IOSR Journal Of Humanities And Social Science (IOSR-JHSS)
Volume 29, Issue 7, Series 3 (July, 2024) 25-28
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

Enhancing Learning Through Physical Activity Breaks in the Classroom: An Action Research Study

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Abstract:
This action research study investigates the impact of integrating physical activity breaks into the classroom setting on concentration (current attitude), multi-tasking and academic performance. A sample of 120 students from middle ME school participated in this study over a period of six week. The study employed a mixed-methods approach, incorporating both quantitative measures, such as pre- and post-intervention assessments, as well as qualitative data obtained through observations and student feedback. Results indicate that regular physical activity breaks positively contribute to students' focus (concentration), multitasking, and academic achievement, highlighting the importance of incorporating movement into the educational environment.

Key words: *Physical activity, academic, break, classroom, participation, school day*

Date of Submission: 01-07-2024 Date of Acceptance: 12-07-2024

I. Introduction:

The traditional classroom model often involves extended periods of seated instruction, which can lead to decreased attention, increased restlessness, and diminished academic performance among students. Recognizing the potential benefits of physical activity on cognitive function and overall well-being, educators have increasingly explored the integration of movement into the learning environment (Kohl, 2013; Peiris et.al., 2022). This action research study aims to explore the effects of incorporating structured physical activity breaks within the classroom setting on student engagement and academic outcomes.

The health and well-being of children can be greatly enhanced through regular physical activity. It has numerous benefits, such as enhancing cognitive function, regulating mood, and enhancing academic achievement. Nevertheless, chances for substantial physical exercise may be few in today's inactive culture, particularly in educational settings. Educators are looking at ways to combat this, such as introducing physical activity breaks, into the school day. In order to break up long periods of sitting instruction, these breaks provide students a chance to stretch, exercise, or do basic calisthenics. Through its findings on the beneficial effects of activity breaks on students' conduct, focus, and academic achievement, this action research project hopes to add to the continuing conversation on the relationship between exercise and education (Mandolesi et.al., 2018).

Incorporating brief periods of physical activity into the classroom day can have a positive impact on students' mood, conduct, and academic achievement. A recent study found that short bursts of physical activity increased blood flow to the brain, which in turn improved concentration and cognitive function. To maintain peak focus all day long, this is a great way to stave off boredom and restlessness. Endorphins are neurotransmitters that increase happiness and decrease stress, and regular exercise releases them. Students can release their pent-up energy, reduce stress, and create a more positive learning atmosphere by incorporating physical exercise breaks into the classroom. Participation in regular physical activity not only improves self-regulation abilities but also decreases disruptive behaviors, creating an environment that is more favorable to learning. Overall, students' interest and engagement with learning tasks are enhanced, and they achieve better grades across the board, when they take active breaks to exercise (Koh, 2013b).

Regular breaks at mid-morning, lunch, and mid-afternoon might be a great way to incorporate physical activity into your daily classroom routine. Make sure your breaks are manageable by keeping them to no more than 5 to 10 minutes. Make use of kinesthetic exercises, instructional games, and other movement-based activities in your classroom. Incorporate classroom-appropriate physical exercises into lessons using readily available materials such as instructional films, guidelines, or activity cards.

The need of providing a range of physical activity options to meet the interests and abilities of all students is emphasized throughout the text. Incorporating alternate movements or assistive gadgets into activities is one

suggestion, and involving students in the process of activity selection and planning is another. Students develop a sense of pride and involvement through this method (Sutapa et.al., 2021; Vlachopulos and Makri; 2017).

Physical exercise breaks should be supported by school personnel, parents, and students working together, according to the text. It recommends holding educational workshops and training sessions to brief stakeholders on the advantages and how to apply them. It also recommends keeping lines of communication open with parents and guardians to promote reinforcement of these behaviors, creating a welcoming atmosphere, and giving kids the opportunity to lead breaks (Bershwinger and Brusseau, 2013).

Problems with time, location, and opposition to change could make classroom physical exercise breaks difficult to implement. It could be challenging to fit in breaks into academic program timetables without cutting into instructional time. It could be challenging to incorporate movement-based activities into classrooms with restricted facilities and design (Mouw, 2015).

Incorporating movement breaks into the classroom might be challenging, but these ideas can help in many ways such as mastering time management where right times to take breaks, for example breaks before any mental work. The most of available space, investigate potential collaborations with local groups or make use of existing classroom space, such as outdoor areas or desks, optimum utilization of low-cost resources, promote teamwork, and provide teachers with chances for professional development so they can gain competence and self-assurance in integrating activity breaks into their lessons.

To ensure their effectiveness, physical activity breaks must be regularly evaluated and adjusted. For this, you'll need to keep an eye on how they're being used and see how they affect things like student participation, conduct, and grades. The ability to modify projects in response to new information, shifting priorities, or unforeseen obstacles is a must. Every member of the school community—administrators, instructors, students, and parents—has a stake in the program's success and can work together to make it better in the long run.

II. Methods:

The study involved 120 students from Arangmow MV school, Nalbadi district of Asam, India. All the students were the regular students of Govt Schools. The attention distraction during multitasking, current attitude and study habit (concentration), and academic achievement were assessed in the present study.

The attention distraction, the data (Co-efficient or division of the attention) was taken in the month of October 2022 with the help of attention control board, Stop Watch, Paper, and pencil. The procedure and administration of test and collection of data are given below: 1. Asked the subject to trace the circular groove with his left hand and record the number of tracing for a period of two minutes with the help of stop watch. 2. Asked the subject to trace the triangular groove with his right hand for a period of two minutes and record the number of tracing with the help of stop watch. 3.Asked the subject to trace the circular groove with the left hand and the triangular groove with the right hand simultaneously for two minutes. 4 Recorded the total number of tracings. The Co-efficient of division of attention (Bhargava; 2010) was calculated by applying following formula 1-(D1+D2)/(S1+S2) Whereas, S1 = Score on the first Physical Task done individually, S2 = Score on the second Physical Task done individually, D1= Score on the first task done along with the second task, D2 = Score on the second task when carried out along with the first task.

