Comparative Study of Physical Activity Level During Physical Education Period of Secondary School Children from Pune City

Subbulaxmi Pechimuthu Thevar
Research Scholar, CACPE, Pune 37

Mahesh Deshpande, Ph.D.
Research Guide CACPE, Pune 37

ABSTRACT

The main propose of the study is to measure the Physical Activity level of the students of Government Aided School and Private School from Pune city through SOFIT. And also, to know whether the Physical Activity Level of Government Aided School and Private School are same. In this study 10 schools from Pune city were chosen out of which 100 students were selected randomly from these schools. The Physical Education class conducted by the Physical Education teachers were observed to measure the Physical Activity level of the students selected for the study.

System for Observing Fitness Instruction Time (SOFIT) tool was used in this study to measure the Physical Activity Level of the student. SOFIT is a complete tool for evaluating physical education classes and coaching settings by collecting data on student's activity levels, in the lesson context, and teacher's behaviour all at the same time. Physical activity participation is one of the primary health-related goals of physical education and sports, and it is required for participants to become physically fit and proficient. Physical Activity in SOFIT means lying, sitting, standing, walking and vigorous activity. Vigorous activity may include running, jogging, jumping jacks etc. SOFIT includes various tests like understanding the teacher behaviour, observing the way the teacher is interacting with the students, the teacher's involvement with the students and also the lesson context, outcome and process variable is measured under different phases. In this study only the Physical Activity Level of the students is measured. The researcher used descriptive statistics to measure the Physical Activity Level obtained through SOFIT tool.

Introduction

Physical activity is defined by WHO as any body movement produced by skeletal muscles that involves energy expenditure. Physical activity encompasses all movement, whether for recreation, transportation to and from places, or as part of a person's job. Physical activity of both moderate and vigorous intensity benefits health.

Regular physical activity has been shown to aid in the prevention and management of noncommunicable diseases such as heart disease, stroke, diabetes, and a variety of malignancies. It also aids in the prevention of hypertension, the maintenance of a healthy body weight, and the enhancement of mental health, quality of life, and well-being.

A person's Physical Activity Level (PAL) is calculated by dividing his or her total energy consumption over a 24-hour period by his or her Basal Metabolic Rate.

SOFIT

SOFIT is a complete instrument for assessing PE courses and coaching situations that collects data on student activity levels, the lesson context, and teacher behaviour all at the same time. Physical activity participation is one of the primary health-related goals of physical education and sports, and it is required for participants to become physically fit and proficient. Participation in MVPA in class is heavily contingent on how the subject matter is presented and the instructor presenting it. SOFIT has been verified in a variety of ways, and research has demonstrated that it can be utilised consistently in a variety of instructional situations, including those with pre schoolers and adults. It has frequently been utilised as a direct observation measuring system to supply practitioners and researchers with data.

Phase 1: Student participation in physical activity.

The initial step in the decision-making process is to code student physical activity levels. The level of physical activity (i.e., active engagement level) of a pre-selected student is used to make the engagement decision. The level of participation estimates the intensity of the student's physical activity. Codes 1–4 correspond to different bodily positions (e.g., lying down, sitting, standing, walking), while code 5 (vigorous) corresponds to energy expenditure above and beyond what is required for normal

walking. Higher values indicate greater energy consumption. What is the physical nature of the student's participation? What is his/her level of activity? Options include: (1) lying down, (2) sitting, (3) standing, (4) walking, and (5) vigorous exercise.

Methodology

The objective of this study is to measure the Physical Activity Level of the school going students. The way of conducting Physical Education class has to be changed to grab the interest of the children and also to make them understand the importance of Physical Activity.

In this chapter the importance of Physical Activity in Physical Education class has been made clear to the teachers and the students.

Choosing appropriate research method is very important for any research. In this study the researcher is intended to determine the present level of Physical Activity of the children in Physical Education class. Therefore, Descriptive Survey Method were utilized to condense factors from the study. This method includes the present level Physical Activity and interprets about the present status. This type of method is used to describe situations. It is used to measure the important factor of the study. The data obtained through this study will help us summarise the measures. Descriptive Statistics presents the Physical Activity level that is sitting, standing, walking, lying, vigorous work out as per SOFIT.

Data Collection Tools

In order to gather information, there are several data collection tools. Each tool has its own quality, advantages and disadvantages. Based on the purpose of the research the study needs to select a precise method to gather the data, as its dependence were on the initiation. In this study the data collection tools used are Observations, Videography and SOFIT Tool. Through the SOFIT tool here the researcher will observe the lesson of Physical Education class and record the Level of Physical Activity performed by the student. As the behaviour of the students change consistently it can be observed through video monitoring.

