remain in the Philippine context particularly at the junior high school level. Much of the existing literature focuses on pedagogy, curriculum, and teacher bias, with limited attention to the spatial dimensions of inequality. Moreover, there is a lack of research that integrates facility assessment with student voice, particularly that of women students from public schools in both urban and rural settings. The absence of intersectional, school-based studies that examine how gender inequity is structurally embedded in PE facilities leaves a critical gap in both scholarship and practice (Brussino & McBrien, 2022; Killen & Rutland, 2022).

To address these gaps, this study investigates how PE and sports facilities in Philippine junior high schools promote or hinder gender equality for women students. Drawing on feminist pedagogy and critical spatial theory, the research explores both the institutional structures and lived experiences that shape facility access and use. By focusing on the voices of female students alongside facility audits and document analysis, this study provides a multi-dimensional understanding of how physical space intersects with gender justice in education.

Literature Review

Gendered Sport Spaces and Spatial Politics in PE

International scholarship has established that school sport spaces are deeply gendered (Azzarito, 2010; Flintoff, 2018; Kirk, 2010). Basketball courts, football fields, and weight rooms are often socially constructed as masculine domains, reinforcing norms of strength, competitiveness, and bodily dominance (Vertinsky, 1992). Girls frequently experience marginalization through spatial displacement, reduced access, or symbolic exclusion (Oliver & Kirk, 2016).

Rich (2018) and Leahy et al. (2017) further argued that PE spaces operate through embodied surveillance, where girls' bodies are scrutinized, regulated, and disciplined. The absence of privacy in locker rooms or poorly designed changing areas can produce shame, anxiety, and withdrawal from participation. Thorpe (2017) highlights how spatial politics intersect with gendered power, shaping

who feels entitled to occupy space and who learns to yield it.

Embodiment, Surveillance, and Infrastructure

Embodiment scholarship emphasizes how physical environments influence bodily confidence and agency (Azzarito & Hill, 2013). Inadequate facilities, particularly those lacking privacy, hygiene, or safety, can function as structural deterrents to participation. Studies in Europe and North America demonstrate that girls' absenteeism in PE is often linked to discomfort in changing areas and fear of exposure (Flintoff & Fitzgerald, 2012; Rich, 2018).

Girls' Voice, Agency, and Participatory Reform

Feminist pedagogical frameworks emphasize student voice and participatory planning (Oliver & Kirk, 2016). When girls are engaged as co-constructors of PE environments, institutional norms can shift. However, such participatory approaches remain underexplored in Southeast Asian contexts.

This study builds upon international scholarship by situating gendered space analysis within Philippine junior high schools and integrating infrastructure assessment with lived experience.

Methods and Materials

Research Design

A qualitative multi-site case study design was employed to examine gender equity in PE facilities. This approach enabled in-depth exploration of institutional contexts, spatial practices, and participant experiences.

Research Locale

The study was conducted in Southern Luzon, a major geographic region in the Philippines located south of Metro Manila. Southern Luzon includes the CALABARZON region (Cavite, Laguna, Batangas, Rizal, and Quezon) and the Bicol Region (Albay, Camarines Norte, Camarines Sur, Catanduanes, Masbate, and Sorsogon). The area includes highly urbanized cities, peri-urban municipalities, and rural coastal and agricultural communities. Southern Luzon contains more than 1,500 public and private secondary schools serving diverse socio-economic populations. The four selected junior high schools represented urban and peri-urban municipalities within the CALABARZON subregion, allowing examination of gender equity issues across varied infrastructural contexts.

Participants

Four junior high schools (two private and two public) were purposively selected to represent diverse geographical and infrastructural conditions. Twenty junior high school female students (aged 13-15) and eight PE teachers (four female, four male) participated in semi-structured interviews. Participants were selected through purposive and snowball sampling to include those with substantial experience with PE classes and facilities.

Data Collection

Data were gathered through three main methods: (1) semi-structured interviews focusing on experiences of facility access, safety, and inclusion; (2) facility audits using a modified version of the validated assessment tool developed in Santos (2024), which measures gender responsiveness and inclusivity in fitness environments; and (3) document analysis of school development plans, PE syllabi, and maintenance records.

Data Analysis

Data were analyzed following Braun and Clarke's (2021) six-phase reflexive thematic analysis:

1. Familiarization with data
2. Initial code generation
3. Constructing candidate themes
4. Reviewing and refining themes
5. Defining and naming themes
6. Producing the report

Codes were generated inductively from interview transcripts and deductively from

feminist spatial theory. Reflexivity was maintained through analytic memos that documented the researchers' positionalities and interpretive decisions.

Both inductive and deductive codes were applied to interview transcripts, audit checklists, and documents. NVivo 12 software was used to organise and code data systematically.

Triangulation and Trustworthiness

Credibility was strengthened through:

- Data triangulation (interviews, audits, documents)
- Investigator triangulation (three researchers independently coded data before synthesis)
- Theoretical triangulation (feminist pedagogy and spatial theory)
- Peer debriefing (two external qualitative researchers reviewed coding decisions and theme development)
- Member checking with selected participants

Ethical Considerations

This study adhered to established ethical principles for low-risk educational research. Formal IRB review was not required because the research involved non-sensitive topics related to physical education facilities and routine school practices, posing no foreseeable physical, psychological, or legal risk to participants. Participation was voluntary, informed consent (and parental consent where applicable) was obtained, and participants were informed of their right to withdraw at any time. Confidentiality and anonymity were ensured through coded identifiers and secure data handling. The study complied with the ethical principles of respect for persons, beneficence, and justice consistent with recognised educational research standards.

Results

The thematic analysis of interview data, facility audits, and document review revealed four interrelated themes that explain how physical education (PE) facilities reproduce and, at times, challenge gender inequities in junior high school contexts. These themes illustrate the interplay between structural conditions, cultural meanings of space, and emergent forms of student agency.

Theme 1: Prioritised Access for Boys' Sports Limited Girls' Opportunities

The institutional prioritisation of boys' sports, particularly basketball, served as a structural mechanism that systematically limited girls' access to physical education facilities and participation opportunities. Across all case sites, scheduling practices and spatial allocation consistently favoured male-dominated sports, reflecting entrenched gender hierarchies within school environments.

Students reported frequent displacement from primary facilities, which constrained their ability to engage meaningfully in skill development and organised sport. As one participant explained, *"The boys always dominate the main court… we end up in hallways,"* illustrating how unequal access to space directly affects participation and motivation.

This pattern demonstrates how institutional practices reproduce gendered inequalities by assigning greater value to boys' athletic activities. Such findings align with international research showing that facility allocation often reflects and reinforces "gendered power" relations in physical education (Stride et al., 2022). In the Philippine context, the cultural dominance of basketball further intensifies this imbalance, privileging male participation while marginalising girls' engagement. Moreover, these spatial inequities exemplify the gap between policy commitments to gender equity and their implementation in practice (Guerrero & Guerrero, 2023). As a result, facility scheduling operates as a hidden curriculum, shaping students' perceptions of belonging and reinforcing the notion that girls' participation is secondary in PE environments (Weiler, 2023). While access inequities shaped participation, the

physical conditions of facilities further intensified gendered exclusion.

Theme 2: Inadequate Privacy and Safety Infrastructure Contributed to Discomfort and Absenteeism

Inadequate privacy and safety infrastructure functioned as a structural barrier, directly discouraging female students' participation in physical education. Across the case sites, the absence or poor condition of changing rooms, restrooms, and washing facilities created environments marked by discomfort, anxiety, and perceived risk, thereby limiting sustained engagement in PE activities.

Students consistently reported the lack of secure and hygienic changing spaces as a critical concern. As one participant noted, *"We don't have proper changing rooms… sometimes boys will just walk in… it's humiliating and uncomfortable,"* highlighting the vulnerability associated with inadequate facilities.

This evidence demonstrates that infrastructural deficits extend beyond inconvenience and operate as mechanisms of exclusion. The lack of privacy reinforces embodied surveillance and discomfort, consistent with findings that unsafe or poorly designed facilities deter participation among girls (Meier et al., 2022; Rich, 2018). Moreover, these conditions disproportionately affect female students, particularly in relation to menstrual health and bodily autonomy, further contributing to absenteeism. In this sense, infrastructure acts as a form of "body pedagogics," implicitly communicating that female students' safety and dignity are not institutional priorities (Kelly et al., 2019). Beyond material limitations, these spatial conditions also contributed to the cultural construction of facilities as gendered environments.

Theme 3: Facilities Were Perceived and Used as Male-Dominated Spaces

Physical education facilities were not only structurally unequal but also culturally constructed as male-dominated spaces, shaping participation through implicit norms of belonging and exclusion. These gendered spatial meanings were reinforced through peer interactions, teacher attitudes, and habitual patterns of space occupation, resulting in reduced confidence and engagement among female students.

Participants described key facilities, such as weight rooms and basketball courts, as implicitly reserved for boys. One student explained, *"I wanted to try weight training… but it feels like boys' territory… I feel judged just entering that space,"* illustrating how perceived social boundaries limit access even in the absence of formal restrictions.

This perception reflects the broader social construction of sport spaces as masculine domains, aligning with research on gendered spatial politics in PE (Azzarito, 2010; Kirk, 2010; Vertinsky, 1992). The normalisation of boys' dominance, often reinforced by teacher inaction, further institutionalises these patterns (Preece & Bullingham, 2022; Martin et al., 2016). As a result, facilities become sites where gender hierarchies are reproduced through everyday practice, teaching girls to yield space and internalise marginality. This underscores that spatial inequity is not only material but also symbolic, requiring both cultural and structural interventions. Despite these structural and cultural constraints, students were not passive recipients of inequality.

Theme 4: Student-Led Initiatives Demonstrated Agency and Demand for Inclusive Reform

Despite structural and cultural constraints, female students demonstrated agency by initiating participatory actions to challenge inequitable conditions and advocate for more inclusive PE environments. These student-led efforts reveal that learners are not passive recipients of inequality but active agents capable of disrupting institutional norms. In one case, students collectively petitioned for equitable sched-

uling of facilities. As a participant recounted, *"We wrote a letter… proposed a rotation schedule… and got all the girls to sign it,"* reflecting organised and strategic advocacy.

Such initiatives illustrate how participatory practices can serve as catalysts for institutional change. Consistent with feminist pedagogical frameworks, student voice operates as a critical mechanism for transforming inequitable structures (Oliver & Kirk, 2016). These micro-level reforms, while limited in scale, demonstrate the potential for bottom-up approaches to complement policy-level interventions. They also highlight the importance of recognising students as co-constructors of educational spaces, reinforcing calls for inclusive and participatory governance in PE (Killen & Rutland, 2022). Ultimately, student agency functions as a transformative pathway that can disrupt entrenched gender norms and promote more equitable spatial practices.

Discussion

The findings align with international research demonstrating that PE spaces reproduce gender hierarchies (Azzarito, 2010; Flintoff, 2018; Kirk, 2010). Similar to studies in the UK and Australia (Oliver & Kirk, 2016; Thorpe, 2017), prime sporting spaces were symbolically and materially masculinized. Spatial inequities functioned as a hidden curriculum, communicating differential value attached to boys' and girls' participation. Inadequate privacy infrastructure reinforced embodied surveillance dynamics identified by Rich (2018) and Leahy et al. (2017).

Similar to findings in university contexts, physical space is not a neutral backdrop but a site of social reproduction and resistance (Gerdin & Pringle, 2022; Greey, 2023; Martin et al., 2023).

The presence of prioritised access for male students, combined with inadequate privacy infrastructure for female students, replicates unequal power dynamics. These findings also reinforce the argument that spatial inequality is as critical as curricular inequality when addressing gender justice in PE (Philpot et al., 2021). The validated audit tool (Santos, 2024) proved transferable to school environments, offering a replicable framework for institutional self-assessment.

Student-led equity activities can indicate a shift in agency. When institutional tools are restricted, students take an active role in lobbying for inclusive improvements. Furthermore, innovative approaches to teaching, such as the use of technology, are also promoted (Prevandos & Martin, 2022). These micro-reforms demonstrate that fairness may be achieved even in constrained circumstances through participatory planning and gender-sensitive leadership.

To synthesize these interrelated dynamics, Figure 1 presents a conceptual map illustrating how structural conditions, spatial practices, and student agency interact to reproduce and potentially transform gendered inequalities in PE facilities. Structural inequalities (institutional prioritisation and inadequate infrastructure) produce gendered spatial practices that function as a hidden curriculum, shaping facilities as male-dominated spaces. These conditions influence participation and reinforce gender hierarchies. However, student-led agency operates as a transformative pathway, challenging inequitable structures through participatory reform and feedback mechanisms that may reshape institutional practices.

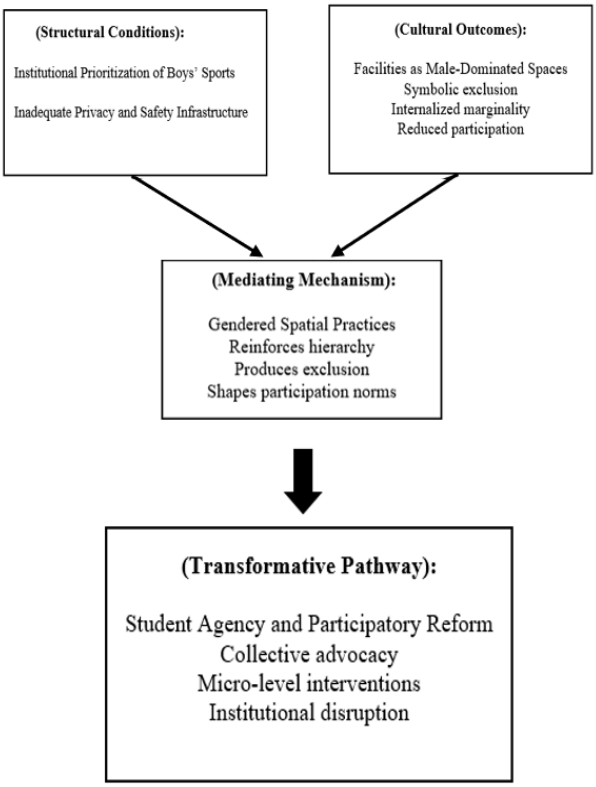

Figure 1. Structural and Cultural Pathways of Gendered Physical Education Facilities and Transformative Agency

Conclusion and Recommendations

By integrating feminist pedagogy, inclusive design, and participatory governance, schools can transform PE facilities into equitable learning environments. Junior high school girls continue to encounter structural and cultural barriers to accessing safe, inclusive physical spaces, thereby limiting their full participation in education. Drawing from a validated assessment model (Santos, 2024), the study provides evidence that inclusive design standards can be adopted in school settings to evaluate and improve facility equity. Future initiatives should institutionalise these standards, involve students in planning, and ensure that PE is an empowering experience for all genders.

This study contributes to global scholarship on gendered sport spaces and advances actionable strategies aligned with Sustainable Development Goals 4 and 5.

Gender equity in PE requires structural transformation of physical space, not solely curricular reform. Based on the findings, the following context-specific recommendations are proposed:

1. Institutionalized rotational facility scheduling policies
2. Minimum national standards for gender-responsive changing facilities
3. Participatory infrastructure planning involving students
4. Regular gender-equity facility audits using validated tools
5. Teacher training on spatial inclusion and gender-sensitive supervision

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The author used Grammarly to improve phrasing, grammar, and clarity when preparing this work. The author took full responsibility for the final manuscript's content and meticulously checked and edited the output to guarantee accuracy.

Note on Contributor

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INTERNATIONAL SPORTS STUDIES

ORIGINAL RESEARCH

Women Arnis Coaches in Philippine Schools: Knowledge, Skills, and Perceptions Under Republic Act No. 9850

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Abstract

Republic Act No. 9850 declares Arnis as the National Martial Art and Sport of the Philippines and mandates its integration into the school curriculum. While historically male-dominated, women now actively serve as coaches, educators, and promoters of Arnis. This study assessed the knowledge, skills, and perceptions of women Arnis coaches in Nueva Ecija, examining their role in implementing RA 9850 and sustaining Arnis as both a sport and a cultural practice. Using a descriptive mixed-methods design, 46 elementary and secondary school coaches completed a structured questionnaire covering four promotion dimensions (education, promotion, activities, funding) and five coaching skill domains (basic skills, combative skills, Anyo, strategies and tactics, coaching practices). Quantitative data were analysed descriptively. Qualitative data were examined using thematic analysis to capture issues and challenges faced by coaches, along with their recommendations. Results indicated strong curriculum integration and active educational roles, with the highest scores in education and coaching practices. Funding and any other skills (e.g., Anyo skills or combative skills) were identified as areas needing improvement. Qualitative findings revealed insufficient resources, limited professional development, and weak institutional support. Coaches recommended increased funding, training programs, and stronger policy implementation. The study highlights the essential contributions of women coaches in promoting Arnis while emphasizing the need for targeted support to enhance their professional capacity and foster sustainable, inclusive martial arts education.

Keywords:
Arnis coaching; women in sports; women coaches; Arnis training implementation; gender equity

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Introduction

Arnis, the national martial art and sport of the Philippines, represents both a cultural heritage and an educational practice. Although traditionally male-dominated, women are increasingly taking on coaching and educational roles. Coaching competence involves technical, interpersonal, and intrapersonal skills, which are essential for effective sport development (Côté & Gilbert, 2009). Gender equity research indicates that women in coaching often face barriers, including limited professional opportunities, inadequate institutional support, and restricted access to leadership roles (LaVoi, 2016; Norman, 2020). Despite policy support under RA 9850, limited research has examined the knowledge, skills, and perceptions of women Arnis coaches, particularly in school-based implementation. This study addresses this gap by examining how women coaches contribute to sport promotion, coaching development, and policy implementation in educational settings.

Arnis represents both a martial practice and a cultural artifact, embodying Filipino values such as discipline, resilience, and

national pride (Lewis, 2016). Its inclusion in education via RA 9850 positions it as a tool for physical, cognitive, and socio-emotional development (Lobo, 2025; Santos et al., 2022). Studies show that martial arts instruction fosters teamwork, self-regulation, and cultural appreciation, highlighting the dual educational and cultural role of Arnis (Cristobal & Serrano, 2024; Martin & Santos, 2019).

Coaching effectiveness is widely recognized as a multidimensional construct involving technical, interpersonal, and intrapersonal competencies (Côté & Gilbert, 2009). Studies on women in coaching emphasize structural and cultural barriers, including gender stereotypes, limited access to professional development, and challenges balancing coaching responsibilities (LaVoi, 2016; Norman, 2020). Within martial arts and sport pedagogy, coaching competence is associated with athlete development, motivation, and program sustainability. In the Philippine context, RA 9850 provides institutional recognition of Arnis, yet implementation varies due to resource and training constraints. This study integrates gender, coaching competence, and policy implementation to provide empirical evidence on the experiences of women Arnis coaches.

Methods and Materials

This study employed a descriptive research design, utilizing a survey questionnaire to gather quantitative data and interviews to support and further explain the responses. Forty-six women Arnis coaches from elementary and secondary schools in Nueva Ecija were selected using purposive sampling. A structured questionnaire based on RA 9850 and coaching competency frameworks measured promotion and coaching dimensions using a 4-point Likert scale. The scale was selected to minimize neutral responses and improve response clarity (Taherdoost, 2022). Qualitative responses were analyzed using thematic analysis following Braun and Clarke's (2006) approach, involving familiarization, coding, theme development, review, and interpretation.

The participants included 46 women Arnis coaches who taught in elementary and secondary schools across Nueva Ecija, Philippines. A purposive sampling method was employed to select licensed teacher-coaches who were actively participating in Arnis within the school's Physical Education program. The participants varied in age, years of teaching experience, and tenure in Arnis coaching, ensuring a range of novice and more experienced practitioners.

A structured questionnaire was developed in accordance with RA 9850 guidelines and previous studies on sports coaching competencies. It covered two sections: promotion of Arnis (education, promotion, activities, funding) and coaching skills (basic skills, combative skills, Anyo, strategies and tactics, and coaching practices). Responses were rated on a 4-point Likert scale (1 = Strongly Disagree to 4 = Strongly Agree). Content validation was conducted by three experts in Physical Education, Arnis instruction, and educational research, with revisions made for cultural and contextual relevance. A pilot test produced a Cronbach's alpha of 0.87, indicating high internal consistency. In addition to the closed-ended items, open-ended questions were included to capture richer qualitative insights into the challenges faced by Arnis coaches and their recommendations for improvement. These were designed to complement the quantitative findings and provide con=-textual depth to the study.

