

## The Effect of Brain Gym on Study Concentration in UIMA Nursing Students in 2022

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### Abstract

**Background:** Learning concentration is a person's condition and ability to focus their thoughts and attention in the learning process. Brain gym can increase O<sub>2</sub> supply, memory, focus and reduce tension, thereby increasing concentration in learning.

**Objectives:** To determine the effect of the brain gym on the level of learning concentration among Indonesia Maju University, Nursing Students in 2022.

**Methods:** Quantitative type of research. The research design used one group pre-test and post-test with a sample of 87 nursing students. The instruments used in the research were the brain gym SOP and the army alpha intelligence test sheet containing questions related to the pre-test and post-test. Data analysis used the Wilcoxon Test statistical test.

**Results:** The average level of student learning concentration before brain gym was in the low category (66.7%) and after brain gym, the average level of student learning concentration was in the high category (74%). Asymp value result. Sig. 2 tailed is 0.000, so the hypothesis is accepted because  $0.000 < 0.05$ .

**Conclusion:** There is an influence of the brain gym on the level of learning concentration of UIMA nursing students in 2022.

**Keywords:** brain gym, study concentration, students

### Introduction

The Program for International Student Assessment (PISA) surveys and ranks the quality of education in all countries in the world. In 2018, the Organization for Economic Cooperation and Development (OECD) announced the results of the Program for International Student Assessment (PISA) survey which received an unsatisfactory rating as in previous years. In 2015, Indonesia ranked 64th out of 72. country, then in 2018, Indonesia was in a very low ranking, namely 73 out of 79 countries. The highest rankings were achieved by China and Singapore.<sup>1</sup> In Indonesia and other Eastern countries, many successful people use intuition to solve the problems they face. On the other hand, people who are also successful in the West use the ratio more. This means that success will be easier to obtain if we can use intuition (right brain) and reason (left brain). However, according to research he has reported, only 3% of the world's population uses their brains in a balanced way.<sup>2</sup>

Education is an important part of supporting the government to realize the nation's ideals. Education begins with the learning process and interaction occurs between students and their environment. If the learning objectives are achieved then the learning process is considered successful. Education is a guide to human life in determining the direction, purpose, and meaning of life. Humans experience an educational process from the womb to old age because education is an element that cannot be separated from humans.<sup>3</sup> Learning concentration is a person's condition and ability to focus their thoughts and attention in the learning process. Concentration is an individual's effort to focus attention on an object. Learning concentration is very important in the learning process because the greater the concentration in learning, the better the learning results will be. Concentration is important to make it easier to master the material provided by the teacher or lecturer and to increase enthusiasm and motivation to be more active during the learning process. If someone has trouble concentrating then the teaching and learning process will not be optimal and will only waste time, energy, and money. Characteristics of someone who is not concentrating include often getting bored with something, always moving around, not listening, and changing the conversation when asked to talk.<sup>3</sup> If someone, especially a student, experiences problems concentrating on learning, learning activities will experience obstacles, and student achievement will not be optimal.<sup>4</sup> Poor study concentration will affect student learning achievement which can which in unsatisfactory learning results.<sup>5</sup>

The brain is a part of the body that functions as a center for controlling organs. The brain and body organs are related to a person's intelligence and ability to concentrate, especially for students in learning activities. An individual's ability to focus attention on the object being studied influences the success of the learning process in lectures. According to Ali & Aminoto, n.d., learning concentration can be improved by using the brain gym method.<sup>6</sup> According to Denison, founder of Brain Gym, the basis of Brain Gym is the interdependence between movement, cognitive, and learning processes.<sup>7</sup> Brain gym can be done by stimulating brain waves through light movements with games using hands and feet so that it can improve learning ability and concentration.<sup>8</sup>

Brain gym is expected to improve blood flow and stretch nerve muscles due to stress and fatigue during excessive studying because the brain gym method focuses on movement activities to draw out a person's full potential. Initially, brain gym was used for children who had hyperactive disorders, brain damage, difficulty concentrating, and people who experienced depression. As time went by, brain gym or brain gymnastics was used for various purposes and currently brain gym is popular in America and Europe because many people feel the benefits of it. Brain gym can relieve stress, improve memory, clear your mind, increase concentration and so on.<sup>9</sup>

Students are individuals who are taking part in the stages of education in higher education, both at state universities and private universities or at other educational institutions at the same level. Students are also said to be an intellectual group who have intelligence and the ability to think critically and be quick and precise in acting.<sup>10</sup> Nursing students are one of the students who are active in various activities. Apart from studying, nursing students also do assignments and practice on campus and practice in hospitals. Therefore, concentration is very necessary for students, especially nursing students, to continue to achieve learning achievements even though activities are very busy. The results of research conducted by (Anastria, 2018) show that providing a brain gym affects concentration abilities.<sup>11</sup> Other research such as that conducted by (Nurhayati & Homdijah, 2020) shows that brain gym can improve learning concentration abilities in children with mild intellectual disabilities.<sup>12</sup>

