PROCEEDING
1st Banten International Conference on Health Advancement & Research
binar@poltekkesbanten.ac.id
https://binar.poltekkesbanten.ac.id/

THE EFFECT OF BRAIN GYM ON STRESS LEVELS IN STUDENTS OF AL-HASYIMIYYAH ISLAMIC MIDDLE SCHOOL

Putri Luvi Kurniawati[1], Lailatul Fadilah[2], Osep Yasier Almunsiri[3]

[1]Applied Bachelor Study Program in Nursing, Poltekkes Kemenkes Banten, putriluvikurniawati01@gmail.com
[2]Nursing Departemen, Poltekkes Kemenkes Banten, lailatul.fadilah@poltekkesbanten.ac.id
[3]Nursing Departement, Poltekkes Kemenkes Banten, osepyasier240996@gmail.com
**Corresponding author:* putriluvikurniawati01@gmail.com

ABSTRACT

Background : Stress is a natural response of the body and mind to pressure or change that requires adjustment. Continuous stress and depression can have a negative impact on the mind and can also weaken the immune system. The most common stress experienced by students in school is academic stress. Academic stress has a negative impact on physical health. One of the academic stressors is stress related to adolescent learning activities at school. Brain Gym is a program designed to improve several aspects of an individual's cognitive and psychological well-being. Brain gym is done through a series of simple movement exercises that test the two sides of the brain, namely the left brain and the right brain. Doing brain gym is one way to relieve stress. **Objective :** To determine the effect of brain gym on stress levels in students during learning at school. **Method :** This study used a quasi-experimental research design with the One Group Pretest-Posttest Design approach, this study did not involve a control group. The sampling of this study used a nonprobability sampling technique, namely purposive sampling with a total of 26 respondents. **Results :** the results of the univariate test obtained an average value of stress levels before being given brain gym was 25.38 and the bivariate test using the T-test obtained a P value of .000. **Conclusion :** There is a significant influence of brain gymnastics on reducing stress levels in students at Al-Hasyimiyyah Islamic Middle School.

Keywords: "*Stress, Brain Gym, Teenagers"*

INTRODUCTION

Stress is a problem that many people experience today, including feelings of fear and anxiety. Prolonged stress and depression can negatively affect the mind and weaken the immune system, which is why psychological problems are often experienced by various groups, including school-aged adolescents (Putri et al., 2022). Academic pressure, social demands, and developmental changes experienced by adolescents are the main factors that trigger stress. If not managed properly, stress can negatively impact mental health, cognitive ability, and academic achievement. The World Health Organization (WHO, 2018) recorded that around 350 million people worldwide experience stress, and in Indonesia, the prevalence of stress among students is quite high, reaching 71.6%. In the Tangerang area, for example, 1.8% of the population experiences emotional disorders. The 2018 Basic Health Research (Riskesdas) reported that 22.3% of women and 21.4% of men experience stress, with a trend that continues to increase each year.

Early adolescence is an important transitional stage in human life, bridging childhood and early adulthood. During this phase, individuals experience various significant changes, both physical and psychological. In addition, adolescents also undergo cognitive changes and begin to develop the ability to think abstractly like adults in general. At this stage, adolescents start to distance themselves emotionally from those around them in order to take on new social roles as they begin to feel more mature (Noya, A., 2023).

Academic stress is one of the most common forms of stress experienced by students, mainly due to heavy workloads, limited study time, and pressure from the surrounding environment. This condition can lead to concentration disorders, decreased memory, and even physical complaints such as headaches and fatigue.

Exercises like Brain Gym not only help calm the mind but also enhance concentration, improve mood, and maintain overall brain balance. According to Sanib, S. S. (2023), Brain Gym is a program designed to improve various aspects of an individual's cognitive and psychological well-being. Brain Gym consists of a series of simple movement exercises that engage both hemispheres of the brain — the left and the right. Brain Gym is said to have a positive impact on cognitive function. Its goal is to increase blood and oxygen flow to the brain and balance the two hemispheres so they can work as efficiently as possible. Therefore, people who practice Brain Gym can improve *laterality*, or the balance between the left and right brain functions.

