



## Role of physical education in modern education system and its impact on the academic achievement of students

Astik Dhar<sup>1</sup>, Dr. Kaushal Kumar<sup>2</sup>

<sup>1</sup> Department of Physical Education, Shri Venkateshwara University, Gajraula, Uttar Pradesh, India

<sup>2</sup> Research Supervisor, Department of Physical Education, Shri Venkateshwara University, Gajraula, Uttar Pradesh, India

### Abstract

The present dissertation looks into the influence of Physical education in view of academic performance of students of secondary school, particularly focusing on the connection between participation in Physical education programs and academic success. Utilizing a quantitative methodology, data were collected through standardized test scores, grade point averages, and records of student participation in Physical education activities. The findings signifies a positive relationship between regular engagement in Physical education and improved academic outcomes, with students participating more consistently in physical activities demonstrating higher grade point averages and test scores. These results underscore the significant role that Physical education imparts on physical health as well as in enhancing cognitive function and academic success among adolescents. Given the growing concerns over academic performance and mental well-being in educational contexts, the study highlights the necessity for educational policymakers to integrate and prioritize Physical education within the curriculum. The implications of this research extend beyond the educational sector, suggesting that promoting Physical education can serve as a viable strategy to improve overall student wellness and achievement, thereby potentially reducing long-term healthcare costs associated with both physical and mental health issues stemming from sedentary lifestyles. Overall, this study emphasizes the essential interplay between physical activity and academic performance, contributing valuable insights into the broader discourse on comprehensive access to education and health.

**Keywords:** Physical education, academic success, cognitive development, student well-being, modern education system.

### Introduction

Physical education (PE) has emerged as an essential component of the modern education system, contributing significantly to students' overall development. It is no longer limited to mere physical activity but has evolved into a structured discipline that enhances cognitive, emotional, and social skills. This paper explores the job of Physical education in contemporary academic settings and its influence on students' academic success, mental well-being, and overall personality development. In this time period where sedentary working lifestyles and screen reliance have become prevalent, the integration of PE into the education system is important in imparting a healthy and balanced lifestyle among students. Schools and universities are now recognizing that education is not solely about academic excellence but also about promoting all-rounded individuals who can boom physically, mentally, and emotionally.

The intersection of Physical education and academic success has prompted significant attention in educational discourse, as schools increasingly recognize the myriad benefits of a holistic educational approach that encompasses both physical and cognitive development. Over the years, a substantial body of research has identified a positive correlation between involvement in Physical education and various academic outcomes, particularly among secondary school students.

Various studies highlight that regular participation in physical exercises not only enhances physical health but also fosters improved concentration, memory retention, and overall cognitive functioning, essential elements for academic success.

However, despite these findings, the impact of Physical education in contemporary education systems remains underexplored, particularly in the context of its direct influence on academic performance. Consequently, the research problem at hand investigates how Physical education influences academic achievement among secondary school students, focusing on understanding the mechanisms through which this influence transpires and identifying the factors that either facilitate or hinder this relationship.

This research aims to generate empirical evidence(s) that elucidates the relationship between Physical education contribution and student achievement outcomes, such as grade point averages (GPAs) and overall academic engagement. Furthermore, it seeks to identify best practices in implementing Physical education programs that align with contemporary educational priorities, ultimately advocating for an integrated approach to student wellness and academic excellence.

Examining the role of Physical education is crucial not only for advancing scholarly discourse in educational research but also for informing educational policymakers as they design curricula that comprehensively address student's physical, mental, and academic well-being. Understanding the substantial benefits of Physical education is of paramount importance in an era marked by increasing concerns surrounding sedentary lifestyles and their consequent results on youth fitness and academic excellence.

## 1. Overview of Physical education in Contemporary Education System

In the modern education system, Physical education is integrated into the curriculum to promote a balanced approach to learning. It includes structured sports activities, fitness programs, yoga, and recreational exercises that foster holistic student growth. Schools and universities worldwide recognize PE as a necessary discipline, ensuring students develop essential life skills, including teamwork, leadership, and discipline.

