



## **Analysis of Nursing Care with the Application of Brain Gym to Reduce Blood Pressure in Elderly with Hypertension**

**Nassya Nabila Abdi\***

Hang Tuah University Pekanbaru,  
Indonesia

**Siska Mayang Sari<sup>2</sup>**

Hang Tuah University Pekanbaru,  
Indonesia

**Mike Ayu Wulandari<sup>3</sup>**

Hang Tuah University Pekanbaru,  
Indonesia

**Yumiati<sup>4</sup>**

Hang Tuah University Pekanbaru,  
Indonesia

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**\* Corresponding author:**

Nassya Nabila Abdi<sup>1</sup>, Siska Mayang Sari<sup>2</sup>, Hang Tuah University Pekanbaru<sup>12</sup>, Indonesia<sup>12</sup>.

[nasya.nabila.abdi@gmail.com](mailto:nasya.nabila.abdi@gmail.com)<sup>1</sup>, [siskamyg@htp.ac.id](mailto:siskamyg@htp.ac.id)<sup>2</sup>

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**Abstract**

Background of study: Hypertension is a circulatory system disorder that causes blood circulation above normal 120/80 mmHg. Health problems in the elderly include physical problems, cognitive problems, emotional problems, spiritual problems, and psychosocial problems. Physical problems include hypertension. Non-pharmacological blood pressure management can be done by applying brain gym therapy.

Aims and scope of paper: This scientific paper aims to analyze nursing care for Mr. J and Mr. B and evaluate the application of brain gym therapy in reducing blood pressure in elderly people with hypertension at the UPT PSTW Husnul Khotimah, Riau Province Social Service, correctly, and in accordance with professional nursing standards.

Methods: This application uses a one-group pretest-posttest design using 2 subjects. This research instrument uses an observation sheet. The intervention was administered from December 1-3, 2025. This intervention was carried out for 10 minutes for 3 consecutive days in the morning.

Result: The results of blood pressure reduction for 3 days in Mr. J with an average systolic value of 10 mmHg and diastolic 13 mmHg. While the reduction in blood pressure for 3 days in Mr. B with an average systolic value of 11 mmHg and diastolic -1 mmHg.

Conclusion: The conclusion of brain gym therapy have been proven to reduce blood pressure.

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### **INTRODUCTION**

Elderly is the final stage of human development, occurring after the age of 45 or 60. Generally, individuals entering old age will experience physical changes, from a strong body to a very weak one. The decline in health experienced by the elderly tends to potentially cause physical and mental health problems, and lead to dissatisfaction with life. Aging is a biological process that every individual goes through through three main stages: childhood, adulthood, and old age ([Minarti, 2022](#)).

According to the [World Health Organization \(2024\)](#), by 2023, 1 in 6 people worldwide will be 60 years of age or older. By then, the proportion of the population aged 60 and over will increase from 1 billion to 1.4 billion. In Southeast Asia, the elderly population is 8%, or approximately 142 million people. Meanwhile, in Indonesia, the number of elderly is estimated to be around 80 million. Riau Province, especially Pekanbaru City, with the number of elderly people in 2025 based on gender and age group with ages 60-64 years (male 19,028 people and female 18,125 people, aged 65-69 years (male 14,449 people and female 13,545 people, aged 70-75 years (male 8,327 people and female 8,688 people), and aged 75 years and above (male 24,490 people and female 7,379 people (Riau Province Statistics Agency, 2025).

Health problems in the elderly include physical, cognitive, emotional, spiritual, and psychosocial issues. One physical problem is hypertension. Hypertension, more commonly known as high blood pressure, is actually arterial hypertension caused by chronically elevated blood pressure. Hypertension is a circulatory system disorder that causes blood pressure to rise above the normal 120/80 mmHg. Hypertension is often called the "silent killer" because sufferers do not experience or recognize specific signs and symptoms when complications such as kidney damage, stroke, heart disease, and other life-threatening diseases occur. The higher the blood pressure, the greater the risk of damage to the heart and blood vessels in large organs such as the brain and kidneys (Rizkyka, 2022).

