



Social

ASSESSMENT OF PHYSICAL ACTIVITY ON ACADEMIC PERFORMANCE OF SCHOOL CHILDREN



Himanshu Tripathi *¹

^{*1} Research Scholar (Education), Alagappa University, Karaikudi, Tamil Nadu, INDIA

ABSTRACT

There is a need to find out the association between school-based physical activity, including physical education and academic performance among school-aged youth. To better understand these connections, this research paper first finds out the independent variables upon which academic performance depends. Study is from a range of physical activity contexts, including school-based physical education, recess, classroom-based physical activity and extracurricular physical activity. In his attempt researcher studied 120 students from 04 CBSE schools of Bikaner District, Rajasthan. He uses Physical Activity Questionnaire for Children (PAQ-C) to find out physical activity performance of students, examination/ test scores to find out the academic achievement and stroop colour word task to find out the academic performance which includes cognitive dimension also.

Keywords:

physical activity, physical fitness, cognitive performance, academic performance.

Cite This Article: Himanshu Tripathi, “ASSESSMENT OF PHYSICAL ACTIVITY ON ACADEMIC PERFORMANCE OF SCHOOL CHILDREN” International Journal of Research – Granthaalayah, Vol. 4, No. 2 (2016): 232-238.

1. INTRODUCTION

During past few years, interest has grown considerably in social, mental and educational benefits of physical activity for young people. There appears to be great potential in this area. For social and mental benefits considerable investment is to be done in their promotion by the local and national government. Particular attention has to be paid for adequate physical activity at school in order to improve learning and academic performance of students.

Studies already demonstrated that physical activity decreases the risk of various diseases like cardiovascular disease, stroke, cancers, obesity, type 2 diabetes mellitus, liver diseases, mental illness, depression, cognitive impairment etc. It increases the benefits of making us healthy in terms of mental health, psychological well-being, improved mood, cognitive function etc. There has been substantial interest in knowing the potential impact of improved fitness and exercise on

cognitive function and learning in children. Higher level of fitness enhances thinking, concentration and subsequently academic performance.

If a child is forced to sit longer and grow roots in his chair, the harder it will be for him to bloom. Physical activity can have an impact on cognitive skills, attitudes and academic behaviour. All of these are important components of improved academic performance. According to a 2010 essay penned by Charles Basch of Columbia University where he summarized how exercise may affect executive functioning: by increased oxygen flow to the brain, brain neurotransmitters and increased brain-derived neurotrophins which are responsible for the survival of neurons in areas responsible for learning, memory and higher thinking. Researches proved that students need adequate amounts of physical activity throughout the school day which will help in preventing obesity, obesity-related issues and in improving the academic performance also. Cognitive skills and motor skills appear to develop through a dynamic interaction. Research has shown that physical movement can affect the brain's physiology eg. blood flow, oxygenation, production of neurotrophins, growth of nerve cells, development of nerve connections etc. These physiological changes may be associated with- improved attention, improved information processing, storage, retrieval, enhanced coping, enhanced positive effect.

2. NEED

Today, obesity is one of the pressing health concerns for children. Nearly one-third of children, more than 23 million kids, are overweight or obese. Physical inactivity is a leading contributor to the epidemic. Most children get little regular physical activity while in school. Increasing pressure to improve standardized test scores have caused school officials to question the value of PE/physical activity programs. This has led to a substantial reduction in the time available for PE. In some cases school-based physical activity programs have been completely eliminated. There is need to bring importance of school-based physical activity programs into limelight by justifying that allocating time for daily PE does not adversely impact academic performance and that regular exercise may improve student's cognitive functioning.

3. AIM

To assess the effect of physical activity on the academic performance of the school children.

4. OBJECTIVES

- i. To compare the physical activity performance and academic achievement of boys and girls studying in the same class of a school.
- ii. To compare the effect of physical activity and academic performance of boys and girls studying in the same class of a school.
- iii. To find out the effect of frequency, duration of physical education period and its intensity on the academic performance of students.
- iv. To bring awareness among parents and students about the importance of daily minimum physical activity in schools.

