

# Impact of Physical Education on Academic Performance and Mental Health: A review

Dr. J. P. Desiga Srinivasan<sup>1\*</sup>

<sup>1</sup>*Deputy Director of Physical Education, Tamil Nadu Agricultural University, Coimbatore.*

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## Abstract

It has long been held that understanding the relationship among mental health, academic achievement, and physical activity is essential to understanding human behaviour and growth. In this page, analyse the numerous studies that investigate the impact of physical education on academic achievement and mental health. This review emphasises how physical education has a major impact on students' emotional and intellectual well-being. Regular physical activity enhances focus, memory, and classroom behavior, leading to improved academic outcomes. It also mitigates mental health challenges like stress, anxiety, and depression while promoting vital life skills such as teamwork, leadership, and goal-setting. A lack of physical activity increases the risk of chronic diseases and can impair cognitive functions, such as attention and alertness. By fostering both physical well-being and emotional resilience, physical education plays a crucial role in developing healthier, more engaged, and well-rounded students equipped for academic and life success.

*Keywords: Physical Activity, Academic Achievement (Performance), Mental Health, Stress, Anxiety, Depression, Social Skills.*

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## 1 Introduction

Physical education, or PE, has long been seen as an extracurricular or non-academic part of the school curriculum, often receiving less money and attention than subjects like mathematics, science, or language arts. In the beginning, physical education was meant to assist children become more physically active, promote sports, and provide them a break from the academic demands of instruction [1]. But in recent years, a growing body of interdisciplinary research has challenged this limited viewpoint by highlighting

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the critical role that physical activity plays in a child's entire development. Exercise is not only beneficial for physical health, but it also aids in the development of cognitive abilities, emotional regulation, and overall mental health, according to research conducted in the disciplines of neuroscience, psychology, and education [2]. Regular participation in structured physical education programs has been associated with enhanced executive functioning, better memory retention, better classroom conduct, and a longer attention span. Students' academic performance in a range of courses is positively impacted by these cognitive benefits [3]. Beyond its benefits for the brain, physical education protects kids against mental health issues including anxiety, depression, and poor self-esteem. PE provides a secure setting for kids to grow in social skills, resilience, stress reduction, and self-assurance—all of which are critical for success in school and in life [4], [5].

### **A. Physical education**

Physical education, which encompasses primary, secondary, and occasionally tertiary education, is an academic discipline that is taught in institutions worldwide. Informally, it is known as gym class or gym in the United States, and it is frequently abbreviated as Phys. Ed. or PE. Generally speaking, physical education emphasises the development of motor skills, social interaction, health awareness, and physical fitness via athletics, physical activity, and movement instruction [6]. Although national curriculum vary, physical education's fundamental objective is to promote lifelong physical activity and wellbeing. Because it involves students in the psychomotor, cognitive, emotional, social, and cultural realms of learning, physical education stands apart from other academic courses. The content of physical education varies across the globe, as physical activities frequently correspond to the geographic, cultural, and environmental characteristics of each region. While the purpose of physical education is a topic of debate, it is generally recognised as a central objective to socialise and empower young people to appreciate and engage in a variety of physical activity and movement cultures [7].

### **B. Importance of physical education**

- **Improve academic performance:** Academic performance and cognitive function may be enhanced through participation in physical activities, including playground games, shore swimming, bicycling, and team sports, according to research. Physical education helps children develop lifelong fitness and health, as well as creative thinking, motivation, and productivity. A study has demonstrated that children who engage in physical education, athletics, and physical exercise experience a stronger sense of connection to their school and its objectives. The extent of children's socially conscious behaviour in the classroom. A busy mind may help with learning and makes it simpler to concentrate for extended periods of time [8].
- **“Develop Social Skills”:** In addition to teaching children the importance of teamwork, physical education helps children develop a sense of identity. Prosocial behaviour on the part of physical education teachers helps kids develop lifetime skills that open the door to positive connections and interactions. This teaches them important communication and social skills. It facilitates students' role development as team participants, collaboration with a diverse team, and support for others [9].

