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Self-Efficacy and Motivation Student in Physical Education Learning: Scoping Review

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Abstract

The purpose of this study through to analyze how self-efficacy and motivation can influence physical education outcomes. The scoping review method was used in this study, to cartographize the existing literature, identify research gaps, and formulate recommendations for more effective physical education practices as well as for future research. The research identification was determined to be how self-efficacy and motivation affect students' participation and achievement in physical education. The literature search came from PubMed, Education Resources Information Center (ERIC), PsycINFO, Scopus, Web of Science and Google Scholar with various keywords that have been determined. While the criteria for articles are discussing self-efficacy or motivation in the context of physical education, studies conducted on elementary, junior high, or senior high school students, articles in English, articles published between 2015 - 2025, articles have open access. The results of this study found a total of 8 articles that were suitable for data synthesis and analysis. This research describes demonstrates the importance of innovation in physical education teaching methods to increase students' self-efficacy and motivation. The use of exergames, hybrid pedagogical models such as Teaching Games for Understanding (TGfU) and Sport Education (SE), and increased Physical Education (PE) sessions had a positive impact on student engagement and achievement. However, long-term evaluation and further research with longitudinal designs and objective measurement instruments are needed to overcome the methodological limitations of previous studies. Educators need to implement innovative methods that support students' intrinsic motivation and improved motor competence.

Keywords: Self-efficacy; student motivation; physical education; sports education

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Introduction

Physical education is an important component in the educational curriculum that aims to develop students' physical abilities, health, and psychological well-being. In recent decades, the focus of physical education has not only been on the development of physical abilities alone, but also includes the development of psychological aspects that support students' achievements and active participation in physical activities (Pirchio et al., 2021), (Qiao & Huang, 2022). Two psychological concepts that are often studied in the context of physical education are self-efficacy and motivation (Úbeda-Palomares & Hernández-álvarez, 2020, Cagongon & Osorno, 2022).

Self-efficacy, defined as an individual's belief in his or her ability to complete a task or face a challenge, plays an important role in determining the level of participation and achievement in physical education (Hakim et al., 2023). The higher the self-efficacy that students have, the more likely they are to be actively involved in physical activities and show improvements in their physical performance (Zhang et al., 2023). Therefore, a deep understanding of the factors that influence self-efficacy in the context of physical education becomes very important. On the other hand, motivation is also a key factor that influences how students interact with physical activity (De Bruijn et al., 2023).

Motivation can come from within the student (intrinsic) or from external factors (extrinsic), such as praise from teachers or rewards. Motivation influences students' desire to participate in physical activities, their persistence in the face of difficulties, and their willingness to continue engaging in physical activity on a regular basis (Schiff & Supriady, 2023, Utama et al., 2023). These two factors, self-efficacy and motivation, are interrelated and together form the basis for the development of effective pedagogical approaches in physical education (Cagongon & Osorno, 2022). Choosing the topic of self-efficacy and motivation in physical education as the focus of the research is motivated by the importance of these two psychological concepts in increasing student participation and achievement in physical activities.

In addition, research shows that high self-efficacy is directly related to students' active participation and their persistence in facing challenges, which in turn contributes to better achievement in physical education (Dula & Osorno, 2022, Mz & Arovah, 2023). From a motivational perspective, both intrinsic and extrinsic, this is crucial in shaping how students approach and persist in learning activities, including physical activity. Furthermore, both of these factors have a significant impact on students' mental and physical health, as well as their self-confidence, which is essential for long-term well-being (Sulistyaningtyas et al., 2023). In recent decades, the concept of self-efficacy has gained significant attention in the physical education and sport psychology literature, both internationally and nationally.

Internationally, research has shown that self-efficacy plays a significant role in improving athletic performance as well as the mental health of athletes (Rogowska et al., 2022, Aizava et al., 2023). Thus, emphasizing the importance of this psychological construct in physical education and sports training. However, the results of studies in Indonesia, detailed exploration of the implications of self-efficacy in physical education is still limited (Nopiyanto et al., 2022). This raises an important need to explore more deeply how self-efficacy can be integrated into the physical education curriculum to maximize students' potential. Previous research has

consistently supported a positive relationship between self-efficacy and various aspects of physical and psychological performance.

