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Running Head: It is More Than Throwing Out the Ball

It is More Than Throwing Out the Ball

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Abstract

Carolann Space conducted an action research study on the role physical education plays in students' academic performance. Her study focuses on the importance of physical activity in relation to students' ability to learn in the classroom.

Based on both existing studies and her own study including analysis of student surveys, teacher observations, and students' GPAs (grade point average), Space discovered that physically active students perform at higher levels academically, experience less stress, and have better self-esteem. Therefore, she highly recommends that all high schools incorporate physical education as a standard component of the curriculum each year of high school.

Purpose / Rationale

Throughout history physical education has played an important role in both education and society. In early times, physical activity was primitive, including activities, such as hunting, running, jumping, and swimming (Freeman, 1997). As times changed the types of physical activity also changed to accommodate the evolving needs of society.

It has been noted that during ancient times countries, such as China and India believed physical activity was a way to promote good health. During the era of the Greeks, physical activity was for the first time in early civilization no longer seen as strictly recreational, by also as a means of competition and warfare. The ultimate goal of the ancient Greeks' physical education philosophy was to produce a higher order of man (Freeman, 1997). To carry out this goal the Greeks created an Olympic Festival, which is the origin of the Olympics as we know it today. It was a five-day festival that involved various athletic competitions, such as disc throwing, running, and boxing. In addition, physical activity was incorporated into military training programs to better prepare soldiers. Physical education was an integral part of military training throughout the next couple of centuries and was only accessible to the upper economic class.

Not until the Renaissance period did beliefs about physical education change. During this period the idea of developing "a well-rounded" person both mentally and physically became important (Freeman, 1997). Then in the 1700's during the Realism era schools hired the first physical education teachers to educate boys about the importance of physical activity in their daily lives. Lessons included activities, such as

fencing and gymnastics. In 1832 John Warren, a Harvard professor published the first book supporting physical education as part of a complete education (Freeman, 1997). Although physical education was not thought of as a necessity by education administrators, the importance of physical education would eventually catch on years later. Eventually, physical education was formally implemented into the educational system and organized competitive sports were seen as extracurricular activities.

Physical education has evolved through many stages to what it is at present day. Years ago people understood the value of physical activity and the importance of it has an integral part of an individual's life. Historically, the body was viewed as a combination of the mind, body, and spirit and physical activity was viewed as a form of recreation or a form of preparing for battle. However, in today's world, society does not place as much importance on physical activity. Increasingly, greater emphasis is being placed on what are considered to be the "core-mind", or academics areas: math, science reading, and writing. Students are now expected to be "brilliant master-minds". Every year more and more academic demands are placed on students to perform at a higher level. Even though society expects the best, schools are not providing a complete educational experience, including academic and life sustaining knowledge, such as physical activity.

Physical activity, or lack thereof, is now viewed as a medical concern. Due to the added pressures and demands students are experiencing higher levels of stress and other health problems for example, obesity. It has been proven in studies that exercise is needed in order to sustain a healthy, longer life.

Students are expected to master upper level academic classes, which unfortunately causes schools to cut or decrease other classes and programs. One of the areas usually effected is physical education. Many school administrators feel that physical education class is an “extra”, when actually it should be seen as a necessity. Physical education provides a way for students to reduce stress, increase energy levels, and maintain a healthy weight. Students cannot be expected to perform at higher academic levels if they are unhealthy and not getting enough exercise. By providing students with an opportunity to exercise their capability to learn is increased. Exercising is the “Miracle-Gro” for young brains, children who engage in regular physical activity show higher test scores (Miller, 2001). Despite the proven positive effects of exercise on academics, many schools are cutting out physical education programs or are limiting them to specific grades and/or semesters. Due to budget cuts and an increased focus on academics, only 56% of American students are enrolled in physical education classes (Miller, 2001). As a result the number of overweight children has been increasing dramatically each year. The number of states with students in the danger zone, currently at 25% keeps growing every year. . In the state of Delaware alone about 25% of students are considered to be overweight (McCracken, 2004).

Physical education is crucial part of a students’ education. Along with improving health, developing social skills, increasing self-esteem, and moral judgment are all benefits of physical education. Students are given opportunities to develop leadership skills, set goals, engaging in cooperative learning, all while developing a healthy body. However, with all of these benefits Delaware schools are still not providing an adequate

amount of physical education. If the ultimate goal is to increase academic performance, then physical education should be included as a standard part of all curriculums in the state of Delaware and across the United States.

