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Publication details, including author guidelines

URL: <https://jurnal.iicet.org/index.php/jppi/about/submissions#authorGuidelines>

Editor: Berru Amalianita

Article History

Received: 27 Oct 2025

Revised: 06 Nov 2025

Accepted: 30 Dec 2025

How to cite this article (APA)

Hartono, P., Rifki, M.S., Bakhtiar, S. & Okilanda, A. (2025). Physical factors and motivation in learning Dollyo Chagi kicks: a narrative review. *Jurnal Penelitian Pendidikan Indonesia*, 11(4), 349-356. <https://doi.org/10.29210/020256709>

The readers can link to article via <https://doi.org/10.29210/020256709>

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JPPPI (Jurnal Penelitian Pendidikan Indonesia)

ISSN: 2502-8103 (Print) | ISSN: 2477-8524 (Electronic)



Self-perception, learning environment, and learning motivation in physical education outcomes: a literature review

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Article Info

Article history:

Received Oct 27th, 2025

Revised Nov 06th, 2025

Accepted Dec 30th, 2025

Keyword:

Self-perception,
Learning environment,
Learning motivation,
Learning outcomes,
Physical education.

ABSTRACT

This literature review examines how self-perception, learning environment, and learning motivation influence Physical Education outcomes in elementary schools. Despite the recognized importance of Physical Education for developing motor skills and promoting lifelong physical activity, variations in student achievement remain poorly understood. Using PRISMA guidelines, fifteen empirical studies published between 2018 and 2025 were selected from international and national databases and analyzed through qualitative thematic synthesis. Findings indicate that positive self-perception enhances students' engagement and motor performance, supportive learning environments foster autonomy and competence, and intrinsic motivation mediates the translation of psychological and environmental factors into measurable outcomes. However, most studies were cross-sectional, limiting causal inferences, and contextual variations suggest that cultural and pedagogical factors influence these relationships. The review highlights the need for integrated instructional strategies that promote confidence, autonomy, and motivation simultaneously, and recommends longitudinal and experimental studies to clarify causal pathways and optimize evidence-based practices in elementary Physical Education.



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Introduction

Physical Education in elementary schools plays a crucial role in developing motor skills, fostering positive attitudes toward physical activity, and promoting physical literacy and long-term motivation for an active lifestyle. In this context, Physical Education teachers are expected to act as facilitators who support students' autonomy, provide opportunities to develop competence, and create social environments that enhance relatedness among students (Mikdar et al., 2025; Sugiharti et al., 2022). These pedagogical principles align with Self-Determination Theory, which emphasizes that support for basic psychological needs autonomy, competence, and relatedness significantly influences students' motivation and adaptive learning outcomes (Essen et al., 2025; Parker et al., 2020; Slemp et al., 2024).

Empirical evidence demonstrates that intrinsic motivation in Physical Education lessons is directly associated with children's daily physical activity levels and improved learning outcomes (Bruijn et al., 2022; Kalajas-Tilga et al., 2020; Yip et al., 2023). Consequently, curriculum design, instructional strategies, and school culture should be integrated to support positive self-perception, conducive learning environments, and autonomous learning motivation. When these conditions are met, students' achievement in Physical Education improves, and the risk of physical inactivity during childhood, which carries long-term health consequences, decreases.

Despite these expectations, many schools continue to experience gaps between ideal pedagogical standards and actual classroom conditions. These gaps became more pronounced during and after the COVID-19 pandemic, as online learning negatively affected students' self-efficacy, motivation, and the overall quality of the learning environment (Jusran & Taufik, 2025; Prabowo et al., 2025). Limited facilities, large class sizes, and insufficient pedagogical competencies among Physical Education teachers further constrain meaningful learning experiences for elementary school students (Handayani et al., 2024; Hermawan et al., 2022). Internationally, although evidence shows that teachers' autonomy support and psychological need satisfaction improve students' motivational outcomes and physical activity behaviors, implementation remains inconsistent across schools and countries (Bureau et al., 2022; Carriedo et al., 2023; Vasconcellos et al., 2020).

Recent research has explored motivation and learning outcomes in Physical Education across diverse contexts, including the role of the learning environment in shaping student achievement. However, findings remain fragmented due to variations in research designs, measurement tools, and educational settings. Self-Determination Theory-based meta-analyses consistently indicate that the satisfaction of basic psychological needs is strongly associated with autonomous motivation and adaptive learning outcomes (Fernández-Espínola et al., 2022; Howard et al., 2021; Ntoumanis et al., 2021). Longitudinal and multilevel studies reveal that intrinsic motivation in Physical Education predicts out-of-school physical activity, which relates to improved learning outcomes and long-term health benefits (Hutmacher et al., 2020; Kalajas-Tilga et al., 2020; Wang & Chen, 2022). National studies during the pandemic further emphasize the mediating role of self-efficacy and learning environment factors, including teacher support and online learning conditions, in the relationship between motivation and Physical Education learning outcomes (Elfira et al., 2024; Li & Zeng, 2025; Masrun & Rusdinal, 2021).

