The Role of Physical Education in Enhancing Academic Performance and Mental Health Among School Students

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Abstract

Physical education (PE) is a vital component of holistic education, yet its relevance to academic performance and mental health is often underestimated. This study explores the correlation between regular physical education and improvements in academic performance and psychological well-being among school students aged 10–16 years. Using both quantitative and qualitative methods, findings indicate that regular physical activity through PE sessions enhances cognitive function, reduces stress, improves mood, and fosters better academic engagement. The results underline the need for integrating quality PE programs into the school curriculum to foster academic excellence and mental health resilience.

Keywords: Physical education, academic performance, mental health, students, cognitive development, stress reduction, school curriculum

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Introduction

With growing academic pressures and the rapid pace of modern life, school students are increasingly facing mental health challenges including anxiety, depression, and stress-related disorders【1】. At the same time, educational success is a major priority for schools and parents alike. However, the traditional focus on rote learning and academic achievement often sidelines physical education (PE), which plays a critical role in the overall development of children【2】.

PE not only promotes physical fitness but also contributes to enhanced brain function, emotional regulation, and better classroom behavior【3】. Several studies have documented the neurophysiological benefits of exercise, including increased blood flow to the brain, enhanced concentration, and mood stabilization【4】.

This study investigates the extent to which PE contributes to academic performance and mental health in school children, emphasizing the importance of structured physical education programs in educational policy and school administration.

Materials and Methods

Study Design
A cross-sectional, mixed-method study was conducted over six months in three urban schools in India. The study combined surveys, standardized academic test scores, and interviews to assess the impact of PE on students.

Participants
A total of 180 students (90 boys, 90 girls), aged 10–16 years, were recruited. Students were divided into two groups:

- **Group A (n=90)**: Participated in at least 3 PE sessions/week.
- **Group B (n=90)**: Had only 1 or no structured PE session/week.

Inclusion Criteria

- Regular school attendance
- No chronic illness or psychiatric diagnosis
- Consent from parents/guardians

Data Collection Instruments

1. **Academic Performance**: Evaluated using average grades in mathematics, science, and language from school records.
2. **Mental Health Assessment**: Measured using the Strengths and Difficulties Questionnaire (SDQ).
3. **Qualitative Interviews**: Conducted with 20 students and 10 teachers from each group.

Statistical Analysis
Descriptive statistics and independent sample t-tests were performed using SPSS v25. Thematic analysis was used for qualitative data.

Results

Academic Performance
Group A showed significantly higher average academic scores across all three subjects compared to Group B ($p<0.01$).

Table 1. Average Academic Scores (out of 100)

Subject	Group A (PE Regular)	Group B (Minimal PE)	p-value
Mathematics	78.4 ± 6.5	71.2 ± 7.4	<0.01
Science	81.1 ± 5.9	73.3 ± 6.7	<0.01
Language	75.6 ± 6.2	68.9 ± 7.0	<0.01

Mental Health Outcomes
Group A students scored significantly better on the SDQ, indicating lower emotional distress and higher prosocial behavior.

Table 2. SDQ Mental Health Scores

Parameter	Group A	Group B	p-value
Emotional Symptoms	3.1 ± 1.2	5.6 ± 1.4	<0.01
Conduct Problems	2.5 ± 1.1	4.1 ± 1.3	<0.01
Peer Relationship	2.9 ± 1.0	4.7 ± 1.2	<0.01
Prosocial Behavior	7.2 ± 1.3	5.9 ± 1.5	<0.01

Qualitative Findings
Recurring themes from student and teacher interviews included:

- **Improved Focus**: “After PE, students come back more alert and ready to learn.”
- **Reduced Stress**: “I feel less anxious about exams when I play regularly.”
- **Better Peer Interaction**: “Students bond more during team sports, reducing bullying.”
- **Motivation**: “PE gives students something to look forward to, increasing school attendance.”

Figure 1. SDQ Scores Comparison
(Bar chart displaying Emotional Symptoms and Prosocial Behavior for both groups)

Discussion

This study strongly supports the hypothesis that regular participation in physical education enhances both academic performance and mental health in school students. The physiological mechanisms underlying these outcomes include improved oxygenation of the brain, endorphin release, and better neurotransmitter regulation【5,6】.

Previous research has also shown that physical activity improves memory, cognitive flexibility, and attention span—skills that are essential for academic success【7】. Additionally, students involved in PE tend to have better self-esteem and fewer symptoms of depression and anxiety【8】.

Notably, the quality and frequency of PE mattered more than the intensity of exercise. Schools with a structured PE curriculum, trained instructors, and integrated sports activities saw better results.

Limitations
This study was limited to urban schools and may not reflect rural or under-resourced educational settings. Also, dietary intake and sleep patterns were not controlled, which could influence mental health outcomes.

Conclusion

The findings affirm the critical role of physical education in fostering academic excellence and promoting mental well-being in students. Schools should prioritize PE as a core subject, not just an extracurricular activity. Policy makers and educators must recognize its academic and psychological value and allocate adequate time, resources, and infrastructure to make PE a regular part of the school timetable.

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