

# THE EFFECT OF COMPLEMENTARY THERAPY COMBINATION OF ERGONOMIC EXERCISE AND MUSIC (SERASI) TO LOWER BLOOD PRESSURE IN THE ELDERLY: CASE STUDY



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## ABSTRACT

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**Introduction:** Elderly are people who have reached the age of more than 60 years and have experienced natural changes, both physical changes and changes related to the disease process. Elderly people tend to have a higher risk of experiencing degenerative diseases due to decreased body function. One of the diseases that is often suffered by the elderly is hypertension. Management to overcome hypertension can be done non-pharmacologically with complementary therapy, namely a combination of ergonomic gymnastics and music therapy (*Serasi*). **Purpose:** This study aims to determine the effect of combination therapy of ergonomic gymnastics and music therapy (*Serasi*) on reducing blood pressure in the elderly. **Methods:** The research method used is case study method. This intervention was given to 3 elderly with hypertension. The intervention was carried out for 3 days with a duration of  $\pm$  30 minutes per day. Data analysis used in this study used the Wilcoxon test. **Discussion:** Client's blood pressure after being given the intervention decreased with an average blood pressure of 158 mmHg (systolic) and 89.89 mmHg (diastolic). The Wilcoxon test results obtained a Sig. (2-tailed) value for systolic of 0.007 and diastolic of 0.017 where this value is  $<0.05$ . There is a significant effect of providing a combination of ergonomic gymnastics and music therapy (*Serasi*) on blood pressure in elderly hypertensive patients.

**Keywords:** Hypertension, elderly, ergonomic exercise, and music therapy

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## INTRODUCTION

Hypertension is a condition which systolic blood pressure increases  $\geq 140$  mmHg and/or diastolic blood pressure increases  $\geq 90$  mmHg. This condition is often asymptomatic. Uncontrolled increase in blood pressure can lead to complications, such as stroke, aneurysm, heart failure, heart attack and kidney damage (Wirakhmi, 2023). Based on data from the World Health Organization (WHO), it shows that around 972 million people (26.4%) of the world's population suffer from hypertension and is expected to increase to 29.2% in 2020. Of the 972 million people with hypertension, 333 million are in developed countries, and the remaining 639 million are in developing countries.

The prevalence of hypertension in Indonesia

tends to increase with age, namely the prevalence of hypertension in the 55-64 age group is 45.9%; 65-74 years of age is 57.6%; and the age group  $>75$  years is 63.8% (Ministry of Health of the Republic of Indonesia, 2019 in Khotimah, 2023). The incidence of hypertension in the elderly has a fairly high prevalence at the age of 65 years and over, ranging from 60-80% of the total number of diseases in Central Java. Data from the Banyumas Regency Health Office (Dinkes) in 2019, the prevalence of essential hypertension in the elderly was 68% and hypertension due to other factors was 32% (Dinkes Banyumas Regency, 2021 in Khotimah, 2023).

Hypertension in Sumbang District, Banyumas is the 4th highest case where there are 20% (19,727) cases. Sumbang

Regency is divided into 2 working areas, namely the working areas of Sumbang Health Center 1 and Sumbang Health Center 2. Banteran Village is one of the villages included in the working area of Sumbang Health Center 1 with a total of 10,947 cases of hypertension (Banyumas Regency Health Office, 2021 in Khotimah, 2023). Hypertension can be suffered by people of all ages, especially the elderly. Causes of hypertension in the elderly include age, weight, salt consumption, and physical activity. This is because in the elderly, as age increases, the elasticity of the skin and blood vessels will decrease, causing disorders such as stiff joints and abnormal blood flow to the brain, as age increases, the incidence of hypertension increases (Tanjung, Mardiono and Saputra, 2023).

Hypertension can be treated pharmacologically and non-pharmacologically, non-pharmacological treatment includes reducing salt consumption, alcohol consumption, cigarette consumption, losing excess weight, and doing complementary physical therapy activities. Physical activity such as exercise has benefits for lowering blood pressure if done regularly. One type of exercise that can be applied and its movements are suitable for the elderly is ergonomic gymnastics (Arwani, Zulfa and Karlina, 2023). Ergonomic gymnastics is a gymnastics technique with movements inspired by prayer movements and in accordance with the principles of body creation so that this gymnastics is effective, logical, and efficient to do. Ergonomic gymnastics has many benefits besides activating the function of body organs, it also facilitates oxygen circulation so that the body will feel fresh and energy increases, cures various diseases, and controls high blood pressure (Arwani, Zulfa and Karlina, 2023).