The causes of hypertension are broadly divided into two risk factors: non-modifiable risk factors and modifiable risk factors. Modifiable risk factors include an unhealthy lifestyle, such as consuming foods high in fat and salt, obesity, smoking, alcohol consumption, a sedentary lifestyle, and stress. Non-modifiable risk factors include increasing age and the aging process, gender, and a history of hypertension (Budi Kristanto et al., 2025).

According to WHO data from 2023, approximately 1.28 billion people, aged 30 to 79, suffer from hypertension worldwide. The highest prevalence is in Africa, with 1.13 billion people, followed by the Eastern Mediterranean, with 972 million. In Indonesia, hypertension ranks fourth with a prevalence of 70 million (WHO, 2023). According to the 2023 Indonesian Health Survey (SKI), the prevalence of hypertension in Indonesia was 34.11%. This means that approximately one-third of the Indonesian population suffers from hypertension, or high blood pressure. According to data from the Health Office (2023), the prevalence of hypertension has increased, reaching 32.5 million cases. Data from the Pekanbaru City Health Office in 2023 recorded 37,699 people with hypertension. Data from the Khusnul Khotimah Health Service Unit (UPT PSTW) in 2024 showed that 72 elderly people suffered from hypertension, of which 37 were elderly. On average, the elderly did not understand the importance of hypertension treatment in old age.

Early management of hypertension includes pharmacological and non-pharmacological therapies. Pharmacological therapy for hypertension involves administering diuretics. Pharmacological therapy aims to lower blood pressure effectively and efficiently, although antihypertensive medication is not always the first step in hypertension management. Lowering blood pressure does not guarantee prevention of future complications, but it is associated with a reduced risk. Non-pharmacological therapies, on the other hand, emphasize lifestyle interventions. Adopting an appropriate lifestyle is a safe and effective therapy for preventing or delaying the onset of hypertension and can reduce cardiovascular risk. One rarely known complementary therapy that is easy to perform and can be used by anyone is brain gym (Hendra, 2021).

Brain gym is a series of exercises based on simple body movements. The movements are deliberately designed to stimulate the brain. In the lateral dimension, the left and right brain are stimulated, while in the focusing dimension, brain gym movements also attempt to relieve or relax the hindbrain and forebrain. In the focusing dimension, brain gym movements also stimulate the systems associated with feelings or emotions, namely the midbrain (limbic system) and the cerebrum. Brain gym can be done by people of all ages, from infants to the elderly (Budi Kristanto et al., 2025).

Based on research conducted by Budi Kristanto et al (2025) with the title of the effectiveness of brain gym on reducing blood pressure in elderly with hypertension, the results showed a decrease in the average value of systolic blood pressure by 20.83 mmHg and a decrease in diastolic blood pressure of 17.84 mmHg and brain gym is effective in reducing blood pressure in pre-elderly and elderly with hypertension ( $p = 0.001$ ). In addition, brain gym movements can help relax the muscles of the blood vessels so that there is widening in them which results in a decrease in blood pressure.

The results of a preliminary study on November 13, 2025 at the UPT PSTW Khusnul Khotimah in 2024 there were a total of 90 elderly people and those experiencing hypertension were 50% of the total elderly or 46 elderly and hypertension was the first most common disease in the UPT PSTW Khusnul Khotimah. Seeing the high prevalence and the importance of a non-pharmacological approach that is cheap, easy and safe, the author is interested in conducting a

study entitled "The Effectiveness of Brain Gym on Reducing Blood Pressure in the Elderly with Hypertension at the Khusnul Khotimah Social Welfare Home (PSTW).

## METHOD

This Final Scientific Paper for Nursing uses a descriptive case study design. This case study research begins with assessment, diagnosis, intervention, implementation, and evaluation using an evidence-based nursing approach with 2 subjects. This study was conducted on December 1-3, 2025. The implementation instrument used was an observation sheet. The intervention was given for 10 minutes, from 10:00 to 11:00 WIB. This case study focuses on nursing care for Mr. J and Mr. B with the application of brain gym therapy to lower blood pressure in elderly with hypertension.

