

## Importance of physical education on academic performance

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**Abstract:** Physical education (PE) is part of systems serving the important role of promoting physical health and impacting cognitive and academic performance. Recognizing the advantages of PE, it has been incorporated into school curricula worldwide with the aim of fostering fitness and supporting overall student growth (Cocca et al. 2021). However, there is debate surrounding the complex relationship between active involvement in physical education and academic success. Health is essential for a child's ability to learn effectively. Research supports the idea that healthier children tend to excel academically. Regular physical activity aids children and teenagers in enhancing cardiovascular fitness, strengthening bones and muscles, managing weight, alleviating anxiety and depression symptoms, and lowering the risk of health issues. National guidelines recommend that schools adopt a comprehensive strategy to promote physical education and activity. These guidelines encourage providing children and adolescents with age-appropriate, enjoyable, and varied opportunities for physical engagement. Studies have consistently shown that physical activity offers numerous health benefits, including improved cardiovascular and muscular fitness, better bone health, positive psychosocial effects, and enhanced cognitive abilities. Sustaining brain health is vital at every stage of life, as it influences both mental functions and physical activities. The popular adage 'health is wealth' throws light on the need to maintain good health for the overall wellbeing of individuals and societies. 'All work and no play makes Jack a dull boy' is an oft quoted proverb. Here, the emphasis is actually on the need to do regular physical exercise. Our perception of health is so illconceived that we tend to go for healthy foods instead of following a strict exercise regimen and good eating habits. No wonder, several people turn obese in their mid-twenties! 'A sound mind in a sound body' is the English translation of a Latin proverb quoted in academic circles everywhere. Our forefathers were ever mindful of the attributes of good health and were practitioners of regular physical activities. It is, therefore, very apt to go deep into the attitude of college students towards physical activity in general. Sports can be used to work towards a number of developmental goals in humans that ensure their total well-being. Sport improves public health, promotes academic activities, enhances social development and above all supports community life.

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### Introduction:

Physical Education (PE) plays a crucial role in promoting physical health and influencing cognitive and academic performance. Acknowledging the benefits of PE, schools around the globe have included it in their curricula to encourage fitness and enhance overall student development (Cocca et al. 2021). Nonetheless, there is ongoing debate regarding the intricate connection between participation in physical education and academic achievement. Physical activity and fitness are crucial for brain development during childhood. After engaging in physical activity, children show quicker and more accurate responses to various cognitive tasks. Moderate exercise enhances neural and behavioral aspects related to focusing on specific cognitive tasks. In experimental studies, children who engaged in 30 minutes of aerobic exercise performed better than those who spent the same time watching television. Physical activity, often seen as a break from academic learning, leads to

improved attention, increased on-task behaviors, and enhanced academic outcomes. Teachers can incorporate physical activity breaks into the curriculum or use them to help refocus students during lessons. After-school programs that promote physical activity have been shown to boost cardiovascular endurance, and this enhancement in aerobic fitness correlates with better academic performance and improved allocation of neural resources for working memory tasks.

Health is a vital moderating factor in a child's ability to learn. The idea that healthy children learn better is empirically supported and well accepted (Basch, 2010). Many factors influence the academic performance of a child. Some of them are socio-economic status (Sirin, 2005), parental involvement (Fan and Chen, 2001) and a host of other demographic factors. Multiple studies have confirmed that health benefits are associated with physical activity, including cardiovascular and muscular fitness, bone

