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The Effectiveness of Brain Gym Exercise on Students Learning Concentration

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ABSTRACT

Introduction: Concentration disturbances among students are an important issue in higher education, especially in the digital era filled with distractions. This study aims to explore the effectiveness of brain gym exercise Exercise as a non-pharmacological intervention to enhance students' concentration. **Methods:** The method used is a quasi-experimental design with a pre-test and post-test without a control group, involving 50 students from the D3 Physiotherapy Politeknik Unggulan Kalimantan. Concentration measurements were conducted before and after the intervention using a grid concentration test form. **Results:** The results show a significant (P<0,05) increase in students' concentration levels. **Conclusion:** Brain gym exercise can serve as an effective alternative for improving students' concentration, especially when performed regularly and continuously. This study contributes to the development of a holistic approach to addressing concentration disturbances in the academic environment.

Keywords*: Brain Gym Exercise, Concentration on Studying, Student college.*

INTRODUCTION

Student learning impairment has become a major concern in higher education. In an era of fast-paced and distracting activities, such as the use of social media and digital technology, many students struggle to maintain focus while studying. Studies have shown that factors such as stress, lack of sleep, and unhealthy diets can contribute to impaired concentration (Hirshkowitz et al., 2015). For example, lack of sleep not only affects physical health but also cognitive performance, hindering students' ability to absorb information effectively. In addition, high academic demands often add to the pressures faced by students, creating feelings of anxiety that can interfere with concentration (Fried et al., 2016). In a study conducted by Benas et al. (2017), it was found that low levels of concentration not only hinder learning ability but also have a significant impact on students' overall academic achievement. The negative impact of impaired concentration creates an urgent need to find effective strategies to improve focus and learning engagement. This condition shows the importance of developing a holistic and research-based approach to addressing impaired concentration.

Concentration is an important aspect of the learning process, especially for students who face high academic demands. Concentration disorders can hurt learning outcomes, both in understanding lecture materials, doing assignments, and facing exams (Purwanto, 2017). Concentration disorders can affect students' learning abilities and academic performance, often related to stress levels and academic demands (Yusnita, & Suryadi, 2019). One effort that has been developed to help overcome concentration problems is brain gym exercise (Mulyani, & Suryana, 2017).

Brain gym exercise is a series of simple physical exercises designed to improve brain function, especially in motor coordination, focus, and comprehension. This program was introduced by Paul Dennison in the 1980s and continues to develop today (Dennison & Dennison, 2016). Brain gym exercises focus on movements that integrate the left and right brain

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so that they can improve cognitive and emotional performance (Hyland, 2018). Brain gym exercise involves a series of movements that can improve cognitive function, motor coordination, and better understanding through the integration of both sides of the brain (Sukmawati, & Yusniarti, 2019). Recent studies have shown that brain gym exercise can help improve concentration and reduce stress, which are important factors in students' learning abilities. Research conducted by Fadli et al. (2020) revealed that students who routinely do brain gym exercises show a significant increase in concentration ability compared to the control group that did not do the exercise. These results are in line with other studies (Rahmawati & Putra, 2019; Gunawan & Sari, 2021; Susanti & Widiastuti, 2017) which state that physical and mental exercise can contribute to improving academic performance, especially in terms of concentration and reducing mental fatigue. The results of the researcher's observations of physiotherapy students at the Kalimantan Polytechnic showed that there was a suboptimal level of student learning concentration during the learning process in classes that had a fairly dense lecture duration. Based on this, the researcher is interested in raising the topic of brain gym exercise as a non-pharmacological intervention method to help improve learning concentration and academic achievement.