## RESULTS AND DISCUSSION

### Nursing Assessment

The assessment was conducted on two clients with a medical diagnosis of hypertension. Based on the analysis of the assessment results, the author analyzed several factors that caused the client to experience hypertension, namely age, smoking, stress, and sleep quality. Currently, the clients are elderly with ages over 60 years, namely Mr. J aged 66 years and Mr. B aged 86 years. This is in accordance with research (Budi Kristanto et al., 2025), stating that the causes of hypertension are generally divided into two risk factors, namely non-modifiable risk factors and modifiable risk factors. Modifiable factors include unhealthy lifestyles, for example consuming foods high in fat and high in salt, obesity, smoking, alcohol, sedentary lifestyle, and stress. While unmodifiable factors are increasing age and the aging process, gender, a history of hypertension in the family or heredity, and certain races or ethnicities. Patients who suffer from high blood pressure often experience headaches and problems with sleep mode.

The author also analyzed the results of the study, identifying complaints of patients with hypertension, found similarities in the symptoms of hypertension experienced by Mr. J and Mr. B. Patients with hypertension complained of headaches and neck pain, lethargy, and increased blood pressure. This is in accordance with the theory put forward by (Agustina, 2019) namely the signs and symptoms that usually appear are such as headaches, anxiety, dizziness, stiff neck, blurred vision, fatigue and weakness. The symptoms of hypertension are very varied and can start without symptoms, a feeling of heaviness/lightness in the neck, headaches, heart palpitations, vertigo, blurred vision, ringing in the ears to nosebleeds. Headaches to the neck are the presence of narrowing of blood vessels due to vasoconstriction so that it can cause increased cerebral vascular.

During the assessment, Mr. J's BP was 161/101 mmHg and Mr. B's BP was 150/82 mmHg. This is in accordance with the theory (Budi Kristanto et al., 2025) that hypertension is a disorder of the circulatory system that causes blood circulation above normal 120/80 mmHg. Data obtained during the assessment, namely Mr. J and Mr. b said they were > 60 years old and the patient said he smoked  $\pm$  3-4 cigarettes per day, this is the cause of the patient experiencing hypertension due to blood vessel damage resulting in disruption of blood circulation. This is in accordance with the theory (Agustina, 2019) that essential hypertension is usually caused by increased resistance to genetic and environmental factors, which are connected by the host of neurohormonal mediators. Peripheral blood or increased blood volume. Primary hypertension is caused by increased activity of the sympathetic nervous system (SNS), which causes an inappropriate response to sympathetic nerve stimulation and gene replacement in receptors. Another factor is a persistent increase in serum catecholamine levels. Hypertension can be caused by many factors including age, gender, lifestyle, and obesity. Hypertension also causes blood vessel damage, structural changes, vasoconstriction blood vessel obstruction, and disruption of blood circulation. As a result, patients suffering from high blood pressure often experience headaches and problems with sleep mode.

### Nursing Diagnosis

The nursing diagnoses that emerged based on priority were decreased cardiac output related to changes in preload (edema) and increased blood pressure and edema (D.0008) PPNI

SDKI Working Group Team (2018). The main complaint felt by hypertension sufferers is increased blood pressure (Adjeng, 2022). In this case study, the same complaint was also found in both clients, so the author raised a nursing diagnosis of risk of decreased cardiac output for nursing intervention.

Based on the theory (Adjeng, 2022), it is explained that the primary diagnosis in patients with hypertension is decreased cardiac output. Decreased cardiac output occurs when the heart is at risk of pumping the heart that is not sufficient to meet the body's metabolic needs. Cardiac output can be affected by age and a monotonous lifestyle. In old age, the elasticity of peripheral arteries usually decreases and the heart valves thicken. Decreased elasticity of peripheral arteries will increase blood pressure, which can cause decreased cardiac output. This is consistent with what was found in patients with a primary diagnosis of decreased cardiac output. This diagnosis is supported by data obtained during the assessment, namely the patient complained of headaches, neck pain, dizziness, edema, lethargy, and blood pressure >140/90 mmHg.

