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The Impact of Physical Fitness on Academic Performance of Grade Five School Children: Case Study

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Abstract
The main purpose of the study is to compare grade five student's academic performance with their physical fitness. The grade five scholarship examinations has become a highly competitive examination in Sri Lanka. Due to the higher level of competition many parents push their children to attend to tuition classes. All extracurricular and leisure activities are on hold and the child is forced to do studies for long hours. Data was collected from 40 students (24 males and 16 females) during the 2014 school year to compare the relationship between their academic performances and the physical fitness. Physical fitness was measured by using the "President's challenge physical fitness test" (PCPFT) and three model papers on grade five scholarship examination were used to evaluate the academic performance. It was found that there is a significant positive correlation between physical fitness levels except for one test in PCPFT: curl ups test and scores of model papers. Among the five physical fitness tests in the PCPFT, the highest positive correlation with the scores obtained for academic papers was obtained in the shuttle run. Overall results concludes the alternative hypothesis of a "significant relationship between physical fitness scores based on PCPFT and academic performance based on scores of model papers on grade five scholarship examination for fifth graders at the participation school" is true.
Key words: Physical fitness, Academic performance

Background of the Study

It is helpful to think of the brain as a muscle. One of the best ways to maximize the brain is through exercise movement. Everybody feels better after exercise. There is a reason for it." Dr. John J. Ratey, Harvard Medical School (Delores King, 1999a).

Globally, around 31% of adults aged 15 and over were insufficiently active in 2008 (men 28% and women 34%). Approximately 3.2 million deaths each year are attributable to insufficient physical activity. The physical inactivity percentages of South East Asian Region are 15% for men and 19% for women (Organization, 2014b).This pattern of inactivity begins early on in life. Physical inactivity is partly due to insufficient participation in physical activity during leisure time and an increase in sedentary behaviour during occupational and domestic activities (Organization, 2014b).

If children participate in at least 60 minutes of physical activity every day, multiple health benefits accrue (Rasberry et al., 2011). Not only health benefits but also many research has found Physical exercise may improve brain function and otherwise increase the capacity for learning (Delores King 1999).

Physical fitness is defined as the ability of an individual to competently and capably perform everyday tasks without excessive fatigue, and with enough energy remaining to enjoy spending free time, as well as to resolve unusual situations of sudden and unforeseen emergency (Cvejić et al., 2013), council of Europe, 1983). Unfortunately, the opportunities for children to engage in physical activity at school and at home are dwindling specially among grade five children. Recesses are being eliminated from the school day. Schools, teachers and also parents have been under increased pressure to increase student achievement.

The grade five scholarship examinations is a highly competitive examination in Sri Lanka conducted by the Department of Examinations of the Ministry of Education. It is compulsory for students to undertake it during the final year of primary school (Grade five (usually ages 9–10)).This study was to identify the impact of physical fitness on academic performance among grade five children of age 9-10 years.

The grade five scholarship examinations are held in three mediums: Sinhala, Tamil and English. The exam tests multiple skills. There are two main subjects for the Scholarship, Sinhalese/ Tamil (mother tongue), mathematics. There are few other subjects, which have less weight age, science, English (second langue) and environmental studies. There are two sections in the test paper. They are called as First Paper and the Second

Paper. In the 1st paper, most of the items are presented in the verbal form. Problem solving ability, Relationships, Organization of facts and Information, Perception, Interrelationship, and Conclusion are fairly represented in that paper. Ability to identify causes and effects and ability of observation are two other areas that have been adequately represented in the 1st paper. Mathematics plays a major role in the first paper.

2nd paper is slightly more complicated than the 1st one. Nearly 50% of the items are for testing ability in comprehension. Writing ability has been tested through the years. Creative writing ability has been measured by asking students to write few sentences on a given topic or a given picture. Most important and measurable language skills are included among language test items. Approximately 20% of the test items are on Mathematics. Approximately 40% of the items comprise questions on Environmental related activities. More emphasis has been given to measure science-based knowledge. Majority of items connected to English and Environmental Related Activities are based on knowledge.

The Grade five scholarship examination has now for parents and had now become a 'rat race' where parents compete among themselves. For some parents, it is not even about passing the exam, but about seeing their children performing better than all other students in his/her class. There have been concerns that children are being burdened at a far too young age by being compelled to sit for an examination whose increasing competitiveness may have a long-term negative impact on them (Jayawardana, 2013).

Teachers should increase the opportunities for physical activity during the school day. As a result students will have higher intention to be physically active in their leisure time. Physical movements of the body that is necessary for normal brain development (Wolfsont, 2002).