Based on the results of a preliminary study with interviews with 10 Bachelor of Nursing

students from the University of Indonesia Maju, it was found that 10 out of 16 students had difficulty concentrating, 10 out of 16 students paid less attention to the explanations of lecturers who were giving material during learning. Based on the results of observations, students seemed to pay less attention to the lecturer when it was the final minute and some students were playing with gadgets. This research is important to carry out because the results of a preliminary study using interviews and objectives showed that not all of the students in the 5th semester of Bachelor of Nursing at Advanced Indonesia University were focused and concentrated during the learning process. After conducting interview observations with 16 5th semester undergraduate nursing students, 10 out of 16 students paid less attention to the explanations of the lecturer who was giving the material during learning and they only paid attention to the explanation of the material by the lecturer only in the first minute of learning.

The ability to concentrate or focus attention is important in carrying out daily activities at school, work, home, or in the social environment because, in the ability to concentrate, there is a process of focusing on one thing so that one can carry out activities well. If someone, especially a student experience problem with concentration, learning activities will experience obstacles and student achievement will not be optimal. Movement sports intervention with brain gym is expected to increase O<sub>2</sub> supply, memory, focus and reduce tension, so that students' learning concentration increases in following the learning process.<sup>8</sup> Researchers used the brain gym intervention because it is easy for everyone from babies to the elderly to do and can be done anywhere, anytime and does not require a lot of energy to do it.<sup>8</sup> The research aims to determine the effect of brain gym on the level of learning concentration in Nursing Students at Advanced Indonesia University.

## Methods

Type of quantitative research. The research design uses one group pre-test and post-test. The design is carried out through pre-test observation first, then intervention or treatment is given, then a post-test is given so that changes can be seen before and after the intervention or treatment is given. One group pre-test and post-test design has no control as a comparison between groups.<sup>13</sup> The population of this research is students from the University of Indonesia Advanced Nursing Study Program Semester 5 2022. The number of students is students from the University of Indonesia Maju, Nursing Study Program Semester 5, namely 112 students. Samples were taken using purposive sampling, namely taking samples that met the inclusion criteria. Research instruments are tools used to measure variables in collecting research data. The instruments used in the research were the brain gym SOP and a questionnaire sheet or army alpha questionnaire containing questions related to the pre-test and post-test. The instruments in the research have been standardized and are official or standard, so validity and reliability are not tested.<sup>14</sup> Data analysis used the Wilcoxon Rank Test.

## Results

### Univariate Analysis

**Table 1.** Frequency Distribution of Students' Learning Concentration Levels Before Brain Gym

Concentration level	Frequency	Percentage (%)
Low	58	66,7 %
Currently	28	32,2 %
Tall	1	1,1 %
Total	87	100 %

Based on the frequency distribution of pre-test concentration levels in [table 1](#), the results

obtained from 87 respondents, namely 58 (66.7%) respondents had low concentration levels, 28 (32.2%) respondents had medium concentration levels and 1 (1.1%) respondent had high levels of concentration.

**Table 2.** Frequency Distribution of Students' Learning Concentration Levels After Doing Brain Gym

Concentration level	Frequency	Percentage (%)
Currently	22	25,3%
Tall	65	74%
Total	87	100%

Based on the frequency distribution of post-test concentration levels or after brainstorming in [table 2](#), results were obtained from 87 respondents, namely 22 (25.3%) respondents had moderate concentration levels, and 65 (74%) respondents had high concentration levels.

**Table 3.** Shapiro Wilk normality test

	Statistic	df	Sig.
Pre-test	0,915	87	0,000
Post-test	0,909	87	0,000

The table above shows that from 87 respondents to the normality test, the p-value obtained on the Shapiro-Wilk pre-test was  $p = 0.000$  and post-test  $p = 0.000$ . So, it can be concluded that  $p < \alpha (0.05)$ , so it can be concluded that the data is not normally distributed. Because the data was not normally distributed or non-parametric, the Wilcoxon test was carried out.

### Bivariate Analysis

**Table 3.** Wilcoxon test

	N	Mean Rank	Sum of Ranks
Post-test and Pre-test			
Negative Ranks	0	0,00	0,00
Positive Rank	86	43,50	3741,00
Ties	1		
Total	87		

Based on the Wilcoxon test results, a negative rank 0 result was obtained, meaning there was no decrease in the respondent's concentration from the pre-test to the post-test. In the positive rank results, it was found that 86 respondents experienced an increase in concentration seen from the results from pre-test to post-test and the results were tied 1, which means there was 1 respondent whose learning concentration results were the same seen from the pre-test and post-test. The conclusion is that there was an increase in concentration levels after being given brain gym, as seen from the pretest and posttest.