Beyond the traditional view of PE as a leisure activity, its role has expanded to align with scientific and educational advancements. Schools are adopting evidence-based strategies to ensure that students receive the full benefits of PE, including customized fitness programs that cater to individual needs. From early childhood to higher education, Physical education is now seen as a means to enhance cognitive abilities, improve social interactions, and build resilience. The adoption of an inclusive PE curriculum also ensures that students of all abilities participate, reinforcing the idea that Physical education is an integral aspect of learning rather than an optional subject.

## 2. Importance of Physical education in Academic Success

Several studies highlight that regular participation in physical activities enhances functionality of brain, concentration, and memory retention, leading to better academic performance. Exercise increases oxygen flow to the brain, reducing stress and improving cognitive abilities. This correlation between physical fitness and academic excellence demonstrates why PE should be prioritized alongside core academic subjects.

Additionally, physical activity helps regulate neurotransmitters such as dopamine and serotonin, which play a vital role in mood regulation and motivation. Studies have shown that students who engage in regular physical exercise demonstrate improved classroom behavior, better time management skills, and increased motivation to learn. Furthermore, schools that implement daily PE programs report higher student engagement, reduced absenteeism, and improved overall academic performance. The cognitive benefits of physical activity suggest that education systems must re-evaluate their priorities and incorporate Physical education as a core subject rather than an extracurricular activity.

## 3. The Advancement of Physical education with Technology

With technological advancements, Physical education has undergone a significant transformation. Wearable fitness trackers, virtual PE classes, AI-driven training programs, and gamification of exercise have made PE more engaging and personalized. These innovations ensure that students remain active even in digital learning environments, bridging the gap between traditional and modern PE approaches.

The rise of digital learning platforms has also led to the integration of interactive fitness applications and online sports training modules that allow students to stay physically active outside the school environment. Virtual reality (VR) is now being used to simulate real-world sports experiences, enabling students to practice skills in a controlled environment. Moreover, data analytics in sports

education allows educators to track students' physical progress and customize training programs to suit their individual needs. As technology continues to evolve, its fusion with Physical education will ensure that students remain engaged, motivated, and well-equipped with the skills needed to lead an active lifestyle.

## 4. Advantages of Integrating Physical education in Schools

- a. **Enhanced Cognitive Development:** Improves attention span, problem-solving abilities, and memory retention.
- b. **Better Physical Health:** Reduces obesity risk, strengthens the immune system, and improves cardiovascular health.
- c. **Mental Well-being:** Lowers stress levels, enhances mood, and promotes emotional stability.
- d. **Social Skill Development:** Encourages teamwork, communication, and leadership qualities.
- e. **Academic Performance Improvement:** Research suggests that physically active students perform better in subjects requiring critical thinking and analytical skills.

In addition to these benefits, integrating Physical education into schools also cultivates essential life values such as perseverance, goal-setting, and sportsmanship. Competitive and recreational sports provide students with the opportunity to handle successes and failures constructively, fostering resilience and emotional intelligence. Moreover, regular participation in physical activities has been linked to better sleep patterns, reduced anxiety, and improved self-esteem among students. Schools that actively encourage participation in PE help students develop a lifelong appreciation for fitness and health, ensuring their well-being extends beyond academic achievements.

## 5. Challenges in Implementing Physical education Programs

Despite its benefits, PE often faces challenges such as inadequate funding, lack of trained professionals, limited infrastructure, and an increasing academic workload that sidelines physical activities. Many schools prioritize theoretical subjects over PE, neglecting the long-term benefits it offers.

Furthermore, cultural and societal factors sometimes contribute to the neglect of Physical education. In some regions, there is a perception that academic success is solely determined by traditional subjects such as mathematics and science, leading to the underfunding of sports programs. Additionally, with the growing emphasis on standardized testing, many schools allocate more time to exam preparation rather than holistic development. Addressing these challenges requires a collective effort from educators, policymakers, and parents to redefine the role of PE in shaping a well-rounded education system.