School authorities and the media deserve blame for giving too much attention to the achievements of the top performers at the exam, whilst undermining the achievements of tens of thousands of others, who have also passed the exam. "Each and every child should be praised for their achievement (Abeyratne, 2013).

In other way children also today spend more time for playing video games, watching television, or occupying themselves on the computer on the weekends and after school. There is a growing concern regarding the number of children who are living a sedentary lifestyle (Standage et al., 2003). Therefore, children are becoming more and more immobile with health concerns which include being overweight, childhood obesity, high blood pressure, depression, and other diseases and trepidations. These health concerns can linger for long periods of time, if not for a lifetime.

Many children in grade four and five present with vague physical complaints like headache and abdominal pain. They have been investigated by pediatricians and no medical basis found for their symptoms. The parents will often tell how their easy going and lovable child has recently become irritable and moody. They throw temper tantrums at the slightest provocation. When interview the child alone it becomes clear that most of them have got anxious due to the impending scholarship exam. Many parents have little idea of their child's scholastic abilities and push children to achieve unrealistic goals. The child becomes worried that he or she will not be able to fulfill the parent's high expectations. Many parents push their kids to the maximum and send them to two or even three tuition classes. All extracurricular and leisure activities are stopped and the child is forced to cram for long hours. Most 10-year-olds are naturally quite playful and not too keen on studies. Therefore this exam creates a great deal of anxiety and some may actually need psychological intervention (Amarasinghe, 2014).

The most commonly data confirm that continued participation in regular exercise associated with not only physical functioning but also psychological effects. The connection between physical activity and health has been researched including the importance of cardiac, muscle, joint, pulmonary functioning and psychological functioning (Emery, Shermer et al. 2003). Regular physical movement has been proven to have a positive relationship with the healthy functioning of all of these areas (Schneider et al., 2007).

There are other benefits of movement in addition to the physical benefits, researchers has showed that there is a relationship between the amount of movement one participates in and cognitive functioning (Emery, Shermer et al. 2003). Exercise significantly increased positive and decreased negative feelings as well as exercise seemed to have a much greater effect on positive than on negative moods (Steinberg et al.,

1998).Regular participation in physical activity also appears to reduce anxiety and enhance an individual's ability to perform daily tasks (Huitt, 2004).

Regular exercise increases the amount of oxygen flowing through the brain, which increases children's capacity to learn (Galley, 2002b). Physical activity is bonded with more benefits including lower rates of obesity, improved cardiovascular and muscular fitness, higher bone mineral density, and academic achievement. More specifically, girls who are physically active perform better academically and have higher self-esteem (Debate et al., 2009). However physical activity during everyday life is essential for several causes. Physical activity has bodily and psychological health profits.

Health and educational professionals believe that physically active students perform better in the classroom. A special study have demonstrated positive associations between physical fitness and academic performance (Chomitz et al., 2009). Lot of animal and human studies provide evidence for the potential of physical and cognitive exercise in promoting cognitive health later in life. Physical and cognitive exercise might increase "cognitive reserve" and increase the overall health of the brain (Studenski et al., 2006).

Research studies, like the ones described above, warrant the evidence of the importance of physical activity for academic performance and for better life. Schools and parents can serve a venue to provide students with opportunities to perform physical activity daily, as well as teach the importance of staying physically active. Understanding this relationship between physical fitness and academic success is crucial. Unfortunately, students are not receiving an ample amount of physical activity in their life.

To date, while there is some evidence that positively correlates physical fitness and physical activity to academic performance, few studies have examined the relationship by using standardized fitness and academic achievement scores. Also, few studies have examined the relationship of physical fitness and academic achievement among elementary students.

Research Objectives

Major research objective
Determine the effect of physical fitness on academic achievement among grade five school children.

Minor research objectives
Determine which physical quality is most effective for academic achievement
Determine the effect of physical fitness for paper I in the scholarship examination paper

Significance of the study

There are numerous factors that influence student achievement. This study contributes to the existing body of knowledge about the importance of physical fitness.
Physical fitness is one component that can impact student performance. Together, schools and parents can work together to develop a plan for a healthy lifestyle that includes physical activity.

The society is becoming more and more sedentary. It is hoped that Education leaders can get an idea from the study about the importance of physical fitness and its effect on student achievement. All students should be encouraged to participate in extracurricular activities that involve physical activity. Additionally, students should feel welcome to participate to their fullest potential in physical activity. Everyone, including parents, teachers, and the students, needs to work together to solve this sedentary problem that can cause health risks.

This study can help restructure the education pattern among children in order for them to obtain the greatest physical fitness education as possible. Teachers can differentiate instruction based on the needs of the individual students. Having high levels of physical fitness can lead to a healthier life.

