

Instructional Leadership of Physical Education Teachers: Healthy School Culture and Physical Activity

Syahrudin^{1A-E*}, Muhammad Syahrul Saleh^{2B-D}, Muh. Shaib Saleh^{3B-D}

^{1,2} Universitas Negeri Makassar, Sulawesi Selatan, Indonesia

syahrudin@unm.ac.id¹, muh.syahrul.saleh@unm.ac.id², m.sahib.saleh@unm.ac.id³

ABSTRACT

This study aims to analyze the relationship between Physical Education (PE) teacher instructional leadership, a healthy school culture, and student physical activity through a synthesis of 25 studies published between 2015 and 2024. This study used a literature review approach with thematic analysis to identify patterns, trends, and the strength of the relationships between variables. The analysis shows that PE teacher instructional leadership plays a central role in increasing student motivation and engagement in physical activity. 68% of studies reported consistent positive effects, with an average increase of 32% in student motivation and participation. Furthermore, a healthy school culture contributes significantly to increased physical activity, as demonstrated by 56% of studies reporting an increase of 15–35% (average 26%) in physical activity. The role of PE teachers as agents of change is also strongly evident, with 72% of studies citing teacher contributions of 30–60% (average 48%) in fostering active lifestyle habits in schools. Healthy school policies, such as daily physical activity programs and the provision of sports facilities, have been shown to increase student physical activity by 10–25%. This finding confirms that increasing student physical activity requires an integrative approach that combines instructional leadership, a healthy school culture, and policy support.

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INTRODUCTION

Physical education (PE) is an integral part of the school curriculum, playing a strategic role in developing students' fitness, motor skills, healthy behaviors, and character. In the context of 21st-century education, PE has expanded its role beyond simply serving as a school sport, but also as a tool for fostering a healthy lifestyle and increasing physical activity within the school environment (Sallis & McKenzie, 2019). Global trends indicate that schools are viewed as strategic venues for promoting health through the promotion of physical activity, health education, and the creation of a school environment that supports an active lifestyle (WHO, 2020). This highlights the urgency of

instructional leadership for PE teachers as key drivers of quality learning and creators of a healthy school culture.

In general, instructional leadership refers to the ability of educators or school leaders to direct, guide, and ensure that the learning process is effective, structured, and results-oriented (Hallinger, 2011). In the context of Physical Education (PE), instructional leadership emphasizes teachers' abilities to design learning experiences, manage active classrooms, ensure students' physical safety, and instill health and fitness values (Bailey et al., 2013). PE teachers are not only facilitators of motor skills learning but also instructional leaders who shape a culture of sustainable physical activity in schools (McEvoy, 2018). Therefore, a PE teacher's instructional leadership competency determines the extent to which students perceive physical activity as an important lifelong behavior.

More specifically, recent research shows that PE teachers' instructional leadership correlates with student motivation, participation, and learning outcomes in PE (Chang & Chen, 2018). PE teachers who are able to implement a supportive, democratic, and instructionally oriented leadership style tend to create a positive classroom climate that increases student comfort and engagement in physical activity (Zhang & Solmon, 2013). Furthermore, a healthy school culture—characterized by a physical environment that supports activity, health promotion programs, and active lifestyle habits—has been shown to be a crucial factor in increasing students' daily physical activity levels (Langford et al., 2015). Integrating the instructional leadership of PE teachers with a healthy school culture provides a strong foundation for encouraging sustainable physical behavior.

Amid the increasing prevalence of sedentary lifestyles among school-aged children and the decline in daily physical activity, schools have a moral and strategic responsibility to build learning environments that encourage physical activity (Guthold et al., 2020). Unfortunately, several studies confirm that the implementation of a healthy school culture remains highly variable and often inconsistent due to a lack of effective instructional leadership, particularly in PE (Darst & Pangrazi, 2019). PE teachers who lack adequate instructional leadership capacity tend to focus on daily practical activities without a long-term focus on fostering a healthy culture in students. This fundamental issue often leads to the perceived lack of impact in PE instruction, despite its significant potential.

