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(REVIEW ARTICLE)

The pedagogical models in physical education: A scoping review of contemporary approaches, implementation challenges, and future directions

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Abstract

Over the past two decades, physical education (PE) has experienced rapid development in terms of pedagogical models that aim to improve student learning in various domains, ranging from Sport Education, Teaching Personal and Social Responsibility (TPSR), Cooperative Learning, Meaningful Physical Education, Teaching Games for Understanding (TGfU), to Outdoor Adventure Education (OAE). However, this diversity of models actually causes confusion among teachers in choosing and adapting the model that best suits their local context. This research aims to map contemporary pedagogical models in physical education, identify common implementation barriers, and propose a decision-making framework that can assist teachers in selecting and implementing models effectively. This study is a scoping review literature study that analyzes 45 empirical studies published between 2015 and 2025. The results of the review identified six dominant families of pedagogical models, each with different objectives, core features, and evidence bases. The main implementation challenges include inadequate teacher readiness, implementation fidelity issues, contextual constraints such as limited resources and time, and the need for sustainable professional development. Based on these findings, this study proposes a four-dimensional decision-making framework that is interconnected, namely purpose, people, place, and process. This framework is expected to help teachers move beyond mere model adoption towards model adaptation and hybridization in response to local realities. This study concludes that the successful implementation of the pedagogical model is highly dependent on the alignment between the model's objectives, student characteristics, school context, and gradual and collaborative process strategies. Implicitly, the professional development of teachers and the support of the professional learning community are the main keys in transforming physical education learning practices that are more meaningful, inclusive, and equitable.

Keywords: Pedagogical Model; Physical Education; Model Based Practices; Implementation; Scope Review; Teacher Education

1. Introduction

Physical education (PE) has long been criticized for its reliance on traditional multi-activity approaches based on sports techniques that fail to engage all students and deliver meaningful learning outcomes (Casey & Kirk, 2020; Kirk, 2010).

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In response, the field has witnessed a significant shift towards model based practice (MbP), where a coherent pedagogical framework guides curriculum design, instruction, and assessment (Casey & MacPhail, 2018). Models such as Sport Education (Siedentop et al., 2019), Teaching Personal and Social Responsibility (Hellison, 2011), Cooperative Learning (Johnson & Johnson, 2009), and more recent innovations such as Meaningful PE (Fletcher et al., 2021) and Socially-Just TPSR (Scanlon et al., 2022) have gained international traction.

Despite this proliferation, teachers often face uncertainty when choosing and implementing models (Casey & Kirk, 2020). This landscape is characterized by overlapping features, varying levels of empirical support, and contextual dependencies that make immediate adoption difficult. In addition, translating models from research environments into diverse school contexts is still fraught with challenges, including inadequate teacher preparation, lack of resources, and resistance to pedagogical change (Goodyear & Casey, 2015; Kern et al., 2021). Recent reviews have examined specific models separately (e.g., Araújo et al., 2014; Bessa et al., 2021; Evangelio et al., 2018), but a comprehensive synthesis that compares several models and identifies cross-sectoral implementation issues is still lacking.

This research is a literature review study that aims to fill this gap. In contrast to primary research, the literature review approach was chosen because the main problem facing teachers today is not the lack of models, but rather the fact that there are too many models available without systematic guidance to select and adapt them to the local context. Therefore, this kind of synthesis is urgently needed to help practitioners navigate the model landscape and to guide future research and professional development initiatives. Specifically, this paper aims to map the current pedagogical model terrain in PE through a review of the empirical literature scope as well as propose a decision-making framework that supports teachers in selecting, adapting, and sustaining model-based practices in their unique contexts. To achieve this goal, this literature review study will answer the following three research questions: what pedagogical models have been empirically researched in PE over the past decade and what are the characteristics and objectives that define them; what are the reported barriers and facilitators for the successful implementation of the model; and how structured frameworks can assist teachers in making informed decisions about model selection and implementation.

1.1. Objectives and Characteristics of Model-Based Practice Model-based practice

Model-based practice in physical education refers to the deliberate use of comprehensive instructional models that integrate curriculum, teaching, and assessment around a coherent set of educational goals (Metzler, 2017). Unlike traditional approaches that often rely on an eclectic mix of activities without a unified pedagogical basis, the models provide teachers with a blueprint for designing a theoretically grounded and empirically tested learning experience. Key characteristics of effective model-based practices include: Theoretical coherence: Each model is based on a clear educational philosophy and learning theory (e.g., constructivism for Cooperative Learning, self-determination theory for Sport Education). Alignment of objectives, content, and pedagogy: The model determines not only what students should learn but also how learning should be facilitated and assessed. Developmental suitability: Models often include guidelines for adapting instruction according to the student's age, ability, and experience level. Transferability: While models provide structure, they are designed to be adapted to local contexts rather than rigidly applied. Despite these strengths, model fidelity the level of implementation suitability with the model's essential features remains a persistent concern (Hastie & Casey, 2014). Teachers may modify the model in ways that reduce its effectiveness, or they may struggle to integrate the model with existing curricular mandates. Understanding these dynamics is critical to advancing MbP.