health, psychosocial outcomes and cognitive and brain health (Strong et al., 2005). Brain health is important across the life span, as brain is responsible for both mental processes and physical actions of human body. In adults, brain health, representing absence of disease and optimal structure and function, is measured in terms of quality of life and effective functioning of activities in daily living. In children, brain health is measured in terms of successful development of attention, on-task behaviour, memory and academic performance in an educational setting. Physical activity and fitness plays a vital role in developing the brain during childhood. Children respond faster and with greater accuracy to a variety of cognitive tasks after participating in a session of physical activity. Participating in moderate physical activity is found to increase neural and behavioural concomitants associated with the allocation of attention to a specific cognitive task. In some experimental study, children who participated in 30 minutes of aerobic physical activity outperformed those children who watched television for the same amount of time. Physical activity which is generally used as a break from academic learning time, post engagement effects of it includes better attention, increased on-task behaviours and improved academic performance. Teachers can offer physical activity breaks as part of a supplemental curriculum or simply as a way to reset student attention during a lesson. After-school physical activity programs have demonstrated the ability to improve cardiovascular endurance and this increase in aerobic fitness has been shown to mediate improvements in academic performance as well as the allocation of neural resources underlying performance on a working memory task.

The connection between participation in education (PE) and academic success is an area of study in education research. Exploring this link has the potential to provide information for policies and practices. As per the study by Estevan et al. (2021), one important focus is to identify the effects that regular engagement in PE can have investigating whether students who actively participate in PE classes demonstrate levels of achievement. This analysis looks not only at grades but also considers indicators of educational success. On the other hand, Galikyan & Admiraal (2019) stated that by examining levels of participation, educators can identify thresholds where the impact on academic achievement becomes more significant. This aspect is crucial for establishing evidence-based recommendations for educators and policymakers. Understanding how often students should engage in PE to maximise their outcomes can guide targeted interventions and adjustments to the curriculum. In summary, this

research sheds light on the relationship between PE involvement and academic achievement providing insights that contribute to students' overall development, within the educational system.

The impact of education (PE), on abilities and student engagement is an important area of study that has significant implications for educational practices. This examination aims to examine the effects of PE specifically focusing on identifying the benefits that directly influence academic performance. By analysing improvements in attention, memory and executive functions this study aims to develop an understanding of how PE influences students' cognitive abilities (García-Hermoso et al. 2021). Additionally, this exploration goes beyond measurements by recognizing the overall cognitive development that can be facilitated through PE. Through assessing the relationship between participation in PE and behaviours such as attentiveness, active involvement and task completion researchers aim to uncover the transferability of skills developed in PE settings to contexts. Understanding these dynamics not only contributes to optimising PE programs but also provides insights for enhancing student engagement and performance across various academic settings. Essentially this study seeks to unravel the connections between education, cognitive abilities and student engagement while shedding light on their broader implications, for educational strategies.

Understanding the connection between fitness and performance is crucial to fully grasp how physical education affects students as a whole. To gain an understanding students analyse fitness indicators like cardiovascular endurance and strength in order to find correlations with academic achievements (Foglesong, 2021). This detailed examination aims to identify the attributes that may directly impact academic outcomes. By pinpointing these fitness indicators educators and policymakers can customise education programs to prioritise activities that promote the development of these attributes potentially maximising the academic benefits derived from such programs. By monitoring changes in fitness levels over a period and linking those changes with progress this study aims to uncover possible cause-and-effect relationships. Such insights can guide the creation of targeted interventions highlighting the importance of maintaining and improving fitness throughout a student's journey. Essentially this research strives to bridge the gap between fitness and academic performance providing knowledge for shaping educational strategies that foster comprehensive student well-being.