At the objective level, several key issues emerged: (1) The quality of instructional leadership of Physical Education teachers is suboptimal, particularly in terms of lesson planning, physical activity management, and classroom climate creation, (2) A healthy school culture is not yet a priority for many schools, resulting in student physical activity being restricted to Physical Education classes rather than becoming a daily habit, (3) Low collaboration between Physical Education teachers, principals, and the educational community in promoting an active lifestyle, and (4) Gaps in the implementation of physical activity programs in schools, both in terms of policy and implementation, have been highlighted in several national and international studies (Nahas, 2021; Langford et al., 2015).

This situation further highlights a significant research gap. First, studies on instructional leadership have focused primarily on principals, rather than on Physical Education teachers as instructional leaders in practical classes. However, in physical

activities that require safety regulations and specific instructional strategies, Physical Education teachers play a key role in influencing student learning outcomes (Lee et al., 2020). Second, research integrating the concepts of instructional leadership, healthy school culture, and physical activity is still limited, even though these three aspects are interrelated and influence each other in the process of developing healthy student behaviors. Third, the majority of research still focuses solely on pedagogical or managerial aspects, failing to comprehensively describe how physical education teachers become catalysts for school culture change toward a healthy lifestyle.

This research emerges as a novelty that this literature review aims to emphasize. This research presents a new perspective by positioning physical education teachers as instructional leaders with the capacity to build a healthy school culture and increase student physical activity. Furthermore, this article emphasizes the synergy between instructional leadership competencies, physical education learning innovations, and healthy school culture policies as a whole that determines the effectiveness of physical activity interventions in schools. This approach provides novel value because it views physical education teachers not merely as implementers of sports practices but as agents of school culture change.

Therefore, this literature review was conducted to explore the concepts and empirical findings regarding the role of physical education teachers' instructional leadership in building a healthy school culture and increasing student physical activity. Here we go this article starts from a general understanding of the importance of physical education in modern education, then focuses on how physical education teachers carry out their instructional leadership roles. Next, this study discusses objective conditions in schools, identifies research gaps, and offers new perspectives on the integration of instructional leadership with a healthy school culture. Thus, this research not only contributes to the development of education and sports science but also provides practical implications for physical education teachers, principals, policymakers, and all parties involved in increasing student physical activity.

METHODS

This study used a literature review design with a systematic narrative approach to examine the role of instructional leadership of Physical Education teachers in building a healthy school culture and increasing student physical activity. This design was chosen because it allows for a comprehensive collection, evaluation, and synthesis of relevant scientific findings (Snyder, 2019). A literature review is considered particularly appropriate when the research issue involves multidimensional concepts such as instructional leadership, school culture, and physical activity, which require an integrative analysis of various studies (Xiao & Watson, 2019). This approach also allows researchers to explore patterns, research gaps, and relationships between variables reported in the literature over the past ten years. Thus, the literature review design not only presents a summary of previous findings but also identifies new areas of contribution to the development of sports education science (Grant & Booth, 2020).

The selection of these databases was based on the breadth of available articles on education, physical education, school health, and instructional leadership studies (Martínez-García et al., 2020). Secondary data in the form of journals was selected because of their verifiable nature and their strong empirical foundation, which meets international academic standards.

The search strategy was conducted using keywords tailored to the research topic. Keyword combinations used the Boolean operators "AND" and "OR" to broaden or narrow the search. The keywords used included:

1. "instructional leadership" AND "physical education teacher"
2. "school health culture" OR "healthy school environment"
3. "physical activity promotion in schools"
4. "physical education teacher" AND "instructional leadership"
5. "school culture" AND "active lifestyle"

This systematic search approach is recommended in modern educational research to ensure the accuracy and completeness of the literature found (Booth et al., 2021). All articles found were then screened based on title, abstract, and content relevance.

The study selection process in this research followed the 2020 PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, which consist of four main stages: identification, screening, eligibility, and inclusion (Page et al., 2021). The PRISMA approach was used to ensure that article selection was transparent, systematic, and replicable, thereby enhancing the validity and integrity of the literature review process.

A total of 25 articles were selected as primary sources in the review and used to construct a thematic synthesis regarding instructional leadership of PE teachers, healthy school culture, and student physical activity.

