

Research Article

Differences in The Level of Learning Concentration of Grade V Elementary School Students Before and After Brain Gymnastics (Brain Gym)

Ika Rizki Anggraini^{1*}, Sukma Marwah Sofa², Nurul Aini¹, Ollyvia Freeska Dwi Marta³

¹Department of Pediatric Nursing, Nursing Study Program, Faculty of Health Sciences, University of Muhammadiyah Malang, Malang 65145, Indonesia

²Nursing Study Program, Faculty of Health Sciences, University of Muhammadiyah Malang, Malang 65145, Indonesia

³Basic Nursing Department, Nursing Study Program, Faculty of Health Sciences, University of Muhammadiyah Malang, Malang 65145, Indonesia

ORCID

Ika Rizki Anggraini: <https://orcid.org/my-orcid?orcid=0000-0001-7328-8939>

Abstract.

Concentration is an important aspect for children in achieving learning success. Low concentration will cause a fall in one's learning outcomes. There are several methods that can be used to increase the concentration of learning in children. One of them is the Brain Gym method. The purpose of this study was to determine the relationship between Brain Gym and the increase in learning concentration of fifth-grade students at SD Plus Mutiara Sains Bangil. The design of this study used the Quasi Experiment Design method, namely the One Group Pretest-Posttest. The research sample was 35 respondents, which was taken through the purposive sampling technique. The research instrument used was one sheet of the Army Alpha Test regarding a row of numbers and a row of shapes or images containing 12 questions. Analysis using Wilcoxon test. The results of this study indicated a Z value of -5.182 with a significance value of 0.000 meaning a significance value <0.05, it can be said that H₀ is rejected and H₁ is accepted. So, it can be concluded that there is a difference in the level of concentration of fifth-grade elementary school students before doing Brain Gym and after doing Brain Gym. The Brain Gym method can increase the learning concentration of fifth-grade students at SD Plus Mutiara Sains Bangil. Brain Gym can increase endorphins that make you happy, and can also reactivate the dimension of laterality, focusing, and concentration.

Keywords: Class V Students, Brain Gym, Concentration level

1. INTRODUCTION

Education as a learning process for students to be able to know, evaluate and apply every knowledge gained from learning in the classroom or experiences that occur in everyday life. The means that can free a person from ignorance and the things that

Corresponding Author: Ika Rizki Anggraini; email: ikarizki@umm.ac.id

Published 23 June 2023

Publishing services provided by
Knowledge E

© Ika Rizki Anggraini et al. This article is distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use and redistribution provided that the original author and source are credited.

Selection and Peer-review under the responsibility of the HSIC Conference Committee.

OPEN ACCESS

result from stupidity are obtained through education in schools [1]. Education in schools is one of the main indicators of the development of the quality of human resources. Education in schools is a very important and strategic field in national development because it is one of the determinants of the progress of a nation. The unit level of education that is considered the basis of education is education in elementary schools (Krismiyati, 2017).

It is in this elementary school that students experience the process of education and learning. Education in elementary school is to provide basic skills in reading, writing, counting, basic knowledge and skills that are beneficial for elementary school students according to their level of development and prepare them to attend education to next level [3]. One of the things that can influence elementary school students to continue their education to the next level is the foundation for the development of children's thinking and learning abilities, meaning that children's mental, physical, intelligence development is centered at the age of 0 to 12 years, this period is a golden age for children's growth, therefore in elementary school it is necessary to strive for children so that they can freely receive knowledge as well as possible (Ministry Education and Culture, 2019).

Some studies show that learning conditions often lead to a lack of concentration in students due to motivational factors that can cause student boredom and anxiety during the learning process. One of the causes of students getting bored is the difficulty of the subject matter. According to [5]. *The International Association for the Evaluation of Educational Achievement (IEA)* on an international scale shows that the concentration and proficiency in reading in grade IV elementary school participants in Indonesia is still at the bottom level. This is indicated from the data showing that in children in other countries such as Singapore and Thailand reached more than 60%, but in Indonesia the figure was only 51.7%. It was found that the difficulty to answer descriptive questions as well as the limitation of mastery of reading material only reached 30% (Fleeson et al, 2017).