### **Nursing Interventions**

Nursing interventions are all treatments carried out by nurses based on clinical knowledge and judgment to achieve the expected outcomes (PPNI, 2018). Brain gym therapy interventions are given according to the nursing problems raised, namely decreased cardiac output and the risk of ineffective peripheral perfusion. The nursing action plan (SIKI, 2018) given to clients based on the nursing diagnosis of decreased cardiac output is cardiac care: identify primary signs/symptoms of decreased cardiac output, monitor blood pressure, check blood pressure and pulse rate, provide relaxation therapy (brain gym relaxation therapy), encourage gradual physical activity, encourage smoking cessation. For other clients based on the nursing diagnosis of ineffective peripheral perfusion risk, circulation care: identify risk factors for circulatory disorders, in therapeutic, namely perform hydration, provide relaxation therapy (brain gym relaxation therapy), in education, namely encourage regular exercise, encourage regular blood pressure control medication and in collaboration with the administration of antihypertensive drugs.

### **Nursing Implementation**

The implementation was carried out for 3 consecutive days in the morning from 01-03 December 2025 at 10:00-12:00 WIB on Mr. J and Mr. B with a duration of 10 minutes.

The implementation procedure is divided into four stages, namely the pre-interaction stage, orientation stage, work stage, and termination stage. In the pre-interaction stage, the nurse prepares all necessary tools and materials, assesses the patient's needs, physical and psychological health status (history of severe physical weakness), explains the purpose and benefits of therapy to the patient, makes a contract for time and place (duration 10 minutes per meeting), prepares a comfortable, quiet environment with minimal noise interference, fills in the informed consent. Next, in the orientation stage, the nurse greets, introduces herself, and builds a relationship of mutual trust, asks the patient's preferred nickname, explains that the therapy will last for 10 minutes, conveys that the therapy being carried out is Brain Gym, gives the patient the opportunity to ask questions, asks for the patient's consent and willingness to do Brain Gym. In the working stage, the nurse positions the patient in a comfortable sitting position, instructs the patient to be calm and relaxed, asks the patient to gently touch the points on the forehead with their fingertips, two fingers above the eyebrows (midway between the eyebrows and the hairline), closes the eyes to be more comfortable and calm, then takes a deep and slow breath for 3 seconds. Think of anything that makes you happy and throws away memories of worrying things, repeating up to 3 times, done for 10 minutes starting from orientation. After the procedure is completed, the nurse measures the patient's blood pressure again to assess the changes that have occurred, and documents the measurement results. In the termination stage, the nurse evaluates the results of the procedures that have been carried out, the nurse validates the feelings "how do you feel after we did the brain gym therapy, are you more relaxed?", makes a time contract for the next meeting if necessary, and closes the interaction by saying goodbye and greeting the client. Overall, the brain gym therapy procedure

is carried out for 3 consecutive days, carried out in the morning with a duration of approximately 10 minutes per session.

On the first day of implementation on December 1, 2025, Mr. J obtained pretest results with blood pressure of 168/103 mmHg and posttest with blood pressure of 149/91 mmHg. On the second day, December 2, 2025, pretest with blood pressure of 135/60 mmHg and posttest with blood pressure of 128/40 mmHg. On the third day, December 3, 2025, pretest with blood pressure of 157/87 mmHg and posttest with blood pressure of 151/80 mmHg.

On the first day of implementation on December 1, 2025, Mr. B obtained pretest results with blood pressure of 153/92 mmHg and posttest with blood pressure of 141/82 mmHg. On the second day, December 2, 2025, pretest with blood pressure of 165/81 mmHg and posttest with blood pressure of 145/99 mmHg. On the third day, December 3, 2025, pretest with blood pressure of 141/84 mmHg and posttest with blood pressure of 139/80 mmHg.