**REVIEW OF LITERATURE:**

Correlation between Participation in Physical Education and Academic Achievement Galikyan & Admiraal, (2019) explore the relationship between physical education (PE) participation and academic performance, a significant topic in educational research. Investigating this relationship can inform policy and practice decisions. Estevan et al. (2021) highlight the importance of assessing the impact of consistent participation in PE, particularly whether students who engage in PE classes show higher achievement levels. This research evaluates not just grades but also other markers of educational success. Galikyan and Admiraal (2019) further emphasize that by analyzing participation levels, educators can pinpoint the thresholds at which participation notably influences academic performance. This insight is essential for developing evidence-based recommendations for educators and policymakers. Understanding the optimal frequency of PE engagement for students can help shape targeted interventions and curriculum modifications. Overall, this research enhances the understanding of how PE involvement relates to academic success, offering valuable insights for students' holistic development within the educational framework. Joseph (2011) highlights that the physical activity behaviors developed during childhood can significantly influence health in adulthood. This is particularly important given the decline in physical activity from childhood to adolescence, underscoring the necessity for understanding the factors that predict these behaviors. Identifying children or groups of children who may benefit from intervention is essential. Zeng & Raymond (2011) explored high school students' attitudes towards physical education and their preferences for sports activities. They argued that recognizing and understanding the factors related to children's participation in physical education is vital for encouraging ongoing physical activity in their lives. Among various influences, children's attitudes play a crucial role in their engagement in physical activities. Those with more positive attitudes toward physical activity tend to participate more outside of school and engage in higher levels of physical activity compared to those with less favorable views. Promoting positive attitudes toward physical activity in children is beneficial for encouraging both current and lifelong physical activity participation. Project SPARK (Sallis et al, 1999) in elementary school children, increased time in physical education did not negatively impact academic performance as assessed by standardized tests. A follow-up after two years of the physical education program indicated that students in the

experimental group performed significantly better on achievement tests compared to the control group.

**Physical fitness and academic performance**

State-mandated academic achievement testing has had the unintended consequence of reducing opportunities for children to be physically active during the school day and beyond. In addition to a general shifting of time in school away from physical education to allow for more time on academic subjects, some children are withheld from physical education classes or recess to participate in remedial or enriched learning experiences designed to increase academic performance (Pellegrini and Bohn, 2005; see Chapter 5). Yet little evidence supports the notion that more time allocated to subject matter will translate into better test scores. Indeed, 11 of 14 correlational studies of physical activity during the school day demonstrate a positive relationship to academic performance (Rasberry et al., 2011). Overall, a rapidly growing body of work suggests that time spent engaged in physical activity is related not only to a healthier body but also to a healthier mind (Hillman et al., 2008).

Children respond faster and with greater accuracy to a variety of cognitive tasks after participating in a session of physical activity (Tompsonowski, 2003; Budde et al., 2008; Hillman et al., 2009; Pesce et al., 2009; Ellemberg and St-Louis-Deschênes, 2010). A single bout of moderate-intensity physical activity has been found to increase neural and behavioral concomitants associated with the allocation of attention to a specific cognitive task (Hillman et al., 2009; Pontifex et al., 2012). And when children who participated in 30 minutes of aerobic physical activity were compared with children who watched television for the same amount of time, the former children cognitively outperformed the latter (Ellemberg and St-Louis-Deschênes, 2010). Visual task switching data among 69 overweight and inactive children did not show differences between cognitive performance after treadmill walking and sitting (Tompsonowski et al., 2008b).

When physical activity is used as a break from academic learning time, postengagement effects include better attention (Grieco et al., 2009; Bartholomew and Jowers, 2011), increased on-task behaviors (Mahar et al., 2006), and improved academic performance (Donnelly and Lambourne, 2011). Comparisons between 1st-grade students housed in a classroom with stand-sit desks where the child could stand at his/her discretion and in classrooms containing traditional furniture showed that the former children were highly likely to stand, thus expending significantly more energy than those

who were seated (Benden et al., 2011). More important, teachers can offer physical activity breaks as part of a supplemental curriculum or simply as a way to reset student attention during a lesson (Kibbe et al., 2011; see Chapter 6) and when provided with minimal training can efficaciously produce vigorous or moderate energy expenditure in students (Stewart et al., 2004). Further, after-school physical activity programs have demonstrated the ability to improve cardiovascular endurance, and this increase in aerobic fitness has been shown to mediate improvements in academic performance (Fredericks et al., 2006), as well as the allocation of neural resources underlying performance on a working memory task (Kamijo et al., 2011).