Ergonomic gymnastics can reduce narrowing and pressure on blood vessels, in addition, this gymnastics also increases the function of blood vessel dilation and reduces peripheral vascular resistance. Increased elasticity of blood vessels can make it easier for blood vessels to stretch quickly when the heart pumps blood (Veri and Amelia, 2020). Music therapy is a therapy using music that aims to improve or improve physical, emotional, cognitive,

and social conditions in individuals of all ages. Music is beneficial in improving health, reducing muscle tension, reducing pain, creating a relaxed, safe, and pleasant atmosphere, balancing brain waves, lowering heart rate, pulse rate, and blood pressure (Aulia, Inayati and Immawati, 2023).

The results of a study conducted at the elderly posyandu RW 03 Banteran Village, Sumbang District, who experienced hypertension found 3 elderly people with uncontrolled hypertension even though there was a program. The results of the preliminary study found that 3 elderly people said they already knew they had a history of hypertension but did not experience significant symptoms so they did not take examinations or actions to control their blood pressure. Uncontrolled hypertension as found in previous studies is very risky for the health of the elderly in the long term. Therefore, it is necessary to carry out interventions to lower blood pressure that can be done independently in everyday life, and as a form of reminder to the elderly that it is important to pay attention to health conditions, one of which is through a combination of ergonomic gymnastics and music therapy. The high incidence of hypertension

## METHOD

The research method in this scientific work uses a case study approach in the form of the application of Evidence Based Practice (EBP) using a quantitative approach with a pre-experimental pretest-posttest design. Respondents were given therapy for 3 days with a duration of  $\pm 30$  minutes per day. Data collection was carried out every day during the intervention period (3 days) by conducting pretest and posttest blood pressure checks before and 30 minutes after therapy. The data analysis to be used is the Wilcoxon test using computer software.

## RESULT

Based on the results of a case study of three elderly people in Banteran Village who had hypertension. The three elderly people had had hypertension for  $\pm 5$  years. It is known that the three elderly people did not routinely take blood pressure lowering medication and did health checks. The three elderly people complained of

pain or stiffness in the nape of the head and headaches. . P: pain in the nape of the head, Q: throbbing pain, R: pain focused on one point S: scale 5 and 6, T: pain that comes and goes and will increase when doing activities and thinking a lot. According to research from Ekasari et al., (2021) signs and symptoms of hypertension include frequent headaches, visual disturbances, nausea, vomiting, chest pain, shortness of breath, flushing, and dizziness.

**Table 1.** Result Blood Pressure

Day	Name	Systolic		Diastolic		Decrease	
		Pre	Post	Pre	Post	Systolic	Diastolic
1	W	165	160	95	82	5	13
	SM	187	182	99	98	5	1
	ST	154	153	99	88	1	11
2	W	154	151	94	90	3	4
	SM	180	176	95	95	4	0
	ST	150	146	86	85	4	1
3	W	146	140	85	82	6	3
	SM	176	174	93	92	2	1
	ST	145	140	85	85	5	0
Mean decrease blood pressure						3.89	3.78

Several risk factors that can cause high blood pressure are advanced age and a history of high blood pressure in the family, obesity, high salt levels, and lifestyle habits such as smoking and drinking alcohol. In addition, there are also factors that can cause high blood pressure, namely being overweight followed by lack of exercise, and consuming fatty and high-salt foods (Akbar, Nur and Humaerah, 2020).

The *Serasi* Intervention carried out on Mrs. W for 3 days resulted in decreased blood pressure, on the first day before the intervention 165/95 mmHg and after the intervention it became 160/94 mmHg, on the second day before the intervention 154/94 mmHg after the intervention became 151/90 and on the third day before

the intervention 146/85 mmHg and after the intervention became 140/82 mmHg. Mrs. W's blood pressure decreased but was still included in the hypertension category, this was because Mrs. W still often consumed fried foods, and foods with high sodium and MSG content.

