

The Effect of Brain Gym on Grades 5-6 Students in SD Negeri Kotalama 6 Malang City

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Abstract

Learning concentration is an important factor in educational success. However, students in grades 5-6 of SD Negeri Kotalama 6 Malang City have difficulty concentrating due to internal (motivation) and external (noise) factors. The main objective of this research is to investigate how brain exercises can impact the focus of students during their learning. The research employed a quasi-experimental method known as One Group Pre-test and Post-test Design. A specific group of 49 students was chosen intentionally for the study. The students' level of concentration was assessed using the Army Alpha Test both before and after they participated in brain exercises for five days, with each session lasting for 10 minutes. The data collected was analysed using the Wilcoxon Signed Rank Test. The findings revealed a notable improvement in the students' learning concentration, with a statistically significant increase ($p = 0.000 < 0.05$). Before the treatment, the majority of students had low concentration, while after the intervention, most showed moderate to high concentration. The conclusion of this study is that brain exercises are effective in improving students' learning concentration and are recommended to be implemented routinely in schools.

Keywords: Brain Gym, Brain Exercise, Learning Concentration

1. Introduction

Education plays a crucial role in shaping high-quality human capital. In the education process, learning concentration is a crucial factor that affects the success of learning. According to Chyquitita (2023), concentration is a state of mind activated by sensations in the body, where relaxed conditions and a pleasant atmosphere are needed to optimise brain function.

According to the findings from the IEA (International Association for the Evaluation of Educational Achievement) study, primary school students in Indonesia show lower levels of focus in learning when compared to their peers in other Asian nations. The data shows that the average score of Indonesian students' reading ability is only 51.7%, far below Hong Kong (74.55%), Singapore (74.0%), and Thailand (61.1%). The average Indonesian student is only able to master 30% of the reading material provided.

Identify various factors that affect learning concentration, including motivation, interest in the material, physical, psychological, and emotional conditions, as well as experience and intelligence level. External factors such as noisy environment, non-conducive learning atmosphere, and inappropriate learning methods also contribute to low learning concentration (Rinawati, 2021).

Learning concentration is a term that comes from two words, namely concentration and learning. according to KBBI concentration is the concentration of attention or mind on something while learning according to KBBI is trying to gain intelligence or knowledge. Concentration is one of the aspects that support students to achieve good achievement and if this concentration is reduced, taking part in class lessons and learning personally will be disrupted (Basri et al., 2021).



Nuramaliana (2016) identified nine indicators of learning concentration, including attention to material, response to learning, appropriate body movements, ability to apply knowledge, analysis, idea generation, knowledge readiness, interest in learning, and resilience in the learning process. These indicators become important references in measuring the effectiveness of interventions to improve learning concentration. To improve learning concentration, one effective method is through brain gym. Brain gym consists of a series of simple movements designed to stimulate brain function and improve students' concentration ability.

Brain gym offers a promising approach to enhancing focus during learning. It involves a set of easy movements aimed at enhancing brain performance and boosting concentration. Research has demonstrated the positive impact of brain gym on cognitive skills and focus in young students (Dennison & Dennison, 2003).

Given the importance of concentration in the learning process and the low level of learning concentration of students in Indonesia, it is necessary to conduct research to examine the effectiveness of brain gym in improving learning concentration. Although a number of studies have demonstrated the effectiveness of brain gym in improving learning concentration, there is still a lack of studies that specifically examine the application of this method to students in grades 5-6 in Indonesia, especially in the context of noisy and heterogeneous school environments. Most existing studies focus more on general cognitive aspects without considering environmental factors such as noise or differences in student behaviour that may affect learning outcomes. Therefore, this study is important to fill the gap by exploring how brain exercises can effectively address learning concentration challenges in students at SD Negeri Kotalama 6 Malang City, given the unique environmental conditions and student characteristics. This research will focus on students in grades 5-6 of SD Negeri Kotalama 6 Malang City, considering that this age is a critical period in the development of children's learning abilities. How to improve learning concentration is with brain gym.

Kota lama public elementary school is located in the middle of the city so that the noise from passing vehicles can reduce students' learning concentration, besides that the heterogeneous behaviour of students when taking lessons also affects learning concentration when at school, so it is necessary to increase learning concentration by using brain exercises. The problem of learning concentration can be seen from several indicators, including the low level of active participation of students in learning, the decline in learning outcomes in several core subjects, the difficulty of students in understanding and remembering the material presented, and the high frequency of students who cannot answer teacher questions. These conditions indicate the need for intervention to improve students' learning concentration.