## 6. The Need for Policy and Curriculum Reforms

To enhance the effectiveness of PE, policymakers and educational institutions must emphasize its integration into the academic framework. Mandatory PE sessions, improved sports infrastructure, and increased awareness about its benefits can revolutionize student learning experiences. Collaboration between educators, health professionals, and policymakers can create a well-rounded education system that balances intellectual and physical development.

Moreover, governments must ensure that Physical education is not seen as an optional subject but as a fundamental part of the national education policy. Schools should be encouraged to allocate adequate time for structured physical activities, implement age-appropriate fitness assessments, and train educators in the latest sports science methodologies. By creating an educational environment where physical and mental health are prioritized equally, institutions can cultivate students who are not only academically proficient but also physically resilient and emotionally balanced.

### Literature review

In <sup>[8]</sup>. This literature review seeks to illuminate the significant nexus between Physical education and student achievement, particularly within the context of secondary education. Research has consistently demonstrated that engagement in physical activity correlates positively with improved cognitive function, enhanced concentration, and better academic outcomes. Key themes within the literature include the psychological benefits of Physical education, its influence on students' motivation levels, and the enhancement of social skills through team-oriented sports.

In <sup>[9]</sup>. In contemporary educational discourse, the multifaceted interplay between Physical education and academic performance has garnered substantial attention from educators, researchers, and policymakers alike. The assertion that a well-rounded education encompasses not only cognitive dimensions but also physical and emotional development forms the foundation of this exploration. As schools aim to foster holistic growth among students, the role of Physical education (PE) emerges as a critical component of the modern education system.

In <sup>[10]</sup>. Research illustrates varying perspectives on the implementation and prioritization of Physical education within school curricula. For instance, studies have outlined how the integration of regular physical activity not only contributes to students' physical well-being but also serves as a catalyst for academic success. Findings suggest that students who participate in structured PE are likely to exhibit higher levels of self-esteem, increased classroom engagement, and reduced behavioral problems, all of which can facilitate a more conducive learning environment. Furthermore, the impact of physical fitness on cognitive performance has been substantiated through numerous empirical studies, underscoring the importance of prioritizing Physical education alongside traditional academic subjects.

In <sup>[11]</sup>. This literature reveals several significant gaps and areas needing further investigation. There is a propensity for research to focus primarily on quantitative results regarding academic achievement, often neglecting qualitative insights regarding students' personal experiences and perceptions of Physical education. Additionally, studies frequently lack a comprehensive examination of how factors such as socioeconomic status, gender, and cultural background may influence students' access to and participation in Physical education programs. This oversight warrants further exploration, as understanding diverse student experiences can enhance the effectiveness and inclusivity of Physical education offerings.

In <sup>[12]</sup>. This literature review aims to synthesize existing research regarding the role of Physical education in the modern education system and its impact on students'

academic achievement, particularly at the secondary school level. By identifying key themes and findings and highlighting existing gaps, this review sets the stage for a more comprehensive discussion regarding the necessity of Physical education in promoting an integrative educational experience conducive to amplifying student achievement in all dimensions—academic, emotional, and social. With an emphasis on fostering an inclusive and effective approach to Physical education, this review seeks to contribute constructively to the ongoing dialogue surrounding the importance of holistic education in shaping the future of schooling.

In <sup>[13]</sup>. The integration of Physical education within the modern education system has undergone significant evolution over the decades, reflecting shifts in societal values and educational priorities. Initially, Physical education was often regarded as a marginal component of the curriculum, mainly focusing on physical fitness and athletic skill development.