5. HYPOTHESES

H1-There is no significant difference between girls and boys with regard to their physical activity performance.

H2-There is no significant difference in academic achievement (excluding cognitive dimension) between girls and boys.

H3-There is no significant difference between physical activity performance of school children and their academic achievement.

H4-There is no relationship among three categories of students (involved in physical activities at school only, in physical activities at school and timely at home, actively in physical activities).

H5-There is no significant difference between physical activity performance of school children and their academic performance.

6. RESEARCH DESIGN

6.1. VARIABLES

(i) **Physical Activity (Independent)**

Childhood **physical activity** includes walking, running, cycling, swimming, various sports activities, break-time play, active travel, sport and physical education (both within and in addition to the school curriculum), informal play and dancing activities. Need is to study the duration, frequency and level of intensity of these activities.

(ii) **Physical Fitness**-It includes components such as cardiovascular fitness, muscular strength and endurance. Physical fitness is a complex set of functional capabilities eg. body composition or degree of fatness, flexibility, agility, coordination, balance and reaction time to complete an activity.

(iii) **Academic Performance (Dependent)**

In this review, academic performance is used broadly to describe academic achievement, academic behaviour and cognitive performance. Three can be described as:

a) **Cognitive Performance**

This refers to the child's performance when assessed using a recognised and validated test of cognitive function. Tests assess components of cognition such as reaction time, attention, working memory, concentration, memory, verbal ability and stimulus response.

b) **Academic Behaviour**

Academic behaviours includes a range of behaviours that may have an impact on student's academic performance. Common indicators include on-task behaviour, attendance, conduct, time on task, homework completion and impulse control.

c) **Academic Achievement**

This is the child's performance which can be assessed by standardised tests within a school or educational setting. This variable is dependent on the ability of the child, their home background and environment as well as the quality and quantity of academic instruction that child receives.

6.2.SAMPLE (YEAR 2014)

120 Students (60 girls & 60 boys) of Std V and VI in total from 04 different CBSE schools of Bikaner District, Rajasthan. Out of these two schools so taken were where socioeconomic condition of children is above average and rest two were where it is below average.

6.3.TOOLS

Physical Activity Questionnaire for Children (PAQ-C), examination/ test scores, stroop colour word task.

6.4.STATISTICS

Mean, SD and t-Test

6.5.ANALYSIS

H1- There is no significant difference between girls and boys with regard to their physical activity performance.

Physical activity performance can be assessed using a children's self-reported physical activity recall questionnaire. Statistical data were extracted with the help of Physical Activity Questionnaire for Children (PAQ-C). The PAQ-C is a self-administered, 7-day recall instrument. It was developed to assess general levels of physical activity throughout the elementary school year for students in grades 4 to 8. The PAQ-C can be administered in a classroom setting and provides a summary of physical activity score derived from nine items, each scored on a 5-point scale. Once we have a value from 1 to 5 for each of the 9 items (items 1 to 9) used in the Physical Activity composite score, we simply take the mean of these 9 items, which results in the final PAQ-C activity summary score. Estimated completion time is 20 minutes.

Category	Mean	SD	t-value	Remarks
Boys	3.8	1.1	4.2080	Significant
Girls	2.7	1.7		

7. CONCLUSION

It is evident from the above table that t-value is more than the table value and difference is significant. Hence, hypothesis is rejected. There is significant difference between girls and boys with regard to their physical activity performance. Performance of boys in PAQ-C is better than girls. This means that they are more interested in physical activities than girls.

H2- There is no significant difference in academic achievement (excluding cognitive dimension) between girls and boys.

Examination Scores (Half Yearly)

Category	Mean	SD	t-value	Remarks
Boys	3.35 (67%)	2.1	0.6280	not sig
Girls	3.55(71%)	2.4		

It is evident from the above table that t-value is less than the table value and difference is not significant. Hence, hypothesis is rejected. Performance of girls is better.