According to a study by Pratiwi and Widarti (2023) titled *"The Effect of Brain Gym on Reducing Stress Levels Among Youth in the Karang Taruna Group, Surakarta City,"* the Wilcoxon test results showed a significant value of $p = 0.001 < 0.05$, indicating that Brain Gym has a significant effect on reducing stress levels among adolescents. One approach that has gained increasing research attention is the use of Brain Gym exercises. The theory underlying this approach suggests that certain body movements can facilitate neurological connections, which in turn support learning processes, concentration, emotional regulation, and stress reduction (Sanib, 2023; Komarudin et al., 2024). Previous studies conducted by Cahyadi et al. (2022) and Pratiwi & Widarti (2023) have shown that Brain Gym is effective in reducing stress levels, both among university students and adolescents.

Based on the results of a preliminary survey at SMP Islam Al-Hasyimiyyah, seventh-grade students were found to experience various complaints indicative of stress, such as headaches, fatigue, irritability, decreased concentration, and feelings of pressure due to academic demands and long school hours. If not addressed promptly, these conditions may hinder the learning process and negatively affect students' academic achievement. Therefore, this study aims to analyze the *"Effect of brain gym exercises on stress levels among students at SMP Islam Al-Hasyimiyyah".* The novelty of this study lies in the implementation of brain gym within the context of an Islamic junior high school, focusing on early adolescent students, as well as in applying brain gym as a simple intervention that can be directly integrated into daily learning activities at school. Furthermore, this study is expected to enrich empirical evidence regarding the effectiveness of brain gym as a non-pharmacological approach to managing academic stress among junior high school students and to serve as a foundation for the development of promotive and preventive mental health programs in school settings.

MATERIALS AND METHODS

This study employed a quasi-experimental design with a *One Group Pretest-Posttest Design*, meaning no control group. The intervention was administered to only one group, and its effects were measured by comparing pretest and posttest results (Hidayat, 2017).

This study employed a *purposive sampling* technique, in which participants were selected based on predetermined criteria established by the researcher. Data collection took place between February and March 2025. During the research process, the possibility of participant dropout was considered; therefore, the required sample size was determined in advance and set at 26 respondents to maintain data validity. The selection of seventh-grade students was conducted using *simple random sampling* through a lottery method, ensuring that each student had an equal opportunity to be selected and minimizing selection bias. To ensure the relevance of the participants to the research objectives, inclusion and exclusion criteria were applied.

Data collection was conducted to determine students' stress levels before and after the implementation of brain gym exercises at SMP Islam Al-Hasyimiyyah. The research procedure began with the submission and approval of the research title by the academic supervisor, followed by obtaining research permission from the school authorities. After permission was granted, the researcher approached students who met the inclusion criteria and provided an explanation of the study's objectives and procedures. Students who agreed to participate were asked to complete an informed consent form. Data collection started with the administration of a pretest questionnaire to assess baseline stress levels, with a completion time of 15 minutes. The intervention was carried out by the researchers themselves in the form of brain gymnastics exercises carried out for 10-15 minutes per session, six times over a period of 14 days. The intervention was implemented in small groups on a rotating basis, with one session conducted per day. After the completion of the intervention period, respondents were given a posttest questionnaire with the same 15-minute completion time. The collected data were then processed through editing, coding, scoring, and tabulation, and subsequently analyzed using a t-test to determine the effect of brain gym exercises on students' stress levels.

In this study, the stress level questionnaire was subjected to a validity test involving 30 respondents, with an *r* table value of 0.374, and consisted of 14 items (Syafitri, 2023). After the validity of the questionnaire was established, the next step was to determine its suitability for use. Reliability is an indicator that reflects the degree of trustworthiness of an instrument, namely its ability to produce consistent results when administered once or repeatedly (Notoatmodjo, 2018).