- **Reduce Stress:** After spending many hours in school, they have to do their homework at home, which leaves little time for other pursuits. A lot of mental and physical stress is also experienced by students who invest a lot of time in their studies. Some of the tension and anxiety may be alleviated through physical exercise. Additionally, it supports mental stability and toughness, as well as health and physical education [10].
- **Self-improvement and character development:** In a controlled setting, team sports foster the development of sportsmanship and leadership. Students learn to respect themselves and their peers by taking on different team duties and learning new skills. It also teaches children to sympathise with others and helps them get through challenging circumstances. Self-esteem is also bolstered by receiving praise from instructors or other players. Confidence and unity are promoted through teammate gestures such as high-fives, pats on the back, and handshakes. Children become more certain of their abilities as a consequence, and they are inspired to improve in their sport of choice [11].
- **Increases focus and retention:** One or more breaks per day will be required by students who are fully invested in their studies. This includes physical education. Exercise during class may help students release surplus energy and break up the pattern, which might make them bored and less attentive.
- **Complete sleep:** Planning the amount and timing of your regular workouts is more crucial than attempting to begin a daily routine all at once. Research has examined the potential benefits of moderate exercise for improving the length and quality of teenagers' bad sleep. Some teenagers have been shown to obtain less sleep when they engage in intense activity at the same time. Better sleep may be experienced by adults who are in good health and regularly exercise. While intense exercise may only marginally alter sleep onset time, quality, and duration, regular, mild exercise can enhance all three [12].
- **Bring leadership quality and better communication:** Every youngster has a tendency to have some kind of influence on others. Different origins, attitudes, and experiences are represented among the members; some are quiet and modest, while others are gregarious and outspoken. Mentors have inspired many successful leaders to improve their leadership abilities. Although some individuals are born with leadership skills, research shows that anybody can learn them, including kids, if they get the proper training and have access to decision-making authority. Adhering to constructivism would lead one to believe that young people may grow as leaders by applying their prior knowledge to new worldviews [13].

### **C. Role of Physical education in emotional well-being**

Our mental health is significantly impacted by regular physical exercise. Here are a few of the main advantages:

- **Stress Reduction:** Tension is decreased by physical exercise because it triggers the production of endorphins, the body's main mood boosters.
- **Improved Mood:** Exercise may improve mood and successfully reduce the symptoms of sadness and anxiety.

- **Enhanced Self-Esteem:** In addition to improving body image and self-confidence, regular physical exercise may boost self-esteem.
- **Better Sleep:** By enhancing sleep quality, exercise may enhance emotional and cognitive health.
- **Social Connection:** Physical activity may provide chances for interpersonal connection and social contact.
- **Increased Resilience:** By engaging in physical activity, individuals can enhance their resilience and more effectively manage problems.
- **“Reduced Risk of Mental Health Issues”:** Frequent exercise has been associated with a decreased risk of mental health issues including anxiety and depression.

#### **D. Physical Activity Improves Mental Health**

Mental health is significantly impacted by regular exercise. This is how it operates:

##### **1. Endorphin Release:**

- **“Stress Reduction”:** The body's natural mood boosters, neurotransmitters, are released when you exercise. Stress, depression, and anxiety are all reduced by these drugs.
- **Pain Relief:** Natural pain relief is also a potential benefit of endorphins, which can enhance overall well-being.

##### **2. Improved Sleep Quality:**

- **Better Sleep Patterns:** Frequent exercise may improve the quality of your sleep by assisting in the regulation of your sleep cycles.
- **Reduced Insomnia:** Exercise may help people sleep better by reducing the symptoms of insomnia.

##### **3. Boosted Self-Esteem:**

- **Positive Body Image:** Self-confidence and body image may be enhanced by physical exercise.
- **Achievement Goals:** Self-esteem and a sense of accomplishment can be improved by the process of establishing and achieving fitness goals.

##### **4. Social Connection:**

- **Group Activities:** Group fitness courses and team sports are only two examples of the many physical activities that provide social contact chances.
- **Community Building:** A feeling of belonging and community may be developed via physical activity with others.

##### **5. Cognitive Benefits:**

- **“Improved Brain Function”:** As demonstrated by research, exercise enhances cognitive abilities, including problem-solving, memory, and focus.

- **“Reduced Risk of Cognitive Decline”:** Reducing the likelihood of cognitive decline that is linked to ageing can be achieved through consistent physical activity.

## **2 Literature Review**

(Abrogar, 2024) [14] This study looks at how physical education (PE) affects college students' academic performance and mental health, with a focus on "stress and cognitive load as moderating and intervening variables". A quantitative, descriptive-correlational research methodology was used to gather data from a sample of college students utilising questionnaires evaluating cognitive load, stress levels, mental health (PHQ-9), academic performance (GPA), and physical education engagement. According to the findings, pupils who participated in physical education at a high level showed noticeably improved mental health outcomes and higher GPAs than those who participated at a moderate or low level. Children who frequently engaged in physical exercise also reported lower stress levels and less cognitive load, further supporting the positive effects of “physical education on academic success” and emotional well-being. In order to support students' overall development, the results highlight the need of including physical education within college curriculum.

