

Ability of high school physical education teachers to meet professional requirements: An evaluation of competency and challenges



Duyet Xuan Do¹, Tuan Manh Nguyen^{1,*}, Doat Van Do², Hang Thi Bich Phung¹, Hoa Ba Nguyen¹, Phuong Thanh Hoang³

¹Faculty of Physical Education, Hanoi National University of Education, Hanoi, Vietnam

²Faculty of Education Management, Hanoi National University of Education, Hanoi, Vietnam

³Faculty of Preschool and Primary Education, Hung Vuong University, Phu Tho Province, Vietnam

ARTICLE INFO

Article history:

Received 16 August 2025

Received in revised form

27 March 2026

Accepted 23 April 2026

Keywords:

Professional competence
 Physical education teachers
 Instructional effectiveness
 Program management
 Professional standards

ABSTRACT

The professional competence of high school physical education teachers is essential for delivering high-quality instruction that supports students' physical, cognitive, and social development. Adherence to professional standards plays a key role in improving student engagement, learning outcomes, and overall well-being. However, differences in training, institutional support, and access to resources create challenges in maintaining these standards. This study aims to assess the ability of high school physical education teachers to meet professional standards by evaluating their instructional effectiveness, program management, and compliance with educational requirements. It also examines differences in competency levels among teachers, managers, and executive officers involved in physical education programs. A cross-sectional survey was conducted with 149 participants, including teachers (n = 56), managers (n = 52), and executive officers (n = 41). Data were collected through structured interviews and analyzed using frequency and percentage distributions. The findings show that a large proportion of participants face difficulties in meeting professional standards. More than 55.70% of respondents did not meet the required competencies, with the lowest performance observed in teaching methods, resource management, and adaptation to modern instructional approaches. Only 10.07% of participants were classified as highly competent, highlighting the need for targeted professional development and institutional improvement. The study concludes that there are notable gaps in professional competence among physical education teachers and administrators. It recommends strengthening training programs, increasing institutional support, and promoting continuous professional development to improve the quality of physical education and achieve better student outcomes.

© 2026 The Authors. Published by IASE. This is an open access article under the CC BY-NC-ND license (<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

The capacity of high school physical education (PE) instructors to fulfill professional standards is a pivotal element in guaranteeing the efficacy of PE programs. Physical education is crucial for enhancing children's physical health and motor skills, while also significantly contributing to cognitive, social, and emotional development (Fenesi

et al., 2022). An effectively organized physical education curriculum cultivates discipline, collaboration, and enduring healthy practices, essential for kids' comprehensive well-being (Latino et al., 2024). Moreover, physical education functions as a crucial platform for cultivating leadership abilities, resilience, and stress management strategies, all of which are essential for student achievement outside the classroom.

The quality of physical education instruction is significantly influenced by the proficiency of instructors, administrators, and executives responsible for overseeing and executing these programs. Their capacity to adhere to professional standards strongly impacts students' participation in physical activities, long-term health outcomes, and the overall efficacy of physical education curricula

* Corresponding Author.

Email Address: tuannm1@hnue.edu.vn (T. M. Nguyen)

<https://doi.org/10.21833/ijaas.2026.04.021>

Corresponding author's ORCID profile:

<https://orcid.org/0009-0005-2630-0647>

2313-626X/© 2026 The Authors. Published by IASE.

This is an open access article under the CC BY-NC-ND license

(<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

(Burson et al., 2021). Professional competency in physical education includes subject knowledge, pedagogical experience, the integration of inclusive teaching practices, the use of contemporary assessment tools, and the ability to adapt to evolving educational regulations and student requirements. Moreover, it necessitates robust communication and leadership abilities to promote collaboration among instructors, students, and parents, guaranteeing that PE programs stay dynamic and attuned to societal shifts.

Therefore, it is imperative that physical education instructors and administrators have the requisite qualifications and competencies to uphold high standards in physical education (Kryshtanovych et al., 2021; Lee et al., 2007). This encompasses ongoing professional growth, opportunities for specialized training, and institutional assistance in implementing novel pedagogical practices. In the absence of these crucial elements, physical education programs may inadequately provide students with the physical literacy and motivation necessary to sustain healthy lifestyles beyond their academic years (Hills et al., 2015). Consequently, evaluating the readiness and efficacy of physical education instructors and administrators in fulfilling professional standards is an essential measure for improving the quality of physical education and augmenting its influence on student well-being.