Previous studies have shown that self-efficacy can significantly predict athletes' motivation and persistence in the face of challenges (Haidir et al., 2023). Then, the study of the self-efficacy variable also influences several other variables such as anxiety, self-confidence, mental toughness, and athlete performance (Swidinata et al., 2023, Saniah et al., 2024, Wibowo et al., 2024). These other variables are part of motivation. However, there is a gap in the literature that examines the specific context of physical education in Indonesia, where most studies focus on the western context with different infrastructure and culture. Identifying this gap is important because physical education in Indonesia faces unique challenges that affect how students' self-efficacy is developed.

So far, research has been limited to the effects of self-efficacy on general motivation and few have explored specific effects according to the multicultural context and educational infrastructure in Indonesia. Therefore, the purpose of this study through the scoping review method that focuses on how self-efficacy and motivation can affect physical education outcomes is very relevant. This scoping review aims to cartograph the existing literature, identify research gaps, and formulate recommendations for more effective physical education practices and for future research. Through this scoping review, it is expected to provide a comprehensive overview of current research in the field of self-efficacy and motivation in physical education.

Method

This research consists of six stages of research which were developed and modified based on the theory of (Arksey & O'Malley, 2005), so the following stages are 1) identification of research questions, 2) identification and selection of data sources, 3) inclusion and exclusion criteria, 4) data collection and extraction, 5) data synthesis, 6) work report. The following is a breakdown of each stage of the research. Identifying research questions the research question that will be answered through this scoping review is: "How do self-efficacy and motivation affect students' participation and achievement in physical education?" The focus will be on a literature review that describes the relationship, effects, and strategies for improving the variables of Self-Efficacy (SE) and Student Motivation (SM) in the context of physical education.

Identification and selection of data sources data for the scoping review will be obtained from academic databases such as PubMed, Education Resources Information Center (ERIC), PsycINFO, Scopus, Web of Science and Google Scholar. Keywords that will be used in the search include self-efficacy OR motivation OR physical education OR student participation OR student achievement, and combinations of these words. Then this research was conducted in January 2025, then the limit for this scientific literature search is 28-02-2025. Inclusion and exclusion criteria the inclusion criteria were 1) articles discussing self-efficacy or motivation in the context of physical education, 2) studies conducted on elementary, middle, or high school students, 3) articles in English, 4) articles published within 10 years or 2015 - 2025, 5) articles have open access. Then the exclusion criteria were 1) articles that did not explicitly examine

self-efficacy or motivation in the context of physical education, 2) case studies or reports without sufficient empirical data, 3) not a review article.

Data collection and extraction data will be taken from articles that meet the inclusion criteria. Information to be extracted includes: authors, year of publication, research methods, population and sample, self-efficacy and motivation measurement methods, main results, and recommendations for practice or further research. Data synthesis the collected data will be narratively synthesized to assess patterns, themes, knowledge gaps, and areas for further research. The focus of the synthesis will be on the influence of self-efficacy and motivation on physical education participation and achievement, and on effective strategies for enhancing both aspects in educational practice. Preparation of reports the results of the review will be organized and presented according to a defined framework, with conclusions that include recommendations for future research as well as practical applications in physical education teaching.

Results

The article data search found 1,150 publications (figure 1). After the first stage of filtering in the form of filtering duplicate titles and abstracts, 637 articles were produced. The second stage of filtering was in the form of content analysis on the articles which produced 78 articles. The last stage was a feasibility analysis in the form of being accessible, coming from a credible journal, and meeting the inclusion criteria, resulting in 8 published articles published from 2015 - 2025.

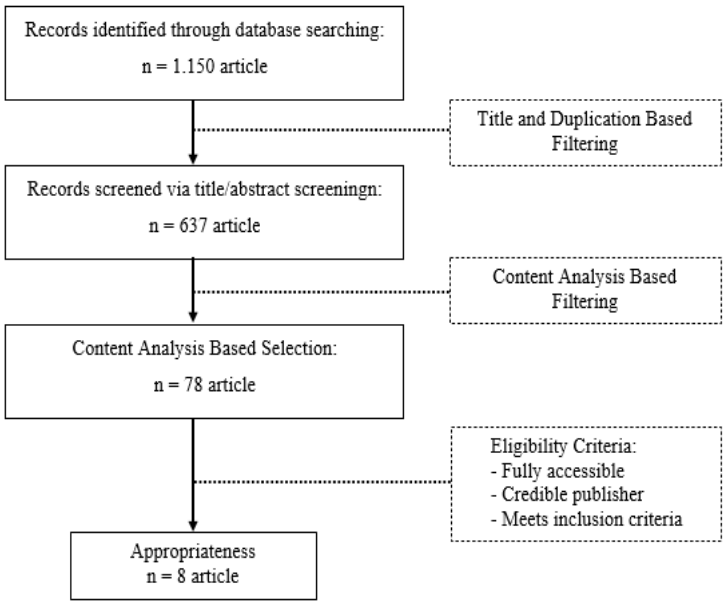

Figure 1. Results at the article search stage

Then in table 1, there is a description of the age of the 8 articles that were successfully analyzed in the format of name and author, research title, research objectives, research methods, population and samples, measurement methods, research, results.

