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Evaluating the impact of physical literacy interventions on physical activity and physical literacy in physical education: a systematic review

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Data extraction.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 May 2025 and was last updated on 20 May 2025.

INTRODUCTION

Review question / Objective This systematic review aims to (i) evaluate the impact of physical literacy interventions, both in randomized controlled trials and non-randomized trials, within the context of physical education classes for children and adolescents (ages 5 to 17), on the construct of physical literacy (PL) using specific and validated instruments, and (ii) assess whether other outcomes, such as physical activity levels, were improved. Therefore, this work will be based on the International Physical Literacy Association (IPLA) definition of PL, which includes its affective (motivation and confidence), physical (physical competence), and cognitive (knowledge and understanding) components for physical activity behavior (participation in lifelong physical activities) (IPLA, 2017). Since the measurement of PL is an emerging field, with numerous approaches implemented worldwide — including objective measures, self-report, and indirect reporting — qualitative study designs (in addition to quantitative designs) were included, in which participants described their experiences and outcomes in physical and movement skills after participating in interventions aimed at developing children's PL.

Rationale Schools are key environments for shaping both individual and community capacities that improve students' quality of life and physical skills. Beyond academic achievement, they play a crucial role in supporting holistic development, encompassing social, emotional, physical, and mental dimensions that influence the well-being and health of children and adolescents. According to the World Health Organization (WHO), schools are strategic settings for influencing the health behaviors of young populations, as children and adolescents spend a significant portion of their daily lives within them.

Within the school curriculum, physical education (PE) holds a fundamental position by providing opportunities for children to develop motor skills and essential social competencies, which are

critical for their present and future development. The habits, preferences, and behaviors established during childhood and adolescence have a ripple effect, shaping lifelong decisions and active behaviors, making investment in comprehensive PE programs not only an educational priority but also a social and public health imperative. In this context, the concept of PL has been progressively integrated into PE curricula over recent years. Defined by the International IPLA as "the motivation, confidence, physical competence, knowledge, and understanding to value and take responsibility for engaging in physical activities throughout life," PL has gained recognition as a multidimensional construct essential to promoting physical activity. Its importance is underscored in global strategies and policies, such as the WHO's Global Action Plan on Physical Activity 2018–2030 and UNESCO's Quality PE Guidelines for Policy-Makers, both of which emphasize PL as a key element in fostering healthy habits and ensuring quality PE.

PL should not be confused with or seen as competing against PE. Rather, PL represents the overarching goal of PE: to cultivate lifelong engagement in physical activity through the development of physical, cognitive, and affective capacities. These domains are deeply interconnected, reinforcing each other in line with holistic, embodied, and monistic perspectives. Recent research indicates that higher levels of PL in young people are associated with better adherence to physical activity recommendations, improved cardiorespiratory health, enhanced academic performance, higher quality of life, better sleep, reduced obesity risk, and greater muscular fitness. Despite these promising associations, prior reviews have mostly analyzed holistic school interventions without focusing specifically on PL interventions delivered during PE class time. For example, Jerebine et al. (2024) evaluated various school-based interventions targeting PL, concluding that most evidence relates to the physical domain, while cognitive and social domains remain understudied. Similarly, Grauduszus et al. (2024) conducted a broad scoping review of PL programs in school settings but did not isolate the effects of PE-specific interventions.

Given the pivotal role of both PE and PL in transforming education and fostering lifelong healthy habits, a focused examination of PL interventions delivered within PE classes is essential. To the best of our knowledge, this study will be the first systematic review specifically investigating the effects of PL interventions implemented during PE class time for children and adolescents. This review will synthesize evidence from both randomized and non-randomized controlled trials, providing a clearer understanding of how PE-based PL interventions impact the physical, cognitive, and affective domains, as well as related outcomes such as physical activity levels.

Condition being studied This review focuses on interventions developed through PL to improve PL or physical activity in children and adolescents (ages 5 to 17) PE classes. Low PL is characterized by deficits in motivation, confidence, physical competence, knowledge, or understanding, which can limit participation in physical activity and negatively affect health, well-being, and the adoption of lifelong active habits. Interventions aiming to improve PL in PE classes focus on these multidimensional aspects to enhance overall physical, cognitive, and affective development, promoting healthier and more active lifestyles among young people and fostering lifelong participation in physical activity.