The Education Office then conducted a study on barriers to focus as well as emotions and behavior that showed that 696 elementary school students taken from 4 provinces had a median below 6, and 33% said they were emotional, behavioral and concentration disorders [7]. According to the Ministry of Health, 7.4% of the child population is in elementary school in East Java, causing a decrease in focus and desire to educate children. Schoolchildren who experienced degradation of focus and interest in learning reached 5.2% and it is predicted that this figure will double to more than 45% every 5 years (Ministry of Health, 2010). From the comparison, experiencing high boredom will

make children unmotivated which then gives birth to laziness and will certainly have an impact on learning achievement (Sutarjo, Adisusilo, 2014).

The success of a learning process is influenced by the individual's ability to focus attention on the object being studied. Related to this, concentration is an important aspect for children in achieving learning success. The trend of increasing cases of children's learning problems is related to the range of concentration levels (Basuki & Faizah, 2020). Concentration is a state of mind or conditioned association activated by sensations in the body. How to activate sensations in the body needs a relaxed state and a pleasant atmosphere, because in a tense state a person will not be able to use his brain to the maximum because the mind becomes blank, one's concentration on newly accepted science depends on brain performance [11].

The brain is a part of the body that functions as a controlling center for body organs and the brain is related to a person's intelligence and a person's ability to concentrate, especially for students during learning activities (Ikbal et al., 2017). Good concentration has the potential to increase the success of an elementary school student in achieving learning goals, if an elementary school student experiences obstacles in learning, for example hampered by the achievement of maximum achievement, an elementary school student experiences a decrease in learning concentration (Pratiwi & Pratama, 2020). The way that can be used so that there is no decrease in the level of concentration in learning in elementary school students is to use various treatments, which can potentially increase concentration and brain work power, the treatments used include using music therapy, qur'anic murotal therapy, using humor therapy, using puzzle play therapy, and using *Brain Gym* or brain gymnastics as a treatment used to improve learning concentration in children (Panzilion et al., 2021; Panzilion et al., 2020; Ningsih & Khotimah, 2018).

Increasing the concentration of learning in children involves not only the brain but also the whole body such as, sensations, movements, emotions and brain integration functions all come from our bodies. Therefore, a system is needed that can connect reason *and* body. *Brain Gym* is a collection of simple movements aimed at connecting or uniting reason and body. The time done in has been donelt is 10-15 minutes and is done 3x a week. *Brain Gym* will not only facilitate the flow of blood and oxygen to the brain, but also movements that can stimulate brain work and proper functioning brain optimally (Suratun, 2020; Panzilion et al., 2020).

The results of the study [11] showed that there was an influence caused by *Brain Gym* on the level of concentration of studying at SMA XYZ Tangerang. The results of the study showed differences in children's learning concentration before and after

brain gym so it can be concluded that brain gym is very effective on children's learning concentration, in other words, *brain gym* can have a significant influence on the level of children's learning concentration.

Research conducted by Bhuvaneshwari and Liji (2020) showed that brain gymnastics exercises are performed for 15 days within 30 minutes. The results showed that students' self-esteem and concentration can be influenced by brain gymnastics. This will help learners to have an improvement in academics as well as over all development.

Therefore, the researcher raised the title "Differences in the Level of Concentration of Learning of Grade V Elementary School Students Before and After Brain Gymnastics (Brain Gym)" in order to see the effectiveness of the application of the *Brain Gym* method in increasing concentration in learning Grade V Students at SD Plus Mutiara Ilmu Bangil.

Based on a preliminary study conducted by researchers from observations at SD Plus Mutiara Ilmu Bangil, researchers saw that many students while in the classroom made noise, often went in and out of the classroom and did not pay attention to the teacher's explanation and from the results of interviews with teachers who taught in the classroom said that students had difficulty understanding the teacher's explanation and could not concentrate on the lesson

the taught. The school that experienced a very lack of concentration was at SD Plus Mutiara Ilmu Bangil. This is what caused the researcher to take the case at SD Plus Mutiara Ilmu Bangil school.