Table 1. Information on research results

Name and Author Research	Title Research	Research Objectives	Research Methods	Population and Samples	Measurement Methods	Research Results
Kooiman, B. J., & Sheehan, D. P. (2015)	The efficacy of exergames for social relatedness in online physical education	Investigating the efficacy of using exergames (video games that contain physical activity) in supporting the social connectedness of students taking online physical education.	This study used a within-subjects design, where the same subjects experienced both conditions of the study. Subjects were randomly assigned to groups. In one condition, subjects played bowling against a Non-Player Character (NPC) and table tennis against a remote human.	The population in this study were high school students (grades 6-12) aged 11-18 years in public schools, charter schools, and private schools in Southern California. The sample used was 124 students.	Measurements were conducted using the Intrinsic Motivation Questionnaire (Intrinsic Motivation Inventory or IMI). Data analysis was conducted using one-way ANCOVA.	Remote exergaming with humans increased social connectedness compared to playing against NPCs. The difference in IMI scores between the two conditions was statistically significant, indicating that social interaction in exergaming increased participants' intrinsic motivation and social experience.
Gil-Arias, A., Harvey, S., Cárceles, A., Práxedes, A., & Del Villar, F. (2017)	Impact of a hybrid TGfU-Sport Education unit on student motivation in physical education	Investigating the effects of a hybrid TGfU/SE unit, compared with direct instruction, on students' perceptions of various aspects of their motivation to engage in physical education (autonomous motivation, basic psychological needs, enjoyment and intention to be physically active).	This study used a crossover design. In this study, two groups of students experienced learning with the hybrid TGfU/SE model and the direct instruction model sequentially and in a balanced manner, to reduce the learning effect.	The research sample consisted of 55 students aged 15-16 years in secondary schools who were taking physical education lessons.	The analysis in this study measured several motivational factors, including basic psychological needs such as autonomy, competence, and satisfaction, as well as autonomous motivation and the intention to remain physically active.	The TGfU/SE hybrid model resulted in significant increases in autonomy, competence, and enjoyment compared to the direct instruction model. However, there were no significant increases in autonomous motivation and intention to remain physically active in either group, suggesting that the influence of instructional models on student experiences may vary.
Úbeda-Palomares, A. B., & Hernández-álvarez, J. L. (2020)	Extra physical education lessons, motivation and motor self-efficacy in adolescents	Evaluating the impact of increasing the number of weekly physical education (PE) lessons on intrinsic motivation and perceived motor self-efficacy in Spanish adolescents. This study was conducted to	The study used a five-month quasi-experimental design involving pre-test and post-test measurements. The sample was divided into two groups: a control group that attended two PE sessions per week and an experimental group that attended four sessions per week.	The population in this study were junior high school students in several public schools in Madrid. The total sample involved was 375 students with an average age of 12 years.	Measurement in this study involved evaluation of students' intrinsic motivation and motor self-efficacy, which was conducted through quantitative tests at the beginning and end of the intervention.	Students in the experimental group showed higher intrinsic motivation for PE and a slower decline in perceived motor self-efficacy compared to the control group who attended only two sessions per week. These effects suggest that increased PE lessons specifically benefited girls more in terms of motivation and self-