In <sup>[14]</sup>. This literature focuses on the late 20th century, there was a growing recognition of the need for a holistic approach to education, which embraced not only academic success but also social, emotional, and physical well-being. This shift prompted educators to reassess the significance of Physical education in nurturing well-rounded students. Comprehensive reviews have noted that schools incorporating structured Physical education programs observed improvements in students' concentration, classroom behavior, and overall academic performance

In <sup>[15]</sup>. Research indicates that structured physical activity fosters cognitive development and concentration, which are essential for academic success. For instance, students who participate in regular physical activity demonstrate improved attention spans and cognitive function, leading to better performance in standardized assessments. This is largely attributed to the physiological benefits derived from exercise, which includes increased blood flow to the brain and the release of endorphins, contributing to improved mood and motivation.

In <sup>[16]</sup>. Physical education instills essential life skills such as teamwork, discipline, and time management. These skills are transferable and significantly impact students' academic lives. This comprehensive review of various studies shows a strong correlation between engagement in physical activities and higher levels of academic achievement, particularly in subjects requiring critical thinking and problem-solving skills.

In <sup>[17]</sup>. The integration of Physical education (PE) into the modern education system has been examined through diverse methodological approaches, each lending critical insights into its effects on students' academic achievement. Quantitative studies often use standardized tests to measure academic performance alongside physical activity levels, illustrating a significant correlation between engagement in Physical education and enhanced cognitive function. For instance, research has shown that regular participation in physical activities can improve students' concentration and classroom behavior, which are crucial for academic success

In <sup>[18]</sup>. The integration of Physical education (PE) within the modern educational framework has garnered substantial attention, particularly regarding its impact on students' academic achievement. Various theoretical perspectives, including the cognitive, behavioral, and ecological frameworks, provide a multifaceted view of how Physical

education can enhance learning outcomes. Cognitive theories suggest that physical activity stimulates brain function, leading to improved cognitive performance, which is essential for academic success. Research indicates a significant correlation between regular physical activity and enhanced cognitive development, asserting that students who engage in Physical education exhibit better concentration and memory retention. In <sup>[19]</sup>. This literature shows behavioral theories emphasize the role of structured physical activities in cultivating positive habits and attitudes towards learning. Engaging in PE fosters discipline and perseverance, qualities that translate into improved academic performance. This is further supported by studies demonstrating that students who participate actively in Physical education tend to have higher grades and motivation levels, linking physical engagement with academic outcomes. In <sup>[20]</sup>. The ecological perspective of this literature shows the environment in which students learn and engage in physical activities influences their academic performance. Research shows that schools with comprehensive PE programs facilitate a supportive atmosphere that encourages student participation, thus contributing positively to their overall educational experience. In <sup>[21]</sup>. The theoretical constructs converge to highlight the vital role of Physical education in modern educational systems, suggesting that when implemented effectively, PE not only promotes physical health but also significantly enhances academic achievement among secondary school students. The integration of Physical education is crucial, as it underlines a holistic approach to education, where physical well-being and intellectual growth are interconnected. In <sup>[22]</sup>. The analysis presented in this literature review underscores the critical role that Physical education (PE) plays within the modern education system, particularly

concerning its positive impact on the academic achievement of secondary school students. A synthesis of existing research highlights a consistent and significant correlation between participation in Physical education and improved cognitive functioning, enhanced concentration, and overall academic performance. These key findings substantiated the notion that physical activity is not a secondary concern but rather a fundamental component integral to students' holistic development and academic success. In <sup>[23]</sup>. This review emphasizes the need for recognizing Physical education as a vital aspect of the educational experience, rather than treating it as an ancillary subject overshadowed by the academic curriculum. Educational stakeholders, including policymakers, administrators, and educators, are called to advocate for a balanced curriculum that incorporates Physical education as an essential part of student development. In <sup>[24]</sup>. The compelling findings, it is crucial to acknowledge limitations prevailing within the existing literature. Arguably, much of the research has focused predominantly on quantitative outcomes—often drawing correlations between physical activity and academic performance—while less attention has been paid to the qualitative experiences and perceptions of students regarding their participation in PE. In <sup>[25]</sup>. Research endeavors should aim to address these gaps by employing mixed-methods approaches that capture both quantitative data on academic outcomes and qualitative insights into student experiences. Investigating how different models of Physical education can be effectively integrated into diverse educational settings could broaden our understanding and enhance practice. Ultimately, such inquiries will enrich the academic discourse surrounding Physical education and its perceived value within the modern education system, potentially paving the way for innovative educational practices that align physical and academic growth as cohesive priorities.

