How to Cite:
Son, D. N. (2025). Improving physical education quality for medical students: A review of international studies and lessons for Hanoi Medical University, Vietnam. *Tennessee Research International of Social Sciences*, *7*(2), 234–244. Retrieved from https://triss.org/index.php/journal/article/view/122

Improving physical education quality for medical students: A review of international studies and lessons for Hanoi Medical University, Vietnam

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***Abstract*---**Medical education is characterized by high academic demands and significant psychological pressure, placing medical students at increased risk of physical inactivity, stress, burnout, and reduced quality of life. Physical education has been increasingly recognized as an important strategy to support student well-being and academic sustainability in medical training. This study aims to review international research on physical education and physical activity among medical students and to derive practical lessons for improving physical education quality at Hanoi Medical University, Vietnam. A structured literature review was conducted to synthesize international studies examining the benefits of physical education, common program models, and effective pedagogical and assessment approaches for medical students. The findings indicate that physical education contributes positively to physical health, mental well-being, stress reduction, and learning effectiveness. International evidence also highlights a shift toward health-oriented curricula, active and student-centered teaching methods, and flexible, formative assessment practices. Based on the synthesis of international experience, this study proposes key implications for Hanoi Medical University, focusing on curriculum adjustment, innovation in organization and assessment, and strengthening institutional support. Improving physical education quality is not only essential for enhancing student health and quality of life but also plays a strategic role in fostering sustainable professional development for future medical practitioners.

***Keywords*---**physical education, medical students, physical activity, student well-being, burnout prevention, medical education.

ISSN 2766-7464 (Online)
Publisher: Smoky Mountain Publishing
Manuscript submitted: 12 August 2025, Manuscript revised: 15 September 2025, Accepted for publication: 17 October 2025

1. Introduction

Medical education is widely acknowledged as one of the most academically intensive and psychologically demanding forms of higher education. Medical students are required to cope with a heavy curriculum load, prolonged study hours, frequent examinations, and increasing clinical responsibilities from early stages of training. In addition to academic pressure, exposure to patient suffering, ethical dilemmas, and competitive learning environments further contributes to elevated levels of stress, fatigue, and emotional exhaustion. As a result, medical students constitute a population at high risk for physical inactivity, burnout, mental health problems, and reduced quality of life (Dyrbye et al., 2017; Macilwraith & Bennett, 2018).

International evidence indicates that medical students often fail to meet recommended levels of physical activity set by global health authorities. Sedentary behaviors associated with long periods of studying, screen time, and clinical rotations are common, leading to adverse physical and psychological outcomes. Previous studies have reported strong associations between insufficient physical activity and increased risks of burnout, depression, anxiety, and poor perceived well being among medical students (Ghassab Abdollahi et al., 2020; Naczenski et al., 2017). These issues not only affect students' health during training but may also have long term consequences for their professional performance and career sustainability as future physicians.

Physical education and structured physical activity programs have been increasingly recognized as effective interventions to address these challenges. A growing body of international research demonstrates that regular physical activity contributes significantly to improving cardiovascular health, musculoskeletal fitness, emotional stability, and stress management. More importantly, physical activity has been shown to play a protective role against academic burnout and emotional exhaustion among medical students. Students who maintain healthy exercise habits tend to report higher quality of life, better mood regulation, and greater academic engagement compared to their physically inactive peers (Dyrbye et al., 2017; Taylor et al., 2022).

Beyond individual health benefits, physical education in medical universities serves a broader educational and professional function. Medical students are future healthcare providers who are expected to promote healthy lifestyles and physical activity among patients and communities. Engaging in physical education during medical training helps students internalize health promoting behaviors and strengthens their credibility as role models for preventive medicine. International studies suggest that medical students who are physically active are more likely to counsel patients about exercise and lifestyle modification in their future clinical practice (Gill et al., 2013; World Health Organization, 2021).

Despite the well documented benefits, physical education in many medical universities remains marginalized. Programs are often limited in duration, focused on traditional physical performance standards, or poorly aligned with students' academic schedules and health needs. In some contexts, physical education is perceived as secondary to academic subjects, resulting in low

student motivation and participation. This gap between evidence and practice highlights the need for systematic review and reform of physical education programs specifically tailored to medical students (Griban et al., 2020; Weight et al., 2013).

In Vietnam, Hanoi Medical University is one of the leading institutions in training healthcare professionals. However, similar to global trends, medical students at the university face increasing academic pressure, dense curricula, and limited opportunities for regular physical activity. Improving the quality of physical education is therefore not only a matter of curriculum enhancement but also a strategic approach to supporting student well being, preventing burnout, and ensuring sustainable professional development.