High school physical education instructors are tasked with providing training that adheres to curriculum standards, captivates pupils, and encourages active lives. Their efficacy is contingent upon their pedagogical expertise, instructional methodologies, and capacity to accommodate students' requirements. Studies indicate that physical education instructors utilizing contemporary pedagogical approaches and evidence-based strategies enhance student motivation and engagement in physical activities (Arufe-Giráldez et al., 2023). Moreover, educators must exhibit proficiency in evaluating students' physical growth, creating inclusive and adaptable physical activities, and employing tactics that address the varied requirements of students. Alongside educators, managers, and executive officers are pivotal in sustaining and enhancing high-quality physical education programs. Managers supervise program execution, guarantee adherence to educational standards, and distribute resources, whereas executive officers establish policies that influence physical education instruction at the institutional level. Effective leadership and administrative backing are essential for addressing obstacles such as financial limitations, insufficient training, and restricted access to contemporary physical education facilities and resources. Although the significance of adhering to professional standards in physical education is acknowledged, various obstacles impede educators and administrators from attaining this objective. Research demonstrates that deficiencies in professional training, restricted access to continuous

professional development, and insufficient institutional support lead to disparities in skill levels. Moreover, the incorporation of technology into physical education instruction and the accommodation of varied student requirements continue to pose significant obstacles. Physical education professionals must consistently enhance their knowledge and abilities to conform to novel teaching methodologies, technological innovations, and growing health trends. The capacity to integrate digital technologies, support students with diverse physical capacities, and incorporate mental health awareness into physical education curricula is becoming progressively essential. Moreover, inequities in access to professional development opportunities can lead to discrepancies in instructional quality, causing certain educators to struggle with the profession's growing expectations.

This study aims to evaluate the capacity of high school physical education teachers, administrators, and executives to fulfill professional standards by examining their competencies using frequency and percentage distributions. The findings will offer significant insights into essential elements of professional competency, including instructional efficacy, policy creation, and program management, by identifying strengths and areas for enhancement. The project will examine how training opportunities, institutional support, and resource availability affect the capacity of PE professionals to perform their duties effectively. The study's findings will aid in the formulation of specialized professional development programs, refined policy-making, and strengthened institutional support for physical education educators and administrators. This project aims to improve the quality of physical education in high schools by ensuring that professionals possess the requisite skills and knowledge to address current educational needs.

2. Methodology

2.1. Participants

The study comprised 149 participants: 56 high school Physical Education (PE) instructors (37.6%), 52 managers (34.9%), and 41 executive officers (27.5%). Each group significantly influenced the development and execution of physical education programs in high schools, offering useful insights from diverse viewpoints.

The physical education teachers (n = 56, 37.6%) were tasked with conducting physical education classes, formulating exercise regimens, and involving pupils in sports and physical activities. Their involvement in the study yielded direct insights into pedagogical approaches, student engagement levels, and obstacles in executing physical education courses within the educational setting. Their input illuminated the pragmatic facets of physical education instruction, encompassing resource accessibility, student engagement, and curricular efficacy.

The managers (n = 52, 34.9%) included school administrators, department heads, and education policymakers responsible for monitoring physical education programs. Their involvement in resource allocation, curriculum development, and institutional policies rendered them significant contributors to the study. Their comments provide a comprehensive insight into the organization and administration of physical education, along with the logistical and managerial issues schools encounter in sustaining good PE programs.

The executive officers (n = 41, 27.5%) were accountable for high-level decision-making, impacting policies and regulations pertaining to physical education. Their viewpoints provided clarity on the strategic trajectory of physical education programs, governmental or institutional policies, and the long-term planning for the advancement of physical education in schools. Their contributions were crucial for comprehending the overarching framework of PE implementation and pinpointing areas for policy enhancement.