Brain gym comes as a potential solution to the problem of learning concentration. This method uses a series of simple movements that can stimulate the brain to work optimally. Students in grades 5-6 who are in the age range of 10-12 years old, should have reached the concrete operational stage towards formal operations, where they are able to think logically, classify information, and solve simple problems.

2. Methods

This research was conducted using a quasi-experimental design, specifically implementing a One Group Pre-test and Post-test Design. The research location was at SD Negeri Kotalama 6 Malang City in 2024. The study population consisted of all grade 5-6 students with a sample of 49 students selected purposively. This study holds significance in its undertaking at SD Negeri Kotalama 6 in Malang City, given the urban environmental factors that may impede student focus, such as traffic noise.

Furthermore, the diverse behaviours exhibited by students during their learning journey also play a role in influencing their ability to concentrate. In order to gather information, the researchers administered the Army Alpha Test both before and after a brain exercise intervention over a period of five days, with each session lasting 10 minutes. The Army Alpha Intelligence Test in this study was to objectively assess students' cognitive abilities and concentration levels. This examination assists in collecting data that can be contrasted between the findings of the initial assessment (conducted before the implementation of Brain Gym) and final assessment (conducted after the implementation of Brain Gym), in order to determine if there are notable alterations in student focus. Through the utilization of the Army Alpha Intelligence Test, this research can offer credible statistical proof of the impact of Brain Gym on enhancing the learning focus of grade 5-6 pupils at SD Negeri Kotalama 6.

3. Results and Discussion

3.1. Research Results

The distribution of respondents based on Univariate data, namely gender and concentration level of students in grades 5-6 SD Negeri Kotalama 6 Malang City can be seen in table 1-2, based on bivariate analysis in table 5.

Table 1. Frequency Distribution of Respondent Characteristics Based on Gender of Intervention Group

Variable	Intervention	
	n	%
Gender		
Male	15	60.0
Female	10	40.0
Total	25	100.0

The results of the analysis of the intervention group regarding the characteristics of respondents based on gender showed that there were fewer female students, namely 10 students (40%), compared to 15 male students (60%).

Table 2. Frequency Distribution of Respondents' Characteristics Based on Gender of Control Group

Variable	Control	
	n	%
Gender		
Male	16	66.7
Female	8	33.3
Total	24	100.0

The analysis of the control group regarding the characteristics of respondents based on gender showed that there were fewer female students, namely 8 students (33.3%), compared to 16 male students (66.7%).

Table 3. Frequency Distribution of Concentration Levels of Students in Grades 5-6 SD Negeri Kotalama 6 Malang City Control Group Before and After Brain Gym

Concentration Level	Intervention	
	N	%
Before Brain Gym		
Very Low	2	8.0
Low	8	32.0
Medium	15	60.0
High	0	0.0
Very High	0	0.0
Total	25	100.0
After Brain Gym		
Very Low	0	0.0
Low	0	0.0
Medium	0	0.0
High	5	20.0
Very High	20	80.0
Total	25	100.0
Total	50	100

The results of statistical tests in the intervention group, the majority of students had a moderate level of concentration before brain gym, namely 15 students (60.0%). Students with low concentration were 8 students (32.0%) Students with very low concentration levels were 2 students (8.0%), and students who were at high levels (0%) and very high (0%). After the brain gym, the majority of students' concentration levels increased, namely at a very high level of 20 students (80.0%) and a high concentration level of 5 students (20.0%), and students who were at a very low level (0%) low (0%) or medium (0%).

Table 4. Frequency Distribution of Concentration Levels of Students in Grades 5-6 SD Negeri Kotalama 6 Malang City Intervention Group Before and After Brain Gym

Concentration Level	Control	
	N	%
Before Brain Gym		
Very Low	2	8.0
Low	7	28.0
Medium	15	60.0
High	0	0.0
Very High	0	0.0
Total	24	96.0
After Brain Gym		
Very Low	0	0.0
Low	0	0.0
Medium	0	0.0
High	5	20.0
Very High	19	76.0
Total	24	96.0
Total	48	96

The results of statistical tests from the pre-test results in the control group the majority had a moderate level of 15 students (60.0%), students who had low concentration were 7 students (28.0%) while very low were 2 students (8.0%) and students who had high categories (0%) and very high (0%). And after the post test without giving the intervention of brain gymnastics the majority was very high 19 students (76.0%) and high as many as 5 students (20.0%), very low (0%), low (0%) and medium (0%).

