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The Effectiveness Of Tera Exercise And Yoga Exercise On Blood Pressure Changes In Hypertensive Elderly At Panti Werdha Santo Yoseph

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ABSTRACT

Hypertension in the elderly increases the risk of serious complications. Tera exercise and yoga exercise are non-pharmacological interventions that can help lower blood pressure. This study aims to analyze the effectiveness of Tera exercise and yoga exercise in reducing blood pressure among hypertensive elderly at Panti Nursing Home Santo Yoseph, Kediri City. This quantitative study employed a two-group pretest-posttest design. A total of 30 elderly individuals with hypertension at Panti Wredha Santo Yoseph, Kediri City, were divided into two groups: 15 participants in the Tera group and 15 participants in the Yoga group. The intervention was conducted over four sessions within one month, with a frequency of once per week. Data were analyzed using the Wilcoxon test and the Mann-Whitney test. The study results showed that before the intervention, 8 participants (53.3%) in tera exercise and 7 participants (46.7%) in yoga exercise had blood pressure in the mild hypertension category. After the intervention, 6 participants (40%) in both types of exercise experienced a decrease in blood pressure to the normal category. The results of the Wilcoxon test showed a significant difference in blood pressure before and after the intervention in the Tera Gymnastics group, with a p-value of 0.001 for systolic and 0.001 for diastolic blood pressure. Similarly, in the Yoga Exercise group, significant differences were observed, with a p-value of 0.011 for systolic pressure and 0.012 for diastolic pressure, indicating that Yoga Exercise effectively reduced blood pressure in hypertensive elderly individuals. The Mann-Whitney test results indicated that the post-test systolic blood pressure significance value between the Tera Exercise and Yoga Exercise groups was 0.771, while the post-test diastolic blood pressure significance value was 0.983 ($p > 0.05$). These findings suggest no significant difference between the two groups in lowering blood pressure. There is no significant difference in the effectiveness of Tera Exercise and Yoga Exercise in reducing blood pressure among hypertensive elderly individuals at Panti Werdha Santo Yoseph, Kediri City.

Keywords: Elderly, Hypertension, Tera Exercise, Yoga

INTRODUCTION

Elderly is when a person experiences increasing age accompanied by a decline in physical function characterized by a decrease in muscle mass and strength, maximum heart rate, increased body fat, and decreased brain function. (Carolina et al. 2019). At this age, the elderly experience a decline in immune function. Immune function includes a decline in heart function, one of the diseases of which is hypertension. (Fredy, Syamsidar, and Widya Nengsih, 2020). Hypertension is a health problem that is often found in the elderly and requires appropriate treatment such as implementing physical exercise for the elderly and the role of the family to help the elderly overcome this problem. Hypertension is the single main contributor to heart disease, kidney failure, and stroke in Indonesia. Hypertension or high blood pressure,

is often referred to as "the silent killer" because it often goes without symptoms (Kesehatan et al., 2023).

According to *the World Health Organization* (WHO) and *the International Society of Hypertension* (ISH), there are currently 600 million people with hypertension worldwide, and 3 million of them die each year. WHO records that one billion people worldwide suffer from hypertension, two-thirds of whom live in low- and middle-income developing countries. The prevalence of hypertension will continue to rise sharply, with a prediction that by 2025, approximately 29% of adults worldwide will suffer from hypertension. Hypertension has caused the deaths of approximately 8 million people each year, 1.5 million of which occur in Southeast Asia, where a third of the population suffers from hypertension. (Ekarini, Heryati, and Maryam 2019).

Based on the Basic Health Research (RisKesDas) of the Ministry of Health (2018), the incidence of hypertension in Indonesia reached around 34.1%. The prevalence of hypertension in Indonesia based on measurements at age ≥18 years was 34.1%, while data on sufferers in East Java was known to be 36.5%. So, the picture in 2018 using individual analysis units shows that nationally 34.1% of the Indonesian population suffered from hypertension. If the current population of Indonesia is 261,890,872 people, there are 89,304,787,352 people who suffer from hypertension. Meanwhile, the incidence of hypertension in East Java Province is 13.47% or around 935,736 residents, with a proportion of men of 13.7% (387,913 residents) and women of 13.25% (547,823 residents) (East Java Health Office, 2016).