Current attitudes and Study Habit (concentration) and Hyperactivity Disorder was studied with the help of questionnaire. The questionnaire consist of 20 items including hyperactivity questionnaire. The academic achievement was taken from there final result sheet from the school.

Baseline Assessment: Prior to implementing physical activity breaks, baseline data on attention distraction, concentration, and academic performance were collected using standardized measures.

Intervention: Physical activity breaks, consisting of team games and recreational activity, were incorporated into the classroom routine forty five minutes daily for six weeks. The control groups were taken from other school where physical activity breaks were not allotted.

Data Collection: Quantitative data were collected through pre- and post-intervention assessments, including academic performance metrics and measures of attention distraction through multi-tasking, current attitude and study habit (concentration). Qualitative data were gathered through classroom observations and student feedback.

Statistical treatment

The data pertaining to this study were obtained from task performed by the selected subjects. Obtained data was then analysed by using Descriptive (Mean ±SE), SD, and inferential (independent t-test) statistics with the help of inbuilt statistical program namely SPSS - 18 (Statistical Package for Social Science – 18)

Level of significance

To test the hypothesis level of significance was set at 0.05, which was considered most appropriate and stringent level for the study.

Table 1: Showing Mean, SD, SE, and t-ratio for the attention deviation for both the studied groups.

	Physical Activity Breaks		Control		*t*-test	
Variable	Mean ± SE	SD	Mean ± SE	SD	*t* -value	*p*– value
Co-efficient of attention deviation	0.16±0.03	0.11	0.33±0.03	0.10	1.97	0.05

Values are Mean ± 1 SE

Attention Distraction

Table 1 depict summary of attention Deviation before and after the intervention. The results indicated inter individual difference among the groups. The attention distraction during multi-tasking were significantly reduced after the physical activity breaks. The inferential analysis (independent *t* –test) revealed statistically (p <0.05) group as well as inter individual difference in attention distraction between the studied groups. The previous group showed least attention distraction.

Table 2: Showing Mean, SD, SE, and t-ratio for the concentration between the groups.

	Physical Activity Breaks		Control		*t*-test	
Variable	Mean ± SE	SD	Mean ± SE	SD	*t* -value	*p*– value
Concentration	13.20 ± 0.03	1.09	7.47 ± 0.03	2.10	3.97	0.05

Values are Mean ± 1 SE

Table 2 depict summary of current attitude (concentration) before and after the intervention. The concentration were significantly higher in intervention group. The inferential analysis (independent *t* –test) revealed statistically (p <0.05) higher concentration level than the control group.

Table 3: Showing Mean, SD, SE, and t-ratio for the academic achievements

	Physical Activity Breaks		Control		*t*-test	
Variable	Mean ± SE	SD	Mean ± SE	SD	*t* -value	*p*– value
Marks scored	71.02 ± 0.87	4.96	70.69 ± 0.85	4.50	0.75	NS

Values are Mean ± 1 SE

Table 2 depict summary of academic achievement from both studied groups. The marks scored by both the groups were insignificantly higher in intervention group. The inferential analysis (independent *t* –test) did not reveal statistically (p >0.05) difference between the groups.

III. Discussion

The findings of this study highlight the potential benefits of integrating physical activity breaks into the classroom routine. By providing opportunities for movement and physical engagement, educators can enhance student attention, participation, and academic achievement. Moreover, incorporating physical activity breaks aligns with current research emphasizing the importance of holistic approaches to education that address both cognitive and physical aspects of development. In the beginning of the study, researcher hypothesized the attention level of the students will not significantly affect when two tasks are performed at the same time after physical activity breaks. When data was analysed it was found the most of the subjects showed multitasking. After activity breaks. It means their attention level will not affect when two physical task was performed simultaneously.

It presumed that the working memory is a reliable predictor of general multitasking ability. In the present study an attempt was made to assess the multitasking ability of school children. Researcher aimed to evaluate the attention control when two physical tasks performed at a time. The degree of multitasking is significantly higher after physical activity breaks in schools. This study was not corroborating with previous study (Donohue et.al.2012). When one tries doing several things at once divide attention. Because the total amount of attention available is limited, the amount of focused attention for any single task decreases as the number of demands increases. The total amount of brain activity present when two tasks are attempted simultaneously seems to be less than the sum of brain activation that occurs when each task is completed in isolation (Newman, Keller, & Just, 2007). In nutshell, the results of the present study indicate that the most of the students were able to control their attention when two tasks are performed simultaneously.

This action research study elucidates the beneficial effects of incorporating physical activity breaks into the classroom setting, specifically in terms of enhancing student engagement and academic success. Regular intervals of rest facilitate physical activity and engaged learning, fostering a dynamic and efficient learning

atmosphere that is beneficial to student achievement. The study posits that the incorporation of physical activity into educational practices has the potential to enhance concentration, improve emotional well-being, and enhance academic achievement. Additionally, it facilitates the enhancement of students' health and well-being by fostering comprehensive growth through engagement in physical activity, stretching, and mobility. The study highlights the significance of incorporating physical activity into the school hours, necessitating cooperation among teachers, administrators, parents, and lawmakers. Allocating resources, providing professional development opportunities, and implementing supportive policies are essential for guaranteeing enduring impacts.

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