Teachers should act like advisors and encourage students to stay physically active. With the help of this study and others similar in nature, educational policy makers will be able to make informed decisions to eliminate more recess. Also this research will provide great guidance for future career of students. This research will be very important to friends of researcher and junior students. This will help them to have a deeper understanding about the impact of physical fitness on an academic performance of school children. By this study they will come up with easier and powerful programme.

If the researcher performs this type of important researches it will nourish the department, faculty and also researcher's university goodwill for a greater extent. The proposed study will benefits and help the future researcher as guidance. The study can also initiate the development of this study. The researcher hopes research findings will motivate different kind of groups in community. Keeping as many people educated about the importance of physical fitness and the implications it may have, will help keep future youth healthy.

Review of Literature

Project Specific Information

The perceptions defined below offer benefits of being physically active. These factors include health benefits, reducing risks of childhood obesity, impacting learning in the classroom. They provide conceptual necessities which this study is based.

Health Benefits

Physical activity has great health benefits including improved cardiovascular and muscular fitness, higher bone mineral density (Debate et al., 2009). Regular exercise increases the amount of oxygen flowing through the brain(Galley, 2002a). Increase in childhood obesity, which can lead to such health problems as the early onset of diabetes(Galley, 2002a). Regular physical activity reduces the risk for developing chronic disease risk factors. Children and youth aged 5–17 should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily. Amounts of physical activity greater than 60 minutes provide additional health benefits (Organization, 2008). For some children, the structured physical education class that they receive at school may be the only preparation they have for an active lifestyle.

Reducing Risks of Childhood Obesity

Childhood obesity is one of the most serious public health challenges of the 21st century (Organization, 2014a).Obesity is linked to type 2 diabetes (Society, 2001). Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. Overweight and obese children are likely to stay obese into adulthood and more likely to develop non-communicable diseases like diabetes and cardiovascular diseases at a younger age. Overweight and obesity, as well as their related diseases, are largely preventable. Prevention of childhood obesity therefore needs high priority(Organization, 2014a).

Impacts on Learning in Classroom

Physical exercise may improve brain function and otherwise increase the capacity for learning(Delores King, 1999b). Regular exercise increases the amount of oxygen flowing through the brain, which increases children's capacity to learn(Galley, 2002c).

There is a relationship between aerobic fitness, learning, and memory on a task that involved remembering names and locations on a fictitious map. Fitness and exercise has a significant influence on hippocampus structure and function. Hippocampus is responsible, in part, for encoding information into memory (Lauren B. Raine and Kramer, 2013).

The brain is activated during physical activity – much more so than when doing seatwork. Sitting for more than 10 minutes at a stretch "reduces our awareness of physical and emotional sensations and increases fatigue. Movement, on the other hand, increases blood vessels that allow for the delivery of oxygen, water, and glucose ("brain food") to the brain. And this can't help but optimize the brain's performance(Pica, 2004).One Canadian study by Pica (2004) has showed that academic scores went up when a third of the school day was devoted to physical education. Another Canadian study by Pica (2004) demonstrated children participating in five hours of vigorous physical activity a week had stronger academic performance in math, English, natural sciences, and French than did children with only two hours of physical activity per week.

Related Research

In 2010, 43 million children (35 million in developing countries) were estimated to be overweight and obese; 92 million were at risk of overweight. The worldwide prevalence of childhood overweight and obesity increased from 4.2% (95% CI: 3.2%, 5.2%) in 1990 to 6.7% (95% CI: 5.6%, 7.7%) in 2010 (De Onis et al., 2010).

Obesity has become an urgent health concern among children. Physical activity programs in schools can engage students in regular physical activity to help children learn the skills and habits necessary to live a healthy lifestyle. Especially school based physical activity programs can help prevent childhood obesity.

Childhood Overweight and Obesity

Worldwide obesity has nearly doubled since 1980(overweight, 2014).Childhood overweight and obesity have increased dramatically since 1990.In 2010, 43 million children (35 million in developing countries) were estimated to be overweight and obese; 92 million were at risk of overweight. The worldwide prevalence of childhood overweight and obesity increased from 4.2% (95% CI: 3.2%, 5.2%) in 1990 to 6.7% (95% CI: 5.6%, 7.7%) in 2010. This trend is expected to reach 9.1% (95% CI: 7.3%, 10.9%), or ’60 million, in 2020. The number of affected children (18 million) and it is higher in Asia(De Onis et al., 2010).

65% of the world's population lives in countries where overweight and obesity kills more people than underweight. Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health(overweight, 2014).

Physical Fitness and Academic Achievement

One study provided that students who scored the physical fitness tests, scored higher on reading and mathematics scores on the Stanford Achievement Test 9th edition, a standardized norm-referenced achievement test(Grissom, 2005).A research conducted by Case-Smith (1995) investigated the relationships among sensorimotor components, fine motor skill, and functional performance in self-care, mobility, and social interaction(Case-Smith, 1995).