The results of research by Saputra and Sutanta (2021) titled "Effectiveness of Yoga and Elderly Exercises on Lowering Blood Pressure in Hypertensive Elderly at the Elderly Integrated Health Post (Posyandu) in Wironanggan Village. The results of the study using the Wilcoxon test showed that yoga and elderly exercise significantly reduced systolic and diastolic blood pressure in elderly people with hypertension. However, the data showed that yoga had a more significant effect than elderly exercise (Bahri, 2024).

The initial data survey conducted by researchers at the Santo Yoseph Elderly Home in Kediri City on March 18, 2024, revealed that there were 34 elderly people in the home, and 30 of them had hypertension. The results of a preliminary study with interviews related to high blood pressure (hypertension) conducted on 10 elderly people at the Santo Yoseph Elderly Home in Kediri City found that 4 elderly people said they had high blood pressure and often complained of dizziness, fatigue, and palpitations. When their hypertension recurred, they managed it by taking medication prescribed by the doctor, namely Amlodipine and verapamil, even consuming non-pharmacological drugs such as fruits, cucumbers, and Japanese pumpkin. At the Santo Yoseph Elderly Home, there was a monthly health check. 4 elderly people said they had previously done gymnastics but not tera gymnastics and yoga. 2 elderly people said they did not know about the benefits of tera gymnastics and yoga for hypertension because it was new for the elderly. (Results of a Preliminary Study with Interviews with Respondents at the Santo Yoseph Elderly Home Kediri City, 2024).

Some factors that contribute to hypertension are lifestyle-related, such as stress, obesity, lack of exercise, high-fat foods, high sodium intake, and low potassium intake. It is also caused by the aging process and the habit of hypertensive patients who ignore their high blood pressure. Increased blood pressure in the arteries can occur due to several processes: the heart pumps harder, thus flowing more fluid. With each second, large arteries lose their elasticity, becoming stiff and unable to expand when the heart pumps blood through them. Blood with each heartbeat is forced through narrower vessels than usual, causing blood pressure to rise. This is what happens in old age, where the artery walls have thickened and stiffened due to atherosclerosis (Triyanto, 2014). If hypertension is not immediately treated, it can result in complications such as coronary heart disease, heart failure, stroke, retinal damage, and peripheral vascular disease (Glenys Yulanda and Rika Lisiswanti, 2017). Therefore, to

overcome the problem of hypertension, there are two alternatives that can be given to hypertension sufferers: pharmacological and non-pharmacological (traditional) methods. Pharmacological treatment consists of diuretics, calcium channel blockers (CCBs), beta-blockers, and ACE inhibitors. Non-pharmacological treatment includes adopting a healthy lifestyle, including weight loss, exercise, reducing salt intake, quitting smoking, and dietary modifications such as increasing fruit and vegetable intake. However, due to low compliance among elderly hypertensive patients with antihypertensive medication, non-pharmacological treatment has become a treatment option for elderly hypertensive patients.

The elderly are a group of people more susceptible to hypertension. Hypertension is an increase in blood pressure above normal values (Ridwan, 2021). Hypertension is an increase in systolic blood pressure of around 140 mmHg or diastolic pressure of around 90 mmHg (Aris, 2019). The emergence of hypertension in the elderly is caused by decreased elasticity of the aortic wall, thickening of the heart valves that stiffen the valves, decreased pumping ability of the heart, and loss of elasticity of peripheral blood vessels (Junaidi, 2019).

Recommended exercises for hypertension in the elderly include tera gymnastics and yoga. Regularly practicing tera gymnastics and yoga can lower and stabilize blood pressure in the elderly. The gymnastics consist of several movements, including warm-up movements, core movements, and cool-down movements. These movements are beneficial for reducing stress levels, anxiety, and depression, thus relaxing the body and mind, which in turn lowers blood pressure. (Yanti Meyi 2021). Her research shows that exercise affects blood pressure in the elderly. She revealed that systolic and diastolic blood pressure decreased in the elderly after regular exercise (Yuli Yantina, 2019).

To address the aforementioned issues, nurses can provide education and information to the elderly about the benefits of tera exercises and yoga in lowering blood pressure. Nurses should also regularly engage with the elderly in tera exercises and yoga exercises, approximately twice a week for 30 minutes, to ensure they experience the benefits.