Given this context, reviewing international studies on physical education for medical students is both timely and necessary. Synthesizing global evidence can help identify effective approaches, common trends, and practical lessons that are transferable to the Vietnamese medical education context. Therefore, this study aims to review international research on physical education and physical activity among medical students, analyze key findings related to health and educational outcomes, and propose evidence based lessons for improving physical education quality at Hanoi Medical University.

2. Review Method

This study employed a structured literature review method to synthesize international research related to physical education and physical activity among medical students. The review was designed to identify key research findings, dominant themes, and effective approaches reported in previous studies, thereby providing an evidence based foundation for discussing implications for medical education in Vietnam.

Literature review approach

A narrative and thematic literature review approach was adopted. This approach was considered appropriate given the interdisciplinary nature of the topic, which spans medical education, public health, sports science, and student well being. Rather than conducting a meta analysis, the review focused on analyzing and comparing patterns, trends, and conceptual insights across empirical studies and systematic reviews. The selected studies were examined to identify common benefits of physical education for medical students, frequently used program models, and reported outcomes related to health, burnout, and quality of life.

Data sources and search keywords

Relevant literature was identified through a targeted search of international academic journals and publications in the fields of medical education, physical activity, and health promotion. The search strategy focused on peer reviewed articles and authoritative reports published in English. Key search terms included physical education, physical activity, medical students, quality of life, burnout, stress, mental health, and university health promotion. In addition, reports and

guidelines published by international health organizations were reviewed to provide a global health perspective on physical activity and its relevance to higher education.

Study selection criteria

Studies were selected based on predefined inclusion criteria. First, the study population had to involve medical students or physician trainees. Second, the research needed to examine physical education programs, physical activity behaviors, or related health outcomes such as quality of life, burnout, or mental well being. Third, only empirical studies, multicenter studies, and systematic reviews published in peer reviewed journals were included. Studies focusing solely on general university populations were included only when their findings were highly relevant to the medical student context. Articles with insufficient methodological description or lacking clear outcome measures were excluded to ensure the reliability and relevance of the review findings.

3. International Studies on Physical Education for Medical Students

3.1. Benefits of Physical Education for Medical Students

A consistent finding across international studies is that physical education has a significant positive impact on both physical and mental health among medical students. From a physical perspective, regular participation in structured physical activity improves cardiovascular fitness, muscular strength, posture, and overall functional capacity. These benefits are particularly relevant in medical education contexts, where students often experience prolonged sedentary behavior due to intensive studying and clinical training (World Health Organization, 2021).

In terms of mental health, numerous studies report that physically active medical students experience lower levels of stress, anxiety, and depressive symptoms. Physical activity contributes to emotional regulation and psychological resilience, helping students cope more effectively with academic pressure and clinical stressors. Empirical evidence demonstrates a strong association between physical activity and higher self reported quality of life among medical students across different cultural and educational contexts (Ghassab Abdollahi et al., 2020; Gill et al., 2013).

Stress reduction and burnout prevention represent some of the most important benefits of physical education in medical training. Large scale and systematic studies indicate that medical students who maintain regular exercise habits have a significantly lower risk of burnout and emotional exhaustion. Physical activity has been shown to mitigate academic stress, enhance mood stability, and support sustained engagement in learning activities (Dyrbye et al., 2017; Naczenski et al., 2017). These psychological benefits contribute indirectly to improved learning effectiveness, as students with better mental well being demonstrate higher concentration, motivation, and academic persistence.

In addition, leisure time physical activity has been linked to improved social functioning and academic satisfaction. Multicenter studies reveal that students who engage in regular physical activity report more positive educational experiences and stronger social connections, which further support learning outcomes and professional identity development (Peleias et al., 2017; Taylor et al., 2022).

3.2. Common Approaches to Improving Physical Education Quality

International research also identifies several common approaches to improving the quality of physical education programs for medical students. One major trend is curriculum innovation oriented toward health promotion rather than traditional performance based physical education. Many programs have shifted their focus from competitive sports to functional fitness, stress management, injury prevention, and the development of lifelong physical activity habits. This approach aligns physical education objectives with the health needs and professional responsibilities of future physicians (Griban et al., 2020).

Active and student centered teaching methods are another widely reported strategy. International programs increasingly emphasize participatory learning, group based activities, and flexible program design that accommodates demanding academic schedules. Team based exercise initiatives and incentivized physical activity programs have been shown to improve student motivation, participation, and overall well being among medical trainees (Weight et al., 2013).