METHODS

Search strategy Keywords and synonyms were entered in various combinations in the title, abstract or keywords: ("child" OR "adolescent" OR "youth" OR "teen" OR "young people" OR "young person" OR "juvenile") AND ("physical literacy" OR "intervention physical literacy" OR "programme physical* literacy" OR "program physical literacy") AND ("Physical literacy" OR "Physical activity" OR "Moderate physical activity" OR "Vigorous physical activity" OR "Moderate-to-vigorous physical activity").

Participant or population Children and adolescents between the ages of 5 to 17 who are seemingly healthy.

Intervention Implementation of an intervention, program, workshop or curricular implementation of PL that had as its main result of its study the evaluation of physical activity or PL (measured through a PL instrument) in the PE class.

Comparator Control conditions (passive control).

Study designs to be included RCT and non-RCT.

Eligibility criteria Publications were included if they met the following criteria: (i) they explicitly implemented or designated an intervention, program, workshop, or curricular implementation of PL, with the primary outcome being the evaluation of physical activity or PL; (ii) the intervention met the majority of the items outlined

in the PLIRT methodology; (iii) the intervention was targeted at school-aged children and adolescents (5–17 years); (iv) the intervention was conducted within the context of physical education classes; and (v) the publication was written in English or Spanish. Publications were excluded if: (i) the PL intervention was directed at kindergarten children, preschoolers, university students, school staff, parents, or children with diagnosed medical conditions; (ii) the PL intervention did not take place in a school setting; (iii) the PL intervention did not meet any PLIRT items; or (iv) the publication was a conference paper, scientific poster, or not written in English or Spanish.

Information sources The electronic search will be conducted in six databases: PubMed, Scopus, SPORTDiscus (via EBSCOhost), PsycINFO, Cochrane Library, and Web of Science. A search for grey literature will be performed in Google Scholar to minimize publication bias.

Main outcome(s) The main outcome was the assessment of physical activity or PL.

Data management The data extraction process will involve organizing the data in a Microsoft Excel spreadsheet using the Cochrane Consumers and Communication Review Group's data extraction template. This spreadsheet will be used to assess the inclusion criteria for all selected studies. In addition, the bibliographic manager Ednote version X9 will be utilized to extract articles and make decisions about their inclusion or exclusion from the review.

Quality assessment / Risk of bias analysis The risk of bias (RoB) assessment was implemented using the Cochrane tool for randomized controlled trials (RCT), following the Cochrane Handbook for Systematic Reviews of Interventions. The tool consists of five different domains that are used to generate the assessment of the intervention's risk of bias. Each domain was assessed with the following options: "Low risk," "Some concerns," and "High risk." RoB for each study was assessed by two authors, and disagreements were resolved through negotiation. Additionally, the ROBINS-I tool was used to assess ("Risk Of Bias In Non-randomized Studies of Interventions") which is used to evaluate the risk of bias in estimates of the effectiveness or safety (benefit or harm) of an intervention from studies that did not use randomization to assign interventions.

Strategy of data synthesis Information extracted from the selected articles will be provided based on: (1) author, year, and project; (2) country; (3) study design; (4) participants (sample size, age, % female); (5) intervention structure; (6) intervention content (description, cognitive, affective, physical); (7) assessment instruments; and (8) outcomes. A systematic evaluation process was carried out to analyze the conceptualization and development of PL in each intervention in order to determine the strength level with which the PL-based intervention was developed, considering the following components: title, background and definition, assessment, design and content, evaluation and discussion, and conclusion, using the Development, Explanation, and Presentation of the Physical Literacy Interventions Reporting Template (PLIRT) (Carl et al., 2023). This template consists of a total of 14 items, and we internally classified the interventions into three levels according to their degree of fulfillment: strong (10–14 items met), when there was coherence between the definition, objectives, content, and outcome evaluation; moderate (5–9 items met), when essential elements were included but with omissions in conceptualization or application; and weak (0–4 items met), when there was little coherence among these components, limiting the effectiveness of the intervention in developing PL.

Subgroup analysis N/A.

Sensitivity analysis N/A.

Language restriction English.

Country(ies) involved Spain, Portugal, Brazil, and Finland.

Other relevant information N/A.

Keywords health; physical literacy; physical education; interventions.

Contributions of each author

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