Research Question

To address widespread concerns for students' and health and well-being I developed a research question based on the premise that students perform better academically if they engage in regular physical activity.

Do students that are physically active during the school day perform better academically than those who are not?

Review of Literature

A significant amount of research has been conducted on the importance of physical activity. In 2000 President Clinton issued an Executive Memorandum to the Secretary of Health and Human Science, and the Secretary of Education. This report, entitled "Promoting Better Health for Young People Through Physical Activity and Sports", includes ten strategies on how to promote better health for young people through proper nutrition, and physical activity. The strategies, meant to improve young peoples' health and address the obesity crisis, range from more parental involvement to media advertisements on health awareness. Included are ways for families, schools, after-school programs, youth recreational programs, the community and the media to get involved in promoting a healthy lifestyle. The bottom-line is based on findings that since the 1980's the number of overweight children has doubled (Memorandum, 2000). Although this Executive Summary provides a strong case for increasing physical activity, no President

has implemented any of these strategies and the obesity rate continues to increase at an alarming rate.

Another meta analysis of nearly 200 studies performed by the Action for Healthy Kids Group found that regular exercise supports better learning (Satcher,2002). It discusses three major areas that affect a student's performance: improper nutrition, a inadequate physical activity, and lack of weight management. Students practicing poor eating habits and carrying excessive weight can hinder a schools' performance, academically and financially. Overweight students perform at a lower academic level mainly because they suffer from lower self-esteem and more frequent illness due to poor nutrition (Satcher, 2002). Many schools receive money based on attendance; the lower the absentee rate the more money that school is awarded. An increase in absenteeism due to poor eating habits and overweight children has caused a decrease in schools' funding, which in turn results in a negative impact on academics and other school programs including physical education. One study found that severely overweight students miss one day per month or nine days per year (Satcher, 2002). Absenteeism costs schools money because they are given money based on their student absenteeism rate. The higher the absenteeism rate the less money a school receives (Satcher, 2002). With an increase in overweight students and the absenteeism rate some school districts could lose as much as \$28 million dollars each year (Satcher, 2002). Unfortunately, this means that programs, such as physical education are either eliminated or cutback. Both the increase in academic performance expectations and decreased funding are causing schools to reallocate money marked as "extras" to academics, even more so due to standardized

testing requirements in recent years (Allegrante, 2004). Since 1995 the percentage of students attending physical education class daily has dropped from 42% to 25% (Allegrante, 2004). Because of this drop the student population is getting heavier and performing below expectations in the classroom. Studies show that students who participate in regular physical activity perform better academically and are less likely to get sick, improving absentee rates. The ultimate goal for a school should be to provide the best possible learning environment (Satcher, 2002). That means providing a physical and academic education to all students.

Many studies have proved the positive effects of physical activity; it can improve learning, by creating healthier students with a greater ability to learn and process information. One study performed in California found that a student's physical well-being has a direct impact on their ability to achieve academically (Vigil, 2005). This study was performed on 10,000 students in grades 5, 7, and 9. The Fitnessgram was used to test the physical fitness levels of the students and California's standardized test was used to test academic achievement levels. The study concluded that students with higher levels of fitness also achieved higher testing scores (see appendix). Another study performed in 2001, on 7,961 Australian children 7 to 15 years of age, also found that physical activity enhances academic performance (Dwyer, 2001). The students were given a questionnaire to rate their perceived fitness levels and participated in a fitness test. The test consisted of a 1.6 kilometer run, sit-ups, push-ups, 50 meter sprint, and a standing long jump. Academic performance was rated on a scale of 1-5, 1 low academically and 5 being high level academically, which was provided by a school

representative, such as the principal. The study concluded that the physical performance ratings the students gave were related to their actual performance on the fitness tests. The study also found that those students who rated higher academically achieved better results on the fitness tests. This study concludes that physical activity and fitness may contribute to improved way to scholastic performance (Dwyer, 2001). Not only can physical activity improve academic performance, but physical activity increases self-esteem and reduces anxiety and stress. Enhanced self-esteem may result in better classroom behavior and a greater desire to learn (Dwyer, 2001). A student that is physically active is more focused and more alert in other classes. Physical activity can help students focus, less disruptive, and learn more effectively (Satcher, 2002). With so much emphasis being placed on academic performance and the rising concern of overweight children there is merit to further investigate the benefits of physical activity on academic performance.