2.2. Measurement

The research utilized a structured approach to evaluate the professional competence of high school physical education instructors, administrators, and executive officials. Data collection was performed using structured interviews and competency-based evaluations to achieve thorough and dependable results. Structured interviews were administered to participants to obtain qualitative insights into their knowledge, abilities, and experiences in physical education. A Likert-scale rating technique was employed to quantify proficiency levels, classifying participants from 'Good' to 'Not Meeting the Requirement.' Additionally, document analysis was conducted, examining professional certificates, training history, and performance evaluations to corroborate self-reported data.

2.3. Procedures

The initial step of the study encompassed the selection of participants. A total of 149 individuals were selected via purposive sampling, comprising physical education teachers (n = 56), managers (n = 52), and executive officers (n = 41). Participants were chosen according to their professional jobs and expertise in the education sector to guarantee a varied array of opinions in the study.

During the second phase, data collection was executed through organized interviews, a Likert-scale rating system, and document analysis. Individual interviews were conducted with each participant, emphasizing their professional qualifications, teaching approaches, administrative skills, and involvement in professional development programs. The Likert-scale rating system classified replies into four tiers: 'Good,' 'Above Average,' 'Average,' and 'Not Meeting the Requirement,' facilitating a quantitative evaluation of performance.

Furthermore, official documentation, including training records, performance assessments, and certifications, was examined to corroborate self-reported data.

The third phase encompassed data analysis. Statistical analysis was conducted on the quantitative data from the Likert-scale assessments to ascertain the distribution of competency levels among participants. Cross-tabulation was employed to analyze competency ratings among various professional jobs, yielding a comprehensive insight into inequalities in professional readiness.

2.4. Data analysis

This study's data analysis concentrated on frequency distributions and percentage calculations to assess the skill levels of high school physical education instructors, administrators, and executive officers. Participants' responses were classified into four competency levels: 'Good,' 'Above Average,' 'Average,' and 'Not Meeting the Requirement.' The frequency and percentage of participation in each group were determined for physical education teachers, managers, and executive officers. A cross-tabulation study was performed to compare competency levels across various professional occupations, facilitating a clearer comprehension of the distribution of competency ratings. The results revealed discrepancies in competency levels among the three groups, with a substantial number of participants categorized as 'Not Meeting the Requirement.' The proportions of participants in the 'Good' and 'Above Average' categories were significantly diminished, indicating possible avenues for professional growth. This research offers a clear and efficient overview of the competency distribution among participants by concentrating on frequency and percentage calculations. The findings can inform the identification of specific areas needing enhancement and the formulation of focused interventions to strengthen the professional competencies of high school physical education staff. The analytical framework remains aligned with the study's descriptive design, while pointing toward inferential approaches suitable for subsequent investigations.

3. Results

The findings from the interview concerning high school physical education teachers' capacity to fulfill professional standards are encapsulated in [Table 1](#). A substantial percentage of respondents reported that numerous PE teachers fail to achieve the requisite professional standards.

Among the physical education instructors, only 5 (8.93%) received a rating of "Good," but 8 (14.29%) were deemed "Above Average." A greater percentage, 12 (21.43%), received a "Average" rating. Nonetheless, the majority, 31 (55.36%), were evaluated as "Not Meeting the Requirement." The managers rendered comparable assessments, with 6

(11.54%) categorizing teachers as "Good" and 7 (13.46%) as "Above Average." Eleven (21.15%) teachers were classified as "Average," but twenty-eight (53.85%) were deemed "Not Meeting the Requirement." The executive officers indicated marginally reduced evaluations, with 4 (9.76%) categorizing teachers as "Good" and 6 (14.63%) as "Above Average." Simultaneously, 7 individuals (17.07%) were classified as "Average," while the predominant group, 24 individuals (58.54%), was assessed as "Not Meeting the Requirement." Overall, among all participant groups, merely 15 (10.07%) of PE teachers received a rating of "Good," while 21 (14.09%) were ranked as "Above Average." Thirty teachers received a "Average" rating, constituting 20.13% of the total. Nonetheless, the most alarming discovery was that 83 (55.70%) of the educators

were classified as "Not Meeting the Requirement," underscoring a substantial deficiency in professional competency. The results imply that most high school physical education teachers are viewed as inadequate in meeting professional standards, indicating a necessity for additional training, professional development, and enhancements in physical education teaching criteria.

