

EFFECT OF BRAIN GYM ON MEMORY CHILDREN 7-13 YEARS OLD

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ABSTRAK

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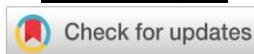
Brain Gym,
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Abstract:

The density of children's daily activities causes children stress, as a result children become bored and do not have the opportunity to relax and play, releasing energy and emotional tension experienced. This study aims to determine the effect of brain gym on the memory of children aged 7-13 years at SDN 3 Sukatani, Tangerang Regency. This study used a quantitative approach. The research method to be used in this study is Pre-Experiment with One Group Pretest Posttest Design. The statistical analysis test used is the Wilcoxon Signed Rank Test. Sampling was carried out using Total Sampling, researchers used grade V students at SDN 3 Sukatani, which was as many as 100 students. The Wilcoxon Signed Rank Test showed that there was a significant influence between the level of memory before and after brain gym for 4 times a week in 2 weeks, obtained a significant level of $p = 0.000$ ($p = <0.005$) thus H_a was accepted. There is an influence of brain gym on the memory of children aged 7-13 years at Public Elementary School 3 Sukatani, Tangerang Regency. It is expected that brain gym movements can increase blood flow and stretch the auto-nerve muscles due to fatigue and excessive learning stress. With regular practice, all brain disorders experienced by children when learning will be resolved.

Abstrak:

Padatnya aktivitas anak sehari-hari menyebabkan anak stres, sebagai akibatnya anak menjadi bosan serta tidak mempunyai kesempatan untuk santai dan bermain, melepaskan energi dan ketegangan emosional yang dialaminya. Penelitian ini bertujuan untuk mengetahui pengaruh senam otak terhadap daya ingat anak usia 7-13 tahun di SDN 3 Sukatani Kabupaten Tangerang. Penelitian ini menggunakan pendekatan kuantitatif. Metode penelitian yang akan digunakan dalam penelitian ini adalah Pre Eksperimen dengan rancangan One Group Pretest Posttest Design. Uji analisis statistik yang digunakan adalah uji Wilcoxon Signed Rank Test. Pengambilan sampel yang dilakukan menggunakan Total Sampling, peneliti menggunakan siswa kelas V di SDN 3 Sukatani, yaitu sebanyak 100 siswa. Pada uji Wilcoxon Signed Rank Test menunjukkan bahwa terdapat pengaruh yang signifikan antara tingkat daya ingat sebelum dan sesudah diberikan senam otak selama 4 kali seminggu dalam 2 minggu, diperoleh tingkat signifikan $p = 0,000$ ($p = <0,005$) dengan demikian H_a diterima. Terdapat pengaruh senam otak terhadap daya ingat anak usia 7-13 tahun di Sekolah Dasar Negeri 3 Sukatani Kabupaten Tangerang. Diharapkan dengan gerakan senam otak dapat meningkatkan aliran darah serta meregangkan otot-otot syaraf akibat kelelahan dan stres belajar yang berlebihan. Dengan latihan rutin, semua gangguan otak yang dialami anak ketika belajar akan teratasi.



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INTRODUCTION

According to the WHO (World Health Organization) 5-25% of school-age children have mild brain problems, including impaired fine motor development. Currently, most of the problems of child growth and development are increasing, both in developed and developing countries including Indonesia. Problems that occur in Indonesia include fine motor and gross motor development, hearing problems, low intelligence and speech delays. In Indonesia alone there is no specific figure for the number of children who have learning difficulties [1].

The proportion of difficulties or obstacles in children aged 5-17 years according to the Regency / City in Banten Province, namely Tangerang, reached 6.84% [2]. At the primary level, only 23% of grade 4 students were able to meet the national minimum maths proficiency, and only 53% in reading at the time of the last Indonesia National Assessment Programme (INAP) survey in 2016. Many students across Indonesia have difficulty obtaining basic academics, this can already be seen from a number of national and international learning assessments [3].

Growth counseling agency records that 4 out of 5 children aged 2 to 15 suffer from stress. The National Commission on Child Protection received an average of 200 problems each month, up 28% from the previous year. Activities and dense activities or daily routines cause 82.2% of children stress in Indonesia as a result of which children become bored and do not have the opportunity to relax and play, releasing the energy and emotional tension they experience [4].

According to Cahyo, brain gym is a series of simple movements designed to stimulate brain optimization. It involves balancing the right and left brain, relaxing the hindbrain and forebrain as focusing dimensions, stimulating the midbrain or limbic system in emotion regulation and stimulating the concentration dimension in the cerebrum [5].