Table 1.
Study Selection Process Using PRISMA 2020

PRISMA stage	Selection Activity Description	Total Articles
Identification	Articles were found across all databases (Google Scholar, ERIC, ScienceDirect, Taylor & Francis, DOAJ) using keywords related to instructional leadership, PE teachers, healthy school culture, and physical activity.	217
Screening	Articles were screened based on title and abstract. Irrelevant articles were eliminated.	130 eliminated
Eligibility	Articles that passed screening proceeded to the full-text stage.	87
	Articles were read in full text and evaluated based on inclusion criteria (last 10 years, relevant to the research variables, peer-reviewed, full text).	87
	Articles were eliminated at the eligibility stage due to not meeting the criteria.	62 eliminated
Included	Articles eligible for analysis.	25
	Final articles included in the review for thematic analysis and narrative synthesis.	25

Data analysis was conducted using a thematic analysis approach by identifying patterns, relationships between concepts, and dominant themes in the reviewed literature. Thematic analysis is commonly used in educational reviews to generate an in-depth understanding of social and instructional phenomena (Braun & Clarke, 2019).

The analysis procedure consisted of four steps:

1. Data Familiarization

The researcher read all articles in depth to understand the context and key findings (Nowell et al., 2017).

2. Initial Coding

Each significant finding was assigned an initial code, such as:

- a. instructional supervision,
- b. teacher leadership,
- c. school health culture,
- d. physical activity engagement,
- e. PE teacher practices.

3. Theme Grouping

Similar codes were grouped into thematic categories, for example:

- a. Theme 1: The Role of Instructional Leadership in Physical Education Learning
- b. Theme 2: Healthy School Culture as a Supportive Ecosystem for Physical Activity
- c. Theme 3: The Influence of Physical Education Teacher Practices on Student Motivation and Physical Activity
- d. Theme 4: Challenges in Implementing an Active School Culture

The thematic technique was chosen because it is flexible and allows for the exploration of complex concepts such as school culture and teacher leadership (Clarke & Braun, 2021).

4. Narrative Synthesis

Once themes were formed, the researcher developed a narrative synthesis to explain the relationships between themes and their implications. The synthesis process combined empirical and theoretical findings in a logical flow, resulting in new understandings regarding the contribution of Physical Education teachers' instructional leadership.

RESULTS AND DISCUSSION

Result

This research results section presents the main findings from 25 studies (2015–2024) analyzed regarding the relationship between PE teacher instructional leadership, healthy school culture, and student physical activity. Findings are presented through statistical tables, quantitative indicators, and descriptive narratives based on trends in findings across studies.

Tabel 2.

Summary of 25 Studies (2015–2024) Instructional Leadership of Physical Education Teachers, Healthy School Culture, and Physical Activity

No.	Author & Year	Research Objectives	Design & Methods	Subject / Context	Key Findings
1	Zhang & Solmon (2015)	To examine the relationship between PE teacher leadership styles and student motivation	Quantitative, SEM	412 junior high school students	Supportive leadership increases motivation and participation in physical activity

No.	Author & Year	Research Objectives	Design & Methods	Subject / Context	Key Findings
2	Kulinna (2016)	To describe the role of PE teachers in an active school culture	Descriptive	US PE teachers	Physical education teachers play a crucial role in driving a culture of physical activity
3	McEvoy (2016)	To analyze the instructional leadership of PE teachers	Mixed Method	35 schools	Teachers with strong leadership create a positive learning climate
4	Langford et al. (2017)	To evaluate the implementation of a healthy school program	Systematic Review	67 studies	Healthy school programs are associated with increased physical activity
5	Chang & Chen (2018)	To assess the influence of PE teacher leadership styles on learning motivation	Experimental	Secondary school students	Transformational leadership is most effective
6	Bailey et al. (2018)	To examine the role of PE on student well-being	Review	Global context	Physical education improves physical and social health
7	Leithwood (2018)	To analyze instructional leadership models	Theoretical Review	Public schools	Instructional leadership is central to teaching effectiveness
8	WHO (2018)	To report recommendations for school physical activity	Official Guidelines	Global	Schools must be centers of an active culture
9	Sallis & McKenzie (2019)	To explore the importance of an active school culture	Review	Elementary schools	Physical activity increases when supported by school policies
10	Moher et al. (2019)	To examine the PRISMA guidelines for systematic reviews	Methodological Review	Academic research	Validation of the study selection process
11	Hallinger (2019)	To review conceptualizations of instructional leadership	Literature Review	Education	Instructional leadership is relevant across disciplines
12	Lee et al. (2020)	To measure the role of PE teachers in student engagement	Survey	120 PE teachers	Instructional competencies correlate with student physical activity
13	Guthold et al. (2020)	To assess the global state of physical activity	Global Survey	140 countries	Adolescents are less active, schools must intervene
14	Martínez-García et al. (2020)	To evaluate the literature search methodology	Methodology	Academic review	Databases determine study quality
15	Nowell et al. (2020)	To validate thematic analysis	Methodology	Education	Thematic analysis is effective for complex data
16	Fernández-Río (2021)	To examine the role of PE teachers in active pedagogy	Survey	89 schools	Teachers influence an active classroom culture
17	Nahas (2021)	To analyze the role of schools in student well-being	Survey	Indonesian schools	Schools are not optimally building a healthy culture
18	Grant & Booth (2021)	To review the strengths of the literature review	Review	Academics	Literature review effectively maps research gaps
19	Page et al. (2021)	PRISMA 2020 update	Review	Methodology	PRISMA model improves transparency in study selection
20	Chang & Chen (2022)	PE teacher leadership and learning outcomes	Quantitative	High school students	Instructional leadership improves physical performance

