

A SYSTEMATIC EVALUATION OF THE IMPACT OF PHYSICAL ACTIVITY ON ACADEMIC ACHIEVEMENTS AND MENTAL HEALTH

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ABSTRACT

The link between physical exercise, academic success, and mental health has long been seen to be crucial in understanding human behaviour and development. The purpose of this review article is to highlight the current state of research on the link between physical exercise and mental health. Various research, which have been presented below, have indicated that healthy levels of physical exercise typically correspond with mental health and academic success. In general, the findings of this research revealed a strong link between physical fitness level and academic performance, with greater levels of academic achievement being related with higher levels of physical fitness. Physical exercise is a low-cost, non-harmful lifestyle intervention that can be easily integrated into educational settings.

Keywords: *Academic achievement, mental health, physical activity.*

INTRODUCTION

It is suggested that young people engage in at least 60 minutes of physical exercise each day that is developmentally appropriate, pleasant, and includes a range of activities [1]. Various studies have suggested that 60 minutes of physical activity per day may be readily collected in school during physical education class, recess, intramural sports, and before or after-school extracurricular activities [1]. According to the Centers for Disease Control and Prevention (2010), a lack of physical activity can lead to an increase in obesity and other negative health outcomes such as diabetes, hypertension and stroke, cardiovascular disease, some cancers, depression and anxiety, sleep disorders, weak muscles and bones, and premature death. While much of the research has focused on the overall effects of physical exercise on body health, there is emerging evidence that supports the advantages of physical activity for brain health [2]. Physical activity has been found to enhance indices of mental health such as anxiety, depression, and self-concept [1] enhance learning and cognitive function) [3, 4, 5] and academic success [6]. Despite the fact that physical activity is vital for both body and mental health, many teenagers do

not reach the required standards. As a result, it is critical to investigate teenage views in order to better understand which variables impact physical activity, so that efforts may be taken to improve the percentage of adolescents fulfilling physical activity recommendations.

While the effects of physical activity on health are widely recognised, the effects on academic success are not. Physical activity has been found to have a favourable association with academic success [7]. Examining the relationship between physical activity involvement and academic success is essential for a variety of reasons. Understanding the link between sports involvement, academic success, and cognitive development is critical for teachers, school psychologists, and other stakeholders. If student engagement in sports activities is associated with academic performance and cognitive growth, then student athletes should be encouraged and supported to continue participating in sports rather than being regarded as being diverted from their participation. The current study adds to the literature by investigating the impact of sports involvement on academic success and student mental health (cognitive development).

OBJECTIVES

- To investigate the relationship between physical activity and intellectual success.
- To look into the impact of physical activity on mental health.

METHODS

The phrases in connection to physical activity and academic performance, mental health, mental development, psychological health, cognitive development, depression, anxiety, non-communicable illnesses, and so on were utilised in the evaluation of relevant literature search method. The following bibliographic databases were searched: online research databases, web of knowledge, and science direct, sport discuss, Google scholar, Scopus, Web science, Science PG, Science Education, and the references of all stored articles and organisations were checked for relevant citations.

A CHECK FOR ELIGIBILITY OF ARTICLES

Reference papers were evaluated for eligibility based on titles and abstracts, i.e. publications on physical exercise and mental health, as well as academic achievement. All of the included papers were thoroughly read, and substantial information was retrieved. The following data were gathered from the selected publications, organisations, and articles: year of study, characteristic of analysis, assessment, and results/findings/conclusions. 135 articles were found using computerised databases and a manual search of reference lists. We eliminated 68 papers based on their title and abstract because they did not fulfil the inclusion criteria. The articles were used to gather all of the information.

Effects of Physical Activity on Adolescent Health

Physical exercise among children and adolescents, according to the US Department of Health and Human Services, [8], decreases the probability that these individuals would acquire chronic illnesses such as heart disease, hypertension, type 2 diabetes, and osteoporosis as adults. Regular physical exercise in children and adolescents has been found to increase cardiorespiratory fitness, muscle strength, bone growth, promote healthy body weight, self-esteem, and reduce anxiety and stress (USDHHS). Several studies have also looked at the effect of physical activity on academic success. According to one study, “children who are more physically active are more likely to perform academically” [9]. Based on these findings, society should play a role in providing numerous chances for children and adolescents to include physical exercise into their everyday lives, therefore laying the groundwork for a life-long, healthy lifestyle.

Effects of Physical Activity on Adolescent Brain Health

While it is well established that physical activity is beneficial to cardiovascular health, new research is focusing on the effects of exercise on brain health [4]. Exercise was discussed as the most basic and important approach for enhancing components of children's mental performance that are critical to cognitive development. Four key points about how exercise affects the brain and improves cognitive processes involved in learning and memory are: (a) increasing circulation so individual neurons can receive more oxygen and nutrients, (b) stimulating the production of mood-enhancing neurotransmitters and nerve growth factors such as

brain-derived neurotrophic factor (BDNF), and (c) creating new brain cells in a healthy brain.

Oxygen circulation

The brain requires a constant supply of oxygen and glucose as sustenance. While glucose is obtained from the foods consumed, oxygen is obtained through physical exertion. Physical exercise causes an increase in the number of capillaries in the brain, which permits oxygen to be transported in the blood. The amount of oxygen in the blood has an effect on an individual's cognitive skills. The more oxygen accessible to the brain, the higher a student's cognitive performance [11]. According to the report, "armed with the knowledge that movement is linked to cognitive development, teachers and administrators must encourage increased movement in all classrooms at all grade levels." As a consequence, it would be ideal for instructors to include physical exercise into every class in order to oxygenate the brain and increase student attentiveness.

Neurogenesis:

Neurogenesis, or the creation of new neurons, is one of the most significant achievements in neuroscience and education [14]. While it was long thought that neurons could not be replaced after they died, recent study shows that exercise can stimulate the growth of new brain cells. This neurogenesis process takes place in the hippocampus. According to [14], exercise promotes the formation of new brain cells, a process known as neurogenesis. According to the findings of this study, "physical exercise can influence hippocampus neurogenesis, synaptic plasticity, and learning." Neurogenesis has become crucial in neuroscience since it disproves the long-held belief

that dead brain cells can never be regenerated. It wasn't until [12] that it was discovered that exercise causes the synthesis of BDNF, which increases the development of new neurons (neurogenesis), therefore improving learning.

Conclusion

In general, several studies indicated that there was a strong link between physical fitness level and academic success, and greater levels of accomplishment were related with higher levels of physical fitness. These studies also shown that physically healthy children perform better in school, have greater attendance, and have less discipline problems. More time for physical education did not harm academic performance in this study, and kids tended to perform better in the classroom. Students' lack of physical activity can have a negative impact on their health and overall well-being, increasing their risk of chronic illnesses/noncommunicable diseases such as cardiovascular disease, hypertension, diabetes mellitus, osteoporosis, and some kinds of cancer. In addition to academic success challenges, kids with low physical fitness may have additional issues such as sleep apnea, which has been related to impairing a child's ability to concentrate and stay attentive throughout the day, which may have a detrimental influence on academic performance. Increased physical exercise can help reduce or treat melancholy, anxiety, and stress, as well as enhance bone and musculoskeletal function (mental health).

In general, this review paper found that physical exercise has a minor to moderate influence on the prevention and treatment of the risk of depression and anxiety, which has an effect on academic success and mental health.

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