After obtaining approval from school authorities, the questionnaire was administered to participants in person during scheduled professional gatherings. Participation was voluntary, and confidentiality of responses was assured. The ethical principles of informed consent, anonymity, and respect for participants' rights were strictly adhered to.

Descriptive statistics (Haden, 2019), including mean and standard deviation, were used to describe the coaches' perceptions across all dimensions. Additionally, thematic analysis was utilized to analyze the qualitative data. Integrating quantitative and qualitative data enabled the study to confirm strengths, clarify moderate competencies, and identify contextual challenges not evident in the survey alone. This approach provided a more comprehensive understanding of the promotion of Arnis and the factors shaping coaching effectiveness under RA 9850.

Results

Extent of Promotion of Arnis under RA 9850

Table 1 presents the mean scores of women coaches' perceptions on the promotion of Arnis in schools. Overall, respondents reported positive perceptions across all four dimensions, reflecting a high level of promotion. Education received the highest mean score (M = 3.19, SD = 0.42), indicating strong integration of Arnis into school curricula and active involvement of women in instructional initiatives. Activities (M = 3.13, SD = 0.38) and Promotion (M = 3.09, SD = 0.40) were also rated High, highlighting women's leadership in advocacy campaigns, tournaments, and workshops that support the visibility and growth of Arnis. Funding, while slightly lower (M = 2.98, SD = 0.44), was still interpreted as High, pointing to ongoing financial and material challenges that may affect the scope of promotional efforts. These results suggest that while educational integration and program activities are well-supported, sustained attention to funding could further strengthen the promotion of Arnis in schools.

Table 1. Respondents' Perceived Extent of Promotion

Dimension	Mean	SD	VI
Education	3.19	0.42	High
Promotion	3.09	0.40	High
Activities	3.13	0.38	High
Funding	2.98	0.44	High

Note: 3.26-4.00 Very High; 2.51 – 3.25 High; 1.76 – 2.50 Low; 1.00 – 1.75 Very Low

Coaching Skills of Women Coaches

Table 2 presents the mean scores of coaching skills across five domains, indicating that respondents generally perceive themselves as competent in Arnis instruction. The highest ratings were observed in Basic Skills (M = 3.20, SD = 0.39) and Coaching Practices (M = 3.20, SD = 0.41), both interpreted as High, reflecting confidence in demonstrating fundamental techniques such as striking, blocking, and footwork, as well as in designing training programs, managing sessions communicating with stakeholders, and engaging in professional development. Moderate competence, also interpreted as High, was reported in Strategies and Tactics (M = 3.10, SD = 0.36) and Combative Skills (M = 3.04, SD = 0.40), suggesting that coaches feel capable of planning and teaching offensive and defensive approaches and applying techniques under dynamic conditions, while still having room to enhance strategic and real-time decision-making.

The lowest score was observed in Anyo (M = 2.99, SD = 0.43), interpreted as High, highlighting a relative need for further development in performing and teaching choreographed forms, which are essential for structured skill progression and competition. Pooled mean scores reinforce these findings, with Basic Skills and Coaching Practices reflecting strong

self-perceived competence, and Anyo showing moderate agreement among coaches regarding proficiency in forms. Overall, the results suggest that respondents are confident in their foundational and program management skills, yet targeted professional development in Anyo and combative application could further enhance the overall effectiveness of coaching practices.

Table 2. Respondents' Perceived Coaching Skills

Dimension	Mean	SD	Interpretation
Basic Skills	3.20	0.39	High
Combative Skills	3.04	0.40	High
Anyo	2.99	0.76	High
Strategies and Tactics	3.11	0.80	High
Coaching Practices	3.20	0.61	High

Note: 3.26-4.00 Very High; 2.51 – 3.25 High; 1.76 – 2.50 Low; 1.00 – 1.75 Very Low

Issues/Concerns and Recommendations of Coaches in the Arnis Training

The study's results present the issues and concerns encountered by coaches during the actual conduct of Arnis training, along with their corresponding recommendations to address these challenges.

Theme 1: Inadequate Equipment and Facilities

Coaches emphasized the lack of adequate equipment, protective gear, and facilities as one of the most pressing challenges in implementing Arnis. These deficiencies compromise the safety of students and limit their opportunities for meaningful practice.

Sample Responses:

"We didn't have enough resources for the equipment and protective gear, so it's hard to train them when it comes in combative."

"Lack of facilities and equipment."

"Budget to buy enough mats and weapons."

Recommendations for Theme 1: Provision of Adequate Resources and Infrastructure

To overcome equipment and facility shortages, coaches called for dedicated funding, provision of standard protective gear, and partnerships with local government and stakeholders. These measures aim to ensure safe, inclusive, and sustainable training environments.

Sample Responses

"Seek for sponsors and donation from stakeholders."

"Training gears and other materials needed should be provided by the school or LGU."

"Proper funding, inclusion, and focus should be given to Arnis in the school and community."

Theme 2: Limited Training and Professional Development

Many coaches expressed limited knowledge in teaching Arnis, especially those without prior playing experience. The absence of continuous professional training diminishes instructional confidence and student learning outcomes.

Sample Responses:

"Sometimes need to refresh the skills in coaching."

"I am not a player of Arnis, I have little knowledge."

"More training and seminars to the coaches."

Recommendations for Theme 2: Continuous Professional Development for Arnis Coaches

Coaches recommended sustained training opportunities through workshops, refresher courses, and seminars to build confidence and strengthen instructional skills in Arnis.

Sample Responses:

"Conduct regular seminars and workshops on Arnis."

"Train non-Arnis players in basic and advanced techniques."

"More training opportunities for coaches to master coaching."

Theme 3: Institutional and Government Support Gaps

Despite RA 9850 recognizing Arnis as the national martial art, coaches reported weak implementation of the policy at the local level. Insufficient funding, limited competitions, and a lack of advocacy hinder its integration into schools and communities.

Sample Responses:

"Lack of support in local government."

"Budget and support."

"Make the Arnis have local competition in every barangay."

"Arnis should be given focus and importance in the school, community, and society."

Recommendations for Theme 3: Strengthening Institutional and Government Support

To close the implementation gap, coaches recommended stronger institutional involvement through budget allocation, promotion campaigns, and local competitions to raise the visibility of Arnis and ensure policy compliance.

Sample Responses:

"Government should provide proper suits for the protection of students."

"Include Arnis in school and community activities."

"Make Arnis competitions available in local barangays."

Discussion

This study offers a comprehensive analysis of Arnis promotion under Republic Act No. 9850, focusing on the experiences of women coaches by integrating survey data and interview responses to identify both strengths and challenges.

Survey findings reveal generally positive perceptions of Arnis promotion, especially in education, activities, and advocacy, with education receiving the highest mean score. Interview data supports these results, indicating that women coaches are actively involved in curriculum integration, instructional delivery, and community-based initiatives. These findings underscore the dual role of women coaches as both implementers of RA 9850 and cultural stewards, sustaining the Philippine national martial art and sport through formal instruction and community engagement. High scores in activities and promotion are further supported by evidence of participation in tournaments, workshops, and advocacy campaigns, highlighting the significance of community-based initiatives in preserving traditional sports (Garcia, 2020).

However, funding emerged as the lowest-rated aspect in the survey, a finding corroborated and elaborated upon by interview data. Coaches consistently

reported inadequate equipment, insufficient protective gear, and limited training facilities as significant barriers to effective instruction. These financial constraints compromise safety, hinder skill development, and restrict program implementation. Inadequate or unsafe facilities may discourage participation and pose risks to learners (Burton et al., 2021), whereas adequate facilities are essential for maintaining motivation and ensuring program continuity (Aljehani et al., 2022).

These structural limitations indicate that the sustainability of Arnis programs is at risk if resource gaps remain unaddressed, underscoring the need for institutional support and investment in physical infrastructure (Plotnikoff et al., 2015).

Survey data on coaching competence indicate high proficiency in basic skills and coaching practices, moderate competence in strategies, tactics, and combative skills, and lower competence in Anyo. Interview responses confirm that coaches are confident in teaching fundamental techniques such as striking, blocking, and footwork, as well as in managing training sessions and engaging stakeholders. Nevertheless, interviews also highlight challenges in teaching advanced techniques and applying strategies in competitive contexts, suggesting that coaches' expertise is strongest in foundational areas and less developed in specialized or advanced applications.

The lower competence in Arnis is attributed to limited experience and training in teaching choreographed forms and sequences, which are identified as a priority for targeted professional development (Lyle & Cushion, 2017). Variability in coaches' backgrounds further underscores the need for ongoing capacity-building initiatives, as differences in prior experience affect instructional confidence and depth. Teacher competence has been shown to directly influence student engagement, underscoring the need for continuous development of specialized skills (Raven & Pels, 2021; Vasconcellos et al., 2020).

The integration of qualitative and quantitative findings highlights the interconnectedness of resource limitations, professional development, and institutional support. Inadequate equipment and facilities reinforce low funding ratings and restrict safe, effective training. Limited opportunities for advanced training account for moderate and lower ratings in specialized coaching domains, indicating that insufficient professional development contributes to skill gaps (Lyle & Cushion, 2017; Vasconcellos et al., 2020). Additionally, interview responses reveal broader systemic challenges, such as limited local government support, inadequate enforcement of RA 9850, and minimal competitive opportunities. These factors complicate the generally positive perceptions of promotion and demonstrate that program sustainability is shaped by structural and institutional influences (Garcia, 2020; Burton et al., 2021).

In summary, the findings reveal a consistent yet nuanced pattern. Women coaches exhibit strong competence and active engagement in promoting Arnis, although their effectiveness is limited by systemic challenges related to resources, training, and institutional support. The effective implementation of RA 9850 depends not only on the dedication of coaches but also on sustained institutional support, increased funding, and expanded professional development opportunities. Addressing these factors is crucial to ensure the long-term growth, cultural preservation, and integration of Arnis in educational and community contexts (Garcia, 2020; Plotnikoff et al., 2015).

Limitations and Future Directions

The study's scope, limited to 46 women coaches from Nueva Ecija, restricts the generalizability of the findings. Interpretations of women coaches' competence, training, and cultural roles should be contextualized within this specific geographic

and demographic setting. Nevertheless, the study demonstrates that women coaches possess strong competence in Arnis instruction, particularly in educational and coaching practices, and serve as essential cultural bearers.

Key challenges identified include inadequate resources, limited professional development, and weak policy implementation. Addressing these gaps through targeted funding, capacity-building initiatives, and enhanced institutional support is necessary to sustain Arnis as both a sport and a component of cultural heritage. The findings contribute to the understanding of gender equity in coaching, cultural preservation, and the implementation of RA 9850. Future research should include male coaches and other regions, and should explore the broader impact of Arnis on cultural identity.

In conclusion, although women coaches play a central role in promoting and teaching Arnis, achieving their full potential requires increased investment, targeted capacity-building, and supportive policies to sustain both the practice and the cultural legacy of the sport.

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Notes on Contributors

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INTERNATIONAL SPORTS STUDIES

ORIGINAL RESEARCH

'I had to Learn on My Own': Intersection of Gender and Disability in Teaching Adapted Physical Education in Philippine Special Education

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Abstract

The implementation of Adapted Physical Education (APE) in the Philippines faces significant challenges that are viewed through a gendered lens. The Special Education (SPED) teaching field is predominantly female, and girls with various disabilities face compounded and intersecting barriers to participation. This study explores the lived experiences of female SPED teachers in teaching APE to girls with diverse special educational needs. A phenomenological qualitative design was employed. Five female SPED teachers from the Division of Science City of Muñoz, Nueva Ecija, were selected via total population sampling and participated in in-depth interviews. Data were analysed using thematic analysis. Key findings revealed significant challenges, including a lack of specialised APE training, inadequate facilities, and difficulties in differentiating instruction for a diverse student population. Gender-specific barriers, such as the lack of private changing areas and tailored strategies for engaging girls with varying disabilities, were prominent. Facilitators included administrative support, collaboration with multidisciplinary teams, and teacher resilience, which involved developing adaptive, gender-responsive strategies. The study underscores the urgent need for enhanced professional development focused on gender-responsive pedagogies that address the spectrum of disabilities, improved resource allocation for gender-sensitive and disability-specific facilities, and stronger institutional support. These findings offer critical implications for creating truly equitable and inclusive APE programs that meet the unique needs of all learners, especially girls with various disabilities.

Keywords:
adapted physical education, women educators, challenges, facilitators, special education, gender, disability, Philippines

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Introduction

Physical activity is vital for fostering inclusion, well-being, and physical function in all children (Carbone et al., 2021). However, children with disabilities experience substantial restrictions to participation, fitness level, and increased risk of obesity when compared to their peers (Murphy et al., 2008). Girls with disabilities experience additional barriers to participation, as socio-cultural factors and a lack of gender-responsive programming create unique barriers for girls. Adapted Physical Education (APE) helps address these differences by providing students with personalised, well-structured instruction (Winnick & Porretta, 2017). In the Philippines, APE is often delivered by Special Education (SPED) teachers, a primarily female profession, both in the Philippines and globally. Therefore, understanding the experiences of female SPED teachers can help elucidate the best ways to offer APE instruction to girls with disabilities.

While it is a significant activity, delivering APE experiences effectively is

difficult for several reasons. Teachers often do not have adequate training in APE (McNamara et al., 2021) and are unprepared to meet the specific physiological and motivational needs of girls with different disabilities. Limited resources, such as adapted sports equipment and accessibility (Morley et al., 2005; McNamara & Rizzo, 2023), along with high teacher-to-student ratios, restrict personalised teaching (Bondebjerg et al., 2023). Furthermore, societal misconceptions can further limit participation opportunities (Shields, Synnot, & Barr, 2012), an issue often magnified for girls. While facilitators such as continuous professional development (Block et al., 2021), multidisciplinary collaboration (Sherrill, 1986), and supportive government policies exist, a critical gap remains in understanding how these factors interplay within the unique context of female SPED teachers instructing girls with disabilities in the Philippines.

Existing Philippine literature on APE remains limited, focusing primarily on general attainment, module development, and implementation challenges (Cubillo, 2024; Estrella, 2020; Martinez, 2021). A specific investigation into the gendered dynamics of APE instruction is notably absent. A thematic assessment of the available literature identifies three interrelated areas of research: structural and pedagogical problems in APE; the gendered landscape of APE and SPED; and the facilitators of its implementation.

Systemic and Pedagogical Challenges in APE

Several systemic issues continue to impede optimal APE administration. Teachers typically receive insufficient pre-service and in-service APE training, leaving them unable to meet the physiological and motivational needs of children with various impairments (McNamara et al., 2021). This training gap is exacerbated by inadequate resources, such as adapted sports equipment and accessible facilities (Morley et al., 2005; McNamara & Rizzo, 2023). Furthermore, high teacher-to-student ratios limit the ability to provide tailored teaching, which is critical for children with SPED needs (Bondebjerg et al., 2023).

The Gendered Landscape of APE and Special Education

The SPED educators are primarily female, a tendency seen both internationally and in the Philippines. This feminisation of the profession intersects with the experiences of female learners with disabilities, who face additional barriers to physical activity participation due to sociocultural norms, body image concerns, and a lack of gender-responsive programming (Shields, Synnot, & Barr, 2012). While previous APE research recognises basic participation barriers, the specific ways in which gender influences the instructional environment for both educators and learners remain unexplored.

Facilitators and the Philippine Context

Despite the aforementioned challenges, facilitating factors such as ongoing professional growth (Block et al., 2021), multidisciplinary collaboration (Sherrill, 1986), and supporting government policies exist. However, there is still a major gap in knowing how these factors interact in the specific context of female SPED instructors teaching girls with disabilities in the Philippines. The current Philippine literature on APE is minimal, focused mostly on general implementation issues, module creation, and program assessment (Cubillo, 2024; Estrella, 2020; Martinez, 2021). A study on the gendered dynamics of APE instruction is noticeably lacking.

Theoretical Framework

This research is guided by two complementary theoretical perspectives: feminist pedagogy and social inclusion theory. Feminist pedagogy offers a critical framework for investigating how gender dynamics influence teaching and

learning (hooks, 1994). This lens focuses on how educational approaches may accidentally promote or fight gender inequities. In this study, feminist pedagogy informs a navigational investigation of how female SPED instructors navigate institutional constraints and devise strategies to meet the special needs of their female students, questioning gender-blind approaches to APE education. Social inclusion theory adds to this by providing a framework for understanding the many overlapping barriers to participation, such as those linked to disability, gender, and socioeconomic position (UNESCO, 2024a).

This perspective contributes to understanding how facilitators, such as administrative support and multidisciplinary collaboration, can build more inclusive environments that meet both disability- and gender-specific demands. Together, these frameworks form a solid conceptual platform for investigating female SPED teachers' lived experiences and the gendered reality of APE implementation.

Research Questions and Significance

To address the observed gap, this phenomenological study is guided by the following research questions:

a) How do female SPED teachers characterise their experiences teaching APE to girls with special educational needs?

b) What gender-specific concerns do female SPED teachers encounter while implementing APE for girls in the Philippines?

c) What gender-responsive practices do female SPED teachers employ to ensure successful APE instruction for girls?

This study examines the lived experiences of female SPED teachers, placing it at the nexus of APE implementation, gender studies, and inclusive education. It directly tackles the gap by shedding light on how gender, of both the educator and the learner, influences the implementation of APE in a particular Global South environment. This study seeks to provide critical insights for developing targeted support mechanisms and improving the quality of inclusive physical education for a disadvantaged, sometimes disregarded student population.

Methods and Materials

Research Design

This qualitative study used a phenomenological approach to explore the lived experiences of female APE teachers. Phenomenology was chosen because it allows for an in-depth study of the essence of participants' experiences through their own lens (Creswell & Poth, 2016).

Study Setting and Participants

The study was conducted in the Division of Science City, Muñoz, to capture a comprehensive view of the specific phenomenon. Total population sampling was utilised, involving all five (5) female SPED teachers from public elementary schools within the division. The inclusion of only female participants was an intentional methodological decision to ensure a grounded, homogeneous perspective on women's experiences in implementing APE, thereby directly addressing the research's gender-centric questions.

Data Collection

Data were collected through in-depth, semi-structured interviews. The interview protocol was specifically designed to elicit rich descriptions aligned with the research questions, including prompts about: a) their personal experiences and feelings in teaching APE to girls; b) perceived differences in engaging male and female students; c) specific challenges related to the gender of their students (e.g., privacy, socialization, equipment needs); and d) strategies they developed or adapted to teach girls with various disabilities effectively. All interviews were audio-recorded, transcribed verbatim, and translated from Filipino to English where necessary to ensure accuracy.

Data Analysis

The data were analysed using thematic analysis, following Braun and Clarke's (2006) six-phase methodological framework. The study was supported by NVivo 14 qualitative data analysis software, which enabled systematic data arrangement, coding, and retrieval during the thematic analysis process. The phases included: a) familiarizing with the data through repeated reading of transcripts; b) generating initial codes that identified significant statements relevant to the research questions; c) searching for themes by collating codes into potential themes (e.g., "Gender-Specific Infrastructural Barriers," "Relational Teaching Strategies for Girls"); d) reviewing themes to ensure they accurately reflected the coded data and the entire dataset; e) defining and naming themes to capture the essence of each; and f) producing the report, weaving together the thematic analysis with extracts from the interviews.

Trustworthiness and Rigour

Several measures were used to guarantee that the findings were trustworthy and rigorous. Peer debriefing involved regular discussions with two independent researchers who assessed the coding system and topic development, offering essential comments to reduce researcher bias. To evaluate the correctness and resonance of the interpretations, participants were given interview summaries and preliminary findings to review. Negative case analysis was used to identify examples that challenged emergent trends, enabling further refinement and a nuanced understanding of the data. While a formal inter-rater reliability check was not routinely assessed, the initial coding of a subset of transcripts was evaluated by a second coder to ensure consistency in the application of codes.

Ethical Considerations

Ethical approval for this study was granted by the Division of Science City of Muñoz, Department of Education [IR2.1]. Informed consent was obtained from all participants. To ensure confidentiality, all identifying information was removed, and pseudonyms were used throughout the analysis and reporting. Data protection measures, including the secure encryption and storage of audio files and anonymised transcripts, were strictly adhered to.

Results

This phenomenological research focused on the experiences of SPED teachers delivering APE at Science City, Muñoz, Nueva Ecija. Through thematic analysis (Braun & Clarke, 2006), two overarching themes were generated, including considerable problems in teaching APE and essential facilitators that supported effective instruction. Table 1 presents the thematic map summarising the themes generated from the study.