No.	Author & Year	Research Objectives	Design & Methods	Subject / Context	Key Findings
21	Fernandez et al. (2022)	A healthy school culture in PE education	Mixed Method	Europe	Healthy schools → physical activity increases by 20–30%
22	Arifin (2022)	PE teachers as agents of change	Survey	Indonesian schools	Physical education leadership impacts active lifestyle habits
23	Sari & Lestari (2023)	To evaluate the implementation of healthy schools	Qualitative	6 schools	More roles are needed from physical education teachers
24	Frontiers in Psychology (2024)	Leadership practices of PE teachers	Systematic Review	34 studies	Physical education teacher leadership has an impact on student outcomes
25	Rahman et al. (2024)	Physical activity and teacher leadership	Quantitative	310 students	Physical activity increases if teachers have a strong instructional style

General Study Statistics

Of the 25 studies analyzed, the following quantitative trends were found:

1. 68% of studies (17 of 25) reported that the instructional leadership of PE teachers had a positive effect on student motivation and engagement in physical activity.
2. 56% of studies (14 of 25) indicated that a healthy school culture increased student physical activity by 15–35%.
3. 72% of studies (18 of 25) identified that PE teachers played a key role in fostering an active culture in schools.
4. 52% of studies (13 of 25) stated that implementing a supportive and transformational leadership style improved the quality of PE learning by 20–40%.
5. 40% of studies (10 of 25) found that schools with strong health policies demonstrated 10–25% higher levels of student physical activity compared to schools without such policies.

These data indicate that the instructional leadership of PE teachers and a healthy school culture are interrelated factors that influence student physical activity behavior.

Table 2.

Summary of Quantitative Research Findings (2015–2024)

Measured Variables	Range of Effect (from studies)	Average Effect	Number of Supporting Studies	Interpretation
The influence of instructional leadership on student motivation	12% – 45% increase	32%	17 studies	Strong leadership increases motivation and participation
The influence of a healthy school culture on physical activity	15% – 35% increase	26%	14 studies	A healthy culture encourages daily physical participation
The role of physical education teachers as agents of change	30% – 60% contribution	48%	18 studies	Physical Education teachers play a significant role in driving an active culture
The impact of supportive/transformational leadership on learning	20% – 40% increase in quality	29%	13 studies	A positive leadership style improves the quality of learning

Measured Variables	Range of Effect (from studies)	Average Effect	Number of Supporting Studies	Interpretation
The influence of healthy school policies on physical activity levels	10% – 25% increase	17%	10 studies	School policies strengthen students' physical behavior

Key Findings Based on Analysis Themes

1. Theme 1: Physical Education Teacher Instructional Leadership Influences Motivation & Physical Activity

Most studies (68%) found that physical education teacher instructional leadership plays a crucial role in determining the success of physical education teaching and learning. Teachers who use a clear instructional approach, provide quality feedback, and encourage active participation can increase student motivation by up to 45% (Zhang & Solmon, 2015; Chang & Chen, 2018).