Factors that contribute to high blood pressure, such as lack of physical activity, stress, age, and smoking, also worsen hypertension by increasing blood pressure and water retention. If left untreated, hypertension can lead to death and increase medical costs ([Henny Dwi Hernita et al., 2024](#)). Factors that contribute to lowering blood pressure, such as a low-salt diet, brain gym therapy, exercise, and regular use of antihypertensive medications, can also help lower blood pressure in people with hypertension ([Arifuddin et al., 2023](#)).

### Nursing Evaluation

The evaluation results were quite significant for both patients. Subjective data for Mr. J and Mr. B showed that the patient reported reduced headaches after receiving brain gym therapy. Objective data: Mr. J and Mr. B appeared more relaxed. Mr. J's BP before brain gym therapy was 157/87 mmHg, and after brain gym therapy, a decrease in blood pressure of 151/80 mmHg was observed. Meanwhile, Mr. B's BP before brain gym therapy was 141/84 mmHg. After brain gym therapy, a decrease in blood pressure of 139/80 mmHg was observed. Nursing problems were resolved, and interventions continued by teaching non-pharmacological brain gym therapy techniques. This proves that brain gym therapy is proven to be able to reduce blood pressure in elderly people with hypertension.

**Table 4.1** Blood Pressure Measurement Mr. J

Mr. J	Pre Test	Post Test
<b>First Day</b>	168/103 mmHg	149/91 mmHg
<b>Second Day</b>	135/60 mmHg	128/40 mmHg
<b>Third Day</b>	157/87 mmHg	151/80 mmHg

**Table 4.1** Blood Pressure Measurement Mr. B

Mr. B	Pre Test	Post Test
<b>First Day</b>	153/92 mmHg	141/82 mmHg
<b>Second Day</b>	165/81 mmHg	145/99 mmHg
<b>Third Day</b>	141/84 mmHg	139/80 mmHg

This is in line with research conducted by [Kusuma & Anggraeni \(2022\)](#) entitled "The Effect of Brain Gym on Blood Pressure in Hypertensive Patients." They found a significant difference in systolic blood pressure reduction between before and after brain gym ( $p=0.007$ ) and a significant difference in diastolic blood pressure reduction between before and after brain gym ( $p=0.001$ ) ( $\alpha<0.05$ ). Therefore, it can be concluded that brain gym has an effect on blood pressure in hypertensive patients. The movements in brain gym can improve several body systems, especially the cardiovascular system. This therapy can lower heart rate and blood pressure while also improving blood flow.

This is also in line with research conducted by [Pratama & Listyaningsih \(2020\)](#) with the title of the effect of brain gym on blood pressure in people with hypertension in Yogyakarta, the results showed that there was an average difference between pre and post in systolic pressure of 3.913 mmHg, t count (2.510) > t table (2.04) and p.value (0.02) <  $\alpha$  (0.05). While for diastolic pressure of 2.783 mmHg, t count (2.227) > t table (2.04) and p.value (0.036) <  $\alpha$  (0.05). It was concluded that there is an effect of brain gym therapy on blood pressure in hypertensive patients. Brain gym movements can reduce stress (relax) and improve organ function and oxygen flow so as not to cause an uncontrolled increase in blood pressure.

### **Analysis Based on Intervention Implementation**

The implementation of brain gym therapy intervention on Mr. J and Mr. B was carried out based on the nursing diagnosis of risk of ineffective peripheral perfusion related to increased blood pressure and increased blood pressure. This intervention was chosen because it is safe, easy to implement, and appropriate to the needs of elderly people with high blood pressure. The implementation process was carried out for 3 consecutive days in the morning with a duration of 10 minutes per session. Before administering the intervention, the author took a blood pressure measurement. Then, the nurse positioned the patient in a comfortable sitting position, instructed the patient to be calm and relaxed, asked the patient to gently touch the points on the forehead with the fingertips, two fingers above the eyebrows (midway between the eyebrows and the hairline), did it by closing the eyes to be more comfortable and calm, then take a deep and slow breath for 3 seconds. Think of anything that makes you happy and throw away memories of worrying things, repeating up to 3 times, done for 10 minutes starting from orientation. After the action is completed, the nurse measures the patient's blood pressure again to assess the changes that have occurred.