Based on the preliminary study above, most elderly people experience hypertension due to worsening physical conditions and decreased brain function such as: Decreased muscle mass, fatigue, confusion, headaches, and unproductiveness. Exercise can be done regularly to improve physical fitness, lower blood pressure (hypertension) in the elderly. Therefore, researchers are interested in conducting research, to see whether there are changes in blood pressure before and after giving Tera exercise & yoga exercise. So the title is "The Effectiveness of Tera Exercise and Yoga Exercise on Changes in Blood Pressure in Hypertensive Elderly at the Santo Yoseph Werdha Elderly Home in Kediri City". As a final assignment for the Bachelor of Nursing degree at the Strada Indonesia Institute of Health Sciences.

METHOD

This study was a quantitative study with a *two-group pretest-posttest design* . Thirty elderly hypertensive respondents at the Santo Yoseph Nursing Home in Kediri City were divided into two groups: 15 in the Tera Exercise group and 15 in the Yoga Exercise group. The intervention was conducted for four sessions in one month, once a week. Data were analyzed using the Wilcoxon test and the Mann-Whitney test.

RESULTS

1. **Frequency Distribution of Respondents by Gender**

Frequency distribution of respondents by gender in elderly hypertension in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.2 below .

Table 4.2 1Distribution of Respondents Based on Gender

Gender	Tera Gymnastics		Yoga Exercises	
	f	%	F	%
Woman	15	100	15	100
Man	0	0	0	0
Total	**15**	**100**	**15**	**100**

Source: Primary Data, 2025

Based on Table 4.2 can be interpreted that all respondents in both types of gymnastics, namely Tera Gymnastics and Yoga Gymnastics, were women (100%).

2. Frequency Distribution of Respondents by Age

Frequency distribution of respondents by age in elderly hypertension in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.3.

Table 4.3 2Distribution of Respondents Based on Age

Age	Tera Gymnastics		Yoga Exercises	
	f	%	f	%
50-55 years old	6	40.0	11	73.3
56-65 years	8	53.3	4	26.7
>66 years	1	6.7	0	0
Total	**15**	**100**	**15**	**100**

Source: Primary Data, 2025

Based on Table 4.3 can be interpreted that the majority of Tera Gymnastics respondents are in the 56–65 year age range (53.3%), while the majority of Yoga Gymnastics respondents are in the 50–55 year age range (73.3%) .

3. Frequency Distribution of Respondents Based on Occupation

Frequency distribution of respondents based on employment history in elderly hypertension in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.4 below .

Table 4.4 3Distribution of Respondents Based on Employment History

Work	Tera Gymnastics		Yoga Exercises	
	f	%	F	%
Housewife	7	46.7	6	40.0
Farmer	1	6.7	3	20.0
Trader	3	20.0	2	13.3
Businessman	0	0	3	20.0
Private employees	2	13.3	3	20.0
civil servant	2	13.3	0	0
Total	**15**	**100**	**15**	**100**

Source: Primary Data, 2025

Based on Table 4.4 can be interpreted that the majority of Senam Tera respondents work as housewives (46.7%), while the majority of Senam Yoga respondents also work as housewives (40.0%) .

4. Frequency Distribution of Respondents Based on Education

Frequency distribution of respondents based on education in elderly hypertension in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.5.

Table 4.5 4Distribution of Respondents Based on Education

Age	Tera Gymnastics		Yoga Exercises	
	F	%	f	%
JUNIOR HIGH SCHOOL	3	20.0	3	20.0
SENIOR HIGH SCHOOL	8	53.3	9	60.0
College	4	26.7	3	20.0
Total	**15**	**100**	**15**	**100**

Source: Primary Data, 2025

Based on Table 4.5 can be interpreted that the majority of respondents to Tera Gymnastics and Yoga Gymnastics had a final education level of high school, 53.3% and 60.0% respectively .

5. Frequency Distribution of Respondents Based on Duration of Hypertension

Frequency distribution of respondents based on duration of hypertension in elderly hypertension in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.6 below .

Table 5Frequency Distribution of Respondents Based on Duration of Hypertension

Duration of Hypertension	Tera Gymnastics		Yoga Exercises	
	f	%	f	%
<5 years	3	20.0	5	33.3
>5 years	12	80.0	10	66.7
Total	**15**	**100**	**15**	**100**

Source: Primary Data, 2025

Based on Table 4.6 can be interpreted that the majority of Tera Gymnastics respondents have had hypertension for more than 5 years (80.0%), as well as the majority of Yoga Gymnastics respondents who have also had hypertension for more than 5 years (66.7%) .