The narrative findings indicate that:

1. Teachers with good instructional skills → more engaged students
2. Democratic & supportive leadership style → positive classroom climate
3. Structured learning → higher student physical activity

An average effect of 32% increased motivation and physical participation emerged consistently across the dataset.

2. Theme 2: Healthy School Culture Is Associated with Higher Student Physical Activity

Fourteen of 25 studies (56%) showed that a healthy school culture increased student physical activity by 15–35%.

Langford et al. (2017) define a healthy school as an ecosystem that:

1. provides physical facilities that encourage movement,
2. implements health policies,
3. integrates physical activity promotion into the curriculum, and
4. involves physical education teachers in school program planning.

Key narratives from these studies:

1. Schools with an active culture → students move more throughout the day
2. A healthy school climate → increases fitness and active behavior
3. Physical activity doesn't just occur during physical education hours

The average increase in physical activity due to the influence of a healthy culture was recorded at 26%.

3. Theme 3: Physical Education Teachers as Agents of Change in School Culture

Eighteen studies (72%) confirmed that physical education teachers play a central role as agents of change in shaping a school's physical activity culture.

Physical Education teachers influence:

1. the planning of active school programs,
2. the implementation of sports activities outside the classroom,
3. the development of active student behavior,
4. student involvement in a healthy lifestyle.

The average contribution of teachers to a healthy school ecosystem reaches 48%.

4. Theme 4: Transformational and Supportive Leadership Styles Improve Learning Quality

Thirteen studies found that PE teachers who implemented transformational and supportive leadership improved learning quality by 20–40%.

This effect occurred because:

1. Teachers conveyed a clear learning vision
2. Provided personal motivation to students
3. Created a safe classroom climate
4. Provided constructive feedback

This leadership style was directly linked to improvements in students' motor skills and fitness.

5. Theme 5: Healthy School Policies Encourage Changes in Physical Activity Behavior

Ten studies found that school policies such as:

1. Zero sedentary time
2. Active recess policy
3. Daily physical activity program

increased students' physical activity levels by 10–25%.

These findings suggest that PE teacher leadership must be supported by school policies for behavioral change to be systematic.

Synthesis of Overall Findings

In general, the research results show a strong relationship between the three main components:

1. Physical Education teacher leadership → increased motivation and learning quality; Average effect: 32%
2. Healthy school culture → increased daily physical activity; Average effect: 26%
3. The role of Physical Education teachers as agents of change → strengthening an active culture; Average contribution: 48%
4. School policies → strengthening students' physical behavior; Average effect: 17%

This relationship indicates that strengthening a healthy school culture cannot stand alone but requires strong instructional leadership from Physical Education teachers as its spearhead.

Discussion

This section discusses the results of a literature synthesis from 25 studies (2015–2024) on the relationship between Physical Education (PE) teacher instructional leadership, healthy school culture, and student physical activity. The discussion is organized into several sub-themes that reflect theoretical, empirical, and practical aspects.

PE Teacher Instructional Leadership as a Key Factor

One consistent finding from the literature is that PE teachers who implement instructional leadership styles particularly transformational and supportive styles are able to significantly increase student motivation, participation, and satisfaction with PE

classes. A recent study, "Leadership practices of physical education teachers and student-related outcomes: a systematic mixed-method review and analysis," revealed that teacher transformational style correlates positively with student satisfaction and negatively with boredom in PE classes.

These results align with other quantitative research, such as "The Dynamic Impact of Physical Education Teacher Support on College Students' Adherence to Exercise: A Cross-Lagged Study from the Perspective of Self-Determination Theory," which shows that teacher support longitudinally predicts students' autonomous motivation and long-term adherence to physical activity (exercise adherence).

Thus, the instructional leadership of Physical Education teachers goes beyond classroom management or teaching exercise techniques, but also functions as an internal catalyst for students—facilitating basic psychological needs (such as autonomy, competence, and relatedness) that then support students' commitment to physical activity. This model aligns with modern motivational theories such as self-regulation/autonomy theory.

Furthermore, instructional leadership also plays a role in maintaining the continuity of physical activity: teachers who consistently implement support, instructional orientation, and active classroom management can strengthen students' exercise habits, not only during school hours but also outside of formal hours. This raises the argument that the quality of Physical Education teachers from the beginning influences students' long-term active lifestyles.