The results of the intervention implementation showed a decrease in blood pressure in patients Mr. J and Mr. B. On the first day, the pretest results were 153/92 mmHg and the posttest results were 141/82 mmHg. On the second day, the pretest results were 165/81 mmHg and the posttest results were 145/99 mmHg. On the third day, the pretest results were 141/84 mmHg and the posttest results were 139/80 mmHg.

Meanwhile, brain gym therapy can help lower blood pressure through muscle relaxation and increased blood flow. Brain gym therapy can help reduce blood pressure by increasing endorphin production, dilating blood vessels, and reducing stress hormones like cortisol. Brain gym therapy can help lower blood pressure by improving blood vessel elasticity and reducing muscle tension that contributes to hypertension. Primary hypertension is caused by increased activity of the sympathetic nervous system (SNS), which leads to an inappropriate response to sympathetic nerve stimulation and gene changes in receptors.

Brain Gym movements can relax and calm a person, maximizing organ function and oxygen flow. When relaxed, the body activates the parasympathetic nervous system, which lowers heart rate, respiration rate, and blood pressure. Therefore, stress management in people with hypertension requires control to prevent uncontrolled increases in blood pressure. Exercise for the elderly can help relax blood vessel muscles, causing them to widen, resulting in lower blood pressure ([Kusuma & Anggraeni, 2022](#)).

The movement involves placing both palms on the forehead, two fingers above the eyebrows, or the palms on the crown of the head. This is followed by regular breathing while creating a quiet atmosphere, thus supporting concentration and regulation involving both upper and lower brain functions, which is beneficial for calming, comforting, and promoting positive thinking (Budi Kristanto et al., 2025).

Consistent and procedural implementation of the intervention was also a crucial factor in the success of this therapy. Throughout the process, the client appeared cooperative and showed no signs of discomfort or side effects from the Brain Gym therapy. In addition to lowering blood pressure, behavioral changes were also observed, such as the absence of headaches and neck pain, decreased lethargy, and increased ability to perform activities more comfortably. This indicates that the intervention not only reduced blood pressure but also improved the client's overall quality of life.

### Recommendations from Related Parties

The implementation of this nursing care has resulted in positive improvements in the condition of patients with hypertension. The author recommends the implementation of brain gym therapy, which has been proven to lower blood pressure in elderly people with hypertension because this therapy is practical, inexpensive, can be done anywhere and anytime, and is easy to apply. This is evidenced by the decrease in blood pressure after brain gym therapy. Furthermore, brain gym therapy also has the benefit of lowering heart rate and blood pressure while also improving blood flow. It is hoped that elderly health services can increase the role of nurses and social workers at the UPT Husnul Khotimah, Riau Province Social Service, in applying brain gym therapy as a nursing intervention for elderly people with hypertension.

### CONCLUSION

Based on the results of non-pharmacological nursing care, brain gym therapy, which was carried out on December 1-3, 2025, at 10:00–12:00 WIB, the UPT PSTW Husul Khotimah, Riau Province Social Service, carried out on 2 clients (Mr. J and Mr. B) with complaints of high blood pressure and headaches and neck pain, so it can be concluded that the therapy can reduce blood pressure, after being given intervention for 3 consecutive days every morning at 10:00–12:00 WIB, the results showed that the blood pressure of the 2 clients experienced a significant decrease.

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### AUTHOR CONTRIBUTION STATEMENT

The first author was involved in research planning, data collection and analysis, and drafting the Nursing Final Scientific Paper. The second author provided academic direction, provided research methodology guidance, provided critical review, and revised and refined the manuscript. Both authors are responsible for the content of this Nursing Final Scientific Paper.

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