The blood pressure results from the 3-day *Serasi* intervention in Mrs. ST also decreased, on the first day before the intervention 154/99 mmHg and after the intervention became 153/88 mmHg, on the second day before the intervention 150/86 mmHg after the intervention became 146/85 and on the third day before the intervention 145/85 mmHg and after the intervention became 140/85 mmHg. Mrs. ST's blood pressure decreased but was still included in the hypertension category, this was because Mrs. ST still often consumed fried foods, and foods with high salt and MSG content.

Elderly people experience hypertension, among others, due to the consumption of foods that are at risk of increasing blood pressure, including consuming foods with high salt content, consuming foods with MSG and consuming fried foods. Consumption of salt or high levels of sodium in food consumed by the community is one of the causes of hypertension. Sodium that is absorbed into the blood vessels from high salt consumption causes water retention, so that blood volume increases. This is what causes blood pressure to increase. High sodium intake will cause excessive secretion of natriuretic hormone which will indirectly increase blood pressure (Yunus, Kadir and Lalu, 2023). Consumption of fried foods will increase blood cholesterol levels and cause plaque in blood vessels. Narrowed blood vessels due to plaque in the blood vessels cause increased pressure when the heart contracts or increased systolic blood pressure (Yoga Madani, 2017).

Table 2. Wilcoxon Test Results

BP	Variable	Median	Min-Max	N	Z	Sig. (2 tailed)
Systolic	Pre-test	154	187-145	3	-2.677	0.007
	Post-test	153	182-140	3		
Diastolic	Pre-test	94	99-85	3	-2.388	0.017
	Post-test	90	98-82	3		

Based on the blood pressure monitoring table of Mrs. SM during the *Serasi* intervention, it was found that blood pressure decreased, on the first day before the intervention 187/99 mmHg and after the intervention it became 182/98 mmHg, on the second day before the intervention 180/95 mmHg after the intervention became 176/95 and on the third day before the intervention 176/95 mmHg and after the intervention became 174/93 mmHg. Given therapy on the third day, Mrs. SM's blood pressure was still quite high, the client said she had a family history of hypertension. The client said systolic blood pressure usually reaches 200 mmHg. Mrs. SM often consumes coffee at least once a day, the client thinks that if she doesn't drink coffee she will feel weak and unmotivated. Apart from liking coffee, Mrs. SM also likes to eat fried foods. Consumption of fried foods and coffee can be a factor in causing hypertension, this is in line with research by Sari, Reni Zulfitri and Nopriadi (2022) that consuming coffee is considered to have a negative impact on health, this is due to the presence of a chemical compound, namely caffeine, which plays a role in the occurrence of hypertension. The performance of caffeine in influencing increased blood pressure is by binding to adenosine receptors and then activating the sympathetic nervous system. This will have an impact on vasoconstriction of blood vessels and increase peripheral resistance which causes blood pressure to increase, while blood pressure that is continuously high for a long period of time can cause complications, namely damage to the kidneys (kidney failure), heart (coronary heart disease) and brain and can also cause stroke (Sari, Reni Zulfitri and Nopriadi, 2022). Meanwhile, the behavior of consuming fried foods will increase cholesterol levels in the blood and cause plaque in the blood vessels.

Narrowed blood vessels due to plaque in the blood vessels cause increased pressure when the heart contracts or an increase in systolic

blood pressure (Yoga Madani, 2018). In addition, the symptoms that arise in the three clients such as pain or stiffness in the nape (back of the neck) and headaches. During the assessment, the three elderly people said they rarely exercised and did not know about gymnastics to lower hypertension. Therefore, the efforts that will be made by the author to overcome this problem include providing a combination of ergonomic gymnastics and music therapy (*Serasi*). The purpose of *Serasi* therapy is to lower blood pressure in elderly people with hypertension. *Serasi* therapy is carried out for 3 days with a duration of  $\pm 30$  minutes per day. The interventions carried out were ergonomic gymnastics and music therapy carried out simultaneously.