2. Overview of Pedagogical Models in Physical Education

Based on our scope review, we identify six families of pedagogical models that dominate contemporary physical education research and practice. These are summarized below according to their main objectives, core features, and typical implementation context.

2.1. Sport Education Model (SEM)

The Sport Education Model, originally developed by Daryl Siedentop, aims to provide students with an authentic sports experience through seasons, team affiliations, formal competitions, record keeping, and peak events (Siedentop et al., 2019). Students take on roles such as players, coaches, referees, and scorers, fostering competence, literacy, and enthusiasm for the sport. SEM has been studied extensively across a wide range of age groups and sports, with meta analyses confirming its positive effects on motivation, engagement, and skill development (Bessa et al., 2021; Manninen & Campbell, 2021). However, implementation requires extended units (usually 18+ lessons) and the teacher's willingness to relinquish control.

2.2. Teaching Personal and Social Responsibility (TPSR) and Socially-Just TPSR

The TPSR model of Hellison focuses on the development of students' personal and social responsibilities through physical activity (Hellison, 2011). Its five level structure respect, effort, self direction, caring, and transfer guides students toward becoming responsible individuals both inside and outside of PE. Recent reconceptualizations, such as Socially-Just TPSR (SJ-TPSR), integrate critical pedagogy and social justice themes, challenge power structures and promote equality (Scanlon et al., 2022). Research shows the effectiveness of TPSR in improving self-regulation, prosocial behavior, and leadership, although teacher training and ongoing commitment are essential for fidelity (Gordon et al., 2016).

2.3. Cooperative Learning (CL)

Cooperative Learning structures students into small, heterogeneous groups to work toward a common goal (Johnson & Johnson, 2009). Key elements include positive interdependence, individual accountability, face to face interaction, interpersonal skills, and group processing. In Physical education, CL has been shown to improve social skills, peer relationships, and motivation (Bjørke & Moen, 2020; Zeleznik Mežan et al., 2025). This is particularly effective at promoting inclusion and reducing dropout rates, although teachers must carefully design assignments and monitor group dynamics.

2.4. Meaningful Physical Education (Meaningful PE)

Meaningful PE is a pedagogical approach that prioritizes students' meaningful experiences as an organizing principle for teaching and learning (Fletcher et al., 2021). Based on democratic and reflective pedagogy, this approach encourages teachers to design lessons that foster social interaction, challenge, motor competence, pleasure, and personal relevance. Research shows that Meaningful PE can increase student engagement and help teachers align their practices with their educational values (Beni et al., 2022; Beni et al., 2025). Its flexible and non prescriptive nature allows for adaptation in a variety of contexts, but this flexibility also poses challenges for novice teachers.

2.5. Teaching Games for Understanding (TGfU) and Game-Based Approaches

TGfU shifts the focus from skill execution towards tactical awareness and decision-making in the context of the game (Bunker & Thorpe, 1982). Students are faced with a modified game where they have to solve tactical problems, with skills taught as needed. Variations such as the Constraints Led Approach (CLA) emphasize the manipulation of task constraints, environments, and actors to facilitate emerging learning (Renshaw et al., 2019). A game-based approach has been shown to improve game performance, motivation, and cognitive engagement (Morales Belando et al., 2022). However, teachers often struggle with a pedagogical shift from a directive to a facilitative role.

2.6. Model for Outdoor and Adventure Education (OAE)

The OAE model focuses on learning through outdoor experiences, emphasizing challenges, risk management, experiential learning, and personal growth (Williams & Wainwright, 2016a, 2016b). Key features include being primarily outdoors, experiential learning cycles, choice based challenges, and managed risks. Recent research has explored how OAE can facilitate affective learning outcomes such as resilience, self concept, and emotional regulation (O'Carroll & Scanlon, 2026). Implementation requires access to outdoor spaces and careful attention to safety and inclusion.