If the Cronbach's alpha value is greater than 0.7, the instrument is considered reliable; conversely, if the Cronbach's alpha value is less than 0.7, the instrument is considered unreliable. The reliability test was conducted on 30 respondents and yielded a Cronbach's alpha value of 0.919, indicating that the instrument is reliable (Syafitri, 2023).

RESULTS AND DISCUSSION

1. Results

1) Respondent Characteristics by Gender

Table 1 Distribution of Respondent Characteristics by Gender of Students Experiencing Stress at Al-Hasyimiyyah Islamic Middle School (N=26)

Characteristics	F	(%)
Male	12	46.2
Female	14	53.8
Total	26	100%

Sumber: Data Primer Tahun 2025

Based on table 1, it shows that of the total 26 respondents in this study, 12 respondents were male (46.2%) and 14 respondents were female (53.8%).

a. Pre-Test and Post-Test Stress Levels

1) Stress levels before brain gym

Table 2 Distribution of Stress Levels Before Brain Gym Among Students Experiencing Stress at Al-Hasyimiyyah Islamic Middle School (N=26)

Stress Level (Pre-Test)	N	Frequency (%)
Normal	0	0
Mild Stress	0	0
Moderate Stress	14	53.8
Severe Stress	9	34.6
Extreme Stress	3	11.5
Total	26	100%

Sumber: Data Primer Tahun 2025

Based on table 2, it shows that of the 26 respondents whose stress levels were measured before being given brain gym, the results showed that 14 respondents experienced moderate stress (53.8%), 9 respondents experienced severe stress (34.6%) and 3 respondents experienced very severe stress (11.5%).

2) Stress Levels After Brain Gym

Table 3 Distribution of Stress Levels After Brain Gym Among Students Experiencing Stress at Al-Hasyimiyyah Islamic Middle School (N=26)

Stress Level (Post-Test)	N	Frequency (%)
Normal	14	53.8
Mild Stress	9	34.6
Moderate Stress	2	11.5
Severe Stress	1	3.8
Extreme Stress	0	0
Total	26	100%

Sumber: Data Primer Tahun 2025

Based on Table 3, among the 26 respondents measured after receiving brain gym exercises, 14 respondents had normal stress levels with a score range of 0–14 (53.8%), 9 respondents

experienced mild stress with a score range of 15–18 (34.6%), 2 respondents experienced moderate stress with a score range of 19–25 (11.5%), and 1 respondent experienced severe stress with a score range of 26–33 (3.8%). These results indicate a difference in stress levels before and after the intervention.

3) Distribution of Mean Stress Levels Before and After Brain Gym

Table 4 Distribution of Mean Stress Levels Before and After Brain Gym Among Students at Al-Hasyimiyyah Islamic Middle School (N=26)

Variabel	Mean	SD	Min-Max
Pre-Test	25.38	5.068	19-38
Post-Test	14.38	5.146	6-28

Sumber: Data Primer Tahun 2025

Based on table 4, it shows that the average stress level before being given brain gym was 25.38 with a standard deviation of 5.068, for the lowest value of the stress level before being given the intervention was 19 and the highest value was 38. Then for the average value after being given the intervention was 14.38 with a standard deviation value of 5.146, then for the stress level after being given the intervention with the lowest value being 6 and the highest stress level value being 28.

a. Data Normality Test

A data normality test is performed first to determine whether the data is normally distributed. Researchers use the *skewness/standard error* test in decision-making. If the *skewness/standard error* test results are <2, then the data is considered normally distributed.

Tabel 5 Uji Normalitas *Skewness/Standard error*

	N	Minimum	Maximum	Mean	SD	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. error
Unstandardized residual	26	-6, 14878	9, 82762	0,0000000	3, 84695911	0,441	0,456
Valid N (listwise)	26						

Sumber: Data Primer Tahun 2025

Based on table 5, the Skewness/Standard error normality test produces a value of 0.967, so it can be concluded that if the Skewness value is divided by the standard error, it produces a number <2, which means that the resulting value is normally distributed.

b. Bivariate Paired Sample T-Test

To determine the effect of Brain Gym on stress levels of students at Al-Hasyimiyyah Islamic Middle School in 2025, the researcher used a paired sample t-test.

