The Relationship Between Physical Activity and Academic Success

Today more than ever, society faces the problem of inactivity and obesity. While there is a distinct connection between physical inactivity and decreased health, the effects of physical inactivity are more far reaching than health alone. Now, as a result of extensive research, the positive relationship between physical activity and academic success has been illuminated. An overwhelming amount of research exists to support the theory that physical activity is, in fact, positively related to academic success. Increased physical activity may be the perfect solution to the current obesity epidemic, improve cognitive function, and increase overall wellbeing among populations.

One study conducted in 2008 examines the relationship between physical fitness, which is presumably a product of physical activity, and academic success in elementary students using standardized physical fitness and academic tests (Chomitz, 2008). In this study, five physical fitness tests were administered to two thousand students during mandatory physical education classes over the span of one academic year (Chomitz, 2008). The pass rate of these physical education classes coupled with BMI was used to measure physical activity. The student's pass rate of mathematics and reading sections in the Massachusetts Comprehensive Assessment System (MCAS) measured academic success (Chomitz, 2008).

The data collected by this research shows a clear relationship that students with higher pass rates in physical fitness tests typically have higher pass rates in mathematics and reading sections in the MCAS as well (Chomitz, 2008). From this research, the positive effects of physical activity on intellectual success can be assumed but not necessarily proven. Although the fitness tests administered were standardized, the data retrieved from such tests is qualitative and not perfectly representative of physical activity's effect on academia itself. The relationship between physical activity and increased passed tests may have been more definite had researchers measured physical activity quantitatively rather than qualitatively. Additionally, the strength of this study may have increased had researchers used the raw test scores of the MCAS, rather than simply a pass/fail grade. Nevertheless, this study suggests that the effects of physical activity may extend into the classroom.

A 2010 study carried out in schools across South Carolina perhaps gives more insight into the relationship between physical activity and academic success than the previous study. This study, conducted by South Carolina's Department of Health and Exercise Science, integrated ninety minutes of physical activity per week into elementary school curriculum and measured its impact on fluid and raw intelligence (Reed, 2010). Fluid intelligence, "the ability to reason quickly and abstractly", was measured by the Standard Progressive Matrices (SPM) Test before and after the study to quantify the effects of increased activity (Reed, 2010). The Palmetto Achievement Challenge Test (PACT), which resembles the ACT in its measurement of reading, mathematics, science, and social studies knowledge, was also administered before and after the implementation of physical activity in the classroom (Reed, 2010). Physical activity was measured with pedometers and minutes spent learning with physical activity integrated into lessons (Reed, 2010). Students who received physical activity during class had higher average fluid and raw intelligence scores on the SPM and PACT tests than control groups, revealing a relationship between exercise and intellectual success (Reed, 2010). Although this study is more specific than the last, tracking students' steps throughout the entire day, rather than simply while at school, may have strengthened the study. While cognitive tests can in many cases be representative of intelligence, they do not take work ethic, participation, test-taking ability, and intelligence into account collectively; thus, cognitive tests are not perfect predictors of academic success. A more refined study was conducted by Michigan State University's Department of Kinesiology (Coe, 2006). There, researchers

compared physical activity with grade point average as a means to track experienced academic success rather than quantified intelligence and predicted success. Not surprisingly, students enrolled in daily physical education classes earned higher grade point averages on average than their peers who voluntarily enrolled in sedentary exploratory classes instead (Coe, 2006). This data, which was collected from over one thousand students, gives a better and more tangible representation of the positive effects associated with exercise.

The link between physical activity and scholastic achievement is universally relevant and being examined in every corner of the globe. In Chile, researchers performed experiments similar to those conducted in South Carolina to test this relationship. Chilean students were administered standardized preliminary tests, exercise over the course of five months, and a final standardized test to show intellectual progress as a function of physical activity (Correa- Burrows, 2014). The Chilean test results showed similar results to the South Carolinian study in that more physically active students achieved higher scores on average than their less active peers (Correa-Burrows, 2015).

Another experiment conducted in Spain tested the academic success of middle school students enrolled in physical education classes with varying frequency and intensity (Ardoy, 2013). In congruence with the data from preceding studies, students enrolled in infrequent and low intensity physical education classes had the lowest average grade point averages and standardized test scores (Ardoy, 2013). Students enrolled in frequent low intensity physical education courses boasted improved grades and higher standardized test scores (Ardoy, 2013). Interestingly, the class of students enrolled in the frequent high intensity physical education course improved most substantially, leading researchers to believe that quantity and quality of physical activity are important factors in determining the benefits it may bring (Ardoy, 2013).

Today's obesity epidemic has cast a bright light on the importance of and necessity for increased physical activity. Some the most well known benefits of exercise include weight loss and control, decreased risk of chronic disease, increased health, increased esteem, increased energy, and improved quality of sleep (Mayo Clinic Staff, 2014). Researchers are now examining the relationship between the quantity and quality exercise and academic success. According to many scientists, increased physical activity has great potential to also increase ones scholastic achievement. As the worlds population becomes less fit, policy makers and citizens are looking for solutions. Evidence of the critical role that exercise plays in academia may lead to a renewed emphasis on healthy lifestyles in schools globally, increasing success rates in students in and out of the classroom.

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