**Table 4.** Wilcoxon test

	Post-test and Pre-test
Z	-8,090
Asymp. Sig. (2-tailed)	0,000

Based on the results of the Wilcoxon test, the asymp value was obtained. Sig. (2 tailed) is 0.000, so the hypothesis is accepted because  $0.000 < 0.05$  and it can be concluded that there is an influence of the brain gym on the level of learning concentration of UIMA nursing students.

## Discussion

### Univariate Analysis

Based on the frequency distribution of pretest concentration levels, results were obtained from 87 respondents, namely 58 (66.7%) respondents had low concentration levels, 28 (32.2%) respondents had medium concentration levels and 1 (1.1%) respondent had high concentration levels. This means that of the 87 respondents, the average concentration level of respondents before doing the brain gym was in the low range, 58 respondents were in the low range and 28 respondents were in the medium concentration level. Based on the frequency distribution, there was an increase, namely the post-test concentration level or after the brain gym was carried out, results were obtained from 87 respondents, namely 22 (25.3%) respondents had a concentration level in the medium category, 65 (74%) respondents had a concentration level in the high category.

The results of the research are in line with research conducted by (Anita Pramesti et al., n.d.), it was found that the results of measuring the level of concentration before the brain gym was carried out on school children showed that the average level of concentration was in the low category and after the brain gym intervention was carried out the concentration level experienced a significant increase. The results of this research were that there was an increase in the level of concentration of school children aged 9 to 10 years after being given brain gym intervention or brain exercises with the results of measuring the level of concentration using the Army Alpha Intelligence test with an average test score of 7 which means the level of concentration is moderate.<sup>8</sup> Further research that supports this is research conducted by (Nurmalasari et al., 2022), the results of research at SD Negeri Kerten Surakarta showed that there was an increase in concentration after the brain gym intervention, before the intervention the average level of concentration of students in the category was very low and after brain gym intervention concentration level scores increased to the medium category.<sup>15</sup>

Other research that supports this is research conducted by (Yanti, 2018), the results of which showed an increase in learning concentration in students after being given a brain gym or brain exercises. Based on the results of parametric statistical test values using SPSS output, the Sig value was obtained. (2-tailed) sample t-test is 0.000, meaning the probability is below 0.05 ( $0.000 < 0.05$ ). Therefore, there is a significant difference in the average level of student concentration between the pre-test score and the post-test score with the post-test average score of 18.933 being higher than the pre-test average score of 3.733.<sup>16</sup> The normality test obtained a p-value of the Shapiro-Wilk pretest, namely  $p = 0.000$  and posttest  $p = 0.000$ . So, it can be concluded that  $p < \alpha$  (0.05), so it can be concluded that the data is not normally distributed. Because the data was not normally distributed or non-parametric, the Wilcoxon test was carried out.

Supporting research was conducted by (Maulana, 2017). The results of this research were that there was an increase in student learning concentration after it was carried out with t-test results = 15.587 and p-value = 0.000 ( $p < 0.01$ ). Before the brain gym was carried out, the student's concentration level was in a low category and after the brain gym was carried out, the student's concentration level increased to the high category. With guidance services through the brain gym method, you can increase your study concentration.<sup>17</sup>

In theory, when the brain's function is working optimally, learning will be very effective and conversely, if the brain functions excessively, there will be an imbalance between the left brain and the right brain, which will cause learning concentration to decrease because the brain is tired. The brain gym method can stretch nerve muscles due to study stress and fatigue and can improve blood flow.



The researchers concluded that the student's level of concentration on learning before the brain gym was carried out was low. After all, at the time of the research, the students' brains were already tired because the students had been studying in class from morning to evening, so there was an imbalance between the left brain and the right brain, which then caused learning concentration to decrease. Then, after doing the brain gym, the left and right brains return to balance and relax so that students' learning concentration increases.