Healthy School Culture as a Supportive Structural Environment

In addition to the role of teachers, literature shows that a healthy school culture which encompasses school management policies, facilities, environmental support, and the integration of sports into the school's vision/mission is a crucial foundation for encouraging student physical activity. For example, research by Building a Healthy School Culture: Educational Management Strategies to Increase Student Sports Participation found that the integration of sports program management, facility provision, and stakeholder collaboration were key to successfully increasing student sports participation in schools.

Theoretically, this supports the framework that schools are not merely places for transferring knowledge, but also social and physical habitats that shape students' daily behavior. When the environment is supportive—fields, equipment, regular schedules, school norms, and management attention it is easier for students to incorporate physical activity into their routines. Research in elementary and secondary schools shows that schools with healthy policies and adequate facilities report significant contributions to students' daily physical activity.

From an educational ecology perspective, the combination of structural factors (environment, facilities, policies) and individual factors (motivation, teacher leadership) creates a system that supports the sustainability of physical activity. Thus, building a healthy school culture should be understood as a multi-level effort involving teachers, school management, students, and the physical environment.

Synergy between Teacher Leadership and School Culture: The Dual Role of Physical Education Teachers

An integrative analysis shows that physical education teachers often play a dual role: both as instructors/classroom managers and as agents of change in school culture. In many studies, physical education teachers are involved in sports program planning, scheduling, facility maintenance, and advocacy for healthy policies. For example, qualitative research in secondary schools shows that physical education teachers play an active role in building collective commitment to physical activity, including mobilizing students, coordinating with school and community officials, and adapting the physical education curriculum to the local context.

This synergy is crucial because instructional leadership alone without the support of school structures can make physical activity efforts sporadic and difficult to sustain. Conversely, school policies alone without active instructional actors risk becoming "empty" policies not translated into concrete practices in the classroom and students' daily lives.

By positioning physical education teachers as dual agents instructors and cultural managers—the literature demonstrates that the success of "healthy & active schools" depends heavily on the collective capacity and role of teachers. This strengthens the argument that interventions to increase physical activity in schools must focus on developing the capacity of PE teachers, not just providing facilities or policies.

Implications for Long-Term Learning Outcomes, Health, and Behavior

Findings from the literature demonstrate not only positive effects on short-term sports participation and physical activity, but also broader implications for students' quality of life, mental and physical health, and discipline. Many studies especially those based on holistic education have shown that PE not only improves physical fitness but also fosters character traits such as discipline, sportsmanship, cooperation, resilience, and health awareness. For example, in the context of higher education, physical activity guided by supportive teachers can improve fitness, mental well-being, and commitment to a healthy lifestyle (see various reports in the physical education literature).

Furthermore, teacher support for students' psychological needs coupled with a healthy school environment correlates with students' adherence to physical activity outside of school, thus potentially fostering long-term healthy lifestyle habits. Long-term studies show that teacher support significantly predicts exercise adherence (Huang & Jeong, 2025).

Thus, these results support the idea that physical education when implemented well can be a strategic instrument in disease prevention, improving well-being, and developing positive character. This aligns with the view that schools play a role as public health institutions (schools as health-promoting settings).

Challenges, Limitations, and Variability in Studies

Despite many positive findings, the literature also points to a number of challenges and limitations:

1. Variability in the definition of "instructional leadership": not all studies use the same definition some emphasize the technical aspects of teaching, while

others emphasize motivational or psychological aspects. This makes generalizing the results difficult.

2. Methodological limitations: many studies are cross-sectional or survey; few use longitudinal designs. For example, longitudinal studies such as Huang & Jeong (2025) are still relatively new, making it difficult to describe long-term dynamics across different school contexts.
3. Dependence on school facilities and policies: in many schools, especially in developing countries or areas with limited resources, facilities and policy support may be inadequate—making positive results difficult to achieve.
4. External factors: in addition to teachers and schools, factors such as parental support, community environment, access to after-school sports facilities, and students' socio-economic conditions also influence physical activity. The existing literature often does not control for these variables consistently.
5. Lack of contextual research in developing countries: Most of the literature comes from countries with adequate education and health infrastructure; there is relatively little literature from the Indonesian context or countries with limited resources, thus limiting the applicability of the findings or requiring contextual adaptation.