Table 2 indicates the interview findings about the capacity of high school physical education instructors to fulfill professional standards according to their roles, encompassing physical education teachers, personnel in ancillary physical education positions, and administrators. The findings reveal a substantial deficiency in professional skill among all categories, with most respondents evaluated as failing to fulfill professional standards.

Table 1: Interview results on the ability to meet professional requirements of high school physical education teachers

Level of response	Interview subject						Total	
	Physical education teachers		Managers		Executive officers			
	N	%	N	%	N	%	N	%
Good	5	8.93	6	11.54	4	9.76	15	10.07
Above average	8	14.29	7	13.46	6	14.63	21	14.09
Average	12	21.43	11	21.15	7	17.07	30	20.13
Not meet the requirement	31	55.36	28	53.85	24	58.54	83	55.70

Table 2: Interview results on the ability to meet professional requirements of high school physical education teachers according to working position

Level of response	Working position					
	Physical education teachers		Other jobs		Manager	
	N	%	N	%	N	%
Good	2	6.67	1	4.35	1	4.76
Above average	3	10.00	1	4.35	2	9.52
Average	8	26.67	5	21.74	4	19.05
Not meet the requirement	17	56.67	16	69.57	14	66.67

Of the 30 physical education teachers, merely 2 (6.67%) were classified as "Good," and 3 (10.00%) were evaluated as "Above Average," signifying that a minimal proportion of PE teachers exhibited great proficiency in their discipline. A significant fraction, 8 (26.67%), were categorized as "Average," indicating that although they fulfilled some professional criteria, they necessitated enhancement in several domains. Nonetheless, the most alarming discovery was that over half of the respondents, 17 (56.67%), were classified as "Not Meeting the Requirement," underscoring an urgent necessity for training and development to improve teaching efficacy. The outcomes for individuals employed in alternative roles associated with physical education (n = 23) were even more alarming. Only one responder (4.35%) was evaluated as "Good," and another one (4.35%) was ranked as "Above Average," demonstrating a diminished perception of proficiency relative to physical education teachers. Five respondents (21.74%) were categorized as "Average," whereas the majority, sixteen respondents (69.57%), were identified as "Not Meeting the Requirement." This indicates that persons in similar positions may lack the requisite qualifications, training, or experience to effectively enhance physical education programs, potentially

diminishing the overall quality of PE instruction and administration.

The assessment results revealed a significant level of concern among the managers (n = 21). Only 1 (4.76%) received a "Good" rating, whilst 2 (9.52%) were deemed "Above Average." A little reduced percentage, 4 (19.05%), classified as "Average," signifying that certain managers fulfilled specific professional requirements, nevertheless necessitated enhancements. The most notable conclusion was that 14 (66.67%) of the managers were classified as "Not Meeting the Requirement," indicating shortcomings in leadership, administrative decision-making, or professional expertise in physical education.

In all three groups, the predominant concern was the elevated percentage of workers classified as "Not Meeting the Requirement," with managers (66.67%) and employees in other roles (69.57%) exhibiting the highest rates. Among physical education teachers, over half (56.67%) were evaluated as failing to satisfy professional standards. These findings indicate significant deficiencies in both the pedagogical and administrative dimensions of high school physical education. The category identified as "Other jobs" refers to personnel performing ancillary functions within the school's physical education

system, thereby reflecting the broader ecosystem in which PE programs operate.

4. Discussion

Connections between professional performance and contextual conditions—such as training access, administrative coordination, and resource flows—frame the discussion within a more analytically grounded perspective. Physical education is essential for enhancing kids' physical health, cognitive growth, and overall academic achievement. Ensuring the quality of physical education programs necessitates proficient educators, capable administrators, and well-defined policies. This study sought to evaluate the professional competency of high school physical education (PE) teachers, administrators, and executive officers, uncovering substantial deficiencies in their capacity to fulfill professional standards. The findings indicate that a significant number of professionals in physical education are insufficiently equipped to provide high-quality instruction or efficiently oversee PE programs. This discourse examines the fundamental difficulties, possible causes, and requisite remedies to enhance the overall efficacy of physical education programs.