One researcher has found the relationship between fitness and achievement appeared to be stronger for females than males and stronger for higher socio-economic status than lower socio-economic status students(Grissom, 2005).There was some evidence that a 2-year health-related physical education program had several significant favorable effects on academic achievement, confidence among elementary school children(Sallis et al., 1999).

All students, especially those who suffer from Attention Deficit Hyperactivity Disorder, need exercise; it assists them with concentration and provides an outlet for healthy impulse discharge, helping to control impulsivity(Mulrine et al., 2008). Given that various physical fitness components are linked to different health outcomes. The aim of this study was to examine how physical fitness developed over time in 2 groups of children: those with a low level of competence in motor skills (low motor competence), and those with a high level of competence in motor skills (high motor competence). The low motor competence group performed less well on all physical fitness measures than the high motor competence group, and both groups scored significantly higher on the physical fitness test after a period of 32 months(Haga, 2009).

Many benefits to the brain have been directly linked to being physically active. Physical movement, such as stretching every 20 minutes in the classroom, can help stimulate the brain-derived neurotrophic factor in a child’s brain and help learning occur more easily. This being said, structured physical education and being physically active, in general, can help stimulate learning by increasing the flow of brain-derived neurotrophic factor within student’s brain. Brain-derived neurotrophic factor is a chemical that helps neurons communicate with one another. With increased brain-derived neurotrophic factor circulating in the brain, a greater amount of neurons are able to exchange and retain information, enabling individuals to understand, comprehend, remember, and retrieve more information and at a quicker rate (Hall, 2007).

A research suggests that the recess period serves a positive purpose in the primary school curriculum(Pellegrini and Bohn, 2005).Outdoor recess breaks get the blood flowing, which rejuvenates the brain to help them attend better on classroom tasks.

Problem specification

The purpose of this study was to explore the relationship between physical fitness and academic achievement. The grade five scholarship examinations is a highly competitive examination in Sri Lanka conducted by the Department of Examinations of the Ministry of Education. It is compulsory for students to undertake it during the final year of primary school (Grade 5 (usually ages 9–10)). Based on the results of the exam, students could transfer to prominent national schools. Due to many reasons like that parents push their kids to the maximum and send them to two or even three tuition classes. All extracurricular and leisure activities are stopped and the child is forced to cram for long hours.

But there are several factors that influence for students' academic performance such as environment, relationships, methods, perception, emotion, attitude, motivation, ability, memory. As well as many researchers have found that physical activity of children may influence for their academic performance. Physical activity and physical fitness are closely related. For most individuals, increases in physical activity produce increases in physical fitness(Blair et al., 2001). The major objective of the study was to determine the effect of physical fitness on academic performance of grade five school children.

Hypothesis

Alternative Hypothesis

H1: There is a significant relationship between physical fitness scores based on the President's Challenge Physical Fitness Test and academic performance based on scores of three model papers on grade five scholarship examinations for grade five school children at the participating school.

H2: There is a significant relationship between physical fitness levels based on the President's Challenge Physical Fitness Test and academic performance based on the scores of three model papers on grade five scholarship examinations for grade five male school children.

H3: There is a significant relationship between physical fitness levels based on the President's Challenge Physical Fitness Test and academic performance based on the scores of three model papers on grade five scholarship examination for grade five female school children.

H4: There is a significant relationship between physical fitness scores based on the President's Challenge Physical Fitness Test and academic performance based on scores of paper I of three model papers on grade five scholarship examination for grade five school children at the participating school.

H5: There is a significant relationship between academic achievement based on average scores of three model papers on grade five scholarship examination and each physical fitness test (curl ups, pull ups, sit and reach, mile run or walk and the shuttle run).

Research design to solve the problem

The research design is a correlation study. This correlation research sought to provide a relationship among the two variables that were used. The purpose of the study was to compare the physical fitness percentile scores of grade five school children to academic achievement, based on the hypotheses of the study. The collected data was gathered from the President's Challenge Physical Fitness scores, average scores of three model papers on grade five scholarship examinations. This study determined if students were identified as being at an "Outstanding" level of physical fitness, a "Basic" level of physical fitness, or below the 50 percentile, which were categorized as "Needs Improvement" for the purposes of this study, while examining the relationship between physical fitness and academic achievement. Students must at least reach the level of 50 percentile in all five events in order to pass the President's Challenge Physical Fitness test. The following questions provided a foundation of which this study was based:

Does a significant positive relationship exist between physical fitness levels and academic achievement, as determined by the President's Challenge Physical Fitness Test, average scores of three model papers on grade five scholarship examination respectively for fifth graders at the targeted school?