2. METHODS

This research method uses a *Quasi Experiment Design*, namely with *The One Group Pretest-Posttest* design consisting of one group (without a control group). The population of this study was 35 grade V elementary school students. This study was conducted in three stages, namely the first stage with a pretest to measure the initial condition in respondents before receiving treatment. The second stage concerns the process to be carried out on the respondents. The third stage is a *post test* to find out the related variables (*independent*) after receiving treatment. Data collection will be carried out in June 2022 with the sampling technique used is purposive sampling. Wilcoxon Test was used to analyze the data.

TABLE 1: Responden characteristics.

Characteristics	N	Mean
Age	35	10.46
Characteristics	N	%
Gender		
Male	14	40.0
Female	21	60.0

3. RESULTS

Table 1 shows the characteristics of respondents' data based on the age obtained in this study, it is known that out of 35 students who were sampled in this study an average of 10.46. The characteristics of respondents' data based on gender obtained in the study that out of 35 students who were sampled in this study, 60% were women and 40% were men.

TABLE 2: Level of Learning Concentration in Class V Elementary School Students Before and After Doing Brain Gym.

	Pre-test			Post-test	
		N	%	N	%
Learning Concentration	Very Low	22	62.9	-	-
	Low	11	31.7	-	-
	Moderate	2	5.7	8	27.9
	Hight	-	-	26	74.3
	Very high			1	2.9

Table 2 shows that out of 35 students who were respondents to this study at the time of the *pre-test* measured using *the Army Alpha Test*, 22 (62.9%) students experienced a very low concentration level then 11 (31.7%) students experienced a low concentration level, and 2 (5.7%) students experienced a moderate concentration level. Meanwhile, the *post-test* results of 8 (27.9%) experienced a moderate concentration level, then 26 (74.3%) experienced a high concentration level, and the remaining 1 (2.9%) experienced a very high concentration level and showed results that there was an increase in the learning concentration level of grade V elementary school students.

TABLE 3: Shapiro-Wilk Normality Test Results.

	Statistic	df	Sig.
Pretest	.773	35	.000
Posttest	.912	35	.008

Based on table 3 above, the significant value of the pretest (0.000) and posttest (0.008) concentration level score data is smaller than the α value of 0.05, so it can be concluded that the result data in this study is not normally distributed. Then the researcher

using the Wilcoxon test.

TABLE 4: Wilcoxon Test Statistics Test Results.

Posttest - Pretest
Z -5.182 ^b
Asymp. Sig. (2-tailed) .000

Based on the results of table 4 the Wilcoxon Test Statistics test results obtained a Z value of -5.1 82 with a significance value of 0.000 meaning that a significance value of <0.05 can be said that H0 rejected H1 is accepted. So, it was concluded that there was a difference in the level of concentration of learning for grade V elementary school students before brain gym was done and after *brain gym* was done. Or there is the influence of *Brain Gym* on increasing the learning concentration of grade V students at SD Plus Mutiara Ilmu Bangil.

4. DISCUSSION

4.1. Level of Learning Concentration of Grade V Elementary School Students Before Brain Gym

Based on the results of data analysis before *brain gym* was carried out, results were obtained according to table 5.2 showing that 62.9% of students experienced very low concentration levels then 31.7% of students experienced low concentration levels, and 5.7% of students experienced moderate concentration levels. The results explained that there was a level of learning concentration of grade V students experiencing a very low level of concentration, which was shown from the results of measuring concentration levels using the *Army Alpha Test*.

The Army Alpha test was used in this study because it is a standardized test to measure concentration endurance. *The Test Army Alpha* is a psychological measurement instrument, to see the general intellectual ability of oral instruction capture, speed, and accuracy. It is a *paper* and pencil test, and the shape is quite simple. The test consists of 12 questions with instructions

which is different, instructions 1 and 5 contain

commands to create a cross, instructions 2 and 7 contain commands to create a line, instructions 3 contain commands to create a comma, instructions 4 and 10 contain commands to create numbers, instructions 5 and 8 contain commands to create letters, instructions 6,9,11, and 12 contain commands to cross out and each question has a value weight of 1. What is measured in this test is the ability of individual capture or concentration power, in receiving and executing instructions quickly and precisely. In this test the narrator will give instructions and will not repeat those instructions, and the time given is limited. This test is used to evaluate a child's learning concentration before and after *the Brain Gym* treatment.