One of the most alarming discoveries was that more than half of PE teachers failed to fulfill professional standards, corroborating research that underscores the necessity for ongoing professional development to maintain proficiency in instructional methodologies, curriculum development, and student involvement (Adeoye et al., 2024; Hochberg and Desimone, 2010; Iqbal and Ali, 2024). Effective physical education instruction necessitates a synthesis of academic understanding, practical competencies, and pedagogical methodologies that enhance student engagement and physical growth (Fernandez-Rio and Iglesias, 2024; Guo et al., 2023). Many physical education teachers have challenges due to antiquated methodology, limited access to contemporary educational strategies, and inadequate professional development opportunities. This deficiency is seen in the minimal percentage of educators classified as "Good" and "Above Average," indicating that only a limited segment of the profession possesses the requisite proficiency to properly implement PE programs. The inadequacy in proficiency among physical education instructors can be ascribed to several issues, such as inadequate pre-service training, a shortfall in ongoing professional development initiatives, and restricted access to advanced pedagogical resources (Mahara, 2024). Research indicates that physical education instructors participating in organized professional development programs exhibit enhanced instructional tactics, classroom management abilities, and student engagement methods (Hastie et al., 2022). Consequently, there is an urgent necessity to establish organized training programs to improve the professional skills of physical education instructors. Furthermore, investment in upgraded educational facilities and technical resources, like

digital learning platforms and virtual coaching, can equip educators with interactive strategies to enhance student engagement and instructional efficacy.

The research indicated substantial competency gaps among managers and executive officers, with more than 66% failing to fulfill professional norms. This prompts apprehensions over leadership and decision-making procedures in the management of physical education. Research indicates that proficient leadership in physical education programs positively influences curriculum quality, teacher motivation, and student engagement (Arban et al., 2023). In the absence of proficient managers and policymakers, the efficacy of physical education instruction is likely to decline, resulting in disengaged students, inadequate curriculum execution, and inferior learning results. Managers are essential in ensuring that physical education programs conform to educational standards and national health goals. The significant proportion of managers classified as "Not Meeting the Requirement" indicates that numerous administrators lack the requisite knowledge to effectively supervise PE programs. This may result from insufficient training in sports administration, physical education teaching, and policy execution. As a result, schools may encounter challenges in curriculum development, resource distribution, and performance assessment, resulting in inadequate physical education instruction and inferior student outcomes. Furthermore, studies indicate that proficient physical education administrators enhance student engagement in physical activities and the overall efficacy of school-wide fitness initiatives (Martín-Rodríguez and Madrigal-Cerezo, 2025; Siedentop, 2009). Consequently, systematic leadership training programs and ongoing professional development are vital to rectify these deficiencies.

Analysis by working position indicated that physical education teachers had marginally superior ratings compared to individuals in other roles associated with physical education and management. Nonetheless, an alarming 69.57% of personnel in non-teaching physical education roles were designated as "Not Meeting the Requirement," suggesting that individuals in administrative or support capacities may be deficient in the requisite qualifications, training, or experience to effectively support and improve physical education programs. This corresponds with Metzler's (2017) findings, which indicated that educational personnel lacking specialized training in physical education frequently have difficulties in executing successful policies and programs. Insufficient understanding of exercise science, sports management, and pedagogy can considerably impede the efficacy of non-teaching personnel in their positions. Individuals in administrative roles frequently oversee the development of physical education curricula, coordinate school sports events, and manage teacher training programs. In the absence of competence in

these domains, physical education programs may become chaotic and inefficient, ultimately affecting student learning outcomes. Research demonstrates that non-teaching personnel with specialized training in physical education administration significantly influence the establishment of complete and well-organized PE programs. Consequently, specialized professional development programs ought to be implemented to furnish non-teaching personnel with critical skills and information.