Assessment practices have also evolved toward more flexible and health oriented models. Instead of relying solely on standardized physical performance tests, many programs adopt formative assessment approaches that emphasize participation, individual progress, and health related outcomes. Such assessment models reduce performance pressure and encourage intrinsic motivation, thereby supporting sustained engagement in physical activity beyond formal coursework (Gill et al., 2013).

3.3. Summary of International Evidence

To provide a clearer overview, Table 1 summarizes key findings from international studies on physical education for medical students, focusing on benefits and common improvement approaches.

Table 1. Summary of International Studies on Physical Education for Medical Students

Focus area	Key findings	Representative studies
Physical health	Improved fitness, reduced sedentary behavior, better functional capacity	WHO (2021); Griban et al. (2020)
Mental health and quality of life	Lower stress, anxiety, and depression; higher quality of life	Gill et al. (2013); Ghassab Abdollahi et al. (2020)

Focus area	Key findings	Representative studies
Burnout and stress reduction	Reduced emotional exhaustion; lower burnout risk	Dyrbye et al. (2017); Naczenski et al. (2017); Taylor et al. (2022)
Curriculum innovation	Shift toward health oriented and student centered content	Griban et al. (2020)
Teaching methods	Active, participatory, and team based approaches	Weight et al. (2013)
Assessment practices	Flexible, formative, health focused evaluation	Gill et al. (2013)

Overall, international evidence demonstrates that effective physical education programs for medical students are those that integrate health oriented curricula, active teaching methods, and flexible assessment strategies. These approaches not only enhance physical and mental health but also support academic effectiveness and long term professional development in the context of medical education.

4. Discussion and Lessons Learned

4.1. Common trends in international studies

A clear trend across international research is the recognition of physical education as an essential component of medical education. Physical activity is increasingly viewed as a strategic means of supporting student well being, reducing academic stress, and enhancing learning sustainability in demanding medical training environments. Rather than being treated as an optional or supplementary subject, physical education is progressively integrated into broader institutional efforts to promote student health and academic resilience.

Another notable trend is the shift from performance oriented physical education toward health oriented and holistic program models. International programs increasingly prioritize functional fitness, stress management, posture improvement, and the development of lifelong physical activity habits. This orientation reflects an understanding that medical students require physical education programs that support long term health rather than short term athletic achievement.

Flexibility and student centeredness represent additional common trends. Many international programs emphasize adaptable schedules, diverse activity options, and learner centered teaching approaches that accommodate the intensive academic workload of medical students. Active and participatory learning methods, including group based and team oriented activities, are frequently employed to increase engagement and foster social interaction, which contributes positively to students' overall educational experience.

A further trend concerns the evolution of assessment practices. Physical education assessment is increasingly designed to be formative and health focused, emphasizing participation, individual progress, and personal well being

rather than standardized physical performance benchmarks. This approach helps reduce performance anxiety and supports positive attitudes toward physical activity, encouraging sustained engagement beyond formal coursework.

4.2. Key lessons for medical education and training

From these trends, several important lessons can be drawn for medical education. First, physical education should be positioned as a strategic component of medical training that contributes to student well being, professional development, and academic effectiveness. Integrating physical education into the core curriculum reinforces the importance of self care as a foundational professional competency for future physicians.

Second, physical education programs should be designed with a strong health promotion orientation. Emphasizing stress reduction, physical resilience, and sustainable exercise habits ensures that programs are relevant to the needs of medical students and supports long term behavioral change. This approach aligns physical education with the broader goals of preventive medicine and health promotion.

Third, flexibility in program organization and delivery is essential. Offering a variety of physical activity options and flexible scheduling enables students to balance physical education participation with demanding academic responsibilities. Student centered teaching approaches further enhance accessibility and motivation, contributing to higher participation rates.

Finally, assessment systems should support learning and well being rather than add to academic pressure. Formative and progress oriented assessment models encourage engagement, reduce anxiety, and foster intrinsic motivation toward physical activity. Such assessment practices help create a supportive learning environment that promotes both health and educational outcomes.

4.3. Synthesis of trends and lessons

To summarize the discussion, Table 2 presents a synthesis of major international trends and the corresponding lessons for medical education.