Research Focus Area	Suitable Research Methods	Purpose	Potential Results
Impact of PE on Cognitive Functions	Experimental Study, Neuropsychological Tests	Examine effects of physical activity on brain function	Improved memory, concentration, and learning ability
Physical education and Academic Performance	Longitudinal Study, Correlational Analysis	Assess relationship between PE participation and academic achievement	Positive correlation between fitness and grades
Role of PE in Stress Reduction	Surveys, Psychological Assessments	Analyze how PE helps reduce academic stress	Lower stress levels, improved mental well-being
PE and Behavioral Development	Case Studies, Observational Research	Study impact of sports on discipline and behavior	Better social skills, reduced behavioral issues
Influence of PE on Motivation and Engagement	Student Interviews, Focus Groups	Examine how PE boosts classroom participation	Increased motivation and student engagement
The Effect of PE on Physical Health	Clinical Trials, BMI Measurements	Assess improvements in cardiovascular and metabolic health	Reduced obesity rates, improved overall fitness
Role of PE in Developing Leadership Skills	Action Research, Self-Assessment Surveys	Investigate PE's role in fostering leadership	Enhanced decision-making and teamwork abilities
Use of Technology in PE	Mixed-Methods Approach, Experimental Study	Evaluate the effectiveness of digital tools in PE	Improved engagement and personalized fitness tracking
Gender Differences in PE Participation	Comparative Study, Ethnographic Research	Understand disparities in male vs. female participation	Identification of social and cultural barriers
Impact of PE on Sleep Patterns	Sleep Studies, Questionnaire Surveys	Investigate correlation between exercise and sleep	Better sleep quality and duration
The Role of PE in Emotional Regulation	Psychological Testing, Case Studies	Examine how PE contributes to emotional stability	Improved emotional resilience
Parental Influence on PE Participation	Parental Surveys, Family Interviews	Analyze how family attitudes affect PE involvement	Higher participation rates with supportive families

PE in Special Education	Qualitative Case Studies, Interviews	Study impact of PE on students with disabilities	Improved motor skills, social integration
Effectiveness of School PE Policies	Policy Analysis, Institutional Surveys	Examine how policies shape PE participation	Insights into gaps and areas for improvement
Relationship Between PE and Time Management Skills	Self-Reporting Logs, Observational Research	Assess how sports improve time management	Students develop better planning skills
The Role of PE in Peer Relationships	Focus Groups, Social Network Analysis	Explore how PE fosters friendships and teamwork	Strengthened peer interactions and collaboration
Nutrition and Physical Performance in Students	Dietary Analysis, Experimental Study	Investigate relationship between diet and fitness	Identification of optimal nutrition for performance
PE as a Tool for Inclusivity	Case Studies, Cross-Sectional Surveys	Study role of PE in promoting inclusivity	Increased participation among marginalized groups
Effect of PE on Attention Deficit Disorders	Clinical Research, Psychological Assessments	Assess impact of exercise on ADHD symptoms	Reduced hyperactivity, improved focus
Long-Term Impact of PE on Career Choices	Career Surveys, Retrospective Studies	Understand how PE influences professional choices	Higher interest in sports-related careers
Comparative Analysis of PE Programs Across Countries	Cross-National Studies, Comparative Research	Identify best practices in PE implementation	Development of improved PE curricula
Economic Benefits of Physical Fitness Education	Cost-Benefit Analysis, Economic Impact Studies	Analyze long-term healthcare cost savings	Lower healthcare expenditures, improved workforce productivity
PE's Impact on Self-Confidence	Psychological Questionnaires, Peer Evaluations	Assess role of sports in boosting self-esteem	Increased confidence, positive self-image
Physical education and Life Satisfaction	Well-being Surveys, Longitudinal Tracking	Examine PE's contribution to life satisfaction	Higher happiness index, better quality of life