### **Bivariate Analysis**

Based on the results of statistical tests using the Wilcoxon signed rank test on 87 respondents, the ASYMP value was obtained. Sig. (2 tailed) is 0.000, so the hypothesis is accepted because  $0.000 < 0.05$  and it can be concluded that there is an influence of the brain gym on the level of learning concentration of UIMA nursing students. Related research that is in line is research (Pipit et al., 2020) The results of this research are that there is a positive influence of brain exercise on learning concentration with the results of  $t = 6.622 > t \text{ table} = 2.056$  with a significance of  $0.000 > 0.005$ . The higher the influence of the application of brain gymnastics, the higher the student's learning concentration, with the result that there is an influence of the brain gym on the level of learning concentration in students.<sup>18</sup>

Other research that supports this is research conducted by Ikbal et al. (2019) research results showed that the comparison data between the pre-test and post-test in the control group resulted in a value of  $p = 0.083$  or  $p > 0.05$ , which means that  $H_a$  was rejected, meaning there was no effect of brain exercise on students' learning concentration. then in the intervention group the result was  $p = 0.003$  or  $p < 0.05$ , which means that in the intervention group  $H_a$  was accepted, meaning that there was an influence of brain exercise on the learning concentration of nursing students at UIN Alauddin Makassar. It can be concluded that in the intervention group there was an influence of brain exercise on the learning concentration of nursing students at UIN Alauddin Makassar.<sup>4</sup>

Supporting research is research conducted by Bili et al. (2019) The research results showed that the results of the paired sample t-test were obtained with a sig value. (2-tailed)  $0.000 < 0.05$  and it can be concluded that there is a difference in the average learning concentration of students in the pre-test and post-test in the brain gym intervention group. The results of the research show that there is an influence of brain gym on learning concentration and brain gym is an effective way to increase learning concentration.<sup>19</sup> Other research that supports this is research conducted by Kurniawan (2020), the results of which show that brain exercise or brain gym can reduce students' boredom levels in the lecture process and can help with learning motivation and increase study concentration. Brain gym movements can help the effectiveness of lectures thereby increasing focus, increasing concentration and increasing understanding of learning.<sup>20</sup>

Further research that supports this is research conducted by (Ummu et al., 2022) the results of the analysis of 13 journal articles using the library study research method by collecting Google Scholar journals with bibliographic annotation data analysis techniques, it was found that by stimulating the work of both sides of the brain, namely the left brain and right in a balanced way using brain gym or brain exercises can increase learning concentration by doing it for a minimum of 10 to 14 minutes. Brain gym can be done before starting learning activities in class, during the learning process or between lessons and after learning to relax and concentrate on receiving learning.<sup>21</sup>

Other research that supports this is research conducted by (Aryanto, 2022) the results of the research were that there was an increase in learning concentration after Brain Gym was carried out with the results of students' concentration levels before Brain Gym was carried out,

namely 65% of 77 students were in a low category and after brain gym was carried out The results obtained were that 88.75% of students had their concentration level in the medium category. This is proven by the student's ability to do brain gym movements so that the brain is trained to increase focus.<sup>22</sup>

In theory, when someone often thinks hard, their thinking power will decrease, and the brain will experience fatigue which will decrease concentration. Brain gym can increase O<sub>2</sub> supply, memory, focus and reduce tension. By doing brain gym you can increase your concentration level in learning and your brain will work better.<sup>2</sup> Intelligence, the process of learning, thinking and creativity found in a person not only involves the brain but also the whole body. Sensation and movement as well as the integration functions of the brain all originate from the body, so a system is needed that can connect the body and mind. Brain exercise is a collection of simple body movements that aim to connect or unite the body and mind.<sup>23</sup>

Researchers concluded that concentration is a very important aspect for someone, especially students, to achieve success in the learning process and maximum learning outcomes. The higher the level of concentration, the higher the learning outcomes. Maximum concentration of attention will increase students' ability to understand and absorb the information obtained. Concentration levels will increase with brain gym because brain gym can increase O<sub>2</sub> supply, memory, focus, and reduce tension so that students' learning concentration increases in following the learning process.

### **Conclusion**

Based on the results of research conducted on the influence of the brain gym on the level of learning concentration of UIMA nursing students in 2022 with a total of 87 respondents, it can be concluded that:

Based on the frequency distribution of pretest concentration levels, results were obtained from 87 respondents, namely 58 (66.7%) respondents had low concentration levels, 28 (32.2%) respondents had medium concentration levels and 1 (1.1%) respondent had high concentration levels. This means that of the 87 respondents, the average concentration level of respondents before doing the brain gym was in the low range, 58 respondents were in the low range and 28 respondents were in the medium concentration level. Based on the frequency distribution, there was an increase, namely the posttest concentration level or after the brain gym was carried out, results were obtained from 87 respondents, namely 22 (25.3%) respondents had a concentration level in the medium range, 65 (74%) respondents had a concentration level in the high range. There is an influence of brain gym on the level of learning concentration of UIMA nursing students in 2022 with a p-value of 0.000.

### **Conflict of Interest Declaration**

The researcher declares that this research is independent of individual and organizational conflicts of interest

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