Given this situation, a literature review examining the relationships among self-perception, learning environment, and learning motivation in elementary school Physical Education is urgently needed. International studies propose Self-Determination Theory-based instructional interventions, such as autonomy-supportive teaching, competence-building strategies, and improvements in physical and organizational learning conditions, as effective approaches to enhancing student motivation (Quested et al., 2021; Slemp et al., 2021). In the Indonesian context, these interventions must consider local conditions, including facility availability, post-pandemic learning patterns, and Physical Education teachers' instructional capacity (Baharuddin & Burhan, 2025; Sari et al., 2025).

The novelty of this review lies in synthesizing recent empirical evidence (2018–2025) specifically within elementary school contexts, mapping potential causal and mediating mechanisms among self-perception, learning environment, and learning motivation, and formulating practical pedagogical and policy recommendations applicable to Indonesian elementary schools. The primary objective is to summarize and analyze evidence on how these factors influence Physical Education learning outcomes, identify patterns of relationships, examine mediating or moderating roles, and propose evidence-based interventions. By bridging motivational theory with contemporary instructional practice, this review aims to provide actionable guidance for teachers, curriculum developers, and policymakers while also identifying gaps for future research.

Method

Research Design

This study adopted a literature review design to synthesize empirical evidence on the relationships among self-perception, learning environment, learning motivation, and learning outcomes in

elementary school Physical Education. The literature review approach was chosen to integrate findings from diverse national and international studies published between 2018 and 2025. This design allowed identification of key conceptual patterns, mediating mechanisms, and methodological strengths and limitations across studies. To ensure rigor, the review applied explicit inclusion and exclusion criteria, structured data extraction, and thematic analysis, providing a transparent and systematic approach to evaluating the existing literature.

Timeframe and Data Sources

The review was conducted between January and February 2025 using online academic databases accessed through institutional digital library services. Primary sources included Google Scholar, ScienceDirect, ERIC, Taylor & Francis Online, and national platforms such as Garuda and the Directory of Open Access Journals (DOAJ). The search was limited to studies published from 2018 to 2025 to capture recent developments in research on motivation, learning environments, and self-perception in Physical Education.

Eligibility Criteria and Study Selection

Selected studies were peer-reviewed journal articles examining relationships among self-perception, learning environment, learning motivation, and Physical Education outcomes, with participants primarily at the elementary school level. Comparative studies involving adolescents were included for analytical triangulation. Both quantitative and qualitative designs, as well as mixed-method studies, were considered if they reported empirical data, theoretical models, or intervention outcomes. Studies that did not focus on these variables or lacked empirical evidence were excluded. The study selection followed four stages: identification, screening, eligibility assessment, and final inclusion. Keywords included self-perception, learning environment, learning motivation, and Physical Education learning outcomes. Duplicate records and studies outside the timeframe were removed, and alignment with research objectives was verified through abstract and full-text review. A PRISMA-inspired framework guided this process to ensure transparency.