The first time brain gym was used for children with hyperactivity disorders, brain damage, poor concentration and depression. But in its development anyone can use it for various purposes, brain gym exercises are currently commonly used and are in vogue in America and Europe. Many people find it helpful in reducing stress, clearing the mind, improving memory, and concentration. Because the method of brain gym training is basically focused on the use of movement activities to expend all the energy a person expects, with brain gym movements can increase blood flow and stretch the auto-nerve muscles due to fatigue and excessive learning stress. School-age children actively benefit from brain gym training. This activity provides a holistic approach that helps increase motivation [5].

According to Ahmadi & Supriyono, memory is a force that can receive, store, and reproduce impressions or experiences [7]. In school-age children, children's brain development in memory is very good. Memory is one of the factors that greatly influence, especially in the learning process and the improvement of children's academic achievement [7].

Based on the results of a preliminary study at SDN 3 Sukatani, Tangerang Regency on March 30, 2022, the data obtained by the number of female students is 524 students, of which grade 5 has 100 students. Based on the findings, it is seen that during learning, students are less active and lack focus or concentration. When students get questions from the teacher about the material that has been delivered at the previous meeting, many students cannot answer. The concentration of learning that students have is lacking, it can be seen that when learning takes place many students chat and joke with their friends, some even do not pay attention to the teacher while delivering lessons. From the observations, it can be concluded that students' memory and concentration are low.

Based on the above background, the percentage of children who experience difficulties or obstacles in children aged 5-17

years according to the Regency / City in Banten Province, namely Tangerang, reached 6.84%. At the primary level, only 23% of grade 4 students are able to meet the national minimum math proficiency, and only 53% in reading. So, the formulation of the research problem above can be concluded that the problem to be known in this study is whether there is an influence of brain gym on the memory of children aged 7-13 years at SDN 3 Sukatani.

RESEARCH METHOD

This study uses a quantitative approach because respondent data is in the form of numbers and analysis is in the form of statistics [7]. The research method to be used in this study is Pre-Experiment with One Group Pretest Posttest Design. Brain gym is performed for 4 times in 2 weeks in the morning before the lesson starts [8]. This research was conducted at SDN 3 Sukatani. The study was conducted in June-August 2022. The sampling was carried out using Total Sampling, researchers used grade V students at SDN 3 Sukatani in 2022, which was 100 students.

The type of instrument used in this study was a questionnaire. The research instrument used in this study was tested for validity and reliability by researchers at SDN 5 Sukatani in July, a questionnaire of cognitive aspects (memory level) totaling 9 questions. declared valid and reliable R Table value (≥ 0.361) and reliable value (≥ 0.6) [9]. Meanwhile, in the digit span test questionnaire consisting of forward span digits and backward span digits, each of which consists of 8 sets of words, is declared valid and reliable r value (≥ 0.361) and reliable value (≥ 0.06), the validity and reality test results of 16 questions are invalid and reliable. So that questionnaires can be used as measuring instruments in research [10]. The researcher gave a pretest questionnaire to respondents and gave 30

minutes to fill out the questionnaire, after the questionnaire was completed the respondent collected the questionnaire to the researcher. Researchers corrected whether all questionnaires had been answered by respondents. Researchers treated respondents by teaching brain gym 10-15 minutes within 2 weeks and researchers assessed respondents to determine the level of concentration of respondents. This is in line with the statement of Wahyu Megawati, 2017 that within 2 weeks brain gym can improve hearing acuity, memory, and language impairment abilities. A week later the researcher collected respondents and gave a posttest questionnaire to the respondents and gave 30 minutes to fill out the questionnaire, after the questionnaire was completed the respondents collected the questionnaire to the researcher. Researchers corrected whether all questionnaires had been answered by respondents [8].

After the data is collected, the researcher analyzes the data to get the results of the study.

RESULTS AND ANALYSIS

RESULT

Table 1.
Frequency Distribution of Respondent Characteristics

Characteristic	n	%	
Age	9 Years	5	5
	10 Years	39	39
	11 Years	54	54
	12 Years	2	2
Gender	Man	50	50
	Woman	50	50
Sum	100	100	

Table 1 shows that out of 100 respondents, there were 5 people aged 9 years, 39 people aged 10 years, 54 people aged 11 years, and 2 people aged 12 years. While the results of gender research show that between men and women have the same frequency, which is 50 (50.0%).