		investigate how increasing the number of PE lessons could affect the level of motivation and self-efficacy in physical activity among adolescents.				efficacy to participate in physical activity.
Pullen, B. J., Oliver, J. L., Lloyd, R. S., & Knight, C. J. (2020)	The Effects of Strength and Conditioning in Physical Education on Athletic Motor Skill Competencies and Psychological Attributes of Secondary School Children: A Pilot Study	This study aims to explore the integration of strength and conditioning activities into the physical education curriculum for secondary school students. The main focus is to improve Athletic Motor Skill Competencies (AMSC) and related psychological factors.	This type of research is an experiment, which is divided into two groups, namely the intervention group and the control group. The intervention lasted for six weeks with nine sessions emphasizing strength and conditioning, while the control group continued with traditional physical education classes.	A total of 46 secondary school children, aged 11-14 years, participated in the study. Participants were divided into intervention and control groups, with both groups having an equal distribution of boys and girls.	Measurement focused on improvements in AMSC as assessed through the Resistance Training Skills Battery (RTSB). In addition, motivation and other psychosocial factors such as self-efficacy and self-esteem were also assessed to determine the psychological impact of the intervention.	Results showed significant increases in AMSC in both male and female intervention group participants, compared to the control group who showed no significant increase. Although males in the intervention group showed increased motivation, there were no significant changes in other psychosocial attributes. One of the striking challenges is the low attendance rate, especially in areas with low socio-economic status, which limits the effectiveness of the intervention.
Latino, F., Fischetti, F., Cataldi, S., Monacis, D., & Colella, D. (2021)	The impact of an 8-weeks at-home physical activity plan on academic achievement at the time of covid-19 lock-down in italian school	Examining the effects of an 8-week home-based physical activity program on secondary school students' academic achievement during the second wave of COVID-19 lockdown in Italy.	This study used a randomized controlled trial design. Students were divided into two groups: an experimental group that followed an online physical training program, and a control group that received only theoretical lessons.	The total sample of this study was 30 high school students in Italy. The age group of participants ranged from 14 to 15 years.	The effectiveness of the program was evaluated through measurements of increased motivation, concentration, and reduced anxiety. Academic achievement was measured through standardized tests to determine the direct impact of physical activity on students' learning abilities.	Students in the experimental group experienced significant increases in motivation, concentration, and decreased anxiety. They were also more organized and flexible in their study methods, which contributed to improved academic achievement. In contrast, the control group showed no significant changes in these metrics.
Sotos-Martínez, V. J., Tortosa-Martínez, J., Baena-Morales, S., &	Boosting Student's Motivation through Gamification in Physical	Evaluating the impact of gamification intervention on students' motivation in physical education (PE) in elementary	This type of research is experimental, which is divided into two groups: the experimental group (EG) which follows the gamified PE curriculum, and the control group (CG)	A total of 72 primary school students aged 9-11 years from two schools in Spain participated in the study. They were divided into an experimental	Student motivation was measured using self-determination theory as a framework, focusing on intrinsic, extrinsic, and amotivation. Measurements were	The results showed significant increases in intrinsic motivation and identified regulation in the experimental group. However, there were no significant changes in extrinsic motivation or amotivation levels. These

Ferriz-Valero, A. (2023)	Education	schools. This study responded to the increasing helplessness of students in PE classes which prompted the use of innovative teaching methods to increase motivation.	which follows the traditional PE curriculum.	group that received PE education through gamification and a control group that followed the traditional method.	made through a customized questionnaire, administered before and after the gamification session.	findings suggest that while gamification is effective in enhancing certain aspects of motivation, it is not universally applicable to all dimensions of motivation.
Mz, A., & Arovah, N. I. (2023)	Developing a Prediction Model of Physical Activity Levels Based on Social Cognitive Predictors among Students	Developing a prediction model of physical activity levels among students based on social cognitive factors.	This research is a descriptive analysis research using quantitative research cross-sectional research design.	The study participants were 107 students involved in the Education and Training Center in Riau. Of these participants, 74% of participants were male and 26% were female. Overall, the average age of the research subjects was 17±0,4 years old. They participated in several sports which include football, basketball, volleyball, and athletics.	The level of physical activity of students was measured through the Physical Activity Vital Sign. In addition, social cognitive factors that influence physical activity such as self-efficacy, outcome expectations, stress levels, and motivation were also measured through various scales that have been validated previously.	The developed prediction model explained 32.9% of the variance in physical activity levels in the sample population. The results showed that there was a significant relationship between social cognitive predictors and physical activity levels, where higher levels of self-efficacy, positive outcome expectations, and better motivation, as well as effective stress management, were associated with greater physical activity.
Ezeddine, G., Souissi, N., Masmoudi, L., Trabelsi, K., Puce, L., Clark, C. C. T., … Mrayah, M. (2023)	The problem-solving method: Efficacy for learning and motivation in the field of physical education	This study was conducted to compare the efficacy of problem-solving methods compared to traditional methods in physical education, with the main goal of increasing students' motivation and learning efficacy.	This type of research is an experiment. The experimental group used a problem-solving method, while the control group followed a traditional teaching approach. The study lasted for five weeks with a structured experiment lasting ten hours.	The sample of this study consisted of 53 first-year students aged 15-16 years from secondary education in Tunisia. The group division was done randomly to ensure the validity of the comparison between teaching methods.	Student motivation was measured using a questionnaire covering the dimensions of intrinsic motivation, identified regulation, and external regulation. Participation in learning was assessed through video analysis that recorded the level of student engagement during the learning session.	The results showed that students taught with the problem-solving method showed higher levels of intrinsic motivation and engagement in learning activities compared to the control group. In particular, there was an increase in effective active time while waiting time and deviant behavior decreased significantly. This emphasizes the effectiveness of the method in creating a more active and engaging learning environment.