Methodology

The researcher sought permission from the principal of the school first (Annex 01). All data was kept confidential and anonymous. Student names were not used in the study, but students were given a number instead. The researcher obtained the physical fitness and academic data.

The President's Challenge Physical Fitness Test (Annex 02)was administered 2 times during the first quarter of the 2014 school year. The testing time took approximately 2 hours. To collect the academic data,

examinations were held using three model papers on grade five scholarship examination. The researcher compared the scores of model papers on grade five scholarship examination to the results of the President's Challenge Physical Fitness Test. This study determined whether or not a relationship exists between physical fitness and academic achievement.

Study sample

The population of this study was 247 grade five students of Kottawa Dharmapala Maha Vidyalaya. The sample of the study included 40 students from grade five of Kottawa Dharmapala Maha Vidyalaya. Out of 40 students 24 was male students and 16 was female students. The sample was selected by using random sampling technique. Random sampling is the purest form of probability sampling. Each member of the population has an equal and known chance of being selected. When there are very large populations, it is often difficult or impossible to identify every member of the population; the pool of available subjects becomes biased.

Data gathering techniques

Data collection methods were tests. Tool for gathering information were President's Challenge Physical Fitness Test and model papers on grade five scholarship examination. President's Challenge Physical Fitness Test included five physical fitness tests. A model paper on grade five scholarship examination consisted two sub papers called paper I and paper II. Academic data was determined based on the percentile scores of paper I and paper II.

Materials

President's Challenge Physical Fitness Test

Physical fitness data was collected from the results of the president's challenge physical fitness test in grade five school children of the 2014 school year. This test provided pertinent information to determine the students' level of physical fitness. The results of this physical fitness test provide normative data. The researcher used the president's challenge physical fitness test because it is a nationally recognized physical fitness test in USA. It was created in 1953 by Kraus and Weber, and was administered by Dwight e. Eisenhower, out of the growing concern of the lack of physical activity of American children in relation to the European counterparts. The president's challenge physical fitness test has intentions of promoting the benefits of fitness for individuals of all ages including kids, teens, adults, and seniors. The president's challenge physical fitness test is designed to assess students based on these areas of physical fitness strength and endurance, flexibility, agility. The tests that the researcher used for the study were sit-ups, shuttle run, one-mile run, push-ups, and the sit and reach.

The results for each test give a percentile ranking for the student performing the physical fitness test. The given percentile scores are based on age and gender to indicate physical fitness levels. Students fall within a "Needs Improvement," "Basic," or an "Outstanding" fitness level.

An "Outstanding" level of physical fitness is having an 85th percentile or higher, and a "Basic" level of physical fitness is equitable to a 50th – 84th percentile rank, and below the 50th percentile will be identified as having a "Needs Improvement" physical fitness level, based on the 1985 School Population Fitness Survey, which was validated in 1998(President'sChallenge, 2014).

Data Analysis

Data was collected and analyzed to determine if a relationship exists between the President's Challenge Physical Fitness Test scores and the academic achievement scores of grade five scholarship examination model papers. Microsoft Excel was used to enter and analyze data, respectively to determine if a relationship exists. Linear

regressions were used to determine any relationships between President's Challenge Physical Fitness Test, percentile scores of grade five scholarship examination model papers.

The physical fitness data was based from five areas of physical fitness: abdominal/core muscle strength and endurance, agility, cardiopulmonary endurance, upper body strength and endurance, and flexibility. All five of these areas were entered in Microsoft Excel for each subject involved in the study. A mean raw score for each subject was calculated. The mean percentile score for each student determined whether each subject had an "Outstanding" physical fitness level, "Basic" physical fitness level, or a "Needs Improvement" physical fitness level. Medians, frequencies, and standard deviations were also calculated, with the help of Microsoft Excel. Students were also assigned a numerical fitness score from 0-5 based on how many fitness tests the subjects fall into the range of an "Outstanding" physical fitness level, "Basic" physical fitness level, or a "Needs Improvement" physical fitness level.

The physical fitness scores, as well as grade five scholarship model paper percentile scores were entered into Microsoft Excel. Using the IBM SPSS software, linear regressions were computed for the data analysis. The researcher conducted various regressions to examine the strength and direction of the correlation between physical fitness and academic achievement. Finally, the data was reported in narrative text, tables, and figures.

Linear Regression and Correlation Analysis

Relationship between Physical Fitness and Academic Performance

Table 1: Relationship between Physical Fitness and Academic Performance

Correlations

		Average Physical Fitness	Total Score
Average Physical Fitness	Pearson Correlation	1	.382*
	Sig. (2-tailed)		.015
	N	40	40
Total Score	Pearson Correlation	.382*	1
	Sig. (2-tailed)	.015	
	N	40	40

*. Correlation is significant at the 0.05 level (2-tailed).