Based on the results of research that has been conducted at SD Plus Mutiara Ilmu Bangil, 35 respondents in this study were aged 9-12 years, at that age according to developmental theory including in late childhood (9-12 years) [16]. At the age of 9-12 years have had more intellectual or cognitive abilities in terms of receiving information, reading, writing and counting. At this time the child's intellectual abilities are already able to develop a broad mindset or reasoning power. At that age it should have been able to concentrate well, one of the interventions that can be carried out in children with problems of lack of concentration learning is through brain gymnastics, among others. Brain gymnastics or better known as *Brain Gym* is actually a series of simple movements performed to stimulate the work of brain function to the maximum. Initially brain gymnastics was used for children who have hyperactivity disorders, brain damage, difficulty concentrating and depression. But in its development, everyone can take advantage of it for a variety Uses. Currently in the American and European states brain gymnastics is popular because many people feel helped to release stress, clear their minds, and improve memory.

4.2. Level of Learning Concentration of Grade V Elementary School Students After Brain Gym

Giving Brain Gym for 5 days with a duration of ± 20 minutes, then given a test using *the Army Alpha Test* to measure concentration levels. The results obtained as in table 5.2 showed that respondents showed the level of concentration measured using 1 sheet of *Test Army Alpha* regarding a series of numbers and a series of shapes or images containing 12 questions, namely there was a majority of students 27.9% experienced a moderate concentration level, then 74.3% experienced a high concentration level, and the remaining 2.9% experienced a very high concentration level.

From the results of this study, it shows that the results of measuring the level of concentration of student learning after brain *gym* showed a significant increase in concentration. This is shown from the results of measuring the level of concentration using the *Army Alpha Test* in grade V elementary school students. This increase in concentration level is influenced because brain gym intervention has been carried out at the time of *brain gym* the students look very happy and enjoy every movement of *Brain Gym*. The results above can be said that light movements with play through the hands and feet can provide a stimulus to the brain.

The increase in concentration is influenced by the presence of factors that can increase the concentration of student learning again. This is in accordance with the theory proposed by (Susanto Ahmad, 2013) that there are several things that can affect the increase in concentration, including is stimulation. The stimulation provided is in the form of *Brain Gym* training, because *Brain Gym* has many benefits including increased memory, learning achievement, creativity, and concentration (Dennison. E Paul, 2010).

According to (Dennison. E Paul, 2010) handling students' lack of learning concentration while studying in a way that has been done by *Brain Gym* regularly. Learning will be very effective if the brain functions optimally, and if the brain works beyond the maximum limit of its proper functioning, there will be an imbalance between the right brain and the left brain which will cause the brain to become tired so that concentration in learning will decrease. In addition, a fun method is needed to support students to be more relaxed in learning. One of them is the *Brain Gym* which has been done a series of simple movements that are done to stimulate the work of brain function to the maximum. *Brain Gym* has the potential to stimulate one's capturing power, especially for students. Movement in the *Brain Gym* will activate the neural connection between the body and the brain making it easier for the flow of electromagnetic energy throughout the body. According to [19] one of the factors that can influence concentration is the physical factor.

Light movements performed in the *Brain Gym* can provide a stimulus to the brain by facilitating blood flow and stretching nerve muscles caused by fatigue and excessive stress caused by studying for too long. When the blood flow to the brain is smooth, the brain will get enough oxygen so that it can function optimally again and will increase the ability to concentrate (Chyquitita, 2018).

4.3. Analysis of Differences in Learning Concentration Levels of Grade V Elementary School Students Before and After Brain Gymnastics (Brain Gym)

From the results of the analysis calculation using SPSS 22 non-parametric tests, namely Wilcoxon, it was found that there was a significant difference between the level of learning concentration of grade V elementary school students before and after *brain gym* was carried out.