This study highlights the critical necessity for improved professional development programs. Considering that more than fifty percent of the participants did not fulfill professional standards, it is imperative to implement required training programs to guarantee that educators and administrators acquire the requisite competencies to proficiently instruct and oversee physical education curricula. Research has repeatedly shown that ongoing professional development enhances instructional techniques, improves classroom management, and boosts student engagement in physical education. Furthermore, recruitment standards must be reassessed to guarantee that only individuals possessing specialized training in physical education pedagogy and sports management are selected. The study's findings reveal that numerous non-teaching staff engaged in PE administration lack the requisite knowledge to proficiently supervise and execute PE programs. Implementing competency-based assessments for educators and administrators can create a systematic framework for reviewing and enhancing their skills over time. The study indicates that enhanced training in educational administration and policy execution is essential for improving decision-making processes within PE departments from a leadership standpoint. Managers and executive officers ought to participate in organized leadership training programs to cultivate the competencies necessary for efficient curriculum planning, resource distribution, and faculty assistance. Ultimately, these findings necessitate enhanced policy support at both institutional and governmental tiers. Enhanced funding, improved infrastructure, and stringent regulatory criteria are crucial for cultivating an atmosphere conducive to high-quality physical education. Enhancing rules to guarantee adherence to professional competency requirements can result in sustained advancements in the efficacy of physical education programs.

Notwithstanding its considerable contributions, this study possesses many limitations. The sample size, although representative, may not comprehensively reflect the varied issues encountered by PE teachers and administrators across different locations or school systems. Subsequent research should encompass larger and more heterogeneous populations to enhance the generalizability of the results. The study predominantly depended on interview replies, which may be subject to personal biases or misinterpretations. Although interviews yield

significant qualitative insights, subsequent research should integrate direct classroom observations, student performance evaluations, and longitudinal studies to furnish a more thorough assessment of PE program efficacy. A further disadvantage is the study's emphasis on detecting skill gaps without a thorough exploration of established viable intervention options. Although it is essential to emphasize shortcomings, subsequent research ought to investigate viable solutions and exemplary techniques already employed in diverse educational environments. Examining the effects of specialized training programs on the performance of physical education teachers and administrators may yield significant insights for the formulation of effective professional development strategies.

5. Conclusion

The ability of high school physical education instructors to fulfill professional standards is essential for the efficacy and longevity of PE programs. This study underscores the disparate skill levels among physical education instructors, administrators, and executive officers, highlighting the necessity for ongoing professional development, organized training programs, and institutional backing. The findings reveal that although certain educators and administrators exhibit competence in fulfilling professional standards, a considerable number encounter difficulties with teaching strategies, resource distribution, and adjustment to modern educational requirements. A principal conclusion from this research is the necessity for focused interventions to address competency deficiencies among PE practitioners. Rectifying concerns such as antiquated pedagogical approaches, restricted access to training, and inadequate policy backing can markedly improve the quality of physical education in secondary schools. Furthermore, cultivating collaboration among educators, policymakers, and stakeholders is crucial for maintaining the relevance, inclusivity, and efficacy of physical education programs in enhancing student well-being. Future study should investigate novel techniques for enhancing physical education instruction, including technology, and addressing varied student requirements. Moreover, longitudinal studies can offer profound insights into the effects of professional development activities on PE competency across time. By enhancing the qualifications and competencies of physical education instructors and administrators, educational institutions can improve the overall quality of physical education and encourage healthier, more active lifestyles among students.

Funding

This research is funded by the Vietnam Ministry of Education and Training under grant number B2023-SPH-09.

Compliance with ethical standards

Ethical considerations

The study was conducted in accordance with ethical standards. All participants were informed about the research's objectives and provided their informed consent voluntarily. The data collected was kept confidential and used strictly for academic research purposes to ensure the privacy of all respondents.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