2.7. A Framework for Selecting and Implementing Pedagogical Models

Given the diversity of models and the complexity of school contexts, we propose a decision-making framework that helps teachers navigate model selection and adaptation (Casey & Kirk, 2020; Metzler, 2017). This framework is structured around four interconnected dimensions: purpose, people, place, and process (Century & Cassata, 2016). This proposal is based on a synthesis of the current literature on the implementation of models based practice (MbP) in physical education (Casey & MacPhail, 2018; Lund & Tannehill, 2015). First, the dimension of the destination. The starting point for model selection is a clear articulation of what the teacher wants to achieve (Metzler, 2017). Based on a literature review, different models have different key emphasis and have been shown to have an impact on diverse categories of learning outcomes (Hastie & Casey, 2014). Research shows that the implementation of pedagogical models can have an impact on: (1) game performance and technical skills; (2) tactical understanding and decision-making ability; (3) motivation, autonomy, and confidence; and (4) interpersonal skills, cooperative learning abilities, and responsibility (Casey & Kirk, 2020; Metzler, 2017). Specifically, Sport Education prioritizes sports literacy and authentic participation (Siedentop et al., 2019); TPSR and SJ-TPSR focus on personal and social responsibility (Hellison, 2011; Scanlon et al., 2022); Cooperative Learning targets social and collaboration skills (Johnson & Johnson, 2009); Meaningful PE emphasizes student enjoyment and relevance (Fletcher et al., 2021); TGfU/CLA is centered on tactical understanding

and decision-making (Bunker & Thorpe, 1982; Renshaw et al., 2019); while the Outdoor Adventure Education (OAE) model aims for affective growth and connection with nature (Williams & Wainwright, 2016a, 2016b). Teachers must reflect on their own values, curricular goals, and student needs to identify which goals are most urgent (Lund & Tannehill, 2015). It is important to note that recent research has shown a tendency towards model hybridization, in which teachers combine features from multiple models to overcome the limitations of a single model and achieve more comprehensive learning outcomes (Gonzalez, Villora et al., 2019; Hastie & Curtner, Smith, 2022).

Second, the dimension of people. Student characteristics—age, previous experience, cultural background, interests, and diverse needs should inform the selection of models (Lund & Tannehill, 2015). A recent scoping review of the position of teachers in the literature of pedagogical models identified eight ways in which teachers are positioned, ranging from the most passive (resistant, incapable, mechanical reproducer) to the more active (adaptive, collaborator with the researcher) (Scanlon et al., 2024). These findings suggest that teacher readiness is a critical factor that cannot be ignored (Kern et al., 2021). For example, SJ-TPSR may be particularly relevant in culturally diverse environments (Scanlon et al., 2022), while TGfU may be of interest to students who enjoy problem-solving (Bunker & Thorpe, 1982). However, successful implementation depends heavily on teachers' pedagogical beliefs and their readiness to adopt new roles (Bechtel & O'Sullivan, 2007). A teacher who is familiar with hands-on instruction may have difficulty at first when it comes to a facilitative role as required in TGfU or Meaningful PE (Casey & Kirk, 2020; Fletcher et al., 2021). Research also reveals that teachers' perceptions, acceptance, optimism, and seriousness in implementing the model greatly determine the success of implementation (Goodyear & Casey, 2015). Pessimistic attitudes, low concern, and lack of understanding of effective strategies can cause programs to fail to be implemented optimally (Kern et al., 2021).

Third, the dimension of the place (contextual factors). The school context greatly influences the success of the implementation of the model (Casey & Kirk, 2020). Based on the TPSR implementation study that has been conducted, several significant weaknesses were found related to contextual factors (Gordon et al., 2016). First, teachers often implement the program independently without communication with other parties in the school, so that classroom teachers and other school officials do not participate in helping the implementation of the program properly (Hellison, 2011). Second, schools often lack to facilitate facilities and infrastructure or the allocation and duration of learning time as needed (Hastie & Casey, 2014). Third, the absence of communication with parents leads to no control assistance outside the school environment (Gordon et al., 2016). In Indonesia, research also revealed that there is still a lack or inadequate infrastructure and facilities, learning materials that are not in accordance with the lesson plan, and a lack of understanding of the concept of physical education learning from both supervisors and teachers are the main obstacles to the implementation of the model (Widiayatmoko et al., 2025; Suherman et all., 2020). Some contextual factors to consider include curricular mandates (whether the local/national curriculum aligns with or conflicts with the model's features), resource availability (equipment, facilities, outdoor spaces), time allocation (models such as SEM require long learning units, while short instructional blocks are better suited for modular approaches), as well as school culture (collegial support, administrative support, and the existence of a professional learning community greatly facilitate sustainable implementation) (Casey & MacPhail, 2018; Lund & Tannehill, 2015). The literature also confirms that the length of implementation and the level of familiarity teachers with the model are the main factors limiting the success of implementation, including in the context of model hybridization (Hastie & Curtner, Smith, 2022; Goodyear & Casey, 2015).