The success of *Brain Gym* as a way to improve learning concentration in students. This is an easy way to help students manage their own learning concentration, because *Brain Gym* is a series of simple and fun movements that students use to improve their abilities while learning using the entire brain. *Brain Gym* can be done to refresh students' physique and mind after undergoing a learning process that can cause tension in the brain so that it will be able to directly reduce the concentration of learning in students.

Brain Gym movements can cause the release of the hormone endorphin. Endorphin is a hormone produced by the pituitary gland located in the hypothalamus. This endorphin hormone will be produced if a person is exercising and in a happy state. This endorphin hormone is commonly referred to as the hormone of happiness, because the hormone endorphin can make a person happy. Endorphin hormones will be released when the human body needs to relieve pain, when exercising, relaxation and when activities have been carried out that make the person feel comfortable and happy. Therefore, endorphin hormones will provide a sense of comfort and the body will relax when movement activities have been carried out on the body. Movement activities on the body will appear when a person has done a *Brain Gym*, so that when students can have done *Brain Gym* regularly then it will trigger the release of endorphin hormones. Endorphin hormones can make students calmer, as well as the body will become easier to control. If the body is in a calm state, then students are able to more easily focus their attention when the learning process takes place [20].

Brain Gym will also activate the three dimensions of the brain, namely dimension, laterality, focusing, and concentration. The movements in the *Brain Gym* will activate the hemispheres of the right brain and the left brain so that there will be cooperation between the two. Both hemispheres (hemispheres) of the brain are spliced by the corpus callosum. If the information that has been obtained from the two hemispheres of the brain quickly works together, the learning ability can be optimal which is balanced with good learning concentration. *Brain Gym* movement can improve the ability to process

information, namely when receiving stimuli, selection until the onset of motion activity (Bilwalidayni, 2017).

Light movements performed in the *Brain Gym* can provide a stimulus to the brain by facilitating blood flow and stretching nerve muscles caused by fatigue and excessive stress caused by learning. When the blood flow to the brain is smooth, the brain will get enough oxygen so that it can function again optimally and will increase the ability to concentrate (Chyquitita, 2018). *Brain Gym* training is carried out consecutively and regularly will be able to increase the positive impact, which can improve the cognitive of students in the teaching and learning process at school (Dennison. E Paul, 2010). *Brain Gym* has many benefits including stimulating, maximizing brain function, can

Thinking becomes more positive, increases self-confidence, can control stress well, and improves concentration.

Such as the research conducted by [22] entitled Application of *Brain Gym* to Improve Cognitive Development of Children Aged 4-6 Years in Marsudi Putro Kindergarten Yogyakarta. The results of the analysis were carried out using the Wilcoxon statistical test with significance values ($p = 0.001 < 0.05$) there was cognitive development of children after *Brain Gym* therapy partly in the category of 9 respondents (45%), who before brain *gym* therapy was mostly in the category of deviant 15 respondents (75%). This suggests that *Brain Gym* therapy can improve the cognitive development of children aged 4-6 years.

5. CONCLUSION

Based on the results of research on the Difference in Learning Concentration Levels of Grade V Elementary School Students Before and After Brain Gymnastics, the researchers drew the following conclusions:

1. The level of student learning concentration measured using *the Army Alpha Test* before brain *gym* was obtained by most students 62.9% very low concentration level and 31.7% low concentration level students.
2. The level of concentration of student learning measured using the *Army Alpha Test* after brain *gym* was obtained the majority of 74.3% of students had a high concentration level, and 27.9% of students had a moderate concentration level.
3. Based on the results of research using the *Wilcoxon Test*, a large Z value of -5,180 was obtained with a significance value of 0.000, meaning that a significance value of <0.05 can be said that H_0 is rejected and H_1 is accepted. So, it was concluded

that there was a difference in the level of concentration of learning of class V students before it was carried out with after the Brain Gym was carried out.