Table 1. Thematic Map

Key Themes	Subthemes	Description	Representative Quote
Challenges in Teaching APE	Lack of Specialized Training	Teachers lacked rigorous APE training and relied on trial and error.	"My training background is in special education; however, we never learned about specific ways to incorporate physical education..." (P3)

Table 1. **(Continued)**

Key Themes	Subthemes	Description	Representative Quote
	Inadequate Facilities and Resources	Limited adapted equipment, inaccessible spaces, and the absence of gender-sensitive services/facilities.	"Our school doesn't have specialized sports equipment for students with mobility impairments." (P2)
	Diverse Student Needs and Gender Dynamics	Difficulty managing diverse physical, intellectual, and behavioral demands is exacerbated by gender-specific engagement barriers.	"Some of my students have different physical conditions... It's hard to balance their needs in one class." (P4)
Facilitators in Teaching APE	Administrative and Institutional Support	School leadership supports flexible scheduling, funding allocation, and involvement in training.	"Our principal supports APE by allocating a small budget for equipment." (P3)
	Collaboration with Peers and Multidisciplinary Teams	Collaboration with therapists and colleague teachers to create tailored strategies.	"I coordinate with a physical therapist who helps me design exercises for students with mobility challenges." (P2)
	Teacher Resilience and Adaptation Strategies	Creativity in restructuring tasks and developing low-cost adaptation solutions.	"I use balloons instead of balls for students who struggle with coordination." (P1)

Challenges in Teaching Adapted Physical Education

Lack of specialised training

The study revealed several initial themes regarding barriers to providing instruction, the lack of resources, the need for professional development, methods for engaging students, and support from schools, universities, and departments, using Braun and Clarke's (2006) thematic analysis.

A prominent obstacle that emerged was a lack of formal training in APE. Although participants had educational backgrounds and experience in SPED, they reported feeling unprepared to teach adaptive physical activities because they had received no formal program training in this domain. This finding is consistent with previous research, which states, "the need for professional development in APE is apparent if educators are to be adequately prepared to consider the specific needs of students with disabilities, as they relate to individualised instruction" (Block & Obrusnikova, 2007, p. 182). Participants perceived this professional development gap as most obvious when addressing the special demands of female students regarding body image, socialisation, and concerns about inclusion measures.

> *My training background is in special education; however, we never learned*

about specific ways to incorporate physical education into lessons for students with disabilities. This is knowledge I had to learn on my own through trial and error.

Most of the workshops we attend focus on academics. There's barely any training on adapted physical education, and we need that. (P3)

Inadequate facilities and resources

SPED teachers highlighted the limited availability of specialised equipment and appropriate facilities as significant barriers to effective APE implementation. Schools lacked adaptive sports equipment, accessible PE spaces, and assistive devices, making it difficult to accommodate the diverse physical needs of learners with special educational needs (LSENs). This finding aligns with the existing literature, which emphasises the role of infrastructure and resource allocation in inclusive physical education (Sherrill, 2004). Participants stipulated that the lack of private changing places and gender-sensitive facilities disproportionately hampered girls' involvement, an issue these female teachers faced in the absence of proper institutional support.

Our school doesn't have specialised sports equipment for students with mobility impairments. We try to modify activities, but it's really limiting. (P2)

The PE area is not wheelchair-friendly, so I have to adjust activities or sometimes hold classes indoors, which is not ideal. (P5)

One participant elaborated on the distinctive gender challenges:

It is difficult for the girls, particularly the older ones, because there is no private space for them to change. They feel timid, and their parents occasionally grumble. I have to ask them to come to school dressed in their PE clothing, which is not always pleasant for them. (P4)

Diverse Student Needs and Behavioural Challenges

Managing students with varying physical abilities and behavioural challenges was another difficulty faced by SPED teachers. Some students required individualised support, but the absence of teaching assistants and large class sizes made differentiated instruction challenging. Teachers also struggled with engaging students with mobility impairments and intellectual disabilities, requiring adaptive teaching approaches that they were not always equipped to provide. The approaches to engaging girls, who participants indicated were frequently socialised into various forms of play and competitiveness, required special consideration in this particular challenge.

Some of my students have different physical conditions—some can run, some need assistance, and others can't participate at all. It's hard to balance their needs in one class. (P4)

Many of my students struggle with following instructions, especially those with autism and ADHD. PE requires a lot of movement, and it can be challenging to keep them engaged and safe at the same time. (P1)

When addressing the disparities in educating males and girls, one teacher stated:

The guys are normally more enthusiastic about the physical activities, but the girls occasionally hold back. They are bashful, especially if they believe the activity is 'for boys' or if they are concerned about how they seem while moving. I need to think of methods to help them feel comfortable and confident. (P2)

Facilitators in Teaching Adapted Physical Education

Administrative and Institutional Support

Despite the challenges, institutional support emerged as a key facilitator in APE implementation. Teachers who received support from school administrators, such as flexible scheduling, budget allocation for APE programs, and inclusion in professional development, found it easier to adapt their instruction. This aligns with Lieberman et al. (2020), who emphasise that school leadership plays a vital role in promoting inclusive PE programs. Supportive leadership was highlighted as critical to enabling primarily female teachers to effectively advocate for the resources required to engage all students, particularly girls.

> *Our principal supports APE by allocating a small budget for equipment. It's not much, but it helps us create more inclusive activities.* (P3)

> *I was given flexibility in my schedule to modify PE activities for my students, which made a big difference.* (P5)

Collaboration with Peers and Multidisciplinary Teams

Teachers also relied on peer collaboration and partnerships with therapists to enhance APE instruction. By working with physical therapists, occupational therapists, and fellow educators, they developed individualised exercise plans and adopted best practices. This supports research by Sherrill (1986, 2004), which highlights the effectiveness of multidisciplinary teamwork in APE settings. Participants identified this collaborative, relational approach to problem resolution as a recognised strength in their teaching methods, and it played an important role in establishing inclusive tactics that resonated with female students.

> *I coordinate with a physical therapist who helps me design exercises for students with mobility challenges. It makes a huge impact.* (P2)

> *Talking with other SPED teachers about their APE strategies really helps. We share ideas on what works and what doesn't.* (P4)

Teacher Resilience and Adaptation Strategies

Many participants demonstrated creativity and resilience in overcoming instructional barriers. They modified traditional PE activities, created low-cost adaptive equipment, and tailored exercises to meet student needs. Their ability to innovate and adapt played a crucial role in making APE more inclusive and engaging. The compassionate and adaptive tactics mentioned were hallmarks of excellent teaching and crucial for fostering a secure, welcoming environment in which girls with disabilities can engage in lifelong physical activity.

> *Since we don't have proper adaptive sports equipment, I use modified versions. For example, I use balloons instead of balls for students who struggle with coordination.* (P1)

> *I make sure to celebrate small victories. Even if a student can't fully participate, I encourage them to do what they can. Motivation is key.* (P3)

A teacher explained a gender-responsive adaptation strategy:

> *For the females, I try to incorporate activities that are less competitive and more cooperative. I occasionally let them lead the warm-up so they feel more in charge. I also make sure to compliment their work in front of the class to build up their confidence. (P5)*

Implications for APE in the Philippines

The findings highlight critical areas for improvement in APE implementation, particularly in the Division of Science City of Muñoz, Nueva Ecija. Addressing the lack of specialised training, limited facilities, and resource constraints is essential to improving the quality of physical education for LSENs. Moreover, strengthening professional development programs, enhancing institutional support, and fostering collaboration among educators and therapists can significantly contribute to a more inclusive and effective APE framework.

The findings point to two targeted recommendations. First, professional development for the female SPED workforce should be enhanced to include training on gender-responsive pedagogies that effectively engage girls with disabilities. Second, policy and resource allocation must consciously address barriers that disproportionately affect female participation, such as ensuring privacy and providing appropriate equipment. These insights offer valuable implications for policymakers, school administrators, and educators, underscoring the need for systematic reforms to ensure that learners with disabilities have equitable access to quality physical education.

Discussion

The findings of this study shed light on the complex and sometimes unseen efforts of female SPED teachers as they navigate hurdles and leverage the facilitators of APE instruction for girls with disabilities in the Philippines. The findings show that the issues confronting educators are not only educational, but also social, infrastructural, and gendered. This discussion analyses these findings, situates them in the wider literature, and proposes a conceptual framework for gender-responsive APE through the twin lenses of feminist pedagogy and social inclusion theory.

Interpreting Challenges Through a Gendered Lens

In line with previous research (Block & Obrusnikova, 2007; Sherrill, 2004), participants indicated a notable absence of specialist APE training. However, the current study goes beyond this finding by exposing how this training gap is exacerbated for female teachers who must additionally handle the gender-specific demands of their female students. Due to a lack of gender-responsive pedagogical training, teachers were forced to rely on trial and error to find ways to engage girls who were described as "shy" or afraid to engage. This is consistent with feminist pedagogy, which emphasises the necessity for educational procedures that actively oppose gendered socialisation (hooks, 1994). Without any preparation, these instructors were responsible for devising these tactics on their own, demonstrating a systemic oversight.

The highlighted infrastructure constraints, notably the lack of private changing spaces, indicate an important junction between disability and gender. According to UNESCO (2024b), the lack of gender-sensitive infrastructure in schools throughout the world has a disproportionate impact on girls' physical activity. Girls with impairments have an even greater challenge since they may require more support and time. The participants' experiences managing these issues without institutional help highlight how gender-blind policies may perpetuate marginalisation. The findings show that teachers were not just instructors, but also advocates, working with parents and administrators to find workarounds, a type of unseen labour that is frequently overlooked.

Another prominent challenge was managing multiple student needs, with teachers reporting that it was challenging to differentiate education for pupils with varying physical, intellectual, and behavioural characteristics. The inclusion

of gender dynamics, in which girls' involvement necessitated different motivating and social techniques than those of boys, provided another degree of complexity. This study supports the social inclusion theory's claim that many overlapping barriers must be addressed concurrently to achieve real inclusion (UNESCO, 2024c). The instructors' experiences show that a one-size-fits-all approach to APE is inadequate and that initiatives must include both disability and gender.

Leveraging Facilitators: Resilience, Collaboration, and Support

The facilitators identified, including administrative support, engagement with interdisciplinary teams, and teacher resilience, are crucial intervention points. According to Lieberman et al. (2020), supportive school leadership was identified as an important facilitator. When administrators contributed resources, even in small amounts, or allowed for schedule flexibility, instructors felt encouraged to experiment. This assistance is especially important for a female-dominated workforce, which frequently confronts extra structural impediments to lobbying and resource allocation.

Collaboration with therapists and peers was another important facilitator, demonstrating the interdisciplinary approach required for effective APE (Hutzler & Barak, 2017). The social and collaborative tactics reported by participants are consistent with feminist educational ideas that promote connection, shared knowledge, and community-based problem solving (hooks, 1994). These approaches were not only efficient but also essential to create a supportive environment for both teachers and students.

Teacher resilience and adaptability emerged as a key topic, with participants demonstrating exceptional inventiveness in adapting lessons and using low-cost resources. However, this resilience must be seen not as an individual attribute, but as a response to institutional inadequacies. As Underwood et al. (2024) argue, reliance on individual teacher resilience in the absence of systemic support can lead to burnout and is ultimately unsustainable. The findings imply that, while resilience is a strength, it requires institutional support and professional growth to be effective in the long run.

Toward a Gender-Responsive APE Framework

Based on the results, this study proposes a conceptual model for a gender-responsive APE framework in the Philippine setting (see Figure 1). This model depicts the dynamics among identified difficulties and facilitators, highlighting the importance of the teacher-learner dynamic, its gendered influence, and the need for a supportive environment.

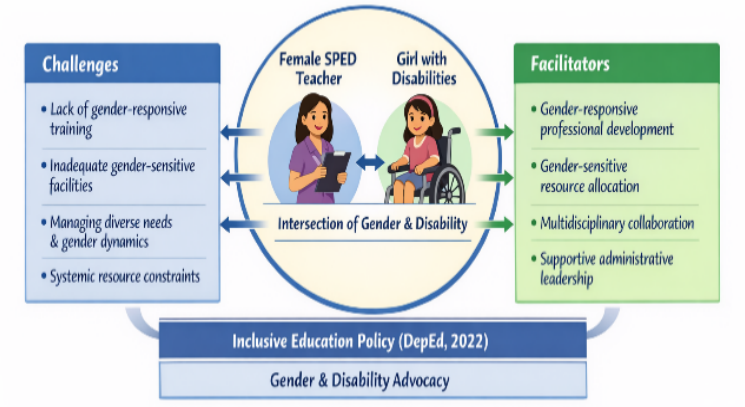

Figure 1. A Gender-Responsive Framework for Adapted Physical Education in the Philippine Context

This proposed model implies that effective APE instruction for girls with disabilities necessitates purposeful consideration of both gender and disability at all levels, from policy to practice. It challenges the gender-blind approach in most of the APE literature and provides a road map for systemic change.

Implications for Policy and Practice

The findings suggest numerous focused recommendations. First, professional development for the female SPED professionals should include training in gender-responsive pedagogies that effectively engage girls with disabilities. This training should cover not only instructional tactics, but also social and cultural factors that affect females' engagement. Second, policy and resource allocation must intentionally address barriers to female participation, such as providing private changing rooms and adequate, accessible equipment. Third, institutional support systems, such as flexible scheduling, access to interdisciplinary teams, and opportunities for peer collaboration, must be enhanced to maintain teacher resilience and prevent burnout. Finally, the findings indicate the need for further research focusing on the voices of girls with disabilities to better understand their perspectives on APE involvement.

Conclusion

This study investigated the experiences of female SPED teachers conducting APE at the Division of Science City of Muñoz in Nueva Ecija. Using in-depth interviews and thematic analysis (Braun & Clarke, 2006), it identified three major challenges: a lack of specialised APE training, insufficient facilities and resources, and the complexity of handling varied student demands, which is exacerbated by gender dynamics. Despite these significant hurdles, major facilitators emerged, including administrative and institutional support, engagement with diverse teams, and teachers' incredible perseverance. Teachers displayed remarkable ingenuity and flexibility by altering activities, devising low-cost solutions to engage all learners, and implementing gender-responsive strategies to support their female students.

Participants noted a clear need for professional development focused on gender-responsive APE, more funding for gender-sensitive, disability-accessible facilities, and policy revisions to better support teachers and students. To help LSENs access equitable physical education, education institutions must embrace a multi-stakeholder approach that includes not only instructors but also school administrators, legislators, and allied health experts.

The findings of this study, interpreted through the lenses of feminist pedagogy and social inclusion theory, demonstrate that the challenges facing female SPED teachers are not merely logistical but are expressions of deeper structural inequities. Feminist pedagogy reveals how gender-blind institutional practices — from the absence of private changing facilities to the lack of gender-responsive training — place the burden of inclusion disproportionately on individual female teachers, whose adaptive resilience, however remarkable, cannot substitute for systemic change. Social inclusion theory further affirms that the overlapping barriers of gender and disability can only be dismantled through coordinated action across policy, infrastructure, and professional development simultaneously. The gender-responsive APE framework proposed in this study (Figure 1) offers one such integrated model, providing a practical roadmap for institutions committed to moving beyond good intentions toward structural equity in APE.

This study demonstrates that, in relation to this overarching mission, intentionality toward the gendered realities

of APE implementation, including the experiences of female educators and the barriers faced by female learners, is not an afterthought, but rather a priority for achieving true equality in adaptive physical activity.

Future studies should examine students' and parents' viewpoints to provide a more comprehensive view of APE experiences. Furthermore, longitudinal studies tracking the implementation of gender-responsive APE programs in inclusive education settings would provide important evidence on their long-term impact. By focusing on the voices of people at the intersection of gender and disability, the field of APE may move closer to its objective of developing fully inclusive and equitable learning environments for everyone.

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this manuscript, the authors used Grammarly to improve language clarity, grammar, and phrasing. The authors carefully reviewed and revised the output to ensure accuracy and take full responsibility for the final manuscript's content.

Disclosure statement

The authors declare no conflicts of interest. Any personal circumstances or interests that could influence the interpretation of the research have been disclosed.

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ORIGINAL RESEARCH

Navigating Physical Education: LBQ Women Students' Experiences in Philippine Colleges

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Abstract

Physical Education (PE) in higher education often reinforces fixed gender roles and heteronormative practices that marginalise students with diverse sexual orientations. This descriptive phenomenological study explored the lived experiences of cisgender women identifying as lesbian, bisexual, or queer (LBQ) in a Philippine state university, focusing on their experiences, challenges, and proposed inclusive pathways in college PE. Data were collected through semi-structured interviews and were analysed thematically. The students' experiences were marked by ambivalence: enjoyment and social engagement coexisted with emotional discomfort, identity concealment, and pressure to conform to binary gender expectations. Challenges were institutional, pedagogical, and social, including rigid gender divisions, limited curricular representation, and instructor silence. Participants recommended gender-inclusive curricula, safer, more flexible physical spaces, supportive school cultures, and participatory teaching practices. These findings underscore the need to redesign PE as an inclusive and affirming environment responsive to diverse sexual identities. By situating these experiences within the Philippine higher education context, this study addresses a significant geographical and cultural gap in predominantly Western-centred LGBTQ+ sport and PE research.

Keywords:
LBQ women students, physical education, inclusive pedagogy, gender equity

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Introduction

Physical Education (PE) is widely recognised as essential to students' holistic development, yet for LBQ women students, it often reflects exclusionary practices. Activities divided by gender, strict uniform rules, and locker room setups are often based on traditional ideas of gender and sexuality that mainly favour straight students (Herrick & Duncan, 2018; Frederick et al., 2020) These arrangements make PE a source of anxiety rather than well-being, particularly in higher education, where young adults are negotiating both identity and participation in institutionalised physical activity (Peterson et al., 2025).

LGBTQ+ is an umbrella term encompassing lesbian, gay, bisexual, transgender, queer, and other identities. LBQ women students—specifically cisgender women identifying as lesbian, bisexual, or queer—encounter intersectional barriers in education and sport. Women identifying as sexual minorities (e.g., lesbian, bisexual, queer) typically report lower levels of physical activity participation compared to heterosexual women (Herrick & Duncan,

2018). For transgender women, sexism and transphobia increase barriers to accessing safe spaces, uniforms, and recognising their gender identity in PE and sport settings (Jones et al., 2016).

International studies indicate LGBTQ+ students experience ambivalence in PE: they often enjoy participating, but experience discomfort and identity concealment (Müller & Böhlke, 2021; Landi et al., 2023). For instance, Frederick et al. (2020) found LGBTQ+ college students reported significantly less participation in aerobic and resistance training than their peers due in part to fear of being judged and discomfort in gendered spaces. Greenspan et al. (2019) found that youth LGBTQ+ individuals frequently avoid PE activities and locker rooms due to safety concerns.

In the Philippines, evidence also suggests the presence of exclusionary experiences. Gamutin et al. (2022) documented student-athletes' application of ossifying experience of LGBTQIA+ members in gendered sports with mixed attitudes that spanned acceptance to anxieties about fairness and identity. Similarly, a study on LGBTQA intercollegiate athletes in 2023 highlighted incidents of harassment and discrimination at institutions of higher education, with many athletes adopting silence as a coping mechanism (Pocaan, 2022). This evidence from the Philippines indicates that the challenges faced by LBQ women students in PE are not unique but are situated within normative and institutional practices.

LBQ women students face institutional, pedagogical, and social barriers in physical education. Barriers at the institutional level include fixed gender divisions in activities, a lack of appropriate spaces, and generic policies that do not reflect a diverse range of identities (Holder et al., 2022; Peterson et al., 2025). Barriers at the pedagogical level take the form of teachers' lack of awareness of, or decisions not to address, LGBTQ+ issues, which ultimately reinforce marginalisation (Drury et al., 2022). Social barriers include stigma, misgendering, and peer harassment that contribute to negative encounters (Greenspan et al., 2019).

Philippine research also highlights these challenges. Addatu-Cambri (2024) noted that LGBTQ+ students at Cagayan State University described intrapersonal, interpersonal, and environmental barriers that prevented them from being active participants in physical activity. The same has been reported among gay and lesbian Filipino athletes in their study of coping mechanisms, for example, hiding their identity, selective participation, and avoiding locations they perceived to be unsafe (Moncal et al., 2024).

Addatu-Cambri (2024) also provided recommendations, including structural changes such as gender-neutral restrooms or changing facilities, a flexible dress code, and ensuring that LGBTQ+ topics are part of the school curriculum (Neary & McBride, 2021; Sáenz-Macana et al., 2024). In addition, Gamutin et al. (2022) and Pocaan (2022) argue that inclusive sports plans, teacher training, and better enforcement of non-discrimination policies should be implemented.