Table 2.
Frequency distribution of children's memory levels before brain gym

Memory before brain gym		Pre-test	
		n	%
Cognitive Aspects	High cognitive problems (Low Memory)	0	0
	Moderate cognitive problems (Moderate memory)	18	18
	Low cognitive problems (High memory)	82	82
Digit Span Test	High memory	2	2
	Medium memory	60	60
	Low memory	38	38
	Sum	100	100

Table 2 shows that the frequency distribution of children's memory levels before being given brain gym intervention is mostly classified as high memory, which is as many as 82 respondents (82%), judging from measurements using the Digit Span Test, children's memory is mostly classified as medium, as many as 60 respondents (60.0%).

Table 3.
Frequency distribution of children's memory levels after brain gym

Memory after brain gym		Post-test	
		n	%
Cognitive Aspects	High cognitive problems (Low Memory)	0	0
	Moderate cognitive problems (Moderate memory)	5	5
	Low cognitive problems (High memory)	95	95
Digit Span Test	High memory	40	40
	Medium memory	60	60
	Low memory	0	0
	Sum	100	100

Table 3 shows that the frequency distribution of children's memory levels after being given brain gym intervention is mostly

classified as high memory, which is as many as 95 respondents (95.0%), judging from measurements using the Digit Span Test of high memory children's memory which originally had 2 respondents (2.0%) increased to 40 respondents (40.0%) with a difference between the two (38.0%).

Table 4.
Normality Distribution of Memory Levels Before and After Brain Gym

Test Stages	P
Before	0.004
After	0.002

Table 4 shows that the significance values before and after brain gym were abnormally distributed ($p < 0.05$). The conclusion of the normality test shows that this study can use the Wilcoxon Signed Rank Test analysis test.

Table 5.
Hasil Uji Wilcoxon Signed Rank Test

Memory Level	Mean	SD	Z Calculate	p
Before	20.45	3.509	-5.743	<0.001
After	18.76	3.882		

The results of the statistical test show the results of the Wilcoxon Signed Rank Test that it can be known that the Z value is -5.743 with $p < 0.001$ where the p value is < 0.05 . So it can be concluded that "Ha received" means that there is a difference between before and after the administration of brain gymnastics intervention.

DISCUSSION
Frequency Distribution of Respondents Characteristics

According to Prasetyo [7], school age is a very good age for brain development including memory to get good grades in subjects. According to Zulaini [11], brain gym should be done when the child starts to be 6 years old. Because, at this age he is usually able to respond to what is desired by others.

According to Santrock [1], boys language development is slower compared to girls' resulting in their cognitive, social, and

emotional development. According to Miriyati [1], states specifically that girls have more ability in reading and writing than boys.

Frequency distribution of children's memory levels before brain gym

The results showed that most children were classified as high memory, which was as many as 82 respondents (82.0%) and judging from measurements using the Digit Span Test, most children were classified as medium, as many as 60 respondents (60.0%). This result is in line with research conducted by [7], which examined the effect of brain gym on the memory of grade V elementary school children where the majority of memory was 50%.

With these results, there is a similarity where the level of children's memory before brain gym is carried out the majority is in the category of medium memory, this shows that many children have moderate memory. Decreased memory occurs due to activities and dense activities or daily routines cause 82.2% of children to be stressed in Indonesia as a result of which children become bored and do not have the opportunity to relax and play, releasing the energy and emotional tension they experience [4].

Research on the effect of brain gym on the memory of school-age children found that the level of memory before being given brain gym had a higher level of memory, namely the majority of memory was less than 10 respondents (50%) [1].

Before being given brain gym, many children still could not read properly and correctly. This is because students find it difficult to accept lessons, so the child's memory level before being given brain gym will be higher. The child's memory in intellectual development and academic performance of the child depends on the child's short-term memory ability. According to Rochman, short-term memory is always involved in daily activities such as mathematical operations, problem solving, and language comprehension, so short-term memory is instrumental in everyday life [1].

This is in line with research [6], entitled brain gym on the level of learning stress in school-age children in the study states that for students who are not supported by a good environment around them such as a family environment that is not intact, household conflicts, social conditions of parents, a place to live that is far from decent and unhealthy social environment, Or also their school environment, crowded learning schedules, bullying at school, social conditions they experience in family and friends will affect the stress level of the child himself. Before being given brain gym, the majority experienced high stress as many as 10 respondents (55.6%).

The results of this study are in accordance with the theory of [4], entitled brain gym affects the level of stress in grade V school-age children at SDN pokok 1, which states that this problem comes from the family for example lack of attention and demands from people and comes from schools related to schoolwork such as giving excessive subject assignments given every day. Thus, children are less able to play with their groups, causing tension and uncomfortable feelings. This sense of pressure can have a negative impact on children, both physically and psychologically.