The value of p is 0.015 (< 0.05), which indicates a significant correlation between physical fitness levels and Total percentile scores of model papers on grade five scholarship examination. At this point in the research study, the hypothesis was supported, which stated that a there is a significant relationship between physical fitness scores based on the President's Challenge Physical Fitness Test and academic performance based on scores of three model papers on grade five scholarship examination for grade five school children at the participating school.

Regression

Table 2 : Relationship between Physical Fitness and Academic Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	34.340	7.502		4.577	.000
	Average Physical Fitness	.702	.276	.382	2.550	.015

a. Dependent Variable: Total Score

There was a positive relationship between Physical fitness level and Total scores of model papers on grade five scholarship examination. That was when physical fitness level increases by a 1 unit (score) then the total score of

model papers on grade five scholarship examination increased by 0.702 unit (score) assuming other factors remain constant.

Relationship between Physical Fitness Levels and Academic Performance of Males

Table 3: Relationship between Physical Fitness Levels and Academic Performance of Males

Correlations

		Average Physical Fitness Level Of Males	Total Score Of Males
Average Physical Fitness Level Of Males	Pearson Correlation	1	.801*
	Sig. (2-tailed)		.000
	N	24	24
Total Score Of Males	Pearson Correlation	.801*	1
	Sig. (2-tailed)	.000	
	N	24	24

* Correlation is significant at the 0.05 level (2-tailed).

The value of p is 0.000 (< 0.05), which indicates a significant correlation between physical fitness levels and total scores of model papers on grade five scholarship examination for males. At this point in the research study, the hypothesis was supported, which stated that there is a significant relationship between physical fitness levels based on the President's Challenge Physical Fitness Test and academic performance based on the total scores of model papers on grade five scholarship examination for grade five male school children.

Regression

Table 4: Relationship between Physical Fitness Levels and Academic Performance of Males

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.208	7.558		.160	.874
	Average Physical Fitness Level Of Males	1.590	.253	.801	6.274	.000

a. Dependent Variable: Total Score Of Males

There was a positive relationship between Physical fitness level of males and total score of model papers on grade five scholarship examination of males. That was when physical fitness level increases by a 1 unit (score) then the total score of model papers on grade five scholarship examination increased by 1.590 unit (score) units assuming other factors remain constant.

Relationship between Physical Fitness Levels and Academic Performance of Females

Table 5: Relationship between Physical Fitness Levels and Academic Performance of Females

Correlations

		Average Physical Fitness Level Of Females	Total Score Of Females
Average Physical Fitness Level Of Females	Pearson Correlation	1	.778**
	Sig. (2-tailed)		.000
	N	16	16
Total Score Of Females	Pearson Correlation	.778*	1
	Sig. (2-tailed)	.000	
	N	16	16

*. Correlation is significant at the 0.05 level (2-tailed).

The value of p is 0.000 (< 0.05), which indicates a significant correlation between physical fitness levels and scores of model papers on grade five scholarship examination for females. At this point in the research study, the hypothesis was supported, which stated that there is a significant relationship between physical fitness levels based on the President's Challenge Physical Fitness Test and academic performance based on the total scores of model papers on grade five scholarship examination for grade five female school children.

Regression

Table 6: Relationship between Physical Fitness Levels and Academic Performance of Females

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	31.570	6.534		4.831	.000
	Average Physical Fitness Level Of Females	1.340	.289	.778	4.631	.000

a. Dependent Variable: Total Score Of Females

There was a positive relationship between Physical fitness level of females andTotal scores of model papers on grade five scholarship examination of females. That was when physical fitness level increases by a 1 unit (score) then the `total score of model papers on grade five scholarship examination increased by 1.340 unit (score) units assuming other factors remain constant.

Relationship between Physical Fitness Levels and Scores of Paper I

Table 7: Relationship between Physical Fitness Levels and Scores of Paper I

Correlations

		Average Physical Fitness	Paper I
Average Physical Fitness	Pearson Correlation	1	.480*
	Sig. (2-tailed)		.002
	N	40	40
Paper I	Pearson Correlation	.480*	1
	Sig. (2-tailed)	.002	
	N	40	40

*. Correlation is significant at the 0.05 level (2-tailed).

The value of p is 0.002 (< 0.05), which indicates a significant correlation between physical fitness levels and scores of 1st paper of model papers on grade five scholarship examination. At this point in the research study, the hypothesis was supported, which stated that there will be a significant relationship between physical fitness scores based on the President's Challenge Physical Fitness Test and academic performance based on scores of 1st paper of model papers on grade five scholarship examination for grade five school children at the participating school.