Methods

Several data collection methods were used to conduct this research study: 1) student surveys, 2) teacher-student observations, and 3) grade point average comparisons. The first method of data collection, student surveys involved students in a physical education class taking surveys asking how they felt and performed in their academic classes after participating in physical education class (See Survey Exhibit Example I). The surveys were given to 171 students in the 10th and 11th grade. The students at this school participate in physical education class for two semesters, one during sophomore year and one during junior year. The surveys were taken anonymously in order to ensure honest responses. The students were asked open-ended questions about how they felt

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after participating in physical education class. The students were also asked if they noticed any differences in their grades during the semester they had physical education class. The survey results will be discussed later in this report.

The next method of data collection was a random selection of 10 sophomores and 10 juniors enrolled in a physical education class. The students' academic teachers were asked to observe these students for a two-week period and note if they acted differently or performed better in class on the days they participated in physical education class prior to their class.

The final method of data collection was a comparison analysis of students' grade point averages (GPA's), between their fall semester GPA's (in physical education class) and their spring semester GPA's (not in physical education class). This same type of comparison was performed for students that did not have physical education class in the fall, but did have it in the spring.

Data / Analysis

The student surveys concluded that 54% of the students had positive responses about physical fitness. Many students stated that following physical education class they were more alert and were better able to concentrate in their academic classes. Others said they noticed an increase in their energy levels and felt less stressed. The other students stated that they felt no change after physical education class. A small number stated that how they felt depended on when they had physical education class, or what activity they were doing in class (See Appendix graphs 1 and 2).

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The teacher observations were performed by 26 academic teachers. After the two-week period, 42% of the teachers reported improved student-behavior (See Graph 3). These teachers stated that their students were more focused, more responsive, and were on task. One teacher noted that a student with ADD was much more focused and was not disruptive in class. The remaining 58% of teachers saw no noticeable change in their students.

The final tool utilized was a GPA analysis. A statistical comparison was performed on the students GPA's. The analysis showed a moderate positive association between the relationship of being physically active and achieving a high GPA. Of the 171 students analyzed, 88 of them had a higher GPA during the semester they were enrolled in physical education class.

Following data collection, a correlation analysis was conducted between the students' GPA's and their teacher observations. Four juniors and eight sophomores had higher GPA's and their teachers noted an improvement in their academic performance during that semester.

This positive association between physical activity and academic performance supports the hypothesis that physically active students perform better than those who are not physically active. A student that is physically active during the school day does have the potential to be a better student academically.

Conclusion

Based on this research study, we can conclude that there is a positive relationship between physical activity and academics. Physically active students have a greater potential to perform at higher academic levels. Many studies have shown that cognitive performance is improved by aerobic activity, which increases the number of capillaries in the brain and thus facilitates the transport of oxygen and the removal of waste products such as carbon dioxide (Allegrante, 2004). Being physically active has many benefits, not just being physically fit. Students with a sedentary lifestyle and weight problems can have health complications later in life such as high blood pressure, Type II diabetes, sleep apnea, and high cholesterol (Satcher, 2002). Schools strive to ensure high standards for every student, which in today's society means trying to fit more academic learning into a school day. As a result, less time is available for physical education. Although research shows physical education has positive effects on a student's educational career, many are not enrolled in a physical education class. Nationwide, 29.1% of students attended high school physical education class (Tappe, 2004). There are many reasons why the number of students in physical education class has dropped. One reason is due to higher academic standards, another reason is due to the over use of electronic devices. One factor contributing to low levels of physical activity among young people might be the many hours that they spend doing sedentary activities, most notably using electronic media (Tappe, 2004). On average students spend more time playing video games, watching TV, and using the computer than any other generation. The students of today have grown up in a society that forces them to be sedentary and does not encourage them

to be active. Physical inactivity has contributed to the 100% increase in the prevalence of childhood obesity in the United States (Tappe, 2004). The idea behind the importance of physical education has been lost. Many people do not realize the importance and necessity for physical activity. The students of today are going to be the leaders of tomorrow and if they are unhealthy now then they might not survive to see their future.

This research study, while noteworthy represents a small sample. It does not contain any bias because the students used in the observations were chosen at random. However, the teachers' responses could be skewed due to the Hawthorne effect. In some cases further clarification was needed to understand a teachers' response. Further investigation needs to be performed to further solidify the link between physical activity and academic performances.