Table 5. Comparison Test Results of Pre Test and Post Test Concentration Levels in Intervention and Control Groups (Wilcoxon Test)

Concentration Level		N	Median	Interquartile Range	P-value
Intervention	Pre test	25	3.00	3.00-2.00	0.000
	Post test	25	5.00	5.00-5.00	
Control	Pre test	24	3.00	3.00-2.00	0.000
	Post test	24	4.00	4.00-4.00	

Based on table 5, the results of bivariate analysis show that the N value in the intervention group is 25 students (100%) and the control group is 24 students (100%). The median concentration level in the intervention group before brain gym was 3.00 with an interquartile range of 1.00 (between 3.00 - 2.00), while the median concentration level after brain gym was 5.00 with an interquartile range of 0.00 (between 5.00 - 5.00). It can be seen that the increase in median concentration level between before and after brain gym is 1 point. While in the control group there was also an increase in the median level of concentration, because Ice breaking can improve children's concentration by reducing anxiety, creating a pleasant atmosphere. The statistical test results show that the p-value is 0.000. Therefore, the alternative hypothesis (H_a) can be accepted, which means that there is an effect of brain gym on the level of concentration in students in grades 5-6 SD Negeri Kotalama 6 Malang City.

3.2. Discussion

3.2.1. Characteristics of Respondents Based on Gender

Based on the results of statistical tests, the majority of respondents were male, 15 students (60%) in the intervention group. In the control group, the results of the analysis showed that the majority of respondents were also male, totalling 16 students (66.7%). The results of the overall univariate analysis showed that the majority of respondents in this study were male.

The dominance of male respondents can be explained by several factors. First, in terms of population characteristics, the number of male students at SD Negeri Kotalama 6 Malang City grades 5-6 is indeed higher than female students. This imbalance is a natural factor that often occurs in the elementary school environment. Second, boys tend to be more enthusiastic in participating in physical activities such as Brain Gym, because these activities involve motor movements that are in accordance with the nature of boys of primary school age who are generally more active, dynamic, and have high energy. Third, the social environment and support from teachers and parents may also contribute, where boys tend to be more encouraged to engage in physical activities. Fourth, cultural influences and gender stereotypes may affect interest and participation, as physical activities are often associated with boys, while girls may feel less comfortable or less interested in engaging in these kinds of activities.

This research is also in line with the research of Sussiaminingsih et al. (2016) on the effect of brain exercises on the concentration of grade 1 students at SD Angkasa Bulak Surabaya which found that the majority of respondents were male. This can be explained by several underlying factors. Firstly, in terms of the characteristics of the school population, there are indeed more male students than female students, which naturally results in a larger proportion of males in this study. Secondly, biologically,

boys tend to have higher energy levels and are more physically active, so they are more interested and more often engaged in physical activities such as brain exercises.

Activities that involve motor movements, such as those in brain exercises, are more appealing to them as they match their more dynamic and energetic nature. Thirdly, social and cultural factors also come into play, where boys are often more encouraged to engage in competitive or energetic physical activities, whereas girls may be more often directed towards more social or quiet activities. Therefore, the dominance of male students in this study may be explained by a combination of population factors, physical characteristics and social influences present in the school environment.

3.2.2. Frequency Distribution of Concentration Levels of Students in Grades 5-6 SD Negeri Kotalama 6 Malang City Before and After Brain Gym

The results of the statistical test showed a difference in the level of concentration before and after the application of brain gym. In the intervention group, the majority of students had a moderate level of concentration before brain gym as many as 15 students (60.0%). Students with low concentration were 8 students (32.0%) Students with very low concentration levels were 2 students (8.0%), and there were no students at high and very high levels (0%). After doing brain gym, the majority of students' concentration levels increased, namely at a very high level of 20 students (80.0%) and a high concentration level of 5 students (20.0%), no students were at a very low, low or medium level.

The pre-test results in the control group mostly had a moderate level of 15 students (60.0%), students who had low concentration were 7 students (28.0%) while the very low was 2 students (8.0%). And after the post test was carried out without providing brain gymnastics intervention, the majority were very high 19 students (76.0%) and high as many as 5 students (20.0%).