The literature reviewed indicates that the absence of LGBTQ+ representation in curricula, combined with instructors' silence, was perceived as exclusionary. International research emphasises that curricular omission is not neutral but rather reinforces invisibility and marginalisation (Drury et al., 2022; Neary & McBride, 2021).

In the Philippine context, however, institutional silence may also be rooted in broader sociocultural dynamics. Filipino society is often characterised by collectivist values that prioritise social harmony, relational interdependence, and the avoidance of open conflict. Concepts such as *pakikisama*—the maintenance of smooth interpersonal relationships—may discourage both students and teachers from addressing sensitive issues that could disrupt group cohesion. As Manalastas and

Torre (2016) explains, LGBTQ+ experiences in the Philippines are shaped by a complex interplay of tolerance and silence, where visibility may be socially accepted, but deeper discussions remain constrained.

This cultural emphasis on harmony may help explain why participants reported identity concealment and reluctance to speak out. Research on Filipino LGBTQ+ narratives highlights that coming out is often carefully negotiated to avoid family or community conflict (Domingo & Escobido, 2024). Similarly, Libiran et al. (2024) note that strong religious ties in Filipino communities can further complicate self-expression, reinforcing caution in environments perceived as morally evaluative, such as schools. Even in urban settings like Manila, LGBTQ+ mobility and expression are shaped by norms of respectability and implicit boundaries (Collins, 2009).

Within educational spaces, these dynamics may translate into what participants described as "instructor silence" — not necessarily overt hostility, but a reluctance to intervene when discriminatory remarks are made or to affirm gender diversity openly. This aligns with findings by Tang and Poudel (2018), who reported that Filipino LGBTQ+ students often experience subtle exclusion rather than explicit institutional opposition. Marciano et al. (2024) similarly found that lesbian students in underdeveloped contexts navigate participation through strategic self-regulation to maintain social acceptance.

Thus, identity concealment among participants may not solely reflect fear of discrimination, but also a culturally embedded strategy for preserving belonging within collectivist and religiously influenced environments. Understanding these sociocultural factors deepens the analysis of why institutional silence persists and why self-expression in PE remains constrained.

While these studies highlight structural and interpersonal barriers in PE, they predominantly reflect Western contexts. In contrast, research situated within the Philippine cultural and societal landscape points to additional layers shaping LGBTQ+ experiences, particularly in educational settings. The Philippines is a predominantly collectivist society where social norms emphasise *pakikisama* — the maintenance of smooth interpersonal relationships and the avoidance of conflict. This cultural orientation can discourage overt self-expression that deviates from group expectations, prompting individuals to suppress personal identities to preserve social harmony (Manalastas & Torre, 2016). In the Filipino LGBTQ+ context, this can manifest as identity concealment and self-monitoring, even in spaces perceived as relatively tolerant.

Empirical evidence suggests that LGBTQ+ individuals in the Philippines navigate complex sociocultural pressures, including familial obligations, religious moral frameworks, and community expectations (Manalastas & Torre, 2016). The Philippines, despite being ranked as socially accepting in regional surveys, lacks national anti-discrimination legislation (e.g., the SOGIE Equality Bill), which hampers legal protections for sexual and gender minorities and contributes to institutional ambivalence in addressing bias (Time, 2023). Moreover, Filipino LGBTQ+ coming-out narratives are often negotiated carefully to avoid disrupting interpersonal harmony or provoking moral judgment from significant others (Domingo & Escobido, 2024).

Studies documenting Filipino LGBTQ+ identities also highlight the influence of religious affiliations — with Catholic dominance shaping social attitudes and perpetuating stigma, thus reinforcing silence around sexual minority issues (Manalastas & Torre, 2016). Research on Filipino bisexual and lesbian experiences further underscores how discrimination and social pressures compel

individuals to hide their identities or limit self-expression in educational and community contexts (Bolilan et al., 2021).

Research across Southeast Asia suggests that while visible LGBTQ+ communities exist in countries such as Thailand and the Philippines, formal institutional protections remain inconsistent, and educational inclusion often lags behind social visibility (UNDP & USAID, 2014). In many Asian societies, collectivist cultural values emphasise conformity, familial obligation, and social harmony, which can influence how gender and sexuality are negotiated in public institutions, including schools (Hofstede, 2001).

Studies examining LGBTQ+ students in Asian educational contexts reveal patterns of subtle marginalisation rather than overt exclusion. For instance, Tang and Poudel (2018) found that Filipino LGBTQ+ students experienced indirect discrimination, characterised by avoidance, silence, and lack of policy support. Similarly, research in other Southeast Asian contexts suggests that institutional inaction and reliance on traditional gender binaries are common features of school environments (UNDP, 2019).

These regional dynamics are particularly relevant to Physical Education, a discipline deeply embedded in embodied performance, gendered categorisation, and visibility. Within Southeast Asia, PE often remains structured around binary divisions that reflect broader cultural norms about masculinity and femininity. Consequently, LGBTQ+ students may experience tension between social acceptance at the community level and structural exclusion within formal educational systems.

This study aims to explore the lived experiences of cisgender women identifying as lesbian, bisexual, or queer (LBQ women students) in Physical Education classes in the Philippines. Specifically, it seeks to (1) describe their experiences in PE, (2) identify the challenges they encounter, and (3) present their suggested solutions for creating more inclusive PE environments. The findings are expected to inform educators, administrators, and policymakers in developing inclusive curricula, safe physical spaces, and supportive institutional cultures, in line with the United Nations Sustainable Development Goals (SDG 3: Good Health and Well-Being, SDG 4: Quality Education, and SDG 5: Gender Equality).

Methods and Materials

This study employed a descriptive phenomenological design to explore the lived experiences of LBQ women students in college Physical Education (PE). Descriptive phenomenology was selected because the study sought to capture the essence of participants' experiences as they were perceived and described, without imposing external theoretical frameworks. Unlike grounded theory, which aims to generate explanatory models, or narrative inquiry, which centres on life stories over time, descriptive phenomenology focuses on identifying shared structures of experience across participants (Creswell & Poth, 2018; Colaizzi, 1978).

This approach was particularly well-suited to the study's objective: to understand how LBQ women students experience PE in specific institutional and cultural contexts. Phenomenology allows researchers to examine how meaning is constructed in embodied and relational spaces — highly relevant in PE, where participation is both physical and socially visible.

To enhance transparency and potential replication, the study followed Colaizzi's (1978) structured analytic framework, which provides systematic steps for extracting significant statements, formulating meanings, clustering themes, and developing an exhaustive description. By clearly documenting these stages, the research design ensures procedural clarity for future researchers examining similar contexts.

Participants were recruited using purposive sampling with the following inclusion criteria: (a) self-identification as women on the LGBTQ+ spectrum and (b) having completed at least one PE subject. Overall, seven (7) self-identified cisgender women identifying as lesbian, bisexual, or queer met the criteria and voluntarily participated in the study. Recruitment was supported by snowball sampling, which enabled participants to refer peers who fit the inclusion criteria.

Data were collected through semi-structured interviews guided by an interview protocol reviewed by experts in qualitative research and gender studies for clarity and sensitivity. Interviews were conducted in private, safe settings, either face-to-face or via secure online platforms, depending on participants' preferences. Each interview lasted between 45 and 60 minutes, was audio-recorded with informed consent, and subsequently transcribed verbatim. Field notes were also taken to capture contextual details and non-verbal cues.

A total of seven self-identified LBQ women students participated in this study. For confidentiality purposes, participant identifiers (e.g., P1–P7) were reassigned during data presentation and do not reflect the order of recruitment. While modest in size, this sample is consistent with phenomenological research, which prioritises depth of inquiry over breadth of representation. Data collection was discontinued when thematic saturation was reached, after which additional interviews did not reveal new themes or insights relevant to the study (Braun & Clarke, 2021).

This study was classified as minimal-risk educational research based on the institutional guidelines applicable to the participating university, which allow classroom-based qualitative studies involving voluntary participation and anonymised reporting of student experiences to proceed without formal review by an institutional ethics committee. As no publicly accessible or named institutional policy document is available, the classification was determined by the researchers in consultation with the university's research office, following standard criteria for minimal-risk research involving non-interventional, interview-based data collection.

The study adhered to recognised ethical standards for research involving human participants, including the principles outlined in The Belmont Report (2006) and the *Declaration of Helsinki* (World Medical Association, 2013), particularly respect for persons, beneficence, and justice. Participation was strictly voluntary, and written informed consent was obtained prior to data collection. Participants were informed of their right to withdraw at any time without consequence. Confidentiality was ensured through the use of pseudonyms, removal of identifying information, and secure storage of digital data accessible only to the primary researcher.

It is acknowledged that discussions of sexual orientation and experiences of discrimination involve inherently sensitive personal information. However, under the applicable institutional guidelines, the study remained within the scope of minimal-risk research because disclosures were entirely voluntary, no identifying information was recorded, and interviews were conducted in private or secure environments to minimise potential psychological or social risk. These safeguards were implemented to ensure participant well-being throughout the research process.

The participants in this study self-identified as cisgender women with diverse sexual orientations, specifically lesbian, bisexual, or queer. In this manuscript, these participants are referred to as LBQ women students to denote their sexual orientation while distinguishing it from gender identity. The study did not include transgender women or non-binary participants; therefore, the analysis focuses specifically on sexual orientation rather than gender identity. Although LGBTQ+ individuals

are recognised as a socially marginalised population, vulnerability in this context refers to structural marginalisation rather than procedural research risk. The study did not involve experimental interventions, medical procedures, or the collection of highly sensitive personal data beyond participants' voluntary disclosure of educational experiences. Interviews focused on classroom participation and were conducted in confidential settings. Under institutional guidelines, such procedures fall within minimal-risk educational research. Nevertheless, enhanced safeguards were implemented, given the sensitivity of identity-related discussions.

Data analysis followed Colaizzi's (1978) phenomenological method. After transcription, each transcript was read repeatedly to gain holistic familiarity. Significant statements directly related to participants' lived experiences in Physical Education were extracted and coded. Meanings were then formulated from these statements while remaining grounded in the participants' own words. These meanings were clustered into thematic categories through iterative comparison across transcripts, ensuring both convergence and divergence of experiences were examined.

Themes were refined through constant return to the original narratives to maintain phenomenological fidelity. An audit trail documenting coding decisions and theme development was maintained to enhance transparency. Reflexive memos were written throughout the analysis to acknowledge the researcher's positionality and to minimise interpretive bias. Where ambiguities emerged, transcripts were re-examined to ensure interpretive consistency. This systematic approach strengthened analytical rigour and credibility.

Results

Experiences of LBQ Women Students in Physical Education Classes

Theme 1: Emotional Discomfort

Participants reported experiencing both enjoyment and discomfort in PE, reflecting an ambivalent engagement with the subject. This finding aligns with previous research showing that LBQ women students often participate in PE while simultaneously managing stigma and identity surveillance (Greenspan et al., 2019; Herrick & Duncan, 2018). However, the present findings suggest that this ambivalence is not simply a matter of personal insecurity but reflects the structural organisation of PE itself. Because PE requires bodily visibility and public performance, it can intensify scrutiny and heighten awareness of difference. In this sense, PE becomes a socially regulated space where gender norms are performed and monitored. Within the Philippine context, where social harmony and conformity are highly valued, participants' cautious self-presentation may represent a strategy for maintaining a sense of belonging while avoiding social conflict.

- *"I do my best to enjoy PE like others, but sometimes I feel like I'm not my full self."-P3.*
- *"There were times I laughed and had fun, but deep inside I was still cautious." P2*
- *"It depends on the teacher and the classmates, some classes felt fine, others felt isolating."-P4.*

Theme 2: Gender Role Pressure and Stereotyping

Pressure to conform to binary gender expectations emerged as a central theme in participants' narratives. Students described feeling constrained by stereotypes linking femininity or masculinity with specific athletic abilities. While similar patterns have been reported in studies from Western contexts (Landi et al., 2023; Peterson et al., 2025), this study highlights how these norms are reproduced through institutional practices, such as gender-segregated activities and assessment standards. In the Philippine setting, where gender norms remain deeply embedded in educational and sporting structures, these expectations can

limit how students express their identities in physical spaces. Thus, the findings suggest that PE not only reflects broader social norms but also actively reinforces them through routine pedagogical practices.

- *"They assume I should act girly or athletic, anything in the middle confuses them."- P2*
- *"Even in how we're grouped, there's this idea of what girls should do."-P5*
- *"Sometimes I think people expect I'm good at basketball because I don't look feminine."-P6*

Theme 3: Identity Monitoring and Concealment

Participants' accounts of identity monitoring and concealment illustrate how Physical Education becomes a space of heightened self-surveillance. Because PE involves visible bodily performance and social interaction, students reported carefully regulating how they speak, move, and disclose personal information. Similar patterns have been documented in international research, where LBQ women students describe managing identity disclosure to avoid stigma in gendered physical activity environments (Greenspan et al., 2019; Herrick & Duncan, 2018). However, within the Philippine context, identity concealment may also reflect broader sociocultural dynamics that emphasise social harmony and the avoidance of conflict. Scholars have noted that collectivist norms and relational expectations in Filipino society can encourage individuals to minimise behaviours that might disrupt group cohesion (Manalastas & Torre, 2016). Thus, participants' self-monitoring may represent both a response to potential discrimination and a culturally embedded strategy for maintaining social belonging. This finding extends existing literature by highlighting how identity management in PE is shaped not only by heteronormative institutional structures but also by cultural norms surrounding conformity and relational harmony.

- *"I had to hide being queer just to avoid uncomfortable stares or questions."-P2*
- *"I'm always calculating, should I talk about my partner? Should I act more 'normal'?"-P7*
- *"Even how I walk or move, I think about it more in PE than any other class."-P1.*

Theme 4: Yearning for Affirming Environments

Participants expressed a strong desire for Physical Education environments that actively affirm gender diversity and acknowledge the presence of LBQ women students. Their accounts suggest that inclusion is not limited to the absence of discrimination but involves the presence of visible support, recognition, and respect within the learning environment. Previous studies have shown that affirming educational climates—where instructors acknowledge gender diversity and intervene against exclusionary behaviour—significantly improve the well-being and participation of LBQ women students in physical activity contexts (Greenspan et al., 2019; Neary & McBride, 2021). The findings of this study extend this scholarship by highlighting the importance of small but meaningful acts of recognition, such as using correct pronouns or explicitly acknowledging LGBTQ+ identities, in fostering a sense of belonging in PE settings. In the Philippine context, where discussions of sexuality and gender diversity may be constrained by cultural norms emphasising social harmony and religious values, such acts of affirmation become particularly significant. These practices signal that diversity is not merely tolerated but valued within the educational environment, helping to transform PE from a space of cautious participation into one where students can engage more authentically and confidently.

- *"A teacher who makes space for us, just even acknowledging we exist—means so much."-P5.*
- *"When a classmate used the right pronouns for someone, I felt hopeful."-P6.*
- *"I wish we had more PE classes that didn't make me feel out of place."-P7.*

Challenges Encountered by LBQ Women Students in Physical Education

Theme 1: Anxiety About Discrimination and Visibility

Participants described anxiety associated with being visibly identified as scrutiny where gender conformity is implicitly evaluated (Jones et al., 2016; Müller & Böhlke, 2021). In PE specifically, the visibility of the body and the performative nature of sport can amplify concerns about judgment or exclusion.

The findings of this study suggest that anxiety is not solely related to individual insecurity but reflects structural conditions embedded in PE environments, such as gender-segregated facilities and peer surveillance. Within the Philippine context, where institutional protections for sexual minorities remain limited, these anxieties may be intensified by uncertainty about how peers and instructors might respond to expressions of sexual identity. Consequently, the findings highlight the importance of examining PE not only as a site of physical development but also as a social environment where identity negotiation and belonging are continuously negotiated.

- *"I always changed as fast as I could. I never felt safe in the locker room."-P1.*
- *"Just being seen can feel risky, like people are watching and wondering about you."-P5.*
- *"There's this quiet pressure. No one says anything, but you feel different."-P6.*

Theme 2: Lack of Representation or Inclusion in Curriculum

Participants noted the absence of LGBTQ+ topics, role models, and inclusive language within PE curricula. This absence contributed to feelings of invisibility and reinforced the perception that sexual minority students were not recognised within educational spaces. Research in sport and physical education has long argued that curricular omission is not neutral but actively reproduces marginalisation by rendering certain identities invisible (Drury et al., 2022; Neary & McBride, 2021).

The findings of the present study support this argument while extending it to the Philippine higher education context, where discussions of gender and sexuality remain limited within formal curricula. In this setting, the absence of representation may reinforce the assumption that PE spaces are designed primarily for heterosexual and gender-conforming students. By highlighting students' desire for inclusive content, the findings emphasise that representation in curricula can play a crucial role in fostering belonging and validating diverse identities within educational environments.

- *"There's nothing about us in the lessons. It's like we're not even considered."-P3.*
- *"It hurts when the curriculum skips over students like me, how do we fit in?"-P1.*
- *"No mention of LGBTQ+ athletes or even respectful language."-P6*

Theme 3: Instructors' Passive Bias or Unawareness

Participants frequently described instructors as silent or passive when issues related to gender diversity emerged in PE classes. Although explicit discrimination was rarely reported, this perceived silence was interpreted as a lack of recognition or support. Scholars have argued that institutional silence can function as a subtle form of marginalisation because it signals that diversity-related concerns are not legitimate topics for discussion (Drury et al., 2022). In PE contexts, where instructors often control participation structures and classroom climate, their responses—or lack

thereof—can significantly shape students' experiences of inclusion.

Within the Philippine cultural context, where educators may avoid discussing sensitive topics to maintain harmony, such silence may not be intentional but can nonetheless reinforce heteronormative norms. The findings, therefore, highlight the importance of proactive pedagogical practices, suggesting that inclusive PE requires educators to actively acknowledge and address issues of gender diversity rather than remain neutral.

- *"Our teacher didn't say anything wrong but also didn't say anything right."-P3.*
- *"Silence can be just as painful, like they don't see us at all."-P7*
- *"We're here, and they act like we are not."-P6*

Theme 4: Rigid Gender Structures in Activities

Rigid gender divisions in PE activities emerged as a major barrier for participants, particularly when teams, uniforms, and roles were organised strictly along binary categories of "male" and "female." This structural arrangement reflects long-standing traditions in sport that associate physical ability with gendered expectations (Landi et al., 2023). However, such practices can marginalise students whose identities or expressions do not conform to these categories. Studies across sport and education have shown that gender-segregated activities often reinforce heteronormative assumptions and limit participation for LGBTQ+ individuals (Sáenz-Macana et al., 2024). The present findings suggest that these structures not only restrict participation but also shape how students perceive their legitimacy within PE environments. In the Philippine context, where institutional practices in sport remain strongly gendered, rethinking how activities are organised may be essential to creating more inclusive educational spaces.

- *"Every time we had to split by boys and girls, I didn't know where to go."-P3.*
- *"Even the uniforms made me uncomfortable. They weren't for me."-P4*
- *"I wish we weren't always divided by gender."-P5*

Suggested Solutions from LBQ women students to Address Challenges in PE

Theme 1: Strengthen Gender-Inclusive Curriculum and Teacher Training

Participants emphasised the need for gender-inclusive curricula and educator training as key strategies for improving PE environments. These recommendations align with international scholarship advocating for inclusive pedagogical approaches that acknowledge diverse gender identities and sexual orientations within sport education (Herrick & Duncan, 2018).

Teacher training is particularly important because educators play a central role in shaping classroom norms, responding to discriminatory behaviour, and modelling inclusive attitudes. In contexts where LGBTQ+ issues have historically received limited attention in teacher education programs, professional development can help instructors develop the knowledge and confidence needed to support diverse learners. The findings, therefore, suggest that inclusive PE requires both structural changes to curricula and professional development initiatives that equip educators to address diversity in meaningful ways.

- *"Just one class about gender would go a long way."-P1*
- *"Teachers should know how to talk about these things and support students."-P7*
- *"Make it part of the syllabus, not just a one-time thing."-P3*

Theme 2: Establish Gender-Neutral and Safer Physical Spaces

Participants also highlighted the importance of creating safer and more inclusive physical environments, including

private changing areas and flexible participation policies. Research on transgender and LGBTQ+ participation in sport has consistently identified gendered facilities such as locker rooms as significant barriers to participation (Jones et al., 2016; Holder et al., 2022).

By advocating for gender-neutral or private spaces, participants emphasised the importance of physical infrastructure in shaping students' sense of safety and belonging. The findings suggest that inclusive education is not limited to curriculum and pedagogy but must also consider how school spatial arrangements influence participation. In this sense, the design of physical spaces becomes a critical dimension of inclusive practice in PE.