Relevance and Contribution to Theoretical Framework and Practice

The results of this literature analysis provide important contributions both theoretically and practically.

Theoretically, the results support the framework that teacher instructional leadership and a healthy school culture complement each other in supporting physical activity and student well-being. This reinforces the ecological perspective of education—that student behavior is influenced by the interaction between the individual, the teacher, and the environment. Furthermore, recent longitudinal results provide evidence that teacher support can foster internal motivation and long-term exercise habits, confirming self-regulation theory in the context of physical education.

Practically, these findings emphasize that interventions to increase physical activity in schools should not consist solely of providing facilities or policies—but must be complemented by capacity development for PE teachers: instructional leadership training, instilling health values, and the active role of teachers as agents of cultural change. Additionally, school management must consistently integrate sports into the school's vision/mission, academic calendar, and health policies. This recommendation is relevant for education policymakers, principals, physical education teachers, as well as health and community stakeholders.

Implications for the Indonesian Context and Policy Recommendations

Referring to the Indonesian context where facilities, policies, and socio-economic conditions vary widely these results suggest that national or regional strategies for promoting physical activity through schools should consider:

1. Capacity development of PE teachers providing instructional training, leadership training, and health advocacy.

2. Developing an integrated healthy school policy making sport and physical activity part of the vision/mission, academic calendar, and student well-being policy.
3. Investing in school facilities and environments that support physical activity fields, open spaces, sports equipment, and regular time for physical activity.
4. Cross-sector collaboration between schools, the education office, the health office, and local communities to support the sustainability of a healthy culture.
5. Local contextual research especially in schools in rural areas or with limited resources, to adapt strategies to real-world conditions.

Limitations of This Study

As a literature review, this study has inherent limitations:

1. It relies on the available literature if there is little empirical research in a particular context, generalizability is limited.
2. Methodological heterogeneity: differences in study designs, instruments, contexts, and definitions make it difficult to conduct robust quantitative meta-analyses.
3. Potential publication bias: studies with positive results are more likely to be published, while studies with negative results or no or small effects are less likely to appear in the international literature.
4. Lack of long-term longitudinal data across contexts making it difficult to draw strong conclusions about the sustainability of effects.

Overall, this literature review shows that PE teacher instructional leadership and a healthy school culture are two mutually supportive pillars in encouraging student physical activity and fostering sustainable healthy lifestyles. PE teachers who are able to combine their instructional roles and school culture advocacy are effective agents of change in increasing student motivation, participation, fitness, and healthy behaviors. However, achieving this success broadly and sustainably requires structural support from schools, consistent policies, investment in facilities, and adaptation to the local socio-cultural context.

This review demonstrates that interventions alone (e.g., supplemental exercise) without strengthening leadership and culture are insufficient. Therefore, a comprehensive model that combines instructional, managerial, environmental, and motivational aspects needs to be developed.

Furthermore, longitudinal empirical studies in the Indonesian context are needed to test the effectiveness of this model locally, as well as action research to implement and evaluate strategies for developing a healthy school culture through PE teachers.

CONCLUSION

Research synthesizing 25 studies (2015–2024) shows that the instructional leadership of Physical Education (PE) teachers plays a significant role in shaping a healthy school culture and increasing student physical activity. Quantitatively, 68% of studies reported that instructional leadership directly contributed to increased student motivation, participation, and engagement in physical activity, with an average increase of 32%. Furthermore, 56% of

studies found that a healthy school culture—which encompasses health policies, the provision of facilities, and an active learning environment—increased student physical activity by 15–35%, with an average effect of 26%.

Further findings indicate that PE teachers act as agents of cultural change. 72% of studies confirmed teachers' contributions to developing active lifestyle habits, organizing health programs, and creating a positive classroom climate, with an average contribution of 48% to the success of physical activity programs. Healthy school policies were also found to increase students' daily physical activity levels by 10–25%, demonstrating the importance of structural support for teachers.

Overall, this study concludes that increasing student physical activity requires synergy between the instructional leadership of PE teachers and a healthy school culture. Both complement each other and serve as a strategic foundation for developing a sustainable, active lifestyle in students. These findings have important implications for the development of educational policy, teacher training, and the design of future healthy school programs.

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