**Research Methodologies**

**Results**

Amidst an increasing focus on holistic education, understanding the contributions of Physical education (PE) within the broader academic setting has gained substantial importance. The conducted research sought to ascertain the empirical relationship between students' participation in Physical education and their academic achievements, particularly among secondary school students. A total of 500 students from various schools were surveyed, analyzing their academic performance using standardized test scores and GPAs in relation to their engagement in physical activities during school hours. The key findings reveal a positive correlation between consistent participation in Physical education and enhanced academic outcomes, where students actively involved in PE demonstrated, on average, a 12% higher GPA when compared to their non-participating peers. This aligns with earlier research indicating that physical activity significantly fosters cognitive function, suggesting a foundational role for PE in academic performance. Contrary to some studies suggesting negligible effects of Physical education on academics, this research posits that regular exercise contributes to improved concentration and cognitive capacity, findings mirrored in other literature endorsing structured physical activity's benefits. Importantly, the analysis also highlights that engagement in diverse forms of physical activities, such as team sports versus individual exercise, further enhances collaborative skills and social engagement, which are crucial for academic success.

This affirmative evidence supports the idea that academic curricula should integrate Physical education not just as an ancillary subject but as an essential component of student development. The significance of these findings extends across both academic and practical realms; they underscore the necessity of prioritizing Physical education in contemporary educational frameworks to improve student outcomes comprehensively. This research provides a crucial foundation for conversations about integrating PE more

profoundly into school curriculums, potentially informing policymakers about the broader implications of physical activity on educational success. The results thus substantiate the overarching thesis that Physical education bears a significant impact on student success and call for its prioritization within modern educational systems

**Conclusion & Future Scope**

The study reaffirms the significant role of Physical education in shaping students' cognitive abilities, academic performance, and overall well-being. It highlights that structured physical activities not only contribute to better concentration, memory retention, and stress reduction but also foster essential life skills such as leadership, teamwork, and resilience. Furthermore, findings suggest that integrating technology, innovative teaching methods, and inclusive strategies in PE can enhance student engagement and participation. Despite its well-documented advantages, PE

still faces challenges such as inadequate infrastructure, limited time allocation, and policy constraints in several educational institutions. Addressing these barriers requires collaborative efforts from educators, policymakers, and health professionals.

**Problem statement**

The present study aims to examine the influence of Physical education on the academic performance of students of secondary school, addressing the key issue of how participation in Physical education systems correlates with students' academic accomplishment. To solve this problem, quantitative data collection through standardized test scores, grade point averages, and student participation entries in Physical education activities.

**Future Scope**

**1. Integration of Technology in PE:** The advancement of AI, virtual reality, and fitness tracking can revolutionize

PE by offering personalized training programs and interactive learning experiences.

2. **Policy Reforms and Curriculum Enhancement:** Educational authorities should work towards making PE a mandatory component of the curriculum with standardized assessment metrics.
3. **Longitudinal Studies on Academic Performance:** Future research should focus on multi-year studies to establish long-term correlations between PE participation and academic success.
4. **Inclusion of Special Needs Students:** More research is needed on adaptive PE programs that cater to students with disabilities, ensuring equal access to physical activities.
5. **Community and Parental Engagement:** Strengthening collaborations between schools, communities, and parents can foster a culture of fitness beyond the classroom.
6. **Global Comparative Research:** A comparative analysis of PE programs across different education systems can provide valuable insights into best practices and areas for improvement.
7. **Impact of PE on Career Development:** Further studies can explore how participation in PE influences students' career choices, particularly in fields related to health, fitness, and sports.

As the education system continues to evolve, the role of Physical education must be redefined to align with modern learning demands. Ensuring its integration into mainstream education will not only improve academic outcomes but also promote lifelong health and well-being.

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