Procedure of Study

Prepare a list of Government aided schools and Private schools located in Pune and then select 10 schools randomly out of which 5 schools will be Govt. aided and 5 schools will be Private schools. And the researcher laid out a schedule to match with the timing of the school and prepare the list consisting of number of Physical Education classes conducted in each school and prepare a schedule for the

observation of the Physical Education class. According to the Schedule prepared the observation will be commenced. Additionally, video will be clicked of the Physical education class conducted by the teacher, for future references of the researcher. The students were being informed about the observation and permission was taken by the Principal and Physical Education teacher to observe the Physical Education class conducted by the schools. After collecting data, obtained through the observations will be presented in the sheet of SOFIT.

Analysis and Interpretation of Data

As the main objective of the study was to measure the physical activity level of secondary students through SOFIT. In SOFIT, Pre-recorded verbal prompts on CDs, MP3s, or audiotapes keep observers on pace throughout a lesson via alternating 10-second observe/record prompts. During each record interval the observer enters a code for each of the three decision sequence phases. Code Student Activity for events that are occurring at the "record" prompt which ends the observation interval. Enter the Interaction code based on physical activity or fitness during the entire 10-second observation interval. Alternately "observe" and "record" during 10-second intervals. This yields 3 observations per minute and 90 observations per half-hour. Data may be summarized by time (3 intervals = 1 minute), estimated energy expenditure. Comparisons may be made among different categories, from class to class, from student to student or from students' different schools. Data collection procedure of this research was declared in the previous chapter. This chapter presents the statistical procedure and analysis of the data. Physical activity of the students was measured in terms of the standard codes laid down by SOFIT. Descriptive statistics was applied to find out the normality of the data. Following section provides the details of data analysis.

Table 1 : *Analysis of Physical Activity Time Duration of Students from Government Aided and Private School During PE class (N=50)*

Statistics	School	Lying	Sitting	Standing	Walking	Vigorous activity
Mean	Govt. Aided	0	48.8	203.4	273.8	374
	Private	0	23	232.6	253.8	390.6
SEM	Govt. Aided	0	24.4	9.6	10.78	15.35
	Private	0	6.26	12.24	9.87	9.9
Median	Govt. Aided	0	0	215	285	360
	Private	0	0	210	280	390
SD	Govt. Aided	0	172.52	67.9	76.24	108.57
	Private	0	44.27	86.52	69.81	70.03
Min	Govt. Aided	0	0	0	0	0
	Private	0	0	90	110	270
Max	Govt. Aided	0	900	410	380	560
	Private	0	150	420	380	480

Researcher observed a 30 Min. (i.e. 900 seconds) lesson of physical education, during this lesson physical activity level of students selected randomly was observed with SOFIT observation tool. Duration of their physical activity (lying, sitting, standing, walking and vigorous activity) was recorded and analysis was done.

The statistics given in table 1 states that observed students from government aided schools were not lying at all during physical education lesson (0%), it was also observed that their average sitting time duration was 48.8 seconds (5.42%), their average standing time was 203.4 seconds (22.60%), they found walking for an average of 273.8 seconds (30.42%) while their vigorous activity time was 374 seconds on an average (41.56%).

The statistics given in table 2 states that observed students of private schools were not lying at all during physical education lesson (0%), it was also observed that their average sitting time duration was 23 seconds (2.56%), their average standing time was 232.6 seconds (25.84%), they found walking for an average of 253.8 seconds (28.20%) while their vigorous activity time was 390.6 seconds on an average

(43.40%).

Table 3 : *Summary of t-Test for the Comparison between Physical Activities of Government Aided and Private Schools Students*

Activity	MD	t' value	df	t' Crit
Lying	0	0	98	1.984
Sitting	25.8	12.39	98	1.984
Standing	-29.2	-16.62	98	1.984
Walking	20	11.70	98	1.984
Vigorous activity	-16.6	-8.78	98	1.984

Table 3 indicates summary of t-test for the comparison of physical activity duration of government aided and private school students. It is clear that both school student did not find lying as per SOFIT tool.

Difference between the duration of sitting time of government aided and private school student is found 25.8 seconds, 't' value of 12.39 is found significant at 0.05 level of significance as critical 't' is found smaller than the calculated 't'.

Difference between the duration of standing time of government aided and private school student is found -29.2 seconds, 't' value of -16.62 is found significant at 0.05 level of significance as critical 't' is found smaller than the calculated 't'.

Difference between the duration of walking time of government aided and private school student is found 20 seconds, 't' value of 11.70 is found significant at 0.05 level of significance as critical 't' is found smaller than the calculated 't'.

Difference between the duration of sitting time of government aided and private school student is found -16.6 seconds, 't' value of -8.78 is found significant at 0.05 level of significance as critical 't' is found smaller than the calculated 't'.

Conclusion:

From the findings of the study further conclusions are made:

- The students of both the schools that is Government Aided School and Private school are Physically active in their Physical Education Class.
- The students of Government Aided school were active for more than 50% of the time of the Physical Education Class.

- From the description it is interpreted that government aided school students spend significantly more in sitting and walking than private school students.