Recommendations

Based on the conclusions of this research study, Space highly recommends that Delaware schools first recognize the benefits of physical activity and second revamp the current physical education class curriculum and third require all students to participate in physical education class every semester. Our education system has an obligation to provide the best possible learning environment and that should include more physical activity. In the State of Delaware only one year of physical education class is required. This is not enough time to provide a student with an adequate knowledge base of how to maintain a healthy lifestyle. Scoring high on state tests is of course critical as it should be; physically fitness will only help to increase test scores and benefit our future leaders, our students.

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How physical education is taught has changed over the years. There is now a national standard and purpose behind physical education class. Across the country

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schools have implemented the “new physical education”. This program emphasizes a more structured physical education class involving, teaching students skills, and holding them accountable. It is no longer seen as just rolling out the ball and letting the children play (Conan, 2002). Delaware educators want to provide a strong education program, a new set of standards for physical education needs to be developed. In addition to math, science, and English, students should be learning life sustaining skills and should be exposed to a variety of activities, such as rock climbing, strength and conditioning, and mountain biking. By not providing ample opportunity for physical activity and an array of activities Delaware high schools are not meeting academic standards. Physical education has taken a back seat to academics and state testing. Many studies have shown that there is merit to physical education and it should be just as important as math and science. From this study and existing research it is evident that physical activity positively effects students’ academic performance. Further research should be done to work toward a goal of changing the future of physical education and our student’s health and well-being.

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Student Survey

1. Do you function better in class after participating in physical education class?

If so how?

2. Do you notice any difference in your ability to perform in class before and after physical education class?

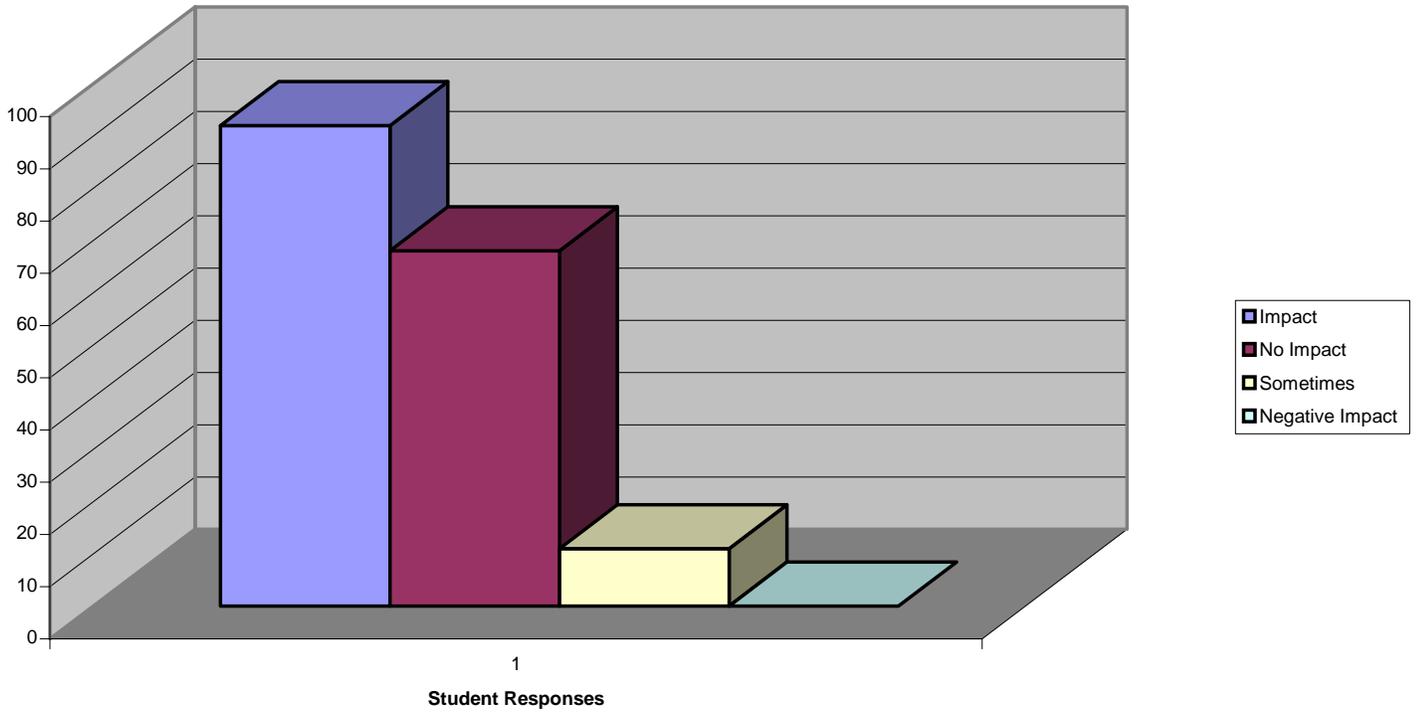
If so how?