Regression

Table 8: Relationship between Physical Fitness Levels and Scores of Paper I

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	26.967	7.796		3.459	.001
	Average Physical Fitness	.966	.286	.480	3.374	.002

a. Dependent Variable: PaperI

There was a positive relationship between Physical fitness level and Score of1st paper of model papers on grade five scholarship examination. That was when physical fitness level increases by a 1 unit (score) then the total score of model papers on grade five scholarship examination increased by 0.966 unit (score) units assuming other factors remain constant.

Relationship between Curl Ups Physical Fitness Test Scores and Academic Performance

Table 9: Relationship between Curl Ups Physical Fitness Test Scores and Academic Performance

Correlations

		Curl Ups	Total Score
Curl Ups	Pearson Correlation	1	.145
	Sig. (2-tailed)		.370
	N	40	40
Total Score	Pearson Correlation	.145	1
	Sig. (2-tailed)	.370	
	N	40	40

The value of p is 0.370 (> 0.05), which indicates no correlation between scores of curl up physical fitness test and total scores of model papers on grade five scholarship examination. At this point in the research study, the hypothesis was supported, which stated that there is no relationship between scores of curl up physical fitness test and total scores of model papers on grade five scholarship examination.

Relationship between Pull Ups Physical Fitness Test Scores and Academic Performance

Table 10: Relationship between Pull Ups Physical Fitness Test Scores and Academic Performance

Correlations

		Pull Ups	Total Score
Pull Ups	Pearson Correlation	1	.461*
	Sig. (2-tailed)		.003
	N	40	40
Total Score	Pearson Correlation	.461*	1
	Sig. (2-tailed)	.003	
	N	40	40

*. Correlation is significant at the 0.05 level (2-tailed).

The value of p is 0.003 (< 0.05), which indicates a significant correlation between total scores of model papers on grade five scholarship examination and the pull up physical fitness test. At this point in the research study, the hypothesis was supported, which stated that there is a relationship between total scores of model papers on grade five scholarship and the pull up physical fitness test.

Regression

Table 11. Relationship between Pull Ups Physical Fitness Test Scores and Academic Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	32.990	6.469		5.100	.000
	Pull Ups	.338	.105	.461	3.206	.003

a. Dependent Variable: Total Score

There was a positive relationship between Physical fitness level and total scores of model papers on grade five scholarship examination. That was when physical fitness level increases by a 1 unit (score) then the total scores of model papers on grade five scholarship examination increased by 0.338 unit (score) units assuming other factors remain constant.

Relationship between Sit and Reach Physical Fitness Test Scores and Academic Performance

Table 12: Relationship between Sit and Reach Physical Fitness Test Scores and Academic Performance

Correlations

		Sit And Reach	Total Score
Sit And Reach	Pearson Correlation	1	.393*
	Sig. (2-tailed)		.012
	N	40	40
Total Score	Pearson Correlation	.393*	1
	Sig. (2-tailed)	.012	
	N	40	40

*. Correlation is significant at the 0.05 level (2-tailed).

The value of p is 0.012 (< 0.05), which indicates a significant correlation between the scores of pull up physical fitness test and total scores of model papers on grade five scholarship examination. At this point in the research study, the hypothesis was supported, which stated that there is a relationship between the scores of pull up physical fitness test and total scores of model papers on grade five scholarship examination.

Regression

Table 13. Relationship between Sit and Reach Physical Fitness Test Scores and Academic Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	18.470	13.157		1.404	.169
	Sit And Reach	1.101	.417	.393	2.636	.012

a. Dependent Variable: Total Score

There was a positive relationship between Physical fitness level and scores of model papers on grade five scholarship examination. That was when physical fitness level increases by a 1 unit (score) then the total scores of model papers on grade five scholarship examination increased by 1.101 unit (score) units assuming other factors remain constant.

Relationship between Endurance Run or Walk Physical Fitness Test Scores and Academic Performance

Table 14: Relationship between Endurance Run or Walk Physical Fitness Test Scores and Academic Performance

Correlations

		Total Score	Endurance Run Or Walk
Total Score	Pearson Correlation	1	.326*
	Sig. (2-tailed)		.040
	N	40	40
Endurance Run Or Walk	Pearson Correlation	.326*	1
	Sig. (2-tailed)	.040	
	N	40	40

*. Correlation is significant at the 0.05 level (2-tailed).

The value of p is 0.040 (< 0.05), which indicates a significant correlation between the scores of endurance run or walk physical fitness test and total scores of model papers on grade five scholarship examination. At this point in the research study, the hypothesis was supported, which stated that there is a relationship between the scores of endurance run or walk physical fitness test and total scores of model papers on grade five scholarship examination.