H3- There is no significant difference between physical activity performance of school children and their academic achievement.

Category	Mean	SD	t-value	Remarks
Physical activity	3.25	1.4	.8268	not sig
Academic achievement	3.45	2.25		

It is evident from the above table that t-value is less than the table value and difference is not significant. Hence, hypothesis is rejected.

H4- There is no relationship among three categories of students (involved in physical activities at school only, in physical activities at school and timely at home, actively in physical activities).

Category wise physical activity performance:

Category	Mean
Students involved in physical activities at school only	3.1
Students involved in physical activities at school and timely at home	2.9
Students involved actively in physical activities	3.75

Category wise academic achievement (mean converted to 5 point scale)

Category	Mean
Students involved in physical activities at school only	3.7(74%)
Students involved in physical activities at school and timely at home	3.45(69%)
Students involved actively in physical activities	3.2(64%)

It is evident from the first above table that the performance of students involved actively in physical activities in PAQ-C is better than the other two categories. However, performance of the

other two categories does not vary too much. From the second table it is evident that students involved in physical activities at school only perform better academically in comparison to the other two categories.

H5- There is no significant difference between physical activity performance of school children and their academic performance.

The Stroop colour word task was used on all 120 students to assess selective attention, response inhibition, interference control and speed response (executive control). In this study higher levels of aerobic fitness were associated with significantly better performance on the cognitive task. Hence, hypothesis is rejected. It was found through Stroop colour word task that students more involved in physical activities perform academically well as their cognitive aspect got more developed.

8. DISCUSSION

Evidence suggests that increasing physical activity and physical fitness may improve academic performance. Time in the school day dedicated to recess, physical education class and physical activity in the school may also facilitate academic performance.

Basic cognitive functions related to attention and memory facilitates learning and these functions are enhanced by physical activity and higher aerobic fitness.

Long-term participation in physical activity improves cognitive performance and brain health. Children who participate in vigorous or moderate intensity physical activity benefit the most. Students should be provided with frequent physical activity breaks that are developmentally appropriate.

Available evidence suggests that Mathematics and reading are the academic topics that are most influenced by physical activity as these tasks have more motor involvement.

9. RECOMMENDATIONS FOR FUTURE

- i. Future research should further examine the relationship between school-based physical activity and academic performance in sub-populations of students (e.g., based on gender, race/ethnicity). Results from this type of research could help physical education teachers and physical activity coordinators to apply findings of programs.
- ii. Future research should be developed across disciplines such as neurobiology, cognitive science and social psychology to find out relationships between physical activity and academic achievement.

10. REFERENCES

- [1] Coe, D.P., Pivarnik, J.M., Womack, C.J., Reeves, M.J., & Malina, R.M. (2006). *Effects of physical education and activity levels on academic achievement in children. Medicine & Science in Sports & Exercise*, 38(8), 1515-1520.

- [2] Davis, C.L., Tomporowski, P.D., Boyle, C.A., Waller, J.L., Miller, P.H., & Naglieri, J.A. (2007). *Effects of aerobic exercise on overweight children's cognitive functioning: A randomized controlled trial. Research Quarterly for Exercise and Sport, 78(5), and 510519.*
- [3] Eveland-Sayers, B.M., Farley, R.S., Fuller, D.K., Morgan, D.W., & Caputo, J.L. (2009). *Physical fitness and academic achievement in elementary school. Journal of Physical Activity and Health, 6(1), 99104.*
- [4] Sigfusdottir, D.I., Kristjansson, A.L., & Allegrante, J.P. (2007). *Health behaviour and academic achievement in Icelandic school children. Health Education Research, 22(1), 7080.*
- [5] Tremblay, M.S., Imman, J.W., & Willms, J.D. (2000). *The relationship between physical activity, self-esteem, and academic achievement in 12-year-old children. Pediatric Exercise Science, 12, 312323.*