- It is also interpreted that private school students spent significantly more time duration in standing and vigorous activities than government aided school students.

Recommendations

- It is recommended that there shall be further research taken to improve the physical activity time of students by conducting lead-up games, leisure games, and modified games so as improve their physical activity level.

- A research study may be conducted on the physical education time table that needs to be created for considering number of aspects; for instance, individual and team sports, dancing, aquatics, gymnastics, and other fitness pursuits.

- In order to overcome a lack of physical exercise, a person must engage in more enjoyable activities. Freshers may conduct research studies to make student engage in physical activities and increase their participation in it.

- It is recommended to incorporate physical activity into daily routine of students.

- Studies on altering patterns in pre-pubertal and post-pubertal alterations might be done.

- Studies on the types of schools, physical activity patterns attained during playtime, weekends, school days and vacations can be conducted.

References:

Arbogast, G., & Chandler, J. P. (2005). Class management behaviours of effective physical educators. Strategies.

Black, I. E., Menzel, N. N., & Bungum, T. J. (2015). The relationship among playground areas and physical activity levels in children. Journal of Paediatric Health Care.

Blair, S. N., Kohl, H. W., Gordon, N. F., & Paffenbarger, R. S., Jr (1992). How much physical activity is good for health?. Annual review of public health, 13, 99–126. https://doi.org/10.1146/annurev. pu.13.050192.000531

Cardon, G., Verstraete, S., De Clercq, D., & De Bourdeaudhuij, I. (2004). Research note: physical activity levels in elementary-school physical education: a comparison of swimming and nonswimming classes. Journal of Teaching in Physical Education, 23(3), 252-263.

Curtner-Smith, M. D. (2007). The impact of a critically oriented physical education teacher education course on preservice classroom teachers. Journal of Teaching in Physical Education.

Dale, D., Corbin, C. B., & Dale, K. S. (2000). Restricting opportunities to be active during school time: do children compensate by increasing physical activity levels after school? Research quarterly for exercise and sport.

Dobbins, M., Husson, H., DeCorby, K., & LaRocca, R. L. (2013). School-based physical activity programs for promoting physical activity and fitness in children and adolescents aged 6 to 18. Cochrane database of systematic reviews.

Duesterhaus, M. P. (2011). A system for observing fitness instruction time in group-exercise classes (SOFIT-X) (Doctoral dissertation, San Diego State University).

Duncan, M. J., Al-Nakeeb, Y., Woodfield, L., & Lyons, M. (2007). Pedometer determined physical activity levels in primary school children from central England. Preventive medicine.

Eather, N., Morgan, P. J., & Lubans, D. R. (2013). Improving the fitness and physical activity levels of primary school children: Results of the Fit-4-Fun group randomized controlled trial. Preventive medicine.

Ennis, C. D. (2011). Physical education curriculum priorities: Evidence for education and skillfulness. Quest. 63(1), 5-18.

Haskell, W. L., Blair, S. N., & Hill, J. O. (2009). Physical activity: health outcomes and importance for public health policy. Preventive medicine, 49(4), 280-282.

McIver, K. L., Brown, W. H., Pfeiffer, K. A., Dowda, M., & Pate, R. R. (2016). Development and testing of the observational system for recording physical activity in children: Elementary school. Research Quarterly for Exercise and Sport, 87(1), 101-109.

McKenzie, T. L., & Smith, N. J. (2017). Studies of physical education in the United States using SOFIT: A review. Research Quarterly for Exercise and Sport, 88(4), 492-502.

McKenzie, T. L., Sallis, J. F., & Nader, P. R. (1992). SOFIT: System for observing fitness instruction time. Journal of teaching in physical Education, 11(2), 195-205.

Rowe, P., van Der Mars, H., Schuldheisz, J., & Fox, S. (2004). Measuring students' physical activity levels: validating SOFIT for use with high-school students. Journal of Teaching in Physical Education, 23(3), 235-251.

Scruggs, P. W., Mungen, J. D., & Oh, Y. (2010). Quantifying moderate to vigorous physical activity in high school physical education: a pedometer steps/minute standard. Measurement in Physical Education and Exercise Science, 14(2), 104-115.

Sharma, S. V., Chuang, R. J., Skala, K., & Atteberry, H. (2011). Measuring physical activity in preschoolers: reliability and validity of the System for Observing Fitness Instruction Time for Preschoolers (SOFIT-P). Measurement in physical education and exercise science, 15(4), 257-273.

Weaver, R. G., Webster, C. A., Erwin, H., Beighle, A., Beets, M. W., Choukroun, H., & Kaysing, N. (2016). Modifying the system for observing fitness instruction time to measure teacher practices related to physical activity promotion: SOFIT+. Measurement in Physical Education and Exercise Science, 20(2), 121-130.

Wilson, R. (1987). Direct observation of academic learning time. Teaching Exceptional Children, 19(2), 13-17.