(Anu, 2024) [15] This research investigates the extent to which cognitive abilities, such as memory, attention, and problem-solving abilities, are improved by the integration of structured physical exercise into the school curriculum, as evidenced by a diverse array of recent empirical studies and scholarly literature. It also examines the potential benefits of regular physical education for enhancing psychological well-being and helping kids and teenagers better control their emotions and stress. In addition to better academic outcomes, the statistics indicate that children who participate in physical education on a regular basis have stronger interpersonal relationships, less anxiety, and higher levels of self-esteem. Based on these findings, the research argues that physical education should be intentionally included and prioritised as a core component of the educational process, since it is crucial for fostering students' mental, emotional, social, and physical development.

(Nashwan, 2024) [16] Combining quantitative rigour with qualitative depth, this study offers a thorough investigation of the link between structured physical education and mental health issues that may be useful to researchers, practitioners, and policymakers. "A meta-analysis of quantitative and qualitative data" has shown that participants' physical fitness and mental health have significantly improved after completing a structured physical education course. Mental health is positively impacted by physical education. according to this study's holistic approach, which considers both objective measurements and subjective experiences. These findings suggest that improved mental health indicators may benefit from a high-quality physical education program's potential to enhance overall wellbeing.

(Latino & Tafuri, 2023) [17] This brief review's goal is to offer an empirical overview of the extensive and continuously growing corpus of research on how physical exercise interventions affect cognitive function and academic performance. To further understand these relationships, this study includes research from a variety of physical activity settings, such as "extracurricular physical activity, school-based physical education, and classroom-based physical education". With the results presented in the

literature, one may claim that physical exercise causes significant brain changes that mediate improvements in academic accomplishment and cognitive ability. Therefore, this study's goal is to explore the several ways that physical exercise might improve school-age children's cognitive health and academic performance.

(Cerdeira et al., 2021) [18] This study examines a topic for which there is currently no data: how high school pupils in central southern Chile's academic performance is impacted by physical exercise and self-esteem. The chance of attaining high academic achievement is ascertained using probit techniques and a linear cross-sectional regression. Nevertheless, two estimation stages are necessary to estimate a Heckman model in order to account for the potential for selection bias. Socioeconomic, familial, academic, and individual aspects are taken into account. In high school, students who exhibit positive self-esteem and participate in sports activities demonstrate superior academic performance. Therefore, it is possible to expect that the government's adoption of a policy requiring more hours of physical education would result in improved academic achievement.

(GetuTeferi, 2020) [19] The connection among "mental health, academic success, and physical exercise" has been hypothesised for a long time, and it is essential to understanding human behaviour and development. Giving the present state of the research on the relationship between exercise and mental health is the specific objective of this review article. A variety of studies, which are summarised here, have demonstrated that academic achievement and mental health are generally correlated with appropriate levels of physical activity. greater academic accomplishment was linked to greater levels of physical fitness, and overall, the review's findings indicated a substantial association "between academic achievement and physical fitness level". Easily incorporated into educational environments, physical exercise is a reasonably priced and safe lifestyle intervention.

(Teferi, 2020) [20] Emphasising the present state of research on the relationship between exercise and mental health is the goal of this review article. This review's results indicated a substantial correlation between academic achievement and physical fitness, with improved academic performance being associated with an increase in physical fitness. Improved fitness and physical exercise may also help lower stress, anxiety, and depression in addition to enhancing bone and musculoskeletal health. Physical exercise appears to have a minor to moderate effect on the prevention and management of depression and anxiety, which in turn influences academic performance and mental health, as indicated by the findings of large-scale observational studies. Easily incorporated into educational environments, physical exercise is a reasonably priced and safe lifestyle intervention.

### **3 Conclusion**

To sum up, physical education (PE) has a significant and complex effect on both academic achievement and mental health. Students who lead physically inactive lifestyles are far more likely to acquire chronic non-communicable illnesses such as diabetes, osteoporosis, cardiovascular disorders, high blood pressure, and several types of cancer. Furthermore, poor physical fitness is linked to sleep apnea and decreased cognitive functions, both of which impair concentration, alertness, and academic performance. On the

other hand, consistent participation in physical activity through structured PE programs enhances mental well-being by reducing symptoms of depression, anxiety, and stress. These programs improve musculoskeletal health and promote better bone development, especially during the crucial growing years. Importantly, research shows that physically active students demonstrate better classroom behavior, higher memory retention, improved focus, and greater academic achievement. PE also helps students acquire vital life skills that are necessary for success outside of the classroom, such time management, goal-setting, leadership, and collaboration. Additionally, physically fit students tend to have better school attendance and fewer disciplinary issues. Therefore, integrating quality physical education into school curricula is essential for nurturing healthier, mentally balanced, and academically successful students. Emphasizing the value of PE not only benefits individual students but also contributes to the development of a resilient and productive future generation.

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