METHODS

This research design is quasi-experimental with a pre and post-test design without a control group design conducted at the Leading Polytechnic of Kalimantan. Sampling using total sampling with research participants consisting of physiotherapy students of the leading polytechnic of Kalimantan. To achieve research success, the following must be done by researchers: (1) Submission of ethical clearance, passing ethical review with number: 013/UMB/KE/IV/2024; (2) Explanation of the objectives, benefits and risks of the research to prospective respondents; (3) Filling out the informed consent sheet; (4) Explanation of the Implementation of the Research with the following procedures: (a) measuring concentration levels using the grid concentration test form (Harris, 2017; Klein & Brien 2018; Lindner, 2019) (table 1); (b) implementation of brain gym exercises every day for at least 15 minutes for 4 weeks (Dennison P & Dennison G, 2018; Carthy, 2019; Gallas, 2020) (table 2); (c) Conducting concentration level measurements using the grid concentration test form (Harris, 2017; Klein & Brien 2018; Lindner, 2019) (figure 1); (5) Data processing was carried out using a statistical program, the results of the normality test obtained P>0.05 so that it was continued with a non-parametric test using the Wilcoxon test.

24	39	45	36	66	3	49	76	61	78
60	5	57	31	95	85	21	68	52	7
12	22	23	25	44	87	29	77	67	35
96	55	82	100	58	14	80	9	10	53
71	81	4	69	40	19	99	92	20	13
84	50	2	42	62	73	64	34	27	8
28	17	46	93	65	37	33	98	26	94
1	70	43	16	32	30	59	86	97	56
88	72	79	90	91	47	75	74	63	48
11	51	6	83	89	41	54	38	18	15

Figure 1. Concentration Grid Test Form

Table 1. Concentration Grid Test Assessment Criteria

No.	Category	Mark
1	21 Up	Very good
2	16-20	back
3	11-15	Enough
4	6-10	Less
5	5 Under	Very less

Source: Harris, 2017; Klein & Brien 2018; Lindner, 2019.

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Table 2. Brain Gym Exercise

Movement	Steps
Cross Crawl This exercise involves crisscrossing movements between the arms and legs.	▪ Stand with your feet shoulder-width apart. ▪ Lift your right knee while extending your left arm forward. ▪ Return to the starting position and repeat with your left knee and right arm. ▪ Do this for 3 minutes.
The Elephant This exercise helps relax the body and improves focus.	▪ Stand with your feet shoulder-width apart. ▪ Place both hands in front of your body and move an elephant's trunk, swaying from side to side. ▪ Do this for 3 minutes while taking deep breaths.
Thinking Caps This exercise involves massaging specific areas of the head to improve concentration.	▪ Place your index fingers on your temples and press gently. ▪ Slide your fingers up towards your forehead, then to the back of your head. ▪ Repeat for 3 minutes while breathing deeply.
The Owl This exercise aims to improve vision and concentration.	▪ Sit with your back straight. ▪ Turn your head left and right slowly, as if you were an owl. ▪ Do this for 3 minutes, while focusing on your breathing.
Energy Yawn This exercise helps to relieve fatigue and increase energy.	▪ Sit or stand comfortably. ▪ Take a deep breath and open your mouth wide as if yawning. ▪ Repeat 5-7 times for 3 minutes.

Source: Dennison P & Dennison G, 2018; Carthy, 2019; Gallas, 2020.

RESULTS

The results of the statistical test using the Wilcoxon test obtained a P value <0.05 (figure 2). This shows that there is an effect of providing brain gym exercise intervention on learning concentration.

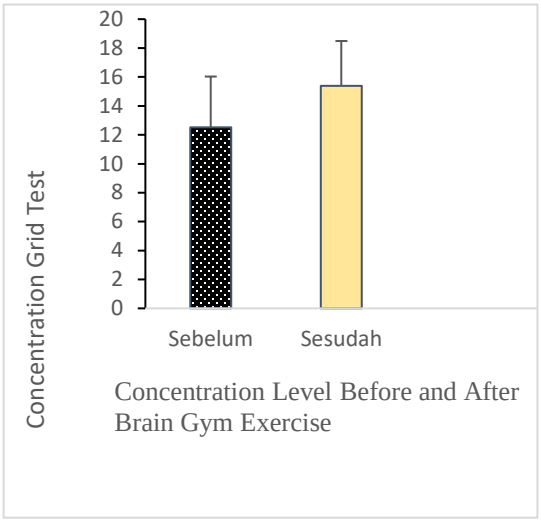

Figure 2. Concentration Grid Test. Data before 12.52 ± 3.51; after 15.38±.3.11 Data (Mean±SD). ***scor P = 0,000 , P>0,05.