References

- [1] Idrus L. EVALUASI DALAM PROSES PEMBELAJARAN Idrus L 1. Eval. Dalam Proses Pembelajaran. 2019;(2):920–35.
- [2] Krismiyati K. Pengembangan Sumber Daya Manusia dalam Meningkatkan Kualitas Pendidikan di SD Negeri Inpres Angkasa Biak (Human Resource Development in Improving The Quality of Education at SD Negeri Inpres Angkasa Biak). J. Off. 2017;3(1):43.
- [3] Asiah N. Pembelajaran Calistung Pendidikan Anak Usia Dini Dan Ujian Masuk Calistung Sekolah Dasar Di Bandar Lampung. Terampil J. Pendidik. dan Pembelajaran Dasar. 2018;5(1): <https://doi.org/10.24042/terampil.v5i1.2746..>
- [4] K. P. dan Kebudayaan., “Klasifikasi Pendidikan di Indonesia.”
- [5] Djamarah SB. Rahasia sukses belajar (Revisi ed.). Jakarta, Indonesia: PT Rineka Cipta., 2008.
- [6] Fleeson M. W., Jayawickreme, E., Jones, A. B. A. P., Brown, N. A., Serfass, D. G., Sherman, R. A., ... Matyjek-, “Pemaparan metode penelitian kuantitatif,.” J Pers Soc Psychol. 2017;51(11):1188–97.
- [7] W. Prasetyo and S. A. Saputra, “PENGARUH SENAMOTAK TERHADAP DAYA INGATANAK KELAS V SEKOLAHDASAR,” AKPER William Booth Surabaya, no. 20, 2016.
- [8] Depkes R. Capaian Pembangunan Kesehatan Tahun 2011. Jakarta, 2010.
- [9] Sutarjo, Adisusilo. Pembelajaran Nilai-Karakter: Konstruktivisme dan VCT sebagai Inovasi Pendekatan Pembelajaran Afektif. Jakarta: PT. Raja Grafindo Persada., 2014.
- [10] Basuki HO, Faizah HN. The Effect of Brain Gym on the Learning Concentration of Student in STIKES NU Tuban. J. Keperawatan. 2020;11(1):38–44.
- [11] Chyquitita T. Pengaruh Brain Gym terhadap Konsentrasi Belajar Siswa Kelas XI IPA dalam Pembelajaran Matematika di SMA XYZ. A J. Lang. Lit. Cult. Educ. 2018;14:39–52.
- [12] Ikbal B, Sutria E, Hidayah N. PENGARUH SENAM OTAK TERHADAP KONSENTRASI BELAJAR MAHASISWA KEPERAWATAN UIN ALAUDDIN MAKASSAR Bilwalidayni. J. Islam. Nurs. 2017;2:52–9.
- [13] Pratiwi WN, Pratama YG. Brain Gym Optimizing Concentration on Elementary Students. Str. J. Ilm. Kesehat. 2020;9(2):1524–32.

- [14] Panzilion. Perkembangan Motorik Prasekolah antara Intervensi Brain Gym dengan Puzzle. 2020;2507(February):1–9.
- [15] Suratun S. Pengaruh Brain Gym Terhadap Konsentrasi Belajar Siswa. J. Keperawatan Muhammadiyah. 2020;5(1):101–5.
- [16] Sumantri Mulyani SN. Perkembangan Peserta Didik, (Atmana su. Jakarta, 2010.
- [17] Ahmad S. Perkembangan Anak Usia Dini: Pengantar Dalam Berbagai Aspeknya. (1st ed.). Jakarta, 2011.
- [18] Dennison P. Brain Gym. Jakarta: PT Gramedia; 2009.
- [19] Slameto, Belajar dan Faktor-Faktor yang Mempengaruhinya. Jakarta: Rineka Cipta; 2010.
- [20] Henny. Pemberian Brain Gym Terhadap Hasil Belajar Matematika Pada Siswa Kelas III di SDN Balongrejo. 2014.
- [21] Bilwalidayni I. Pengaruh Senam Otak Terhadap Konsentrasi Belajar Mahasiswa Keperawatan UIN ALaudin Makassar. 2017.
- [22] Aprilasari Mutia Sanda. Penerapan Brain Gym Untuk Meningkatkan Perkembangan Kognitif Anak Usia 4-6 Tahun Di TK Marsudi Putro Yogyakarta. 2017.