Frequency distribution of children's memory levels after brain gym

The results showed that most of them were classified as high memory, which was as many as 95 respondents (95.0%) and judging from measurements using the Digit Span Test, children's memory was mostly classified as medium, as many as 60 respondents (60.0%), high memory as many as 40 respondents (40.0%). This situation shows an increase in memory in children after brain gym intervention

In line with research conducted by [7], with the results of research after brain gym intervention, respondents were found to get very good grades as many as 11 students (45.83%). This study is also in line with research conducted by [12], showing that the

average level of learning concentration of students before being given brain gym was 6.18 and when after being given brain gym increased to 7.09.

Based on the description above, it shows that the average level of memory of children after brain gymnastics intervention has increased memory, this is because children can release energy and emotional tension experienced through simple movements so that children feel happier. With brain gym children will get benefits such as improving memory, improving concentration, and increasing a sense of happiness [11].

With good memory, children's academic achievement will also be good while lack of memory will have an impact on children's achievement, causing low children's self-confidence due to losing competition with their schoolmates. To achieve all that requires an optimal brain integration process. One way of optimizing the use of all dimensions of the brain is brain gym [7].

Brain gym is a series of simple body-based movements. This movement is made to stimulate the right brain and left brain. Brain gym helps to integrate parts of the brain so that it can be used by educators to turn learning blocks into learning pathways. Brain gym can be used to help learners be better prepared for lessons, improve concentration span, and improve focus and memory, improve social interaction skills, and control emotions [7].

So from the discussion above, it can be concluded that brain gym is one of the important aspects of a child's life and one of the coping tools to overcome memory decline, decreased concentration, and stress in children that can be used to release tension or emotional experienced by children on the sidelines of children's activities while undergoing solid activities.

Differences in children's memory levels before and after being given brain gym

The results of the statistical test show the results of the Wilcoxon Signed Rank Test

that it can be known that the P-value value from the data is <0.001 ($P < 0.005$), so it can be concluded that there is a significant influence between the level of memory before and after brain gym intervention in children aged 7-13 years at State Elementary School 3 Sukatani, Tangerang Regency.

The effect of brain gym has been proven from several previous studies. Research by [4], p-value <0.001 (<0.05) which means there is an effect of brain gym on stress levels before and after treatment in children. Another study that is in line is also research conducted by [1], which proves that the p-value of $0.002 < 0.05$ which means there is an influence of brain gym on the memory of school-age children in Public Elementary School 1 Upai.

Brain gym is an exercise designed to promote better brain function during the learning process. These exercises are based on the thought that simple physical exercise increases blood flow to the brain and helps improve learning by ensuring the brain remains alert. Students can use simple exercises that can be done independently, and teachers can use them in class to help children maintain energy throughout the day [5]. Brain gym carried out with the right method will affect student memory, so it is expected that students are able to carry out brain gymnastics correctly [1].

The method of brain gym training is basically focused on utilizing movement activities to draw out all one's potential so that it is hoped that brain gym movements can increase blood flow and stretch the nerve muscles due to fatigue and excessive learning stress, including elementary school children who are in the process of education at school [6].

The most important developmental stage for successful future development occurs during primary school age (around 6-12 years). At the beginning of school, children undergo a period of change (grade 1 to grade 2). In this time of change, children need special support, knowledge, and energy so that children can get through it well. In the elementary school world, there are many

experiences that will be faced by a child, including the learning patterns applied, material acquisition, and evaluation stages that must be carried out [13].

According to Cahyo [14], in addition to making the body fit, brain gym activities are also beneficial for child development such as increasing children's concentration when applied regularly, sharpening children's memory, reducing stress, and increasing children's sense of happiness.

According to researchers, one of the activities that is suitable to be applied to school-age children is brain gym. Brain gym is a series of simple movements that can be done at any time about 10-15 minutes. Brain gym in addition to improving memory can also improve concentration, reduce stress, and sharpen vision and hearing. Brain gym can be used to release the tension and emotional experience experienced by students, so that students can feel more comfortable and a sense of happiness increases. Students can also do it independently, and teachers can use it in the classroom to help children maintain energy throughout the day [5].

CONCLUSION

Based on the level of memory of respondents before being given brain gym intervention, most of them were classified as high memory at 82.0% and children's memory was mostly classified as medium at 60.0%. The level of memory of respondents after being given brain gym intervention was mostly classified as high memory, which was as much as 95.0% and memory with high categories increased to 40.0%. The statistical test results show the results of the Wilcoxon Signed Rank Test that the P-value can be known <0.001 . So it can be concluded that there is a significant influence between the level of memory before and after brain gym intervention.

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