2. **Discussion**

1) Univariate Discussion

a. Respondents Characteristics Based on Gender

The study found that the majority of respondents were female, totaling 14 (53.8%) out of 26. This aligns with Wilujeng, Habibie, and Ventyaningsih (2023), who reported that females tend to experience higher stress levels than males due to biological, hormonal, and social role differences. Females often use task-oriented coping mechanisms, which may increase emotional pressure, while males generally view stress as a motivating challenge. Stress responses are influenced by internal factors (emotional stability, identity) and external factors (academic and social expectations). Early adolescence (ages 11–15) also affects stress response, with ages 13–15 showing higher stress levels (Putri & Azalia, 2022; Putri, Harti & Fitriana, 2023).

b. Stress Levels Before Brain Gym Intervention

Before the intervention, the mean stress level of 26 respondents was 25.38, with a minimum score of 19 and a maximum of 38. Students reported frequent stress due to academic workload, poor concentration, lack of rest, and decreased memory. Stress arises from the accumulation of internal pressures (emotions, identity, self-confidence) and external pressures (parental expectations, school demands, social conflicts). Biologically, stress triggers cortisol and adrenaline release, affecting physiological and emotional responses (Sumarto, 2024). If unmanaged, stress can reduce motivation, concentration, academic performance, and increase the risk of mental health issues. Early interventions such as mental health education, coping skills training, social support, and brain gym are important to prevent chronic stress (Nurichsan, Hastuti & Fitriana, 2024).

c. Stress Levels After Brain Gym Intervention

After the brain gym intervention, the mean stress level decreased to 14.38, with scores ranging from 6 to 28, indicating a significant reduction. This demonstrates that brain gym effectively reduces student stress. Previous research shows that brain gym over two weeks with five sessions can lower stress, improving calmness, emotional stability, and resilience (Cahyadi, Dani & Aryono, 2022).

This study was conducted over 14 days with six sessions using brain gym exercise videos lasting 10–15 minutes, which effectively reduced students' stress levels. During the 14 days, students performed nine specific brain gym movements: ***cross crawl***, ***lazy 8***, ***the owl***, ***the active arm***, ***grounder***, ***brain buttons***, ***earth buttons***, ***balance buttons***, *and* ***the thinking cap***. These exercises help students manage stress, calm the mind, and improve emotional balance, positively affecting learning outcomes and psychological well-being.

2) Bivariate Discussion

Stress is a psychological and physiological response to mental or emotional pressure that exceeds an individual's capacity. Adolescents are particularly vulnerable due to biological, hormonal, and social changes during the transition from childhood to adulthood. Major stressors include academic demands, parental and teacher expectations, performance pressure, and peer dynamics, which trigger cortisol and adrenaline release, influencing physiological and emotional responses (Sumarto, 2024).

The study showed a significant difference between pre-test and post-test stress scores. The pre-test mean was 25.38 and the post-test mean was 14.38, with $p = .000$ ($\alpha<0.05$), indicating that brain gym effectively reduces stress among SMP Islam Al-Hasyimiyyah students. This aligns with prior studies showing brain gym lowers stress in adolescents and university students through structured sessions over two weeks (Baskara, 2020; Cahyadi, Dani & Aryono, 2022).

Brain gym offers advantages over other therapies: it is easy to perform, requires no special equipment, is suitable for all ages, and can be done anytime. The 14-day intervention with 6 sessions of 10–15 minutes reduces stress by stimulating the nervous system to release endorphins, naturally calming students and improving mood (Putri, Harti & Fitriana, 2023).

Brain gym reduces stress through combined physical and mental stimulation. Light, structured movements relax the body and mind, reduce muscle tension, and enhance memory, concentration, and self-confidence. During exercises, students' attention shifts from stressors to the activity, creating calmness and happiness (Tyas, 2021; Anri et al., 2024).