- *"A private changing area could help students like me feel less anxious."-P7.*
- *"Let us choose how we participate, don't assign based on gender."-P4*
- *"Make room for people who don't fit in the boxes."-P5.*

Theme 3: Supportive and Responsive School Culture

Beyond structural reforms, participants emphasised the need for supportive school cultures where teachers and peers actively challenge discriminatory behaviour. Previous research has shown that inclusive school climates significantly influence the well-being and participation of LBQ women students in educational and athletic settings (Greenspan et al., 2019). When educators intervene in instances of bullying or harassment, they signal that diversity is valued and protected within the institution. The findings of this study reinforce the importance of institutional culture in shaping students' experiences of inclusion. In the Philippine context, where policies addressing sexual diversity remain uneven across educational institutions, cultivating supportive peer and teacher relationships may be a crucial step toward creating safer environments for LBQ women students.

- *"Teachers need to step in when they hear something offensive."-P2*
- *"Don't just ignore the bullying, set rules and follow through."-P4*
- *"Even one ally makes a difference."-P3*

Theme 4: Create Channels for Anonymous Feedback

Participants suggested that anonymous feedback mechanisms could allow students to express concerns about discrimination without fear of retaliation. This recommendation reflects broader discussions in educational research about the importance of safe reporting systems for addressing sensitive issues such as harassment or exclusion. Anonymous feedback channels can empower students who may otherwise feel reluctant to speak openly about their experiences, particularly in environments where discussing sexuality or gender identity remains socially sensitive. Implementing such mechanisms may therefore provide institutions with valuable insights into student experiences while simultaneously fostering a sense of psychological safety among marginalised groups.

- *"We need a way to give feedback anonymously."-P4*
- *"Not everyone's ready to speak up face-to-face."-P2*
- *"If we had a safe feedback box, we'd use it."-P3*

Theme 5: Redesign PE Practices for Flexibility and Comfort

Finally, participants recommended redesigning PE practices to allow greater flexibility in uniforms, participation structures, and group organisation. These suggestions challenge traditional assumptions that PE must be structured around rigid gender categories. Scholars have argued that flexible and student-centred approaches to sport education can promote greater engagement and inclusion by recognising diverse identities and abilities (Neary & McBride, 2021). In the context of

this study, flexible practices such as allowing students to choose uniforms or participate in mixed groups were seen as simple but meaningful steps toward reducing discomfort and enhancing participation. Such changes illustrate how inclusive practices in PE can be implemented not only through large policy reforms but also through everyday pedagogical adjustments.

- *"Let people wear what makes them comfortable."-P7*
- *"Stop splitting us into boy-girl groups, there are other ways."-P1*
- *"Give us options. Let us choose."-P5.*

Discussion

Physical Education (PE) in the Philippine higher education context operates as a regulatory social space where participation is shaped by gender norms, institutional silence, and cultural expectations surrounding conformity and relational harmony.

The findings of this study demonstrate that for LBQ women students, PE is not merely a site of physical activity but a space where identity is negotiated, managed, and, at times, constrained. While similar tensions have been documented in Western contexts, the present study extends this scholarship by showing how these dynamics are intensified within a Southeast Asian setting influenced by collectivist values and limited institutional protections for sexual minorities. As such, the study contributes to a culturally grounded understanding of how gender and sexuality are experienced within PE in Philippine higher education.

The present findings should be interpreted within multi-layered scholarship spanning global, Asian, Southeast Asian, and Philippine contexts. At the same time, research conducted in the United States (Frederick et al., 2020; Wattenberg et al., 2022), Canada (Herrick & Duncan, 2018), and Europe (Müller & Böhlke, 2021; Sáenz-Macana et al., 2024) documents similar tensions in PE. Southeast Asian research highlights how collectivist norms and institutional silence further shape identity negotiation (UNDP & USAID, 2014; Tang & Poudel, 2018). The Philippine context adds a distinct dimension wherein relational harmony and religious influences intersect with institutional inertia. This underscores the need to understand inclusion in PE not only as a policy issue but as a lived, culturally embedded experience shaped by everyday interactions and institutional practices.

The coexistence of enjoyment and discomfort in PE highlights how participation for LBQ women students is shaped by continuous identity negotiation within socially regulated environments. Rather than reflecting individual uncertainty, this ambivalence reveals how PE functions as a space where gender norms are both performed and monitored, requiring students to manage their self-presentation actively.

This finding aligns with previous research indicating that LGBTQ+ individuals engage in physical activity while simultaneously navigating stigma and visibility (Greenspan et al., 2019; Herrick & Duncan, 2018). Within the Philippine context, this negotiation is further influenced by cultural expectations of social harmony, which may encourage students to minimise differences in order to maintain group belonging. Concurrently, Addatu-Cambri (2024) noted the same context in their work with local LBQ women students, reporting anxiety in physical activity as a result of potential peer assessment.

General pressure to conform to binary gender expectations became a significant challenge. Participants expressed feeling restricted by stereotypes associating femininity or masculinity with sporting capability. This phenomenon mirrors the focus of Peterson et al. (2025) and Landi et al. (2023), who highlighted heteronormative practices in PE. In a study, Sáenz-Macana et al. (2024) also found that trans and non-binary students across contexts

face difficulties within restrictive categories of gender. This trend identified in the study is echoed in studies in the Philippines, where Gamutin et al. (2022) reported that gender-specific sports at HEIs created exclusions for LGBTQIA+ athletes, thereby reproducing structural exclusions.

The lack of LGBTQ+ representation in curricula and the silence on the part of instructors was understood to contribute to exclusion. Drury et al. (2022) and Neary and McBride (2021) argue that curricular omission is not neutral but instead reinforces invisibility. The Philippine research echoes this, showing limited institutional mechanisms to protect or affirm LBQ women students (Pocaan, 2022). Participants in the present study highlighted that even small acts of recognition, such as using correct pronouns, significantly improved their sense of belonging.

Locker rooms and gender-based grouping were recurring sources of anxiety. This aligns with Holder et al.'s (2022) and Jones et al.'s (2016) findings that gendered facilities pose barriers for transgender and LBQ women students. Similar challenges were reported in the Philippine contexts: Moncal et al. (2024) described how gay and lesbian athletes coped with exclusion by concealing identity or avoiding unsafe spaces. These findings underscore how physical environments can either reproduce exclusion or become sites of transformation through inclusive design.

Importantly, participants proposed actionable solutions: gender-inclusive curricula, teacher training, safer physical spaces, anonymous feedback mechanisms, and flexible uniform and grouping policies. These echo global recommendations for LGBTQ+ inclusion in education and sport (Herrick & Duncan, 2018; Neary & McBride, 2021; Sáenz-Macana et al., 2024). Locally, studies also suggest institutional inclusive sports plans and anti-discrimination policies as critical steps (Addatu-Cambri, 2024; Gamutin et al., 2022). The convergence of international and Philippine findings demonstrates both the universality of challenges and the urgent need for context-specific interventions in higher education.

The findings also resonate with broader research on empowerment in sports education. Pestaño et al. (2024) demonstrated that participative coaching fosters self-confidence and self-efficacy among student-athletes, highlighting how inclusive and collaborative teaching practices can sustain motivation and resilience. Similarly, Lobo et al. (2023) emphasised that students' engagement in PE is deeply linked to their individual interests and affective investment. When PE activities align with learners' identities and goals, engagement and persistence increase, thereby strengthening the argument that fostering affirming, student-centred, and participative practices in PE is essential not only for LGBTQ+ inclusion but also for the holistic development of all learners.

Implications

The findings of this study provide important practical insights for improving inclusive practices in Physical Education within Philippine higher education institutions. Because PE involves bodily visibility, group interaction, and gendered activity structures, inclusive practices must extend beyond policy statements to everyday teaching strategies and classroom environments. The experiences of LBQ women students highlight the need for educators and institutions to actively recognise diverse sexual identities and address exclusionary practices embedded in traditional PE structures. The results suggest the following implications:

1. Integrating discussions of gender diversity, LGBTQ+ athletes, and respectful language into PE curricula can help address participants' reported invisibility and promote greater awareness of diversity in sport and physical activity contexts.

2. Faculty development programs should equip PE instructors with inclusive teaching strategies, including addressing gender stereotyping in physical activity settings, responding to discriminatory remarks, and facilitating respectful discussions about gender diversity.
3. Gender-neutral changing rooms, flexible uniforms, and non-binary team structures should be considered.
4. Establishing feedback mechanisms and enforcing anti-bullying policies can create safer environments for LBQ women students.

These recommendations are consistent with the United Nations Sustainable Development Goals (SDG 3: Good Health and Well-being, SDG 4: Quality Education, SDG 5: Gender Equality).

By centring LBQ women students' voices in Philippine PE classes, this study helps bridge the gap between global and Southeast Asian research. While global studies document similar issues, this research highlights how collectivist norms, limited policies, and institutional silence uniquely shape local experiences. Future research should explore (a) the perspectives of teachers and administrators, (b) the experiences of transgender men and non-binary students, and (c) the effectiveness of inclusive interventions once implemented.

Limitations of the Study

While the descriptive phenomenological design was appropriate for capturing the lived and subjective experiences of LBQ women students in college Physical Education, several limitations must be acknowledged.

First, phenomenological research prioritises depth over breadth. The findings are not intended to be statistically generalizable to all LBQ women students in the Philippines. Rather, they provide context-specific, in-depth insights that may be transferable to similar higher education environments sharing comparable sociocultural conditions (Lincoln & Guba, 1985).

Second, the study involved a relatively small sample drawn from a limited institutional context. Although this aligns with phenomenological methodology, it limits the representativeness of experiences across diverse regions, institutional types, and socioeconomic backgrounds in the Philippines.

Third, participants' narratives relied on retrospective accounts of their experiences in Physical Education. As with all recall-based qualitative data, these accounts may be influenced by memory reconstruction, reinterpretation over time, and current perspectives. However, phenomenological inquiry recognises that meaning-making itself is central to lived experience, and thus such reflective interpretation remains analytically valuable.

Finally, as with all qualitative research, the researcher's positionality may have influenced the interpretation of participants' narratives and the development of themes. The researcher's perspectives, experiences, and familiarity with the educational context may have shaped analytic decisions. To mitigate this influence, reflexive strategies were employed throughout the study, including reflexive memos, continuous engagement with the data, and efforts to remain grounded in participants' accounts. Nonetheless, the findings should be understood as interpretive representations rather than objective accounts of reality.

Conclusion

This study explored the lived experiences of cisgender women identifying as lesbian, bisexual, or queer in Physical Education (PE) classes in the Philippines. Findings revealed that while PE can provide enjoyment and social connection, it often remains a site of discomfort, identity concealment, gender role pressure, and exclusionary practices. Rigid gender structures, the absence of LGBTQ+ representation in the curriculum, and instructors' silence reinforced these challenges.

Participants also identified concrete solutions, including integrating gender-inclusive content into PE, providing teacher training, ensuring safer, more flexible facilities, and fostering supportive institutional cultures. These recommendations highlight pathways for higher education institutions to make PE more affirming and equitable.

The study contributes to the limited body of literature on LBQ women students in Southeast Asian PE contexts, addressing a critical gap in both global and Philippine research. By centring the voices of marginalised students, the findings reinforce the importance of inclusive education practices aligned with the United Nations Sustainable Development Goals (SDG 3: Good Health and Well-being, SDG 4: Quality Education, and SDG 5: Gender Equality).

Future research should expand to include the experiences of other LGBTQ+ subgroups and evaluate the effectiveness of institutional reforms, ensuring that PE becomes a space where all students can thrive authentically.

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this manuscript, the authors used Grammarly to improve language clarity, grammar, and phrasing. The authors carefully reviewed and revised the output to ensure accuracy and take full responsibility for the content of the final manuscript.

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INTERNATIONAL SPORTS STUDIES

ORIGINAL RESEARCH

Integrated readiness monitoring based on post-competition fatigue in team sports: A longitudinal study comparing male and female athletes

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Abstract

The study aimed to assess the utility of a fatigue-monitoring protocol for determining athletes' readiness post-competition and to present sex-related variation in its use. Methods included a subjective assessment of specific dimensions of perceived readiness (dRIs) and an objective evaluation of the physical readiness (RDs). dRIs evaluated fatigue upon waking up, sleep quality, mood, and muscle soreness, while RDs consisted of 3 field tests. Twenty-one male and 23 female athletes were tested 4 days per week, starting from the match day (MD): MD+2, MD+3, MD+5. Results indicated no significant differences in dRIs among females, whereas for males, fatigue upon waking was lower at MD+2, MD+3, and MD+5 than at MD, and muscle soreness was higher at MD+5 than on the other days. For RDs, only a significant difference in adductor strength was found in females between MD and MD+2, as well as between MD+2 and MD+3, whereas no notable changes were evidenced in males. Between sexes, the dRIs comparison showed significant differences on MD; for RDs, a difference was found only for the Adductor Squeeze Test on MD+3. In conclusion, sex differences in the utility of dRIs have been noted: they appear less suitable in females, whereas in males they reflect the expected fatigue pattern. Instead, in terms of RDs, they seemed limited in fatigue detection in both sexes; they serve as useful tools for assessing physical readiness with eventual differences in ROM and strength.

Keywords:
fatigue monitoring, load management, performance, readiness for exercise, recovery, team sport

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Introduction

Rugby is a physically demanding contact sport that has gained popularity around the world in recent years, becoming one of the most widely played and watched. It is an intermittent team sport, with an average intensity similar to other team sports (~70-80% VO2max), in which high-intensity phases of the game (high-intensity running, rucking, scrummaging, tackling, etc.) alternate with lower-intensity phases (low-intensity running, walking, etc.) for a total of 80 minutes, divided into two 40-minute halves with a 10-minute break in between (Read et al., 2017; Twist & Highton, 2013). These game's demands, together with the high number of collisions and repeated eccentric muscle contractions associated with acceleration and deceleration, lead to an increase in markers of muscle damage and acute neuromuscular and perceptual fatigue after matches, which can last up to several days after the competition (Roe, 2016; Twist & Highton, 2013) and it means

that the inherent risks of injury are substantial (Hulin et al., 2016). The incidence of injury in this sport has been widely reported in literature, with values ranging from 5.95/1000 to 99.5/1000 hours of play in amateur rugby and approximately 81/1000 in professional rugby. While comprehensive injury-monitoring and prevention programs have been implemented in professional play, similar strategies are needed in amateur play (Yeomans et al., 2018).

Typically, during the regular season, senior athletes play one game per week, which likely provides sufficient time for complete recovery between matches. Consequently, S&C (Strength and Conditioning) coaches systematically monitor players' recovery status and aim to manage fatigue by making daily adjustments to training loads, as fatigue accumulation is believed to negatively affect players' wellbeing and performance (Johnston et al., 2013). However, the time course of post-match recovery is highly variable among individual players, potentially leaving some players insufficiently recovered on match day (West et al., 2014). Therefore, to ensure that athletes are ready to perform, daily fatigue monitoring is often recommended (Ramírez-López et al., 2022). The entity of fatigue induced by matches and the subsequent recovery kinetics have been studied previously. For example, the decrease in neuromuscular function (NMF) assessed through counter-movement jumps (CMJ) can persist up to 48 hours after the match (Ramírez-López et al., 2020b; Roe, 2016). Well-being has also been recommended for studying players' responses to matches in both senior and elite youth populations, and its decline has been observed to persist for up to 72 hours after the match (Johnston et al., 2013; Roe, 2016; Saw et al., 2016).

Athlete self-report measures (ASRMs) are the most widely used method for monitoring fatigue in high-level sport systems (Taylor et al., 2012) because they are generally non-invasive, easy to administer, and may be more sensitive to changes in training and post-match loads than other commonly used objective assessments (Saw et al., 2016). However, the subjective nature of these questionnaires must be considered, and therefore, they have a greater margin of error.

Aetiology of Fatigue

Fatigue is the decline in physical performance induced by an increase in the actual or perceived difficulty of a task. It is not the failure of the demand or the moment when the muscles get exhausted, but it refers to the inability of the muscles to maintain the required level of strength/power during an exercise, and it develops gradually immediately after the beginning of an intense physical task (Starling & Lambert, 2018). The increase in energy produced during exercise disrupts the body's internal homeostasis, leading to the accumulation of certain metabolites within muscle fibres and fatigue. Fatigue occurs because one or more physiological processes that allow contractile proteins to generate force are compromised, and the site of the damage depends on the task being performed (Enoka & Duchateau, 2008). This phenomenon is known as "task-dependency", and it refers to the fact that there is no single cause that explains the aetiology of fatigue, as it is considered a gradual process involving various complex physiological changes inside and outside the muscle (Tornero-Aguilera et al., 2022).

The aetiology of fatigue arises from two main pathways: the central nervous system through central fatigue, or the peripheral nervous system through peripheral fatigue. Central fatigue is defined as a decrease in voluntary muscle activation, directly related to reduced frequency and synchronisation of motor neurons and reduced information transmission from the motor cortex, which attenuates performance or even leads to cessation of activity. Peripheral fatigue is defined as a decrease in the effectiveness of the neuromuscular

junction and processes beyond it, including metabolic and biochemical changes within the muscle that diminish the contractile strength of muscle fibres and alter the mechanisms of transmission of muscle action potentials.

Fatigue is influenced by factors such as sex, which affects men and women differently. Women have greater lipid oxidation efficiency but lower anaerobic lactacid pathway efficiency than men. The interpretation of effort and stress differs when faced with the same workload, and here perception is greater for women. Consequently, fatigue perception is greater in women (Tornero-Aguilera et al., 2022). Fatigue can also be influenced by the type of stimulus (voluntary or electrical), the type of contraction (isometric, isotonic, intermittent, or continuous), the duration, the frequency, and the intensity of the task, and even by the type of muscle.

Additionally, physiological state, training status, and environmental conditions can significantly influence fatigue (Halson, 2014). Personal problems, anxiety, and stress are likewise associated with different patterns of brain activation and central nervous system weariness. External factors, such as sleep deprivation, can also modify the subjective perception of fatigue. Thus, these factors can result in increased central fatigue (Tornero-Aguilera et al., 2022) and decreased ability to respond promptly and responsively to external stimuli.

It is essential for rugby and S&C coaches to understand the mechanisms and aetiology of fatigue in order to prescribe an appropriate training load to reduce the risk of non-functional overreaching, illness, or injury, and to maintain the athlete's optimal physiological and psychological wellbeing (Halson, 2014).

Monitoring Training Load and Fatigue

Monitoring training load can provide a scientific explanation for changes in performance and enable an appropriate planning of training loads. Understanding players' responses to load and fatigue status after games throughout the season is necessary to determine which athletes are ready for matches and to avoid injuries, performance declines and overtraining syndromes. This requires an appropriate battery of tests that allows coaches to make decisions based on each athlete's health status. Although there is much scientific evidence for valid and reliable test batteries for monitoring load and fatigue, the application environment must always be taken into account in order to select those tests that are most suitable and easily feasible in the context in which they are used (Halson, 2014; Twist & Highton, 2013).

A review of the scientific literature suggests that the best test for assessing fatigue in terms of ecological validity is a maximal-effort test that reproduces the conditions of the athlete's competition. However, there are numerous complications with this type of task in athletes, especially in a team-sport context, where non-reproducible external factors related to the opposing team's behaviour are present. Additionally, maximal tests could exacerbate the athlete's existing fatigue, which can be problematic during the competitive phase of the season. Therefore, performance monitoring is generally based on indirect markers of maximal performance and/or relevant psychological and physiological characteristics (Taylor et al., 2012).

For example, tests that measure neuromuscular capacity, such as jump tests (CMJ/SJ), sprint tests, or tests with isokinetic and isoinertial dynamometers, are preferred due to their simplicity of administration and the minimal additional fatigue they induce in the athlete. Jump tests reflect the lengthening-shortening capacity of the lower limb muscles and provide useful data to assess muscle fatigue, whereas sprint tests provide information on movement-specific fatigue, as these actions are typically compromised after prolonged intermittent activity, such as a rugby match (Twist & Highton, 2013).

A relatively large number of studies have examined the biochemical, hormonal, and immunological responses to physical exercise, with analyses performed on blood or saliva. For instance, analysis of serum creatine kinase activity, a marker of muscle damage (Lee et al., 2017), has been shown to be a popular method for assessing fatigue and acute recovery after a match, as sample collection and analysis are easy to implement. In addition, salivary cortisol and testosterone levels have been shown to be related to athletes facing a state of overreaching. However, the usefulness of these measures for quantifying internal load on a regular basis has not yet been examined, partly because these procedures are expensive, time-consuming, and quite impractical in sports environments, especially for team sports (Drole et al., 2025).