DISCUSSION

Based on the research results, the highest concentration category before being given brain gym exercise was sufficient, which was 50%, the good category was 16% and very good was only 2%, while the less category was 32%. Then after being given brain gym exercise, the results showed an increase in concentration, namely the sufficient category was 54%, the good category was 30% and the very good category was 10%, while the less category was only 6%.

This is in line with several previous studies that have examined the effectiveness of Brain gym exercises in improving concentration in studying among students, namely a study conducted by Safitri and Kusumaningrum (2017) showed that brain gym exercises showed an improvement in concentration so that students experienced an increase in their ability to complete academic tasks that require deep concentration. Furthermore, research by Putra et

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al. (2018) found that brain gym exercises not only have an impact on increasing concentration but also reduce students' anxiety levels before exams. In this study, students who participated in brain gym exercises were reported to experience an 18% decrease in anxiety compared to the control group. Lower stress allows them to focus better during study sessions and exams. Then, research by Mastura et al. (2020) showed that students who regularly do brain gym exercises before study sessions showed a significant increase in their ability to focus for longer periods. Of the 150 students who participated, the experimental group showed a 20% increase in concentration scores compared to the control group. This suggests that brain gym exercises can help improve brain function related to attention. Another study by Chen et al. (2021) emphasized the importance of body awareness in improving concentration. The results showed that students involved in brain gym exercises showed increased attention and ability to stay focused on the task at hand.

Physical movements in the Brain Gym stimulate connections between the left and right brain, which are believed to improve cognitive abilities and concentration. Movements such as the "cross crawl," which is done by moving the hands and feet in a crisscross manner, help align the brain hemispheres and improve the flow of information between them (Putra et al., 2018). In addition, brain gym exercises can coordinate eye, hand and body movements to stimulate brain waves through light movements involving movements of the hands and feet. The movements generated by brain gym exercises can provide stimulation or stimulus to the brain so that it can improve learning ability and concentration in students because all parts of the brain are used in the learning and concentration process (Suratun, 2020).

Brain gym exercises are also believed to be able to influence the production and regulation of neurotransmitters that are important in the process of concentration and attention such as dopamine, serotonin, and acetylcholine. Dopamine is known as a neurotransmitter that plays a role in regulating focus and attention. Moderate physical exercise performed during brain gym exercises can increase dopamine levels in the brain, which helps improve students' ability to concentrate (Ramadhani et al., 2021). Serotonin is involved in regulating mood and anxiety, doing brain gym exercises can help increase serotonin levels to help reduce anxiety which is often an obstacle to concentration in learning (Mastura et al., 2020). Meanwhile, acetylcholine is a neurotransmitter involved in many cognitive processes, including attention, learning, and memory processing. It works by activating receptors located at neuronal synapses, which helps strengthen signals between neurons. In the context of learning, acetylcholine plays an important role in maintaining attention and facilitating the transfer of information from short-term memory to long-term memory (Mastura et al., 2020). The impact of brain gym exercise on acetylcholine is not only short-term but can also support the improvement of cognitive abilities in the long term. Research shows that physical activity that is done routinely can stimulate the production of acetylcholine over a longer period so that the benefits of brain gym exercise in improving concentration and cognitive processing abilities can continue to be felt sustainably (Putra et al., 2018). This is very important for students who need consistent focus throughout their studies.

Thus, brain gym exercises can be used as an alternative to improve students' learning concentration. Brain gym exercise activities need to be done continuously because the movements are simple and easy to do so that they can increase learning concentration to the maximum.

CONCLUSION

Based on the research that has been done, the results of brain gym exercises have proven to be effective in improving students' learning concentration. This is evidenced by a significant value of P = 0.000 (P <0.05). However, some things need to be considered, such as limited research design without a control group so it is difficult to ensure that the increase in concentration is truly caused by brain gym exercise intervention and not external factors or other variables, relatively small sample size and lack of long-term monitoring. Further research is

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needed to evaluate the long-term effects of Brain Gym training.

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