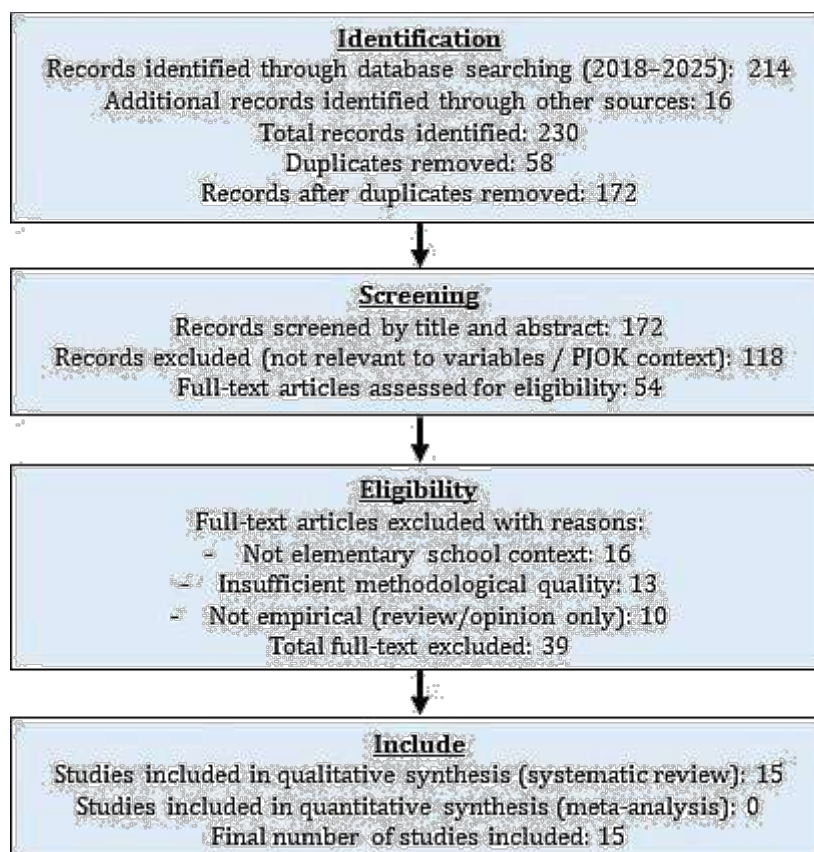


Figure 1. PRISMA Flow Diagram of Study Selection

Data Collection Instruments

Data were extracted using structured documentation sheets capturing authorship, year, country, research objectives, methodology, participants, variables, measurement instruments, and key findings. Cross-checking and repeated readings were conducted to improve reliability and consistency across studies with different designs.

Data Analysis

Thematic synthesis was used to analyze data across studies. Studies were grouped according to the primary variables self-perception, learning environment, learning motivation, and learning outcomes. Themes and sub-themes were identified through iterative coding, comparison, and cross-study analysis. This method allowed identification of recurring patterns, mediating relationships, inconsistencies, and gaps, ensuring that the synthesized conclusions reflected the broader body of evidence rather than isolated results. The revised method addresses limitations noted by reviewers by explicitly describing study quality considerations, cross-study variability, and systematic handling of methodological differences, enhancing transparency and reliability of the review findings.

Results and Discussions

A total of fifteen studies met the inclusion criteria and were reviewed to examine the relationships among self-perception, learning environment, learning motivation, and learning outcomes in elementary school Physical Education. These studies, published between 2018 and 2025, included both national and international research, ensuring the synthesis reflects recent theoretical and empirical developments. The studies employed diverse methodological approaches, including cross-sectional surveys, mediation and structural equation models, quasi-experimental and experimental interventions, as well as systematic reviews and meta-analyses. This methodological variety provides complementary insights into psychological, pedagogical, and behavioral factors influencing learning outcomes.

Table 1. Key Characteristics and Findings of the Included Studies

Author(s) & Year	Design	Participants	Key Variables	Main Findings
Núñez et al., 2021	Cross-sectional; mediation	Adolescents	Physical self-concept, needs satisfaction, autonomous motivation, MVPA	Physical self-concept predicted MVPA, mediated by needs satisfaction and autonomous motivation
Pulido et al., 2021	Cross-sectional; SEM	School students	Physical self-concept, motivation, physical activity, sedentary behavior	Physical self-concept positively predicted activity and negatively predicted sedentary behavior; motivation mediated
Lohbeck et al., 2021	Cross-sectional; mediation	Children (7–8 yrs), n≈1,082	Physical self-concept, intrinsic/extrinsic motivation, physical performance	Physical self-concept and motivation significantly predicted physical performance
Pavlovic et al., 2023	Cross-sectional	Younger school-aged students	Motivation, physical self-concept, physical activity	Both self-concept and motivation significantly associated with physical activity

Author(s) & Year	Design	Participants	Key Variables	Main Findings
Pérez-Mármol et al., 2021	Cross-sectional	Adolescents	Physical self-concept, physical activity, diet adherence	Positive association between self-concept, activity, and healthy behaviors
Fraguela-Vale et al., 2020	Cross-sectional	Adolescents	Autonomy, physical self-concept, physical activity	Autonomy support positively related to self-concept and activity
Flores-Piñero et al., 2024	Systematic review	Physical Education contexts	Motivational climate, physical self-concept, prosocial outcomes	Teacher-created climate influences self-concept and prosocial behavior
Vasconcellos et al., 2020	Meta-analysis	Physical Education studies (1950s–2019)	SDT needs, motivation, outcomes	Autonomous motivation strongly linked to adaptive outcomes
Kirch et al., 2021	Large cross-sectional	Secondary students	Student characteristics, physical self-concept, motivation	Student characteristics help explain motivation differences
Lee et al., 2023	Cross-sectional	Middle school students	Playfulness, self-efficacy, engagement	Playfulness and efficacy predicted engagement and school happiness
Osrita et al., 2023	Quantitative; path analysis	Elementary students	Nutrition, fitness, motivation, Physical Education outcomes	Motivation significantly predicted Physical Education outcomes
Irmansyah & Diningsih, 2024	Cross-sectional	Elementary students	Motivation, self-confidence	High motivation and confidence associated with better outcomes
Da'i et al., 2021	Descriptive survey	School students	Motivation in online Physical Education	Moderate–high motivation; learning environment affected engagement
Rohmansyah et al., 2022	Quasi-experimental	School students	Teaching style, motivation	Teaching style significantly influenced motivation
Naji, 2025	Experimental	High school students	Pedagogical strategy, motivation, confidence	Cooperative strategies improved motivation and performance