Based on the results of table research articles were found that used experimental methods (Kooiman & Sheehan, 2015), (Gil-Arias et al., 2017), (Pullen et al., 2020), (Latino et al., 2021), (Sotos-Martínez et al., 2023), (Ezeddine et al., 2023), while the other is 1 article with a descriptive method (Mz & Arovah, 2023). The average age studied in the results of the study was a minimum of 9 years and a maximum of 18 years. Then the study was carried out in a physical education program at school. The variables studied were primarily motivation in physical education, while the self-efficacy variable was added as one of the independent variables to investigate its influence on student motivation

Discussion

The first analysis is based on research results by (Kooiman & Sheehan, 2015) this study on the use of exergames in online physical education suggests that it can reduce social isolation among students. The study identified several shortcomings, such as the lack of research on the effects of game type and technology on social interactions, as well as a lack of understanding of the long-term impact of these interactions on students' academic performance and social development. The study emphasizes the importance of tailoring exergames to individual needs and abilities to ensure inclusive participation and reduce frustration. Further research is needed to examine the long-term effects of exergame use on students' physical, cognitive, and social development, as well as the application of acquired social skills in real life.

The second analysis is based on research results by (Gil-Arias et al., 2017) highlights the gap in the literature on the hybrid pedagogical model of Teaching Games for Understanding (TGfU) and Sport Education (SE), especially in the context of student motivation in physical education. The hybrid model of TGfU and SE, which has been researched separately, has rarely been explored together in terms of its impact on student motivation. This model requires in-depth understanding and adaptation from teachers, combining the autonomy of TGfU and the structure and competition of SE to enhance motivation. Teacher training that includes tactical, technical and managerial development is essential for effective implementation.

For future studies, longitudinal research is recommended to examine the long-term impact of this model on student motivation, as well as the adaptation of the model to different age groups and abilities. The third analysis is based on research results by (Úbeda-Palomares & Hernández-álvarez, 2020) investigated the quantitative effects of the number of physical education (PE) sessions on students' intrinsic motivation and motor efficacy, indicating the need to further study the quality and variability of these sessions. The findings suggest increasing the number of PE sessions, which could potentially help improve students' motivation, motor efficacy, and physical and mental health.

The recommendation for physical education practice is that schools, especially in Spain and countries with minimal PE time allocation, should increase the number of weekly sessions. For future research, it is recommended to examine more deeply the quality of instruction and the types of activities in PE sessions, as well as their impact on academic and social outcomes. The fourth analysis is based on research results by (Pullen et al., 2020) revealed gaps in the implementation studies of strength training programs in physical education, particularly the

focus on short-term interventions and the lack of process-oriented measurements that can assess motor skill competency comprehensively.

The study was also limited to a sample from a low socioeconomic area, making it less representative of the wider population. Based on these findings, it is recommended that physical education curricula incorporate more diversified strength and conditioning exercises that support both students' physical and psychological development. It is also important to implement strategies that increase students' motivation, create a supportive and enjoyable learning environment. For future research, it is recommended to conduct longitudinal studies that evaluate the long-term impact of the program, with a more diverse sample to ensure the effectiveness of the intervention across contexts.

Also, more in-depth studies are needed to develop accurate measurement methods to monitor students' motor skill competency development. The fifth analysis is based on research results by (Latino et al., 2021) examined the short-term effects of 8 weeks of physical activity via e-learning, but did not explore the long-term effects or variations in other exercise methods. The study was also limited by its single location and exclusive type of activity, so the results may not be generalizable. Recommendations for physical education include the integration of a variety of engaging and interactive physical activity programs, and the use of technology and e-learning to reach students at home.

Training for teachers to optimize virtual classroom management is also recommended. Future research should use larger and more diverse samples, and investigate the long-term effects of physical activity in an e-learning context on academic performance and socioeconomic aspects. Additional research could include the use of wearable technology to effectively enhance student physical engagement. The sixth analysis is based on research results by (Sotos-Martínez et al., 2023) identified several weaknesses in the application of gamification to increase intrinsic motivation, including the lack of significant changes in amotivation and the absence of direct measurement of Basic Psychological Needs (BPNs) such as autonomy, competence, and relatedness.