- Adeoye MA, Prastikawati EF, and Abimbowo YO (2024). Empowering learning: Pedagogical strategies for advancing 21st century skills and quality education. *Journal of Nonformal Education*, 10(1): 10-21. <https://doi.org/10.15294/jone.v10i1.1451>
- Arban J, Domdom V, Aliasas JV, and Gimpaya R (2023). Competency assessment of physical education teachers and its influence on students' cognitive learning. *International Journal of Scientific and Management Research*, 6(6): 28-44. <https://doi.org/10.37502/IJSMR.2023.6603>
- Arufe-Giráldez V, Sanmiguel-Rodríguez A, Ramos-Álvarez O, and Navarro-Patón R (2023). News of the pedagogical models in physical education—A quick review. *International Journal of Environmental Research and Public Health*, 20(3): 2586. <https://doi.org/10.3390/ijerph20032586> **PMid:36767953 PMCID:PMC9916296**
- Burson SL, Mulhearn SC, Castelli DM, and van der Mars H (2021). Essential components of physical education: Policy and environment. *Research Quarterly for Exercise and Sport*, 92(2): 209-221. <https://doi.org/10.1080/02701367.2021.1884178> **PMid:34009092**
- Fenesi B, Graham JD, Crichton M, Ogrodnik M, and Skinner J (2022). Physical activity in high school classrooms: A promising avenue for future research. *International Journal of Environmental Research and Public Health*, 19(2): 688. <https://doi.org/10.3390/ijerph19020688> **PMid:35055510 PMCID:PMC8776126**
- Fernandez-Rio J and Iglesias D (2024). What do we know about pedagogical models in physical education so far? An umbrella review. *Physical Education and Sport Pedagogy*, 29(2): 190-205. <https://doi.org/10.1080/17408989.2022.2039615>
- Guo Q, Samsudin S, Yang X, Gao J, Ramlan MA, Abdullah B, and Farizan NH (2023). Relationship between perceived teacher support and student engagement in physical education: A systematic review. *Sustainability*, 15(7): 6039. <https://doi.org/10.3390/su15076039>
- Hastie PA, Stringfellow A, Johnson JL, Dixon CE, Hollett N, and Ward K (2022). Examining the concept of engagement in physical education. *Physical Education and Sport Pedagogy*, 27(1): 1-18. <https://doi.org/10.1080/17408989.2020.1861231>
- Hills AP, Dengel DR, and Lubans DR (2015). Supporting public health priorities: Recommendations for physical education and physical activity promotion in schools. *Progress in Cardiovascular Diseases*, 57(4): 368-374. <https://doi.org/10.1016/j.pcad.2014.09.010> **PMid:25269062**
- Hochberg ED and Desimone LM (2010). Professional development in the accountability context: Building capacity to achieve standards. *Educational Psychologist*, 45(2): 89-106. <https://doi.org/10.1080/00461521003703052>
- Iqbal S and Ali A (2024). Education and professional development: Opportunities and challenges for in-service teachers: A review. *Gomal University Journal of Research*, 40(1): 117-133. <https://doi.org/10.51380/gujr-40-01-10>
- Kryshtanovych S, Bilyk O, Shayner H, Barabash O, and Bondarenko V (2021). Study of the experience of the formation of professional competence in future managers of physical education and sports. *Revista Romaneasca Pentru Educatie Multidimensionala*, 13(1Sup1): 162-176. <https://doi.org/10.18662/rrem/13.1Sup1/390>
- Latino F, Romano G, and Tafuri F (2024). Physical education teacher's continuing professional development affects the physiological and cognitive well-being of school-age children. *Education Sciences*, 14(11): 1199. <https://doi.org/10.3390/educsci14111199>
- Lee SM, Burgeson CR, Fulton JE, and Spain CG (2007). Physical education and physical activity: Results from the School Health Policies and Programs Study 2006. *Journal of School Health*, 77(8): 435-463. <https://doi.org/10.1111/j.1746-1561.2007.00229.x> **PMid:17908102**
- Mahara KK (2024). Receiving and implementing in-service teacher training programmes: Identifying challenges from teachers' perspectives. *KMC Journal*, 6(1): 153-175. <https://doi.org/10.3126/kmcj.v6i1.62338>
- Martín-Rodríguez A and Madrigal-Cerezo R (2025). Technology-enhanced pedagogy in physical education: Bridging engagement, learning, and lifelong activity. *Education Sciences*, 15(4): 409. <https://doi.org/10.3390/educsci15040409>
- Metzler M (2017). *Instructional models for physical education*. Third Edition, Routledge, New York, USA. <https://doi.org/10.4324/9781315213521>
- Siedentop DL (2009). National plan for physical activity: Education sector. *Journal of Physical Activity and Health*, 6(s2): S168-S180. <https://doi.org/10.1123/jpah.6.s2.s168> **PMid:28872431**