The results showed an increase in concentration in both groups, both the intervention group that was given Brain Gym and the control group that was only given ice breaking. In the intervention group, the majority of students experienced a significant increase to a very high level of concentration (80.0%), while in the control group, although no brain gym intervention was given, the post-test results showed a significant increase, with the majority of students at the very high (76.0%) and high (20.0%) concentration levels.

This study is also in line with the study by Silviana and Elsanti (2024) entitled "The Effect of Brain Gymnastics on Children to Improve Learning Concentration at SDN 1 Rancamaya, Cilongok" which involved two groups, namely the intervention group given brain gymnastics and the control group which was only given ice breaking. The results showed that the intervention group who performed brain exercises experienced a significant increase in learning concentration, with an average pre-test score of 32.42 and post-test of 37.42. Meanwhile, the control group that was only given ice breaking also showed an increase. This study strengthens the hypothesis that brain exercises can improve learning concentration more effectively than light activities that do not involve motor movements that involve brain coordination.

Despite the difference in the type of intervention provided, the improvement in the control group that was only provided with ice breaking can be explained by several factors. Ice breaking activities, although simple, can create a more pleasant learning atmosphere and reduce students' anxiety, which in turn improves their focus and concentration. In addition, the psychological effect, where students tend to improve their performance due to feeling cared for or given special attention, might have also influenced the post-test results in the control group. Meanwhile, Brain Gym provides more intensive physical stimulation, which stimulates blood flow and improves the connection between the right and left brain, making it more effective in improving concentration in the long run. Therefore, although both groups showed improvement, brain gymnastics had a stronger impact in stimulating the brain to

improve concentration, while ice breaking served more to create mental readiness and a more relaxed atmosphere.

3.2.3. The Effect of Brain gym on Concentration Level in Students of Grade 5-6 SD Negeri Kotalama 6 Malang City

The P-value obtained from the statistical test was 0.00, which is less than the significance level of 0.05, leading to the acceptance of H_a . This indicates that brain gym has an impact on the concentration level of grade 5-6 students at SD Negeri Kotalama 6. Using the Army Alpha Intelligence Test on 49 respondents, the study found a significant effect of brain gym on concentration levels, with a p-value of 0.000, lower than the α level of 0.05. The results of both the pre-test and post-test confirm the influence of brain gym on student concentration, with a p-value of 0.000 (<0.05) showing a significant improvement.

This study is in line with research conducted by Septian (2018) titled “The Effect of Brain Gym on the Concentration Ability of Ciparay 07 Elementary School Students” showed a significant increase in the level of student concentration after applying Brain Gym, with a p-value of 0.000. This shows strong statistical evidence of the effectiveness of Brain Gym in improving student concentration. This shows strong statistical evidence of the effectiveness of Brain Gym in improving student concentration.

Brain Gym is a series of physical movements designed to stimulate neural connections between the left and right brain. This stimulation supports brain integration thereby improving cognitive abilities, including focus and concentration. Secondly, the physical activities in Brain Gym help increase blood flow to the brain, providing sufficient oxygen and nutrients to support optimal brain function, in addition to the use of the Army Alpha Intelligence Test instrument provides a standardised measurement in assessing students' concentration levels, so the research results have high validity. The significant difference between the pre-test and post-test results shows that Brain Gym succeeded in creating a more focused and conducive learning environment for students. This result also reinforces the theory that simple but structured physical activities have a positive impact on children's concentration ability. Although the control group was only given ice breaking and did not receive Brain Gym intervention, the significant increase in concentration in the control group can also be explained by several psychological and physical factors. Ice breaking is a light physical activity that aims to reduce tension and improve students' mood. This activity, although simple, can stimulate blood circulation and increase brain oxygenation, which contributes to increased alertness and concentration.

4. Conclusion

The findings from a study investigating the impact of brain gym on the focus and attention levels of grade 5-6 pupils at SD Negeri Kotalama 6 in Malang City suggest that brain gym can be beneficial in enhancing students' ability to concentrate. Prior to the sessions, a large number of students were classified as having low concentration levels, however, following the intervention, students mostly demonstrated improvement in their concentration levels, moving into the medium to high range. These findings support the hypothesis that brain exercises can serve as an effective method to help students improve their focus and attention during the learning process. As a recommendation, it is suggested that schools schedule brain exercises regularly, for example twice a week before learning begins. This is expected to provide long-term benefits for the development of students' learning concentration. Further research is also recommended to involve variations in the duration and types of brain exercise movements as well as expanding the research population to other educational levels, so that the results obtained can be more generalisable and applicable in a broader educational context.

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