Over the past three decades, several reviews and meta-analyses have described the relationship among physical fitness, physical activity, and cognition (broadly defined as all mental processes). The majority of these reviews have focused on the relationship between academic performance and physical fitness—a physiological trait commonly defined in terms of cardiorespiratory capacity (e.g., maximal oxygen consumption; see Chapter 3). More recently, reviews have attempted to describe the effects of an acute or single bout of physical activity, as a behavior, on academic performance. These reviews have focused on brain health in older adults (Colcombe and Kramer, 2003), as well as the effects of acute physical activity on cognition in adults (Tomprowski, 2003). Some have considered age as part of the analysis (Etnier et al., 1997, 2006). Reviews focusing on research conducted in children (Sibley and Etnier, 2003) have examined the relationship among physical activity, participation in sports, and academic performance (Trudeau and Shephard, 2008, 2010; Singh et al., 2012); physical activity and mental and cognitive health (Biddle and Asare, 2011); and physical activity, nutrition, and academic performance (Burkhalter and Hillman, 2011). The findings of most of these reviews align with the conclusions presented in a meta-analytic review conducted by Fedewa and Ahn (2011). The studies reviewed by Fedewa and Ahn include experimental/quasi-experimental as well as cross-sectional and correlational designs, with the experimental designs yielding the highest effect sizes. The strongest relationships were found between aerobic fitness and achievement in mathematics, followed by IQ and reading performance. The range of cognitive performance measures, participant characteristics, and types of research design all mediated the relationship among physical activity, fitness, and academic performance. With regard to

physical activity interventions, which were carried out both within and beyond the school day, those involving small groups of peers (around 10 youth of a similar age) were associated with the greatest gains in academic performance.

The number of peer-reviewed publications on this topic is growing exponentially. Further evidence of the growth of this line of inquiry is its increased global presence. Positive relationships among physical activity, physical fitness, and academic performance have been found among students from the Netherlands (Singh et al., 2012) and Taiwan (Chih and Chen, 2011). Broadly speaking, however, many of these studies show small to moderate effects and suffer from poor research designs (Biddle and Asare, 2011; Singh et al., 2012).

Basch (2010) conducted a comprehensive review of how children's health and health disparities influence academic performance and learning. The author's report draws on empirical evidence suggesting that education reform will be ineffective unless children's health is made a priority. Basch concludes that schools may be the only place where health inequities can be addressed and that, if children's basic health needs are not met, they will struggle to learn regardless of the effectiveness of the instructional materials used. More recently, Efrat (2011) conducted a review of physical activity, fitness, and academic performance to examine the achievement gap. He discovered that only seven studies had included socioeconomic status as a variable, despite its known relationship to education (Sirin, 2005).

### **Strategies to mitigate Challenges that improve the students' engagement**

To address the difficulties of balancing performance and physical activity a comprehensive approach is needed. Educational institutions can introduce programs that set aside time for physical education enabling students to have dedicated periods for exercise. On the other hand, Subić & Simonović (2019) stated that by establishing well-equipped sports facilities within school premises infrastructure limitations can be overcome. Furthermore, fostering a culture that values both academic accomplishments and physical achievements can be achieved through awareness campaigns promoting the idea that physical activity is complementary to success rather than conflicting with it. Involvement from parents is crucial in this endeavour with initiatives aimed at educating them about the benefits of maintaining a lifestyle. Educational policies should also emphasise the significance of education that ensure sufficient resources are allocated for its inclusion in curricula.



Lastly, leveraging technology in a way such as integrating activity apps or encouraging active breaks during screen time can motivate students to remain physically active even when faced with academic demands (Gao & Lee, 2019). Successful mitigation of these challenges requires an effort involving educators, parents, policymakers and students themselves.

#### Conclusion

this study presents evidence that shows a positive connection between participating in physical education classes and achieving academic success. The diverse range of participants, including age groups, genders and educational backgrounds adds credibility to the findings. The correlation and regression results highlight the relationship between engaging in physical education and attaining higher academic achievements. These findings have implications for policies emphasising the need to incorporate physical education into school curricula to promote the holistic development of students. While this study establishes a correlation, future research could investigate the mechanisms involved and explore potential factors that mediate this relationship. Overall, this investigation contributes to the growing body of knowledge supporting the role of education, in fostering overall well-being and academic accomplishments.

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