The study also did not assess the long-term impact of gamification, limiting understanding of its sustainability in physical education. Recommendations for physical education practice and research include: developing gamification strategies that focus more on reducing amotivation and meeting BPNs. It is recommended that more controlled experimental designs and valid measurement tools be used to assess the effects of gamification on BPNs. Research should include longitudinal studies to explore the long-term effects of gamification and qualitative analysis methods to better understand students' perceptions of gamification and which elements are effective in increasing motivation.

The seventh analysis is based on research results by (Mz & Arovah, 2023) outlined several methodological limitations in exploring the relationship between social cognitive predictors and physical activity, including the use of a cross-sectional design that does not provide a basis for causality, the use of a limited sample from the Riau Education and Training Center that reduces generalizability, and the reliance on self-report methods that are prone to bias. Several recommendations for improving physical education practice and future research include: in practice, physical education curricula should include programs that enhance self-efficacy, outcome expectations, stress management, and motivation.

For research, a longitudinal design is recommended to more validly test the causal relationship between social cognitive factors and physical activity. Studies with larger and more diverse samples and the use of objective measurement methods such as accelerometers will help improve the accuracy and external validity of the findings. In addition, it is important to consider environmental and cultural variables in future research to gain a more comprehensive understanding of physical activity motivation among students. The eighth analysis is based on research results by (Ezeddine et al., 2023) revealed that most previous studies focused more on theoretical or academic learning and there was little research exploring the application of specific problem-solving methods in physical education, especially related to motor engagement and intrinsic motivation.

Therefore, it is recommended that physical educators adopt the problem-solving method as the main approach in the curriculum, accompanied by regular workshops and training for teachers. For future research, it is recommended to conduct similar experiments in various educational settings with a strong control group to further generalize the effectiveness of this method. Also, it is important to examine the long-term effects of implementing the problem-solving method on the development of social and emotional skills and students' participation in physical activities outside of school. Based on the eight analyses above, it is clear that self-efficacy and motivation are key elements that influence how students engage and achieve in physical education.

Any enhancements in the curriculum that support these two factors can lead to significant improvements in student participation and achievement. Some practical methods to improve students' self-efficacy and motivation in physical education, educators must set clear and achievable goals, provide constructive feedback regularly, and use a variety of teaching methods to meet the needs of students' various learning styles (Pambudi et al., 2022). Educators also need to increase student autonomy by allowing them to choose activities that interest them, as well as creating a supportive learning environment where mistakes are seen as learning opportunities and every achievement is recognized and praised (Masrun & Rusdinal, 2022).

This approach not only strengthens students' intrinsic motivation, but also provides them with successful experiences that effectively build self-confidence and maintain their participation and achievement in physical education classes (Cagongon & Osorno, 2022). Therefore, it is critical for educators to consider how elements in their teaching can strategically enhance self-efficacy and motivation. Research in physical education often faces several common limitations including study designs that are unable to establish causality, such as the use of cross-sectional designs. Other issues include the use of samples that are limited in both scale and diversity, which reduces the generalizability of research results.

Over-reliance on self-reported data also introduces biases such as social desirability and recall bias, affecting the accuracy of results. Lack of consistency in the implementation of interventions across settings also reduces the effectiveness and uniformity of outcomes achieved. In addition, studies often fail to consider the long-term impact of interventions, as well as the influence of cultural and environmental contexts that can have significant effects on intervention effectiveness. Addressing these limitations could improve the validity and practical application of future research in physical education.

Conclusions

The conclusions of the scoping review of the literature, which investigated various aspects of physical education, reveal the importance of innovation and adaptation in teaching methods to improve students' self-efficacy and motivation. Research on the use of exergames, hybrid pedagogical models such as TGfU and SE, and increasing the number of PE sessions, indicate that variability in teaching approaches can have a significant impact on student engagement and achievement in physical education. Furthermore, studies also point to the need for long-term evaluation of the effectiveness of these interventions and the need to expand the scope of research to a wider range of demographics and socioeconomic settings. Methodological limitations such as reliance on subjective data and cross-sectional designs suggest the need for more robust approaches in future research, including the use of longitudinal designs and more objective measurement instruments. The practical implications of these findings suggest that educators need to continue to implement and adapt innovative methods while ensuring that they meet students' basic psychological needs to support intrinsic motivation and effective motor competence development in physical education.

Author's Statement

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