Table 2. Synthesis of International Trends and Lessons for Medical Education

International trends	Key characteristics	Lessons for medical training
Physical education as a core component	Emphasis on student well being and academic sustainability	Integrate physical education strategically into medical curricula
Health oriented program models	Focus on functional fitness and stress management	Design physical education to support long term health
Flexible and student centered delivery	Adaptable schedules and diverse activities	Increase accessibility and student engagement
Active teaching approaches	Participatory and group based learning	Enhance motivation and social interaction

International trends	Key characteristics	Lessons for medical training
Health focused assessment	Evaluation based on participation and progress	Reduce pressure and encourage sustained participation

Overall, international experience indicates that effective physical education in medical education requires a holistic, flexible, and health oriented approach. These lessons provide a valuable foundation for improving physical education quality and supporting student well being in medical training contexts.

5. Implications for Hanoi Medical University, Vietnam

5.1. Implications for physical education curriculum adjustment

Hanoi Medical University should consider revising its physical education curriculum toward a more health oriented and student centered framework. Instead of emphasizing traditional physical performance standards or sport specific skills, the curriculum can prioritize functional fitness, stress management, posture improvement, and injury prevention. Content related to lifestyle physical activity, basic exercise planning, and self care strategies may be integrated to support students' long term health and professional resilience.

The curriculum should also reflect the specific demands of medical training. Modular or flexible content structures can allow students to select physical activities that align with their physical condition, interests, and academic schedules. Integrating theoretical components related to health promotion and preventive medicine into physical education courses may further enhance relevance and professional applicability for medical students.

5.2. Innovation in organizational and assessment methods

Innovating the organization of physical education is essential to improve student participation and learning outcomes. Hanoi Medical University can adopt flexible scheduling models, such as multiple time slots or blended learning approaches, to accommodate dense academic timetables. Offering diverse physical activity options, including individual and group based activities, can help address varying student preferences and physical capacities.

Teaching methods should shift toward active and participatory approaches that emphasize experiential learning and peer interaction. Group based activities and team oriented programs may foster social support and increase motivation, contributing to a more positive learning environment.

Assessment practices should be redesigned to focus on health outcomes and learning processes rather than fixed physical performance benchmarks. Formative assessment models that evaluate participation, individual progress, and self reflection can reduce performance pressure and encourage sustained engagement. Incorporating self assessment and reflective components may further promote students' awareness of their own health behaviors and learning experiences.

5.3. Strengthening institutional support

Effective improvement of physical education quality requires strong institutional support from the university. Hanoi Medical University should invest in adequate facilities, equipment, and learning spaces that enable safe and diverse physical activity. Continuous professional development opportunities for physical education instructors can enhance pedagogical competence and ensure alignment with health oriented educational goals.

In addition, physical education should be integrated into the university's broader student support and wellness policies. Collaboration between academic departments, student affairs units, and health services can help create a supportive environment that encourages physical activity as part of daily campus life. Institutional recognition of physical education as a strategic component of student development will contribute to the sustainability and long term impact of program reforms.

5.4. Summary of proposed implications

Table 3 summarizes key implications and recommended actions for improving physical education at Hanoi Medical University.

Table 3. Proposed Implications for Improving Physical Education at Hanoi Medical University

Focus area	Key directions	Proposed actions
Curriculum adjustment	Health oriented and student centered content	Integrate functional fitness, stress management, and lifestyle physical activity
Program organization	Flexible and diverse delivery models	Offer adaptable schedules and multiple activity options
Teaching methods	Active and participatory learning	Implement group based and experiential approaches
Assessment practices	Health focused and formative evaluation	Assess participation, progress, and self reflection
Institutional support	Comprehensive and sustainable backing	Improve facilities, instructor development, and wellness integration

6. Conclusion

This review highlights the critical role of physical education in supporting the physical health, mental well being, and academic sustainability of medical students. International studies consistently demonstrate that well designed physical education programs contribute to stress reduction, burnout prevention, improved quality of life, and enhanced learning effectiveness within the demanding context of medical education.

The findings indicate that effective physical education for medical students requires a shift from traditional performance based approaches toward health

oriented, flexible, and student centered models. Curriculum innovation, active teaching methods, and formative, health focused assessment practices emerge as key elements for improving program quality. Moreover, strong institutional support is essential to ensure the sustainability and impact of physical education initiatives.

For Hanoi Medical University, improving physical education quality should be considered a strategic priority rather than a supplementary activity. By aligning physical education with health promotion principles and the specific needs of medical students, the university can contribute to the development of a healthier, more resilient, and professionally sustainable medical workforce. Future efforts may focus on implementing and evaluating context specific physical education models to further enhance student well being and educational outcomes.

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