Readiness Monitoring

It is essential for coaches to have a training periodisation, but it is even more important to adapt it based on how the athlete is coping with the demands of training or a match. To do this effectively, coaches need information on each athlete's recovery ability in response to various training stressors, and they often rely on "self-report" questionnaires that assess perceived changes in muscle soreness, fatigue, sleep quality and quantity, and other psychosocial factors. There are several tools for assessing perceived fatigue, of which the most popular are tailor-made forms such as the Profile of Mood States questionnaire (POMS), the Daily Analysis of Life Demands for Athletes questionnaire (DALDA), the Recovery-Stress Questionnaire for Athletes (REST-Q Sport), and the Total Quality Recovery scale (TQR). According to Taylor et al. (2012) many professionals in the field of elite sport, questionnaires should be shorter and better targeted. Therefore, several forms have been developed over the years, generally consisting of 5-12 questions that use a simple 5-, 7-, or 10-point Likert scale to score the response, with the sum of the questions indicating the overall athlete's wellbeing. Although shorter questionnaires are more time-efficient, it is important to be aware of their reduced sensitivity for quantifying fatigue, as they contain fewer, more general questions (Twist & Highton, 2013). The most frequently investigated aspects in "self-report" questionnaires are perceived muscle soreness (DOMS), sleep duration and quality, and perceptions of fatigue and wellbeing (Taylor et al., 2012).

In rugby, players typically report their mood, stress levels, energy, sleep, and nutrition, as well as feelings of soreness in the upper body, quadriceps, hamstrings, groin, and calves (Gabbett, 2016). Sleep is recognised as an essential part of recovery and is central to optimal athletic performance, wellbeing, and the reduction of injuries and illness. The American Academy of Sleep Medicine (AASM; Watson et al., 2015) recommends that athletes benefit from more sleep than the 7/8 hours per night recommended for the general population, due to their exposure to high-intensity training and competition (Ramírez-López et al., 2020a).

Questionnaires can be a relatively simple and inexpensive way to assess athletes' fatigue and readiness to train. However, because they are based on subjective information, athletes can manipulate the data and/or over- or underestimate their training load. It is also important to consider the frequency of administration and its length to maximise athlete adherence and avoid the "boredom" of completing the questionnaire (Halson, 2014). In light of the evidence highlighted in the literature, there is a clear need to develop practical monitoring approaches capable of identifying periods of reduced readiness in athletes. In this study, particular attention was given to identifying periods of reduced readiness following competition, referred to operationally as the "red zone", which represents a phase of increased fatigue typically occurring within the first days after match exposure.

Purpose

The main objective of this investigation was to evaluate whether monitoring four specific dimensions (fatigue upon waking, sleep quality, mood, and muscle soreness) can help identify athletes' readiness to compete in both male and female athletes. In this context, the monitoring protocol was designed to generate an integrated score to identify the "red zone," operationally defined as a phase of increased fatigue and reduced readiness occurring approximately within the first 2 days after the match (MD+2). This phase is characterised by a significant deterioration in test scores relative to the athlete's best individual value recorded during the monitoring period, indicating a temporary reduction in perceived or functional readiness.

Secondly, this study aimed to examine sex differences in using the same readiness-monitoring approach, particularly by accounting for the menstrual cycle in women, which can alter athletes' readiness depending on the phase they are in.

The hypothesis of this study was that monitoring four specific readiness-related dimensions, as determined by this protocol, can help identify an athlete's readiness for competition. More specifically, athletes were expected to report higher readiness scores on match day (MD), indicating optimal conditions for the competition. Conversely, lower readiness values were expected approximately two days after the match (MD+2), reflecting fatigue resulting from match participation.

Methods

This research consisted of a prospective, longitudinal, observational study to analyse post-match recovery profiles.

Participants

The group that took part in the project consisted of 35 males (age: 26.3±4.6 yrs, weight: 98.29±16.91 kg, height: 182.16±6.70 cm) playing in the second top Italian men's rugby league, Serie A and 27 females (age: 24.85±2.97 yrs, weight: 70.70±9.91 kg, height: 168.04±7.91 cm) playing in the top women's league, Serie A Élite.

However, the final sample analysed was smaller: only 21 males and 23 females were declared valid, as some data were deemed insufficient for various reasons. For example, if some players did not complete a training session or skipped parts of the questionnaire, they were discarded, and if the collected data were significantly different from the average, it indicated an error in the sample collection.

Ethical Approval

This research was conducted in accordance with the principles of the Declaration of Helsinki. Before data collection, participants received verbal and written explanations of the study and provided written informed consent to complete the self-reported questionnaires. Data were collected through an electronic questionnaire (Google Forms), where participants were asked to identify by using a personal ID. All data were later analysed in aggregate.

The study protocol was reviewed and approved by the University of Milan's Ethics Review Committee (approval number: 19/26; approved in 2026). Data confidentiality and protection were ensured throughout the study: access to the database was restricted to the research team, and only personal ID numbers were collected. No identifiable information was retained, and no individual data were shared with the participating sports clubs. Data were stored securely and will be retained in accordance with institutional data protection guidelines.

Study Design

This study considered two distinct periods of the competitive season (November-December and February-March), each lasting four weeks, for a total of eight weeks, where matches were played on Sundays. For each period, the first week was to familiarise with the protocol and to record the personal best (PB), and in the last three

weeks, there were the matches. The players were monitored four days per week before each training session and each match to monitor their perceived and physical readiness.

The days on which the tests were carried out were classified as Match Day (MD), Match Day + 2 (MD+2, rugby session on the field 48 hours after the match), Match Day +3 (MD+3, rugby session on the field 72 hours after the match), and Match Day +5 (MD+5, team run 120 hours after the match).

The chosen methodology involved a two-part monitoring approach: a subjective assessment of specific dimensions of the athlete's perceived readiness (dRIs) and an objective assessment of physical readiness (RDs) through evaluations of strength and flexibility (Range of Motion, ROM). For both assessments, a single electronic questionnaire was created in Google Forms (Google, CA, USA), which participants were required to complete on their own cell phones to avoid any influence from other team members. The aim was to obtain data to calculate the state of readiness and to assess differences between rest and training days (Ramírez-López et al., 2022) and, similarly, to obtain indications of differences in strength and ROM. A practical monitoring framework was adopted to identify periods of increased fatigue and reduced readiness, occurring within approximately the first two days after the match (MD+2), which have been called "red zones", characterised by a significant deterioration of the test results relative to the athlete's best individual value recorded during the monitoring period.

Research Materials and Procedures

Subjective Readiness Protocol

The first part was a self-report questionnaire where the athlete was asked to answer four questions concerning: fatigue upon waking up (FW), sleep quality (SQ), mood (Mo) and DOMS, with each question rated on a 5-point Likert scale (1-5), where 1 was the minimum and 5 the maximum, with increments of one point, as described in previous studies (McLean et al., 2010; Ramírez-López et al., 2020a).

Then the total dRIs score was obtained by summing the four scores, so the minimum possible score was 4, and the maximum was 20. Finally, for each question, a fatigue index (FWi, SQi, Moi, DOMSi), was calculated by dividing the score obtained on the day of competition or training by the personal best (PB) scored. The index ranged from 0 to 1, with 1 representing the athlete's personal condition. An aggregated four-dimensional readiness index (4-dRi) was then calculated as the arithmetic mean of the four indices to provide an overall indicator of readiness over time. Within this framework, the "red zone" condition was identified by examining reductions in the 4-dRi occurring approximately two days after the match (MD+2) relative to the athlete's best individual value recorded during the monitoring period.

Objective Readiness Protocol

The second part consisted of three field tests: the Adductor Squeeze Test (AST), the Sit and Reach Test (SRT), and the Knee-to-Wall Test (KTW). Unlike the subjective part, the answers obtained were relatively consistent: the maximum score obtained in mmHg (millimetres of mercury) for AST, the maximum score obtained in cm (centimetres) for SRT, and the maximum scores obtained in cm (centimetres) for KTW, either right (KTWR) or left (KTWL) ankles.

The Adductor Squeeze is a test that indirectly measures the maximum strength of the thigh adductor muscles using a sphygmomanometer to quantify the pressure generated by compressing the air chamber between the two thighs. The athlete must lie supine, maintaining a 90° angle at the hips and knees as shown in Figure 1a, and place the air chamber of the sphygmomanometer between the knees. Then, using the valve, the athlete set the

pressure to 100 mmHg and executed a maximum adduction of the thighs, compressing the air chamber with as much force as possible, trying to maintain the contraction for 5 seconds, and reported the maximum mmHg value reached in the Google form. This test has been chosen because hip and groin injuries are a common problem in team sports, particularly those involving running, changes of direction, and kicking. In these areas, adductor compression tests are often used to diagnose, monitor, and prevent the risk of developing groin pain (Hodgson et al., 2015).

Figure 1a. Adductor Squeeze Test

The Sit and Reach is a validated test of hamstring extensibility, chosen for its simplicity of application in a team-sport context (Mayorga-Vega et al., 2014). The athlete sat on the ground with his legs extended, leaning against the wall with his buttocks and shoulders, a centimetre-graduated scale placed under him. When ready, while maintaining the starting position of the legs, he bent his torso forward as far as possible, keeping his arms extended and, with the hands overlapping in correspondence with the graduated scale, he touched the point furthest away from him, trying to maintain this position for 3", (Figure 1b). Then, he recorded the cm reached on the Google form The importance of good hamstring extensibility, along with adequate strength, is in reducing the risk of muscle injuries in this area (Edouard et al., 2022). Consequently, in these athletes, who perform weight training and sprints in all their training sessions, monitoring hamstring stretching status is an interesting tool for obtaining specific information useful for injury prevention.

Figure 1b. Sit and Reach Test

The Knee-to-Wall test measures ankle joint range of motion and can be used as a continuous assessment of ankle dorsiflexion. The athlete stood facing the wall in a lunge position, bringing the knee of the rear leg to the ground and moving the foot of the opposite leg forward, next to the graduated scale, keeping the hip and knee angles at 90°. Next, while performing ankle dorsiflexion, he brought the frontal knee forward until it touched the wall without ever lifting the heel off the ground, and once the wall was reached, he measured the distance in cm between the toes on the ground and the wall (Figure 1c). After performing the test with both limbs, he recorded the measurements obtained as answers on the Google form (Powden et al., 2015). This test has been chosen based on the widespread consensus that limited ankle dorsiflexion contributes to the development of conditions such as patellofemoral knee syndrome, foot overpronation, and plantar fasciitis, which can be risk factors for common lower limb injuries. The practice of rugby, especially in contact situations, involves the lower limbs, leading to stiffness in these areas; therefore, it is very likely that rugby players experience dorsiflexion stiffness.

Figure 1c. Knee to Wall Test

Finally, for each dRIs question, a fatigue index, with a value from 0 to 1, was calculated; for each RDs test, the score obtained on the day of competition or training was divided by the participant's PB score (ASTi, SRTi, KTWi-R, KTWi-L).

Data Analysis

A longitudinal analysis was chosen to investigate longer-term events, comparing data from both phases of the study during the championship. The statistical tests were performed using JASP (Jeffreys's Amazing Statistics Program, version 0.95.4).

Descriptive statistics were calculated for each variable at each time point relative to match day (MD, MD+2, MD+3, MD+5) and are presented as median, mean, standard deviation, interquartile range (IQR), minimum, and maximum values. The normality of the data distribution was assessed using the Shapiro–Wilk test, which indicated significant deviations from normality ($p<.001$). Therefore, linear mixed-effects models (LMMs) were used to analyse the effects of time points relative to match day on the subjective and objective readiness variables. A separate model was fitted for each variable, yielding 9 models for females and 9 for males.

For all models, the athlete's identity was included as a random effect to account for repeated measurements within participants. Time points relative to match day (MD, MD+2, MD+3, MD+5) were included as a fixed effect. For the sex-comparison analysis, Sex and the Sex × Time interaction were also included as fixed effects. Model terms were tested using the Satterthwaite approximation for degrees of freedom, and Type III sums of squares were used. When significant effects

were detected, pairwise contrasts were performed with Holm-adjusted p-values to control for multiple comparisons. The level of statistical significance was set at $p<0.05$.

Additionally, data were collected across six match weeks for each team, organised into two regular-season periods, each comprising a maximum of three consecutive matches. Prior to data collection, athletes were familiarised with the monitoring protocol to ensure consistent and reliable responses. Athletes who did not complete a sufficient portion of the monitoring protocol (i.e., fewer than 10 valid observations across the monitoring period, corresponding to more than two full match weeks) were excluded from the analysis to ensure adequate data for reliable model estimation. The remaining dataset, therefore, included repeated observations from the same athletes across multiple monitoring cycles. Missing data within these observations were handled using restricted maximum likelihood (REML) estimation within the LMM framework. The repeated structure of the data was further accounted by including athlete identity as a random effect.

Results

The statistical analysis conducted with JASP described changes in the dependent variables across time points relative to match days and differences between females and males. Detailed descriptive tables (Table S1 and Table S2) and the full panel plots (Figure S1-S2-S3) are provided in the Supplementary Materials, whereas the main findings are presented in the tables described in the following sections.

Subjective Readiness Monitoring

The effects of match days on subjective readiness variables were analysed using linear mixed-effects models with athletes included as a random effect, comparing time points relative to the match day (MD, MD+2, MD+3, and MD+5).

In the female group, no clear changes were observed across the analysed time points for any subjective variable. FWi, SQi, Moi, DOMSi, and the aggregated four-dimensional readiness index (4-dRi) remained relatively stable from MD to post-match assessments (Table 1a-1e).

Table 1a. Pairwise contrasts between match days derived from the linear mixed model for the FWi female

	Estimate	SE	df	t	p†
MD vs MD + 2	0.014	0.028	23.286	0.519	1.000
MD vs MD+3	0.009	0.028	18.509	0.334	1.000
MD vs MD+5	0.049	0.025	38.137	1.961	.343
MD+2 vs MD+3	-0.005	0.026	45.956	-0.198	1.000
MD+2 vs MD+5	0.035	0.029	20.377	1.201	.974
MD+3 vs MD+5	0.040	0.027	33.873	1.483	.736

Note: † P-values are adjusted using Holm adjustment.

The ANOVA summary of the linear mixed-effects model showed no significant main effect of Match Day ($F(3, 28.68) = 1.45$, $p = .248$).

Table 1b. Pairwise contrasts between match days derived from the linear mixed model for the SQi female

	Estimate	SE	df	t	p†
MD vs MD + 2	-0.030	0.026	23.767	-1.163	1.000
MD vs MD+3	-0.052	0.024	349.685	-2.194	.173

Table 1b. (continued)

	Estimate	SE	df	t	p†

MD vs MD+5	-0.003	0.023	360.339	-0.127	1.000
MD+2 vs MD+3	-0.021	0.026	31.723	-0.823	1.000
MD+2 vs MD+5	0.027	0.026	30.103	1.051	1.000
MD+3 vs MD+5	0.049	0.023	369.991	2.075	.194

Note: † P-values are adjusted using Holm adjustment.

The ANOVA summary of the linear mixed-effects model showed no significant main effect of Match Day (F (3, 56.30) = 2.12, *p* = .108).

Table 1c. Pairwise contrasts between match days derived from the linear mixed model for the Moi female

	Estimate	SE	df	t	p†
MD vs MD + 2	0.011	0.023	318.435	0.469	1.000
MD vs MD+3	-0.023	0.023	24.794	-0.997	1.000
MD vs MD+5	0.004	0.024	40.597	0.157	1.000
MD+2 vs MD+3	-0.034	0.024	95.834	-1.438	.921
MD+2 vs MD+5	-0.007	0.024	74.728	-0.298	1.000
MD+3 vs MD+5	0.027	0.023	144.472	1.151	1.000

Note: † P-values are adjusted using Holm adjustment.

The ANOVA summary of the linear mixed-effects model showed no significant main effect of Match Day (F (3, 69.37) = .796, *p* = .500).

Table 1d. Pairwise contrasts between match days derived from the linear mixed model for the DOMSi female

	Estimate	SE	df	t	p†
MD vs MD + 2	0.039	0.023	113.129	1.672	.389
MD vs MD+3	0.015	0.022	293.198	0.690	.909
MD vs MD+5	0.055	0.022	204.952	2.530	.073
MD+2 vs MD+3	-0.024	0.023	189.757	-1.034	.907
MD+2 vs MD+5	0.017	0.022	260.607	0.749	.909
MD+3 vs MD+5	0.040	0.022	340.177	1.849	.327

Note: † P-values are adjusted using Holm adjustment.

The ANOVA summary of the linear mixed-effects model showed no significant main effect of Match Day (F (3, 208.58) = 2.44, *p* = .065).

Table 1e. Pairwise contrasts between match days derived from the linear mixed model for the 4-dRi female

	Estimate	SE	df	t	p†
MD vs MD + 2	0.010	0.016	61.688	0.620	1.000
MD vs MD+3	-0.014	0.016	166.637	-0.877	1.000
MD vs MD+5	0.026	0.016	94.397	1.646	.515
MD+2 vs MD+3	-0.024	0.017	47.818	-1.437	.629
MD+2 vs MD+5	0.016	0.017	27.523	0.929	1.000
MD+3 vs MD+5	0.039	0.015	343.427	2.548	.068

Note: † P-values are adjusted using Holm adjustment.

The ANOVA summary of the linear mixed-effects model showed no significant main effect of Match Day (F (3, 65.88) = 2.30, *p* = .085).

In the male group, the subjective readiness showed a clearer time-related variation. A significant effect of time point was observed for FWi (F(3, 27.55)=11.35,

p<.001), with lower FWi values at MD compared with MD+2, MD+3, and MD+5 (Holm-adjusted p≤.002), indicating a worse fatigue perception at MD relative to the subsequent assessments (Table 2a). DOMSi also varied significantly over time (F(3, 23.13) =8.45, p<.001), with the muscle soreness being higher at MD+5 compared with earlier time points (Table 2d). The 4-dRi showed a significant effect of time point (F(3, 17.16) = 5.77, p=.006), with higher readiness at MD compared with MD+2, MD+3, and MD+5 (Holm-adjusted p≤.022) (Table 2e). No meaningful time-related changes were detected for SQi or Moi within the male group (Table 2b and 2c). The decrease in readiness observed around MD+2 corresponds to the period, within the monitoring framework adopted in this study, referred to operationally as the "red zone".

Table 2a. Pairwise contrasts between match days derived from the linear mixed model for the Fwi male

	Estimate	SE	df	t	p†
MD vs MD + 2	0.102	0.027	42.025	3.738	.002
MD vs MD+3	0.124	0.024	71.753	5.156	< .001
MD vs MD+5	0.109	0.026	47.564	4.256	< .001
MD+2 vs MD+3	0.022	0.029	21.491	0.767	1.000
MD+2 vs MD+5	0.007	0.026	18.030	0.263	1.000
MD+3 vs MD+5	-0.015	0.028	19.798	-0.550	1.000

Note: † P-values are adjusted using Holm adjustment.
The ANOVA summary of the linear mixed-effects model showed a significant main effect of Match Day (F (3, 27.55) = 11.35, $p < .001$).

Table 2b. Pairwise contrasts between match days derived from the linear mixed model for the SQi male

	Estimate	SE	df	t	p†
MD vs MD + 2	0.033	0.032	19.111	1.014	1.000
MD vs MD+3	0.052	0.032	17.527	1.639	.595
MD vs MD+5	0.007	0.026	18.259	0.285	1.000
MD+2 vs MD+3	0.020	0.021	45.098	0.922	1.000
MD+2 vs MD+5	-0.025	0.023	26.833	-1.121	1.000
MD+3 vs MD+5	-0.045	0.025	16.979	-1.806	.532

Note: † P-values are adjusted using Holm adjustment.
The ANOVA summary of the linear mixed-effects model showed no significant main effect of Match Day (F (3, 25.58) = 1.24, $p = .316$).

Table 2c. Pairwise contrasts between match days derived from the linear mixed model for the Moi male

	Estimate	SE	df	t	p†
MD vs MD + 2	0.078	0.038	20.351	2.028	.326
MD vs MD+3	0.077	0.044	18.786	1.741	.326
MD vs MD+5	0.029	0.034	20.200	0.856	.804
MD+2 vs MD+3	-3.965×10^{-4}	0.027	54.509	-0.015	.988

Table 2c. (continued)

	Estimate	SE	df	t	p†

MD+2 vs MD+5	-0.049	0.025	132.982	-1.941	.326
MD+3 vs MD+5	-0.048	0.027	29.349	-1.814	.326

Note: † P-values are adjusted using Holm adjustment.
The ANOVA summary of the linear mixed-effects model showed no significant main effect of Match Day (F (3, 46.01) = 1.97 *p*= *.132*).