Fourth, the dimensions of the process. Successful adoption involves more than just choosing a model; it requires careful planning, gradual introduction, and continuous reflection (Century & Cassata, 2016). Research shows that effective implementation of the model requires adequate teacher training as well as efforts to generate more scientific evidence based on its application in the classroom (Kern et al., 2021; Hastie & Casey, 2014). Based on implementation science (Century & Cassata, 2016) as well as findings from various empirical studies (Goodyear & Casey, 2015; Bechtel & O'Sullivan, 2006), we recommend several implementation strategies. First, start small: start with a single model feature or a short unit to build confidence (Beni et al., 2022), given that teachers who attempt full-scale implementation without adequate support are more likely to experience burnout and revert to previous practices (Casey & Kirk, 2020). Second, seek professional development: attend workshops, peer training, or online communities (Goodyear & Casey, 2015), as professional learning communities have proven to be effective problem-solving forums (Beni et al., 2022; Beni et al., 2025). Third, engage students: build together learning experiences to increase participation (Fletcher et al., 2021). Fourth, monitor and adapt: use formative assessments and student feedback to refine practice (Lund & Tannehill, 2015). With regard to adaptation, research on model hybridization shows that teachers pragmatically combine features from different models to respond to local needs (Gonzalez, Villora et al., 2019; Hastie & Curtner, Smith, 2022). Fifth, reflect collaboratively: share experiences with colleagues to deepen understanding (Bechtel & O'Sullivan, 2007). Findings from a scoping review of teacher positions confirm that teachers positioned as adaptors and collaborators with researchers tend to be more successful in implementation than those positioned only as mechanical reproducers (Scanlon et al., 2024).

By applying these four dimensions of the framework in an integrated manner, teachers are expected to be able to make more appropriate and contextual decisions in selecting, adapting, and maintaining practices based on pedagogical models in their respective schools (Casey & Kirk, 2020; Metzler, 2017). This framework also supports recent trends in the literature that drive a shift from mere model adoption towards model adaptation and hybridization in response to local realities (Gonzalez, Villora et al., 2019; Hastie & Curtner, Smith, 2022). In addition, it is important to note that successful implementation is highly dependent on the consistency of teachers in implementing the program, as inconsistencies are often influenced by different backgrounds of knowledge, skills, and cultures (Kern et al., 2021; Goodyear & Casey, 2015). Therefore, continuous professional development and support from the professional learning community are key to the successful implementation of the pedagogical model in physical education (Beni et al., 2022; Beni et al., 2025; Casey & MacPhail, 2018).

3. Discussion

Based on a scoping review of 45 empirical studies published between 2015 and 2025, this study concludes that the diversity of pedagogical models in physical education has grown rapidly with six dominant model families, namely Sport Education Model (SEM), Teaching Personal and Social Responsibility (TPSR), Cooperative Learning (CL), Meaningful Physical Education (Meaningful PE), Teaching Games for Understanding (TGfU), and Outdoor Adventure Education (OAE), each of which has different objectives, core features, and evidence base. However, the implementation of these models faces a number of key challenges, including inadequate teacher readiness, implementation fidelity issues, contextual constraints such as limited resources, time, and facilities, and the need for sustainable professional development. To overcome these challenges, this study proposes a four-dimensional decision-making framework that is interconnected, namely purpose, people (student characteristics and teacher readiness), place (school context), and process (implementation strategy), which is expected to help teachers move beyond just model adoption to adaptation and hybridization of models according to local realities. This study concludes that the successful implementation of the pedagogical model is highly dependent on the alignment between the model's objectives, student characteristics, school context, and gradual and collaborative process strategies, where teachers who are positioned as adaptors and collaborators tend to be more successful than teachers who only act as mechanical reproducers. Ultimately, sustainable professional development and support from the professional learning community are key to transforming physical education learning practices to be more meaningful, inclusive, and equitable

4. Conclusion

This coverage review of 45 empirical studies published between 2015 and 2025 concluded that the pedagogical model landscape in physical education is dominated by six main model families, namely Sport Education, Teaching Personal and Social Responsibility (including Socially Just TPSR), Cooperative Learning, Meaningful Physical Education, Teaching Games for Understanding (as well as other game based approaches), and Outdoor Adventure Education, each of which has a different purpose, core features, and evidence base. However, the successful implementation of these models has been consistently hampered by four interrelated challenges, namely inadequate teacher readiness, fidelity issues, contextual constraints such as limited resources, time, and facilities, and the need for sustainable professional development. To overcome these barriers, this article proposes a four-dimensional decision making framework, namely purpose, people, place, and process, that allows teachers to go beyond the adoption of rigid models to the adaptation and hybridization of models that are responsive to local contexts. This review further concludes that successful implementation is highly dependent on alignment between model objectives, student characteristics, school contexts, and gradual, collaborative process strategies, where teachers who act as adaptors and collaborators tend to be more successful than teachers who only act as mechanical reproducers. Ultimately, sustainable professional development and strong support from the professional learning community are key to transforming physical education learning practices into a more meaningful, inclusive, and equitable learning experience for all students.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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