Regression

Table 14: Relationship between Endurance Run or Walk Physical Fitness Test Scores and Academic Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	51.222	2.233		22.939	.000
	Endurance Run Or Walk	.301	.141	.326	2.128	.040

a. Dependent Variable: Total Score

There was a positive relationship between Physical fitness level and total scores of model papers on grade five scholarship examinations. That was when physical fitness level increases by a 1 unit (score) then the total scores of model papers on grade five scholarship examination increased by 0.301 unit (score) units assuming other factors remain constant.

Relationship between Shuttle Run Physical Fitness Test Scores and Academic Performance

Table 15: Relationship between Shuttle Run Physical Fitness Test Scores and Academic Performance

Correlations

		Total Score	Shuttle Run
Total Score	Pearson Correlation	1	.543*
	Sig. (2-tailed)		.000
	N	40	40
Shuttle Run	Pearson Correlation	.543**	1
	Sig. (2-tailed)	.000	
	N	40	40

*. Correlation is significant at the 0.05 level (2-tailed).

The value of p is 0.000 (< 0.05), which indicates a significant correlation between total scores of model papers on grade five scholarship examination and the shuttle run physical fitness test. At this point in the research study, the hypothesis was supported, which stated that there is a relationship between total scores of model papers on grade five scholarship and the shuttle run physical fitness test.

Regression

Table 16: Relationship between Shuttle Run Physical Fitness Test Scores and Academic Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	35.583	4.693		7.582	.000
	Shuttle Run	.604	.152	.543	3.987	.000

a. Dependent Variable: Total Score

There was a positive relationship between Physical fitness level and total scores of model papers on grade five scholarship examinations. That was when physical fitness level increases by a 1 unit (score) then the total scores of model papers on grade five scholarship examination increased by 0.604 unit (score) units assuming other factors remain constant.

Discussion

The results of this study provided significant correlations between physical fitness and academic achievement, leaving the researcher to retain the hypotheses of the study which stated that there will be a significant correlation between physical fitness scores based on the President's Challenge Physical Fitness Test and academic achievement based on scores of model papers on grade five scholarship examination.

Physical fitness levels were compared to percentile scores of model papers on grade five scholarship examination. The results from both of these linear regressions indicated that a relationship did exist between physical fitness and academic achievement. This correlation was also considered statistically significant since p < 0.05 (p = < 0.015).

There was a correlation between physical fitness levels and percentile scores of paper I in model papers on grade five scholarship examination (p = 0.002). Another correlations were found between pull ups and total scores of model papers on grade five scholarship examination (p is 0.003), between sit and reach and total scores of model papers on grade five scholarship examination (p is 0.012), between shuttle run and total scores of model papers on grade five scholarship examination (p is 0.000), between mile run or walk and total scores of model papers on grade five scholarship examination (p is 0.040). But there were no correlation between curl ups and total scores of model papers on grade five scholarship examination (p is 0.370). With the result of this study, the researcher suggests that the relationship between physical fitness and academic achievement be studied further, especially physical fitness levels and total scores of model papers on grade five scholarship examination and academic achievement and shuttle run.

By retaining the hypotheses of this study, the results of this study support existing literature that has found a link between physical fitness and academic achievement. Current research is able to describe why many studies have found a relationship between physical fitness and academic achievement. Several theories exist, but more research needs to be conducted to determine the causal factors of the relationship between physical fitness and academic achievement. As well as the other researches, results of this study showed a significant correlation between physical fitness and academic achievement.

Conclusion

Many researchers have found and believe in the relationship among the variables physical fitness and academic achievement, but some studies have found otherwise. The purpose of this correlational study was to examine the relationship between physical fitness and academic achievement. This study was based on the notion that physical fitness can have an impact on children's ability to learn and perform academically. Demographic data, including gender was obtained and analyzed.

This research is considered as a correlational study, it does not prove causality; therefore, the results should be interpreted cautiously. It is a possibility that extraneous variables could have affected the results of this study that were not evaluated in this study.

Given the pressure that educators and policy makers are under to achieve academic standards for all students, understanding the relationship of academic success to physical activity, fitness is important for allocating scarce resources and for implementing the right mix of policies and programs.

Recommendations

It is evident from the study that further research is necessary in the area of the relationship between physical fitness and academic achievement. This study can replicate in other areas. This can apply for other grades to determine if a relationship exists between physical fitness and academic achievement. Also by using this research can apply other subjects which students learn and identify the relationship between two variables.
Another instrument of physical fitness, besides the President's Challenge Physical Fitness Test, could be used to see if results vary or achieve the same results as this study. The final result of this research can be applied for decision making with regard to Education curricular making of grade five.

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