Table 2d. Pairwise contrasts between match days derived from the linear mixed model for the DOMSi male

	Estimate	SE	df	t	p†
MD vs MD + 2	0.054	0.023	52.736	2.307	.100
MD vs MD+3	0.060	0.027	18.915	2.267	.100
MD vs MD+5	0.134	0.027	19.777	4.968	< .001
MD+2 vs MD+3	0.006	0.027	23.006	0.236	.815
MD+2 vs MD+5	0.081	0.025	25.926	3.213	.017
MD+3 vs MD+5	0.074	0.031	19.184	2.394	.100

Note: † P-values are adjusted using Holm adjustment.
The ANOVA summary of the linear mixed-effects model showed a significant main effect of Match Day (F (3, 23.13) = 8.45, *p* < .001).

Table 2e. Pairwise contrasts between match days derived from the linear mixed model for the 4-dRi male

	Estimate	SE	df	t	p†
MD vs MD + 2	0.068	0.021	16.699	3.180	.022
MD vs MD+3	0.075	0.019	12.809	3.860	.010
MD vs MD+5	0.074	0.020	19.303	3.786	.007
MD+2 vs MD+3	0.007	0.016	20.529	0.447	1.000
MD+2 vs MD+5	0.006	0.016	14.690	0.376	1.000
MD+3 vs MD+5	-0.001	0.015	13.584	-0.080	1.000

Note: † P-values are adjusted using Holm adjustment.
The ANOVA summary of the linear mixed-effects model showed a significant main effect of Match Day (F (3, 17.16) = 5.77, *p*= .006).

To provide a concise overview of the main models observed, Table 3 summarises them.

Table 3. Summary of the main patterns observed in subjective and objective readiness variables across time points relative to match day (MD, MD + 2, MD + 3, MD + 5) in female and meale groups

Variable	Female group	Male group
Fwi	No clear time-related changes	Lower values at MD vs MD+2, MD+3, MD+5
SQi	No clear time-related changes	No clear time-related changes
Moi	No clear time-related changes	No clear time-related changes
4-dRi	No clear time-related changes	Higher values at MD+5 vs MD and MD+2
ASTi	Differences between MD vs MD+2 and MD+2 vs MD+3	No clear time-related changes
SRTi	No clear time-related changes	No clear time-related changes
KTWi-R	No clear time-related changes	No clear time-related changes
KTWi-L	No clear time-related changes	Difference between MD+3 and MD+5

Objective Readiness Monitoring

The effects of time points relative to match days (MD, MD+2, MD+3, and MD+5) on objective readiness variables were analysed using linear mixed-effects models with athletes included as a random effect.

In the female group, a different pattern emerged. A significant effect of time point was observed for ASTi (F(3, 54.72) = 4.45, p=.007), with differences between MD and MD+2 and between MD+2 and MD+3, indicating a transient change in adductor strength around the early post-match assessments (Table 1f). No meaningful changes were detected for SRTi, KTWi-R, or KTWi-L, which remained stable across the analysed time points (Table 1g-1i).

Table 1f. Pairwise contrasts between match days derived from the linear mixed model for the FWi female

	Estimate	SE	df	t	p†
MD vs MD + 2	0.049	0.014	24.823	3.486	.011
MD vs MD+3	0.018	0.013	38.612	1.445	.313
MD vs MD+5	0.020	0.011	75.011	1.744	.256
MD+2 vs MD+3	-0.031	0.011	85.489	-2.758	.036
MD+2 vs MD+5	-0.029	0.012	32.029	-2.443	.081
MD+3 vs MD+5	0.002	0.011	97.610	0.171	.864

Note: † P-values are adjusted using Holm adjustment.

The ANOVA summary of the linear mixed-effects model showed a significant main effect of Match Day (F (3, 54.72) = 4.45, p = .007).

Table 1g. Pairwise contrasts between match days derived from the linear mixed model for the SRTi female

	Estimate	SE	df	t	p†
MD vs MD + 2	0.014	0.010	145.891	1.434	.922
MD vs MD+3	-3.231×10^{-4}	0.011	43.783	-0.030	1.000
MD vs MD+5	0.003	0.010	237.132	0.328	1.000
MD+2 vs MD+3	-0.015	0.011	23.286	-1.307	1.000
MD+2 vs MD+5	-0.011	0.010	68.141	-1.108	1.000
MD+3 vs MD+5	0.003	0.011	53.305	0.327	1.000

Note: † P-values are adjusted using Holm adjustment.

The ANOVA summary of the linear mixed-effects model showed no significant main effect of Match Day (F (3, 57.69) = .855, p = .470).

Table 1h. Pairwise contrasts between match days derived from the linear mixed model for the KTWi-R female

	Estimate	SE	df	t	p†
MD vs MD + 2	-0.010	0.015	41.802	-0.671	1.000
MD vs MD+3	-0.006	0.015	27.414	-0.428	1.000
MD vs MD+5	-0.010	0.015	65.705	-0.657	1.000
MD+2 vs MD+3	0.004	0.015	325.379	0.260	1.000
MD+2 vs MD+5	6.674×10^{-4}	0.015	147.511	0.044	1.000
MD+3 vs MD+5	-0.003	0.015	184.393	-0.220	1.000

Note: † P-values are adjusted using Holm adjustment.

The ANOVA summary of the linear mixed-effects model showed a significant main effect of Match Day (F (3, 81.89) = 0.197, p = .898).

Table 1i. Pairwise contrasts between match days derived from the linear mixed model for the KTWi-L female

	Estimate	SE	df	t	p†
MD vs MD + 2	-0.018	0.020	18.431	-0.874	1.000
MD vs MD+3	-0.001	0.016	54.974	-0.067	1.000
MD vs MD+5	-0.005	0.017	27.338	-0.275	1.000
MD+2 vs MD+3	0.017	0.018	37.533	0.935	1.000
MD+2 vs MD+5	0.013	0.016	57.631	0.798	1.000
MD+3 vs MD+5	-0.004	0.015	151.047	-0.234	1.000

Note: † P-values are adjusted using Holm adjustment.
The ANOVA summary of the linear mixed-effects model showed a significant main effect of Match Day (F (3, 45.66) = 0.344, *p* = .794).

In the male group, most objective measures remained relatively stable across the analysed time points. No clear time-related changes were observed for the ASTi, SRTi, or KTWi-R (Table 2f-2h). A significant effect of time point was detected only for the KTWi-L (F(3, 31.39) = 3.93, p = .017), with a difference observed between MD+3 and MD+5 (p = .015) (Table 2i).

Table 2f. Pairwise contrasts between match days derived from the linear mixed model for the ASTi male

	Estimate	SE	df	t	p†
MD vs MD + 2	0.002	0.028	17.992	0.076	1.000
MD vs MD+3	0.003	0.029	18.189	0.097	1.000
MD vs MD+5	0.028	0.023	18.679	1.241	.919
MD+2 vs MD+3	7.427×10^{-4}	0.013	106.967	0.057	1.000
MD+2 vs MD+5	0.026	0.014	39.054	1.850	.431
MD+3 vs MD+5	0.025	0.015	22.716	1.741	.476

Note: † P-values are adjusted using Holm adjustment.
The ANOVA summary of the linear mixed-effects model showed a significant main effect of Match Day (F (3, 39.44) = 2.18, *p* = .105).

Table 2g. Pairwise contrasts between match days derived from the linear mixed model for the SRTi male

	Estimate	SE	df	t	p†
MD vs MD + 2	-0.019	0.012	33.606	-1.623	.456
MD vs MD + 3	-0.026	0.011	4.057	-2.271	.424
MD vs MD + 5	-0.025	0.012	10.285	-2.120	.356
MD + 2 vs MD + 3	-0.006	0.012	16.044	-0.526	1.000
MD + 2 vs MD + 5	-0.006	0.012	69.943	-0.511	1.000
MD + 3 vs MD + 5	4.524×10^{-4}	0.012	7.319	0.036	1.000

Note: † P-values are adjusted using Holm adjustment.
The ANOVA summary of the linear mixed-effects model showed a significant main effect of Match Day (F (3, 12.27) = 2.28, *p* = .131).

Table 2h. Pairwise contrasts between match days derived from the linear mixed model for the KTWi-R male

	Estimate	SE	df	t	p†
MD vs MD + 2	9.408×10^{-4}	0.014	164.897	0.069	1.000
MD vs MD+ 3	-0.024	0.013	53.960	-1.801	.367

Table 2h. (continued)

	Estimate	SE	df	t	p†
MD vs MD + 5	0.004	0.013	108.410	0.293	1.000
MD + 2 vs MD + 3	-0.025	0.014	88.282	-1.811	.367
MD + 2 vs MD + 5	0.003	0.014	53.045	0.200	1.000
MD + 3 vs MD + 5	0.027	0.013	17.706	2.107	.298

Note: † P-values are adjusted using Holm adjustment.
The ANOVA summary of the linear mixed-effects model showed no significant main effect of Match Day (F (3, 45.76) = 1.85, p = .151).

Table 2i. Pairwise contrasts between match days derived from the linear mixed model for the KTWiL male

	Estimate	SE	df	t	p†
MD vs MD+2	-0.007	0.016	20.345	-0.435	.668
MD vs MD+3	-0.025	0.016	19.424	-1.547	.434
MD vs MD+5	0.025	0.015	24.594	1.665	.434
MD+2 vs MD+3	-0.017	0.015	43.615	-1.165	.501
MD+2 vs MD+5	0.032	0.014	117.796	2.351	.102
MD+3 vs MD+5	0.050	0.015	30.630	3.305	.015

Note: † P-values are adjusted using Holm adjustment.
The ANOVA summary of the linear mixed-effects model showed a significant main effect of Match Day (F (3, 31.39) = 3.93, p = .017).

A concise overview of the main patterns observed across objective readiness variables is provided in the summary Table 3.

Comparison Between Males and Females

Sex-related differences in subjective and objective readiness variables were analysed using linear mixed-effects models with athletes included as a random effect. A first comparison has been made using the 4-dRi to see the different patterns of load management of dRIs over time. The analysis revealed a significant Sex × Time point interaction (F(3, 56.27) = 4.66, p=.006). Pairwise comparisons indicated a significant difference between females and males at MD (p=.031), whereas no differences were observed at the subsequent time points (Table 3a).

Secondly, to assess objective readiness, a comparison using the three field-test indexes has been conducted to determine whether there are discrepancies between the two groups' scores. A similar pattern was observed for ASTi, with a significant Sex × Time point interaction (F(3, 104.20) = 3.23, p = .025). Post-hoc comparisons showed a significant difference between sexes at MD+3 (p=.031), while no differences were found at the other time points (Table 3b). On the contrary, SRTi, KTWi-R, and KTWi-L showed no significant sex differences, and no significant Sex × Time-point interactions were detected (Table 3c-3e).

Table 3a. Pairwise contrasts between female and male groups at each time point relative to match day derived from the linear mixed-effects model for the 4-dRi

	Estimate	SE	df	t	p†
MD(F) vs MD(M)	-0.059	0.021	43.543	-2.798	.031
MD+2(F) vs MD+2(M)	-0.005	0.027	41.540	-0.173	1.000
MD+3(F) vs MD+3(M)	-0.009	0.025	39.829	-0.382	1.000
MD+5(F) vs MD+5(M)	0.027	0.025	40.611	1.056	.892

Note: † P-values are adjusted using Holm adjustment.

The ANOVA summary showed no significant main effect of Sex ($F(1, 42.57) = 0.35$, $p = .560$), a significant effect of time point ($F(3, 56.27) = 6.13$, $p = .001$), and a significant Sex * time point interaction ($F(3, 56.27) = 4.66$, $p = .006$).

Table 3b. Pairwise contrasts between female and male groups at each time point relative to match day derived from the linear mixed-effects model for the ASTi

	Estimate	SE	df	t	p†
MD(F) vs MD(M)	0.048	0.021	47.183	2.329	.073
MD+2(F) vs MD+2(M)	0.002	0.021	40.681	0.078	.938
MD+3(F) vs MD+3(M)	0.057	0.020	44.006	2.785	.031
MD+5(F) vs MD+5(M)	0.033	0.022	46.303	1.538	.262

Note: † P-values are adjusted using Holm adjustment.

The ANOVA summary showed a significant main effect of Sex ($F(1, 45.62) = 4.70$, $p = .036$), no significant main effect of time point ($F(3, 104.20) = 2.65$, $p = .053$), and a significant Sex * Time point interaction ($F(3, 104.20) = 3.23$, $p = .025$).

Table 3c. Pairwise contrasts between female and male groups at each time point relative to match day derived from the linear mixed-effects model for the SRTi

	Estimate	SE	df	t	p†
MD(F) vs MD(M)	0.046	0.037	47.492	1.238	.888
MD+2(F) vs MD+2(M)	0.014	0.035	46.318	0.394	1.000
MD+3(F) vs MD+3(M)	0.024	0.035	47.442	0.684	1.000
MD+5(F) vs MD+5(M)	0.021	0.033	43.187	0.644	1.000

Note: † P-values are adjusted using Holm adjustment.

The ANOVA summary showed no significant main effect of Sex ($F(1, 46.90) = 0.60$, $p = .443$), no significant main effect of time point ($F(3, 113.67) = 1.80$, $p = .150$), and no significant Sex * Time point interaction ($F(3, 113.67) = 1.83$, $p = .145$).

Table 3d. Pairwise contrasts between female and male groups at each time point relative to match day derived from the linear mixed-effects model for the KTWi-R

	Estimate	SE	df	t	p†
MD(F) vs MD(M)	-0.018	0.030	46.432	-0.586	1.000
MD+2(F) vs MD+2(M)	-0.014	0.030	45.251	-0.472	1.000
MD+3(F) vs MD+3(M)	-0.009	0.031	45.663	-0.299	1.000
MD+5(F) vs MD+5(M)	-0.040	0.029	46.866	-1.375	.702

Note: † P-values are adjusted using Holm adjustment.

The ANOVA summary showed no significant main effect of Sex ($F(1, 46.12) = 0.53$, $p = .470$), no significant main effect of time point ($F(3, 627.64) = 1.84$, $p = .139$), and no significant Sex * Time point interaction ($F(3, 627.64) = 1.06$, $p = .365$).

Table 3e. Pairwise contrasts between female and male groups at each time point relative to match day derived from the linear mixed-effects model for the KTWi-L

	Estimate	SE	df	t	p†
MD(F) vs MD(M)	0.005	0.037	45.986	0.145	1.000
MD+2(F) vs MD+2(M)	0.010	0.035	43.036	0.284	1.000
MD+3(F) vs MD+3(M)	0.033	0.038	45.245	0.885	1.000
MD+5(F) vs MD+5(M)	-0.017	0.035	47.402	-0.490	1.000

Note: † P-values are adjusted using Holm adjustment.

The ANOVA summary showed no significant main effect of Sex ($F(1, 46.45) = 0.06$, $p = .814$), a significant effect of time point ($F(3, 81.34) = 2.81$, $p = .045$), and no significant Sex * Time point interaction ($F(3, 81.34) = 2.24$, $p = .090$).

An overview of the main patterns observed in the comparison between the female and male groups is provided in Table 4.

Table 4. Summary of the main patterns observed in the comparison between female and male groups across time points relative to match day (MD, MD+2, MD+3, MD+5)

Variable	Main finding (Female vs Male)
4-dRi	Difference between sexes at MD
ASTi	Difference between sexes at MD+3
SRTi	No sex differences
KTWi-R	No sex differences
KTWi-L	No sex differences

Discussion

Subjective Readiness Monitoring

The results obtained for the male group show that 4-dRi monitoring followed a trend that may be related to the players' physical and mental fatigue (Drole et al., 2025). In fact, the significant differences highlighted for FWi between MD and the other days can be explained by the fact that on match day, players feel the game and experience less fatigue and anxiety, thereby increasing their overall sense of readiness. As for DOMSi, having a higher value on MD means that players are in the right physical condition to face a match because they have recovered enough from the weekly load. Moreover**,** in line with the monitoring framework proposed in this study, the estimated marginal means for the male group showed a reduction of approximately 20% in 4-dRi at MD+2 relative to the players' personal best values, as reported in Table S2**.** This decrease may indicate that athletes are approaching the red zone, a phase of reduced readiness that occurs around 48h after match exposure and reflects the transient fatigue accumulated during competition.

In the female group, 4-dRi showed no clear relationship with the analysed time points, suggesting that readiness status in female athletes may be influenced by additional factors, particularly the menstrual cycle. Therefore, depending on the phase the athlete is in, she may be affected differently by the hormonal fluctuations typical of the menstrual cycle, especially oestrogens and progesterone, which are most responsible for the different psychological and physical sensations that occur on different days of the cycle [OB]in women. Lower index values were observed 48h post-match (MD+2), followed by a subsequent increase at 72h post-match (MD+3). As shown in Table 1f, ASTi values decreased from MD to MD+2 and then increased from MD+2 to MD+3, suggesting that this test may be a useful indicator for monitoring post-match recovery in female athletes, indicating they may still be fatigued from the competition.

Men seemed unaffected by fatigue. Either their recovery was faster post-match, or the values over time remained fairly regular because of a hypothetical influence of the "Learning Effect" (Lund et al., 2005)—which is the process whereby repeating a new motor skill within short periods of time leads to rapid improvements in performance, which become smaller and smaller as one becomes more familiar with the action.

Comparison Between Males and Females

Between the two research groups, the analysis of 4-dRi revealed that subjective readiness perception differs by sex. On match days (MD), the days when players should feel at their best to face the game, there was a difference. Men showed their highest index as expected (Figure S2e). Women, on the other hand, had a lower value index that did not reach their maximum score, with a higher estimated

marginal mean observed at MD+3 (Figure S1e), likely because they experienced greater stress and performance anxiety on match day, leading to a lower sense of general readiness.

After MD, the male values settled at a lower index and remained constant (Figure S2e). While in females, there were fluctuations between lower and higher values that were difficult to associate with a dissimilar management of fatigue and anxiety; the values would all have to be higher than MD, or even MD+5 would have shown high values as MD+3 did (Figure S1e). These intergroup differences are more likely to be related to the menstrual cycle in women, making it more difficult to assess whether the decrease in readiness is linked to performance- or hormonal-related factors (Roffler et al., 2024).

Regarding RDs, the comparison between the two groups revealed discrepancies only for ASTi, where men resulted in having lower values than their female counterparts, especially on MD+3 (Figure S3b), where lower estimated marginal means were observed; and on MD, where the value increased, but it remained significantly different from the female one. However, on MD+2 they almost had the same index, and on MD+5 it was only slightly divergent.

The general trend among females followed the expected pattern: a higher estimated marginal mean on MD, then the lowest index values on MD+2, which increased again on MD+3 and MD+5. Males did not seem to follow the same trend, showing index values that decreased during the week, then increased on MD and MD+2. These differences in the pattern after a match may reflect distinct fatigue states, as recovery is not the same for all athletes; it depends heavily on the minutes played, the position played, and the number of collisions.

In this context, the aggregated readiness index (4-dRi) in the male group appeared to provide a clear reference for identifying the “red zone”, as the decrease observed at MD+2 (48h post-match) corresponded to the hypothesised phase of reduced readiness.

Finally, comparing SRTi, KTWi, both for the right limb (KTWi-R) and the left limb (KTWi-L), there were no significant differences to report. The index values in both groups followed a fairly regular trend during the week, deviating by a maximum of 0.03-0.04 points from MD (Figure S3d-S3e). It can therefore be concluded that these tests were not very suitable for monitoring players' health, as they are highly dependent on each subject's ankle dorsiflexion mobility and hamstring flexibility and therefore vary little unless specifically trained.

Results in Relation to the Specific Context of the Discipline

As this is one of the few studies conducted on women (Baptista et al., 2025; Roffler et al., 2024), it is not possible to make direct correlations with other studies in the current literature, but only to compare women with their male counterparts. However, by taking the male group exclusively, it is possible to relate them to other male populations on which similar studies have been conducted.

Ramírez-López et al. (2020a; 2020b; 2022) carried out various fatigue monitoring protocols using both questionnaires assessing the athlete's wellbeing and physical field tests to assess their readiness on the match day or training sessions. In all cases, it is clear that monitoring via questionnaires is useful for tracking the athlete's readiness and for determining whether the athlete is in a suitable state to compete or in a critical situation (“red zone”). Physical tests, on the other hand, are seen more as a tool for assessing daily-to-daily physical readiness, but they are not very useful for obtaining data to compare over time due to the Learning Effect created by repeating the action.