## DISCUSSION

The combination therapy "*Serasi*" consists of 2 therapies, namely ergonomic gymnastics and music therapy. Based on the results of the Wilcoxon test, it was found that *Serasi* therapy had an effect on reducing blood pressure in elderly hypertensive patients. This therapy was carried out for 3 days showing a difference in blood pressure values before and after therapy. This is evidenced by the Sig. (2-tailed) value of 0.007 for systolic pressure and 0.017 for systolic pressure. Where this value is  $<0.05$ , which means that there is a difference in blood pressure values before and after therapy. This is supported by research from Arwani, Zulfa and Karlina (2023) that the application of ergonomic gymnastics therapy for 3 days with a duration of  $\pm 30$  minutes per day was able to significantly reduce blood pressure from the original average of 146/93.5 mmHg to 133/84.95 mmHg ( $p < 0.05$ ). This is supported by research by Veri and Amelia (2020) who provided ergonomic exercise relaxation therapy for 3 days to reduce blood pressure in the elderly. Meanwhile, research by Hanum, Sukmarini and Zahra (2023) found that music therapy for 3 days had a



significant effect on reducing systolic blood pressure by 13.59 mmHg and diastolic by 12.72 mmHg.

Based on the results of data analysis, it was found that the blood pressure of the elderly before *Serasi* therapy was an average of 161.89 mmHg (systolic) and 92.67 mmHg (diastolic) and after *Serasi* therapy, the average blood pressure of the elderly decreased to 158 mmHg (systolic) and 89.89 mmHg (diastolic). The results of blood pressure measurements before therapy showed that the three elderly had hypertension. According to Anggraini, Sitorus and Damanik (2022) a person is indicated to have hypertension if the systolic and diastolic pressures are more than 140 mmHg and 90 mmHg respectively.

After being given a combination of ergonomic gymnastics and music therapy intervention for 3 days with a duration of  $\pm 30$  minutes. Blood pressure measurements were taken again 30 minutes after the intervention, the average blood pressure of the three elderly people decreased to 158 mmHg (systolic) and 89.89 mmHg (diastolic). The average decrease in systolic blood pressure was 3.89 mmHg, diastolic blood pressure decreased by 3.78 mmHg.

Ergonomic gymnastics is a gymnastics technique with movements inspired by prayer movements and in accordance with the principles of body creation so that this gymnastics is effective, logical, and efficient to do. Ergonomic gymnastics has many benefits besides activating the function of body organs, it also facilitates oxygen circulation so that the body will feel fresh and increase energy, cure various diseases, and control high blood pressure (Arwani, Zulfa and Karlina, 2023).

Ergonomic gymnastics is gymnastics and breathing techniques to restore or improve the position of the flexibility of the nervous system and blood flow. If the flexibility of blood flow is good, it will make it easier for the blood vessels to relax quickly when the heart pumps blood. In blood vessels that are less elastic or stiff, blood vessels will find it difficult to relax quickly when the heart pumps, which will later cause blood pressure to increase when the heart contracts. Ergonomic gymnastics also maximizes the supply of oxygen to the brain, if the blood vessels are elastic, blood will easily flow to the brain, so that the brain does not lack oxygen and nutrients and is protected from damage to blood

vessels in the brain (Veri and Amelia, 2020).

When *Serasi* therapy was carried out, the three elderly people were cooperative until the therapy was finished, following the therapy for three consecutive days, very enthusiastic and cheerful. Each time the third intervention, the client said their body felt more comfortable and relaxed, and said their health knowledge had increased. All three clients said this therapy was easy to practice independently again. The results of observations during *Serasi* therapy, clients appeared calmer and more relaxed. After being given therapy, all three clients experienced a decrease in blood pressure. All three clients felt grateful because they could find out alternative ways to deal with their high blood pressure. After the third *Serasi* therapy, the client said their body was more relaxed and the aches and pains decreased, this is supported by research by Dewi, Sutajaya and Dewi (2019) that there was a decrease in musculoskeletal complaints in the elderly before ergonomic gymnastics was carried out and after ergonomic gymnastics was carried out with an average decrease from the category of sick to slightly sick. Ergonomic gymnastics is a combination of muscle movement and breathing. When standing perfectly all nerves become one control point in the brain, at that time the mind is controlled by the consciousness of reason to be healthy and fit, and when the body bends in the ruku movement of gratitude it can supply oxygen to the entire body.

## CONCLUSION

Blood pressure in the elderly after being given a combination of ergonomic gymnastics and music therapy for 3 days, namely an average decrease in pre and post blood pressure of 3.89 mmHg in systolic blood pressure and 3.78 mmHg in diastolic blood pressure. There is a significant effect of giving a combination of ergonomic gymnastics and music therapy (*Serasi*) on reducing blood pressure in the elderly with a Sig. (2-tailed) value  $< 0.05$ .

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