3. Do you notice if your grades on test / quizzes are higher after being active in physical education class?

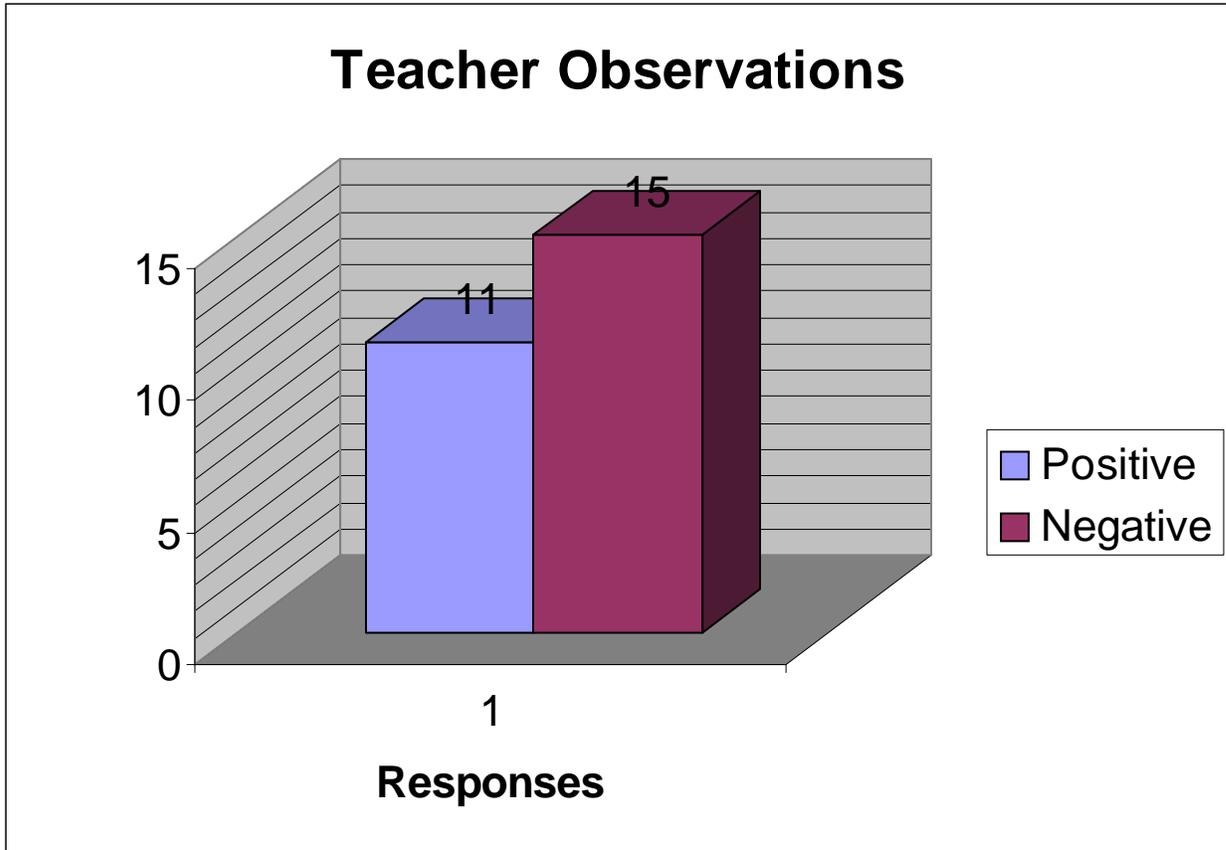
Student Survey Sophomore & Junior Physical Education Class 1st and 2nd Semester
(171 total students)

Question: Do you function better in class after participating in physical education class?

Student Surveys



Teacher Observations: A total of 26 teachers were asked to observe 20 students currently enrolled in physical education class. A random selection was performed and 10 sophomores and 10 juniors were observed for a two-week period. Many of the teachers stated that their students did not act differently in class on the days after the student participated in physical education class.



Student Positive Responses to the survey: How they felt after participating in physical education class. * Note there were 97 students that gave a positive response, some students provided more than one positive effect that occurred after participating in physical education class.