Finally, the most recent study (Ramírez-López et al., 2022) stated that there was a positive correlation between the perception of subjective readiness, espe-

cially related to the quantity and quality of sleep, and the athlete's technical and tactical performance, thus demonstrating that this kind of monitoring helps to have greater control over performance, thanks to the continuous check of responses to workloads, as hypothesised in this current research.

Limitations of the Study

The first major limitation is the small sample analysed, which does not represent the entire team of athletes. The group that performed the tests was larger, but some data were deemed insufficient for various reasons.

Secondly, the research was not conducted over the entire competitive season, but only at two distinct moments during the championship, which were more intense in terms of the number of matches per unit of time. This choice was made because, as this was the first time a monitoring questionnaire had been administered to these teams, we wanted to test the athletes' response to the project. We wanted to avoid asking them to fill it out continuously throughout the season, as this could have caused adverse reactions. It is an additional commitment the athlete is required to maintain, and since they were not used to doing so, some might have found it annoying.

Then, it should be noted that, apart from the Adductor Squeeze Test, which was always checked by the same operator, the other two tests were self-administered because the centimetre scales were fixed in the gym and the athletes measured themselves as they entered, without an operator present to check them. This, therefore, implies less accurate measurements, meaning the results are subject to a higher margin of error.

Finally, for women athletes, no information on menstrual cycle phase or contraceptive status was collected. The consequences of this omission explained the interpretation of 4-dRi results, including the possibility that fluctuations in perceived readiness across time points may reflect hormonal rather than fatigue-related variation.

Future Developments

Future investigations in this field should aim to continuously develop tools that are more valid and reliable, quick to administer, and that demonstrate a clear correlation with athletes' performance, serving as tools for readiness monitoring and injury prevention.

Having demonstrated how, in a group of only women, it is essential to consider possible alterations in the questionnaire and test scores, future developments in readiness monitoring should take into account the presence of the menstrual cycle and consider differences due to hormonal factors (Carmichael et al., 2021; Legerlotz & Nobis, 2022). For example, a question could be included in the subjective assessment of the questionnaire, asking which phase of the menstrual cycle the athlete is currently in, to build a general picture of her hormonal state and understand the potential consequences for her mood and physical performance.

Conclusion

In conclusion, the most important result emerging from this study is the sex differences in the utility of dRIs and RDs for readiness monitoring. In women, the results did not indicate significant differences in the subjective assessment, suggesting that this type of monitoring may not be suitable for assessing the perceived readiness of a group of female athletes, possibly due to the influence of the menstrual cycle. While in males it seemed to follow the expected pattern, where the athlete was still in a state of fatigue 48h after the match (MD+2), corresponding to the “red zone,” while during the week (MD+3, MD+5), as the next match approaches, the value rose again until it reached its maximum on MD.

The RDs tests chosen, in both cases, revealed not to be very effective in readiness monitoring, apart from a small,

significant effect observed within the women's team. Nevertheless, field tests remain an optimal tool for monitoring daily readiness from a preventive perspective, because any decline in ROM and strength relative to the average immediately indicates the athlete's current status and allows the training load to be adjusted accordingly to avoid potential injury.

Despite this evidence, monitoring perceived readiness is a popular, cost-effective strategy and is often used to select athletes for matches and plan daily training sessions.

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this manuscript, the authors declare that no AI and AI-assisted technologies were used.

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Supplementary materials

Table S1. Female Group Descriptive Statistics

		Median	Mean	Std. Deviation	IQR	Minimum	Maximum
FWi	MD	0.750	0.739	0.187	0.200	0.200	1.000
FWi	MD+2	0.750	0.720	0.201	0.300	0.250	1.000
FWi	MD+3	0.750	0.730	0.194	0.300	0.250	1.000
FWi	MD+5	0.750	0.697	0.211	0.300	0.250	1.000
SQi	MD	0.800	0.796	0.197	0.250	0.200	1.000
SQi	MD+2	0.800	0.828	0.182	0.250	0.200	1.000
SQi	MD+3	0.800	0.840	0.180	0.250	0.200	1.000
SQi	MD+5	0.800	0.796	0.189	0.325	0.400	1.000
Moi	MD	0.750	0.732	0.182	0.200	0.400	1.000
Moi	MD+2	0.750	0.702	0.186	0.200	0.200	1.000
Moi	MD+3	0.750	0.741	0.211	0.400	0.200	1.000
Moi	MD+5	0.750	0.712	0.182	0.200	0.200	1.000
DOMSi	MD	0.750	0.818	0.168	0.250	0.330	1.000
DOMSi	MD+2	0.750	0.787	0.199	0.250	0.200	1.000
DOMSi	MD+3	0.750	0.809	0.167	0.250	0.500	1.000
DOMSi	MD+5	0.750	0.772	0.192	0.250	0.200	1.000
4-dRi	MD	0.810	0.816	0.121	0.193	0.530	1.000
4-dRi	MD+2	0.820	0.802	0.133	0.135	0.410	1.000
4-dRi	MD+3	0.820	0.826	0.122	0.180	0.410	1.000
4-dRi	MD+5	0.800	0.787	0.134	0.190	0.500	1.000
ASTi	MD	0.890	0.894	0.079	0.100	0.620	1.000
ASTi	MD+2	0.850	0.847	0.096	0.120	0.530	1.000
ASTi	MD+3	0.880	0.878	0.083	0.110	0.670	1.000
ASTi	MD+5	0.880	0.875	0.081	0.110	0.640	1.000
SRTi	MD	0.915	0.884	0.134	0.080	0.330	1.000
SRTi	MD+2	0.910	0.871	0.139	0.130	0.320	1.020
SRTi	MD+3	0.920	0.887	0.136	0.100	0.290	1.000
SRTi	MD+5	0.920	0.885	0.134	0.075	0.290	1.000
KTWi-R	MD	0.820	0.801	0.137	0.203	0.430	1.000
KTWi-R	MD+2	0.840	0.811	0.142	0.180	0.420	1.000
KTWi-R	MD+3	0.830	0.816	0.126	0.155	0.430	1.000
KTWi-R	MD+5	0.810	0.814	0.125	0.150	0.430	1.000
KTWi-L	MD	0.860	0.809	0.167	0.268	0.360	1.000
KTWi-L	MD+2	0.870	0.829	0.135	0.160	0.450	1.000
KTWi-L	MD+3	0.870	0.827	0.143	0.205	0.400	1.000
KTWi-L	MD+5	0.860	0.821	0.126	0.150	0.450	1.000

Figure S1. Distribution of subjective and objective measures in the Female Group across match day (MD) and the three subsequent days (MD+2, MD+3, and MD+5). Each panel displays a different variable. Black horizontal lines represent estimated marginal means derived from the linear mixed-effects model.

Figure S1a.

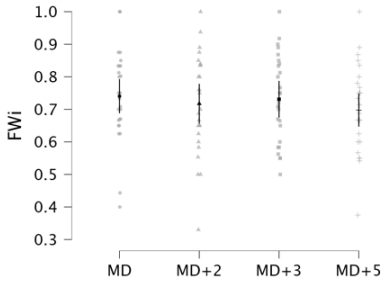
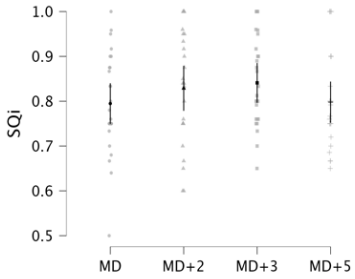


Figure S1b.



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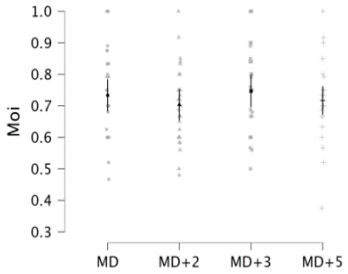

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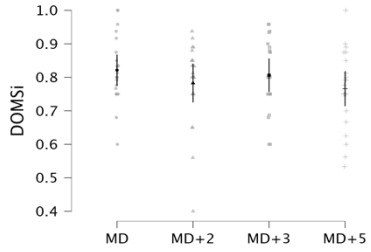

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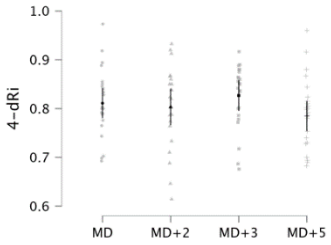

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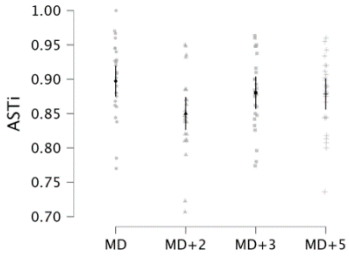

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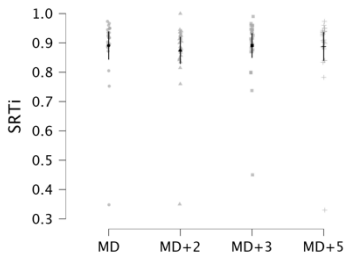


Figure S1h.

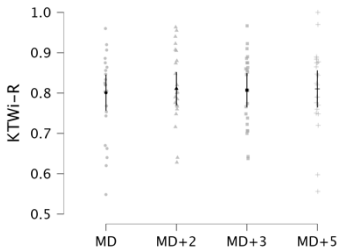


Figure S1i.

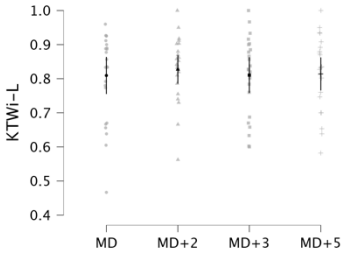


Table S2. Male Group Descriptive Statistics

		Median	Mean	Std. Deviation	IQR	Minimum	Maximum
FWi	MD	0.750	0.835	0.176	0.250	0.250	1.000
FWi	MD+2	0.750	0.717	0.185	0.250	0.330	1.000
FWi	MD+3	0.750	0.695	0.179	0.250	0.250	1.000
FWi	MD+5	0.750	0.719	0.205	0.275	0.200	1.000
SQi	MD	1.000	0.877	0.166	0.200	0.200	1.000
SQi	MD+2	0.800	0.826	0.162	0.250	0.400	1.000
SQi	MD+3	0.800	0.805	0.172	0.250	0.200	1.000
SQi	MD+5	0.800	0.854	0.160	0.250	0.400	1.000
Moi	MD	1.000	0.813	0.234	0.250	0.200	1.000
Moi	MD+2	0.750	0.751	0.227	0.400	0.200	1.000
Moi	MD+3	0.750	0.759	0.234	0.400	0.200	1.000
Moi	MD+5	0.800	0.795	0.218	0.400	0.200	1.000
DOMSi	MD	0.800	0.861	0.147	0.250	0.500	1.000
DOMSi	MD+2	0.750	0.805	0.168	0.250	0.200	1.000
DOMSi	MD+3	0.750	0.782	0.163	0.250	0.200	1.000
DOMSi	MD+5	0.750	0.714	0.190	0.175	0.200	1.000
4-dRi	MD	0.880	0.871	0.110	0.140	0.530	1.000
4-dRi	MD+2	0.820	0.801	0.123	0.170	0.530	1.000
4-dRi	MD+3	0.800	0.792	0.118	0.170	0.440	1.000
4-dRi	MD+5	0.800	0.795	0.114	0.150	0.470	1.000
ASTi	MD	0.880	0.851	0.108	0.120	0.380	1.000
ASTi	MD+2	0.880	0.855	0.099	0.120	0.480	1.000
ASTi	MD+3	0.880	0.846	0.110	0.120	0.440	1.000
ASTi	MD+5	0.850	0.825	0.112	0.120	0.380	1.000
SRTi	MD	0.880	0.846	0.148	0.140	0.270	1.000
SRTi	MD+2	0.900	0.872	0.119	0.140	0.380	1.000
SRTi	MD+3	0.900	0.881	0.108	0.120	0.310	1.000
SRTi	MD+5	0.910	0.875	0.132	0.125	0.230	1.000
KTWi-R	MD	0.820	0.812	0.125	0.160	0.450	1.000
KTWi-R	MD+2	0.850	0.831	0.124	0.185	0.450	1.000
KTWi-R	MD+3	0.870	0.842	0.132	0.120	0.360	1.000
KTWi-R	MD+5	0.820	0.815	0.132	0.180	0.270	1.000
KTWi-L	MD	0.830	0.804	0.156	0.180	0.330	1.000
KTWi-L	MD+2	0.900	0.848	0.146	0.165	0.330	1.000
KTWi-L	MD+3	0.900	0.840	0.144	0.170	0.500	1.000
KTWi-L	MD+5	0.800	0.805	0.152	0.160	0.330	1.000

Figure S2. Distribution of subjective and objective measures in the Male Group across match day (MD) and the three subsequent days (MD+2, MD+3, and MD+5). Each panel displays a different variable. Black horizontal lines represent estimated marginal means derived from the linear mixed-effects model.

Figure S2a.

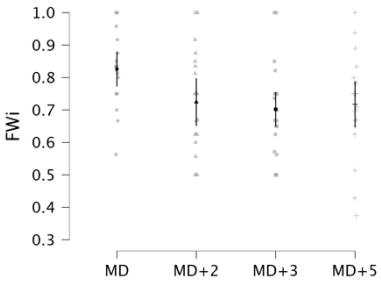
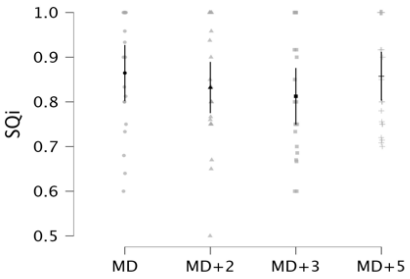


Figure S2b.



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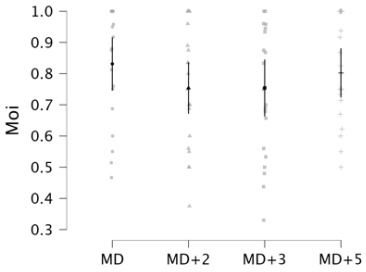


Figure S2d.

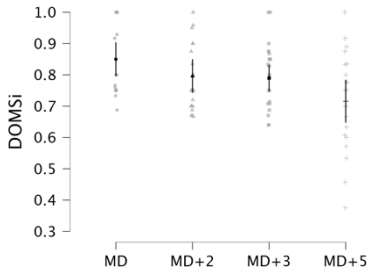


Figure S2e.

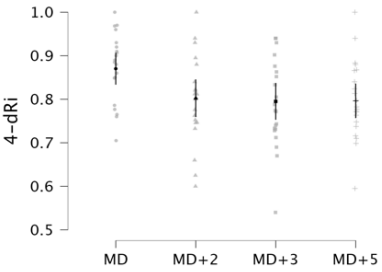


Figure S2f.

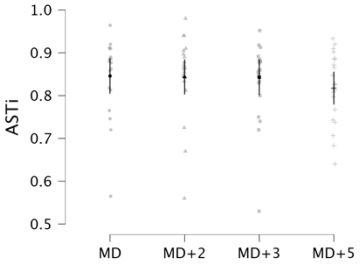


Figure S2g.

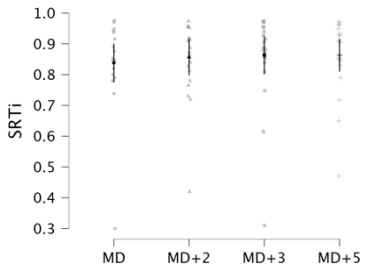


Figure S2h.

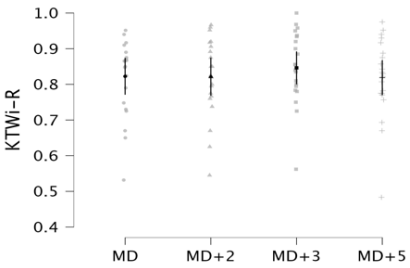


Figure S2i.

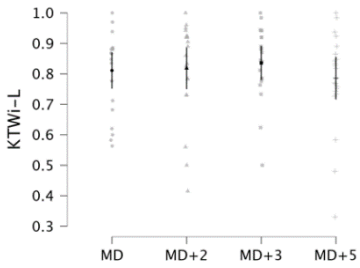


Figure S3. Comparison of the distribution of subjective and objective measures in Female and Male Groups across time points relative to match day (MD, MD+2, MD+3, and MD+5). Black horizontal lines represent estimated marginal means derived from the linear mixed-effects model.

Figure S3a.

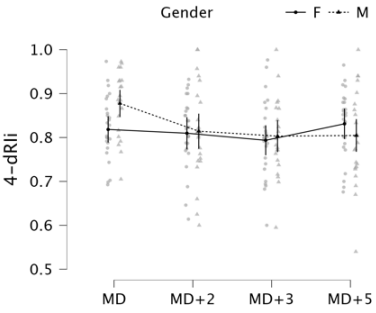


Figure S3b.

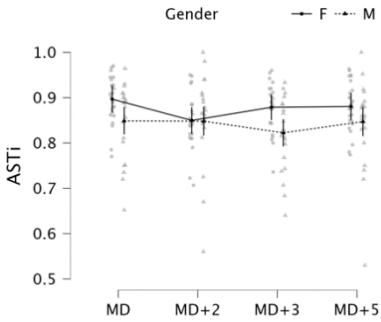


Figure S3c.

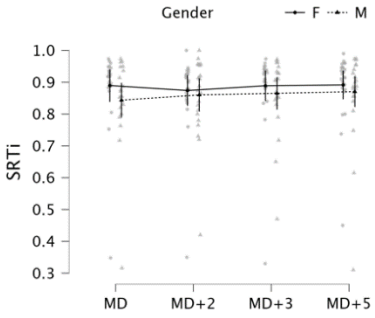


Figure S3d.

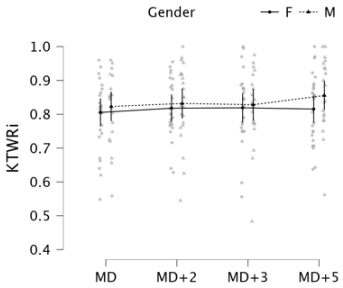
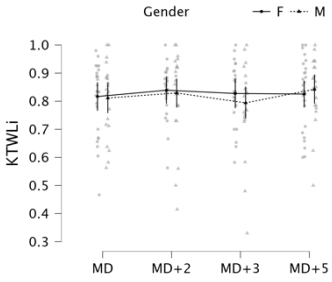


Figure S3e.



The Official Journal of the International Society for
Comparative Physical Education and Sport

EDITORIAL

Message from the ISCPES President

Prof Dr Rosa López de D'Amico

The International Society for Comparative Physical Education and Sport (ISCPES) has maintained a longstanding partnership with the International Association of Physical Education and Sport for Girls and Women (IAPESGW) for more than four decades. Throughout this time, the theme of women in Physical Education, Physical Activity and Sport has remained central to our shared agenda. The following highlights reflect the depth and continuity of this valued relationship:

1. At the International Committee for Sport Pedagogy (ICSP), created in 1984 as an advisory group of the International Council for Sport Science and Physical Education (ICSSPE), five organisations (ISCPES, IFAPA, IAPESGW, FIEP, AIESEP) collaborated on numerous joint projects and meetings from the committee's founding until 2018 (López de D'Amico et al., 2014).

2. The ISCPES Book Series featured volumes following both a "mono-national" (or country), so-called 'Area approach' and an international dimension thematic, so-called 'Problem approach' (e.g., Women and Sport). The third volume, *Social Issues in Women and Sport – International and Comparative Perspectives* (2003), exemplifies this latter approach and featured contributions from several IAPESGW members.

3. A particularly noteworthy joint initiative was *Global Voices on Physical Education and Sport*, coordinated by Walter Ho (then president of ISCPES) and conducted between 2009 and 2016. The project engaged participants across all continents and generated several publications in various languages (e.g., Ho et al, 2016; Holzweg et al, 2013).

4. This present volume is a further testament to the productive collaboration of ISCPES and IAPESGW. It features a special issue on women and sport, drawing on selected papers from the 2025 IAPESGW World Conference, which was successfully hosted in the Philippines amid complex weather conditions. The resilience and commitment of the local organisers made a lasting impression on all the participants. I extend my sincere congratulations to the guest editors and the entire team who worked hard to make this volume possible.

On a personal note, as the current President of ISCPES, I am honoured to serve as an Honorary Life Member of IAPESGW, having had the privilege of leading the organisation as its president from 2013 to 2021. It is a great pleasure to see this partnership continue to flourish. Together, these two distinguished organisations and their dedicated volunteers remain steadfast in their support for academics and practitioners who share our common mission and vision.

Rosa López de D'Amico
ISCPES President

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