Physiologically, brain gym improves blood circulation and oxygen supply to the brain, increasing serotonin, dopamine, and endorphins that support mental health. It also enhances motor coordination, balance, and rhythm, thereby improving cognitive abilities, problem-solving, decision-making, language skills, and memory. Thus, brain gym is an effective method to reduce stress while enhancing brain function and psychological well-being.

CONCLUSION

This study shows that brain gymnastics (Brain Gym) has a significant effect in reducing stress levels of students at Al-Hasyimiyyah Islamic Middle School. Providing brain gymnastics interventions has been proven to be able to shift students' stress conditions from moderate-severe levels to a more normal direction,

which is reflected in the decrease in the average stress score from 25.38 to 14.38, showing a mean difference between the pre-test and post-test scores of 11 points. The results of the Paired Sample T-Test statistical test with a *P value <0.05* confirm that these changes did not occur by chance, but were a real impact of the implementation of brain gymnastics. Thus, brain gymnastics can be seen as a simple and effective intervention to help manage stress in seventh grade junior high school students.

REFERENCES

Anri, et al. (2024). *Improving Adolescent Mental Health through Brain Gym and Ice Breaking Therapy at SMK Bhakti Kencana Soreang, Bandung Regency*. Selaparang: Journal of Progressive Community Service, 8(1), pp. 678–685.

Baskara, F. (2020). *The Effect of Brain Gym on Stress Levels in Preparation for the Computer-Based National Assessment (ANBK) among Grade 12 Students of SMK Negeri 4 Surakarta*, pp. 1–9.

Cahyadi, A., Dani, R.A., & Aryono, M.M. (2022). *The Effectiveness of the Brain Gym Method in Reducing Stress Levels among Students Facing Online Learning*. Psikodimensia, 21(2), pp. 144–151. https://doi.org/10.24167/psidim.v21i2.4243

Hidayat, A.A. (2017). *Research Methodology in Nursing and Health Sciences*. Jakarta: Salemba Medika.

Komarudin, et al. (2024). *Cognitive Training Models in Sports*. Bandung: Indonesia Emas Group.

Noya, A. (2023). *Textbook of Psychology*. Indramayu: Adab Publishing.

Nurichsan, R., Hastuti, W. and Fitriana, L.A. (2024). *Fikih Kesehatan Remaja di Era Disrupsi*. Jakarta: Tata Akbar.

Putri, T.H. & Azalia, D.H. (2022). *Factors Affecting Stress in Adolescents during the Covid-19 Pandemic*. Journal of Mental Health Nursing, 10(2), p. 285. https://doi.org/10.26714/jkj.10.2.2022.285-296

Putri, U.N.H., et al. (2022). *Mental Health Module*. Pasaman Barat: Cv. Azka Pustaka.

Pratiwi, E.A. & Widarti, R. (2023). *The Effect of Brain Gym on Reducing Stress Levels among Students in the Youth Organization Group of Surakarta City*. Physio Journal, 3(1), pp. 34–40. https://doi.org/10.30787/phyjou.v3i1.969

Sanib, S.S. (2023). *Lateral Dimension Brain Gym Movements to Increase Self-Confidence in Public Speaking (A Beginner's Guide to Mastery of Material & Self-Control)*. Indramayu: Adab Publishing.

Sumarto, M. (2024). *Overcoming Stress and Anxiety: Managing Emotions in Daily Life for Children and Adolescents*. Yogyakarta: Andi Publisher.

Tyas, R.P. (2021). *The Effect of Brain Gym on Anxiety Levels among Students Completing Their Final Project During the Pandemic*. Angewandte Chemie International Edition, 6(11), pp. 951–952., 40, pp. 1–15.

Wilujeng, C.S., Habibie, I.Y., & Ventyaningsih, A.D.I. (2023). *The Relationship Between Gender and Stress Categories among Adolescents at Brawijaya Smart School Junior High School*. Smart Society Empowerment Journal, 3(1), p. 6. https://doi.org/10.20961/ssej.v3i1.69257.