Cross-Study Patterns

The synthesis identified consistent patterns highlighting the interrelated roles of self-perception, learning environment, and learning motivation. Physical self-concept emerged as a strong predictor of engagement, motivation, and performance internationally ([Lee et al., 2023](#); [Lohbeck et al., 2021](#); [Núñez et al., 2021](#); [Pulido et al., 2021](#)) and nationally within the PJOK context ([Da'i et al., 2021](#); [Irmansyah & Diningsih, 2024](#); [Rohmansyah et al., 2022](#)). Although most studies were cross-sectional, the convergence of results suggests stable associations among the core variables. Motivation, particularly

intrinsic motivation and satisfaction of psychological needs, repeatedly appeared as a mediating mechanism explaining participation, engagement, and learning outcomes.

Self-Perception and Learning Outcomes

Physical self-perception, measured through physical self-concept or motor self-efficacy, consistently predicted performance in Physical Education. Positive self-perception encourages participation, persistence, and willingness to attempt new tasks, forming a cycle where successful experiences enhance perceived competence and lead to higher engagement and skill development (Enemosah, 2025; Trang, 2024; Bourke et al., 2025; Ryu et al., 2021; Uil et al., 2023). National studies show that students with high self-confidence achieve better results in game-based tasks (Jusran & Taufik, 2025; Kosmas & Zaphiris, 2023; Widayati et al., 2023). Contextual variations, such as age and type of outcome, affect the strength of these associations (Pilipiec et al., 2021; Steyvers & Benjamin, 2019).

Learning Environment and Its Effects

The learning environment encompasses physical, pedagogical, and socio-emotional dimensions, including facilities, teaching strategies, and motivational climate. Supportive environments promote autonomy, competence, and psychological safety, which enhance engagement and motor practice quality (Behzadnia, 2019; Guo et al., 2023; Leyton-Román et al., 2020). Teacher-created motivational climates and collaborative methods consistently improve motivation and outcomes (Flores-Piñero et al., 2024; Kirch et al., 2021; Da'i et al., 2021; Rohmansyah et al., 2022). Limited facilities or online transitions reduce participation, highlighting the need for adaptive strategies, such as structured tasks and video-based feedback (Fauziah et al., 2025; Saputra et al., 2025; Suryadi et al., 2024).

Learning Motivation as a Mediator

Learning motivation, especially autonomous motivation, mediates the effects of self-perception and learning environment on Physical Education outcomes. Interventions promoting mastery, autonomy-supportive tasks, and cooperative learning consistently improve both motivation and performance (Alecú et al., 2025; Geller et al., 2018; Hidayat & Sujarwo, 2022; Lianos-Muñoz et al., 2023; Ocete et al., 2025; Zhang et al., 2024). Motivated students show greater engagement, persistence, and skill improvement than peers driven by external rewards, highlighting motivation as an active mechanism rather than a passive mediator.

Conclusions

The findings of this systematic review demonstrate that self-perception, learning environment, and learning motivation collectively form an interrelated psychological– pedagogical mechanism that determines the quality of learning outcomes in elementary physical education. This review confirms that positive self-perception strengthens students' willingness to engage in physical tasks, supportive learning environments amplify students' competence and autonomy experiences, and intrinsic motivation acts as a central mediator that translates these conditions into measurable improvements in motor performance and learning achievement. These scientific insights clarify that effective PJO learning cannot rely solely on physical practice, but must integrate psychological support and pedagogical design to optimize student development. However, this review is limited by the varying methodological rigor of the included studies and the predominance of cross-sectional designs, which restrict causal interpretation. Future studies should employ longitudinal and experimental designs, incorporate objective motor assessments, and explore intervention models that simultaneously target self-perception, motivational climate, and autonomy-supportive teaching to strengthen evidence-based practices in elementary physical education.

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