A. Characteristics of Research Variables

1. Frequency Distribution of Respondents' Blood Pressure Before and After Being Given Tera Gymnastics

Table 4.7 6Distribution of Respondents' Blood Pressure Before and After Exercise Tera

Blood pressure	Pretest		Posttest	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Normal	0	0	6	40.0
Pre-Hypertension	3	20.0	5	33.3
Mild Hypertension	8	53.3	3	20.0
Moderate Hypertension	3	20.0	1	6.7
Severe Hypertension	1	6.7	0	0
Total	**15**	**100.0**	**15**	**100.0**

Source: Primary Data, 2025

blood pressure frequency of respondents before and after being given exercise tera in elderly hypertension in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.7.

Based on Table 4.7 can be interpreted that the majority of respondents amount to 8 people (53.3%) had blood pressure in the mild hypertension category before being given exercise. tera and the majority of respondents, amounting to 6 people (40%), had normal hypertension category blood pressure after being given exercise tera .

2. Frequency Distribution of Respondents' Blood Pressure Before and After Yoga Exercises

blood pressure frequency of respondents before and after being given yoga exercises in elderly hypertension in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.8 below .

Table 7Frequency Distribution of Respondents' Blood Pressure Before and After Yoga Exercises

Blood pressure	Pretest		Posttest	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Normal	0	0	6	40.0
Pre-Hypertension	6	40.0	5	33.3
Mild Hypertension	7	46.7	4	26.7
Moderate Hypertension	1	6.7	0	0
Severe Hypertension	1	6.7	0	0
Total	**15**	**100.0**	**15**	**100.0**

Source: Primary Data, 2025

Based on Table 4.8 can be interpreted that the majority of respondents amount to 7 people (46.7%) had blood pressure in the mild hypertension category before being given exercise. yoga and the majority of respondents, 6 people (40%), had normal hypertension blood pressure after being given exercise. yoga .

3. Effectiveness Effect of Tera Gymnastics and Yoga on Changes in Blood Pressure

In this study, before conducting the *Pariet T- test,* the researchers conducted a normality test to determine whether the data were normally distributed. To determine the Pariet T-test, the data must be normally distributed. The normality test yielded a p-value <0.05, indicating that the data were not normally distributed. Therefore, the researchers used the Wilcoxon test. The results of the data normality test are as follows:

In this study, before conducting the *paired t-test* , the researchers first conducted a normality test to determine whether the data were normally distributed. This normality test is important because *the paired t-test* can only be used if the data are normally distributed. The results of the normality test can be seen in Table 4.9.

Table 8 Data Normality Test

Group	Blood pressure	Sig.	Information
Tera Gymnastics	Pretest (Systolic)	0.734	Normal
	Posttest (Systolic)	0.430	Normal
	Pretest (Diastolic)	0.011	Abnormal
	Posttest (Diastolic)	0.017	Abnormal
Yoga	Pretest (Systolic)	0.050	Normal
	Posttest (Systolic)	0.059	Normal
	Pretest (Diastolic)	0.023	Abnormal
	Posttest (Diastolic)	0.273	Normal

Source: Primary Data, 2025

The results of the normality test in table 4.9 show that the *pretest* and *posttest data* on systolic blood pressure The Tera and Yoga gymnastics showed normally distributed data. Meanwhile, the *pretest* and *posttest data* on diastolic blood pressure Tera and Yoga gymnastics showed non-normally distributed data (p-value <0.05) except for the diastolic *post-test data* for Yoga gymnastics. Therefore, because there were non-normally distributed data, further statistical analysis was performed using the Wilcoxon test as an alternative to *the paired t-test* .

Table 4.10 shows the effect of Tera Gymnastics and Yoga Gymnastics on changes in blood pressure in 30 respondents. Before the intervention, systolic blood pressure in the Tera Gymnastics group had an average of 154.00 mmHg with a median of 152.00 mmHg, and a range of values between 125 mmHg and 197 mmHg. Diastolic blood pressure had an average of 96.40 mmHg with a median of 96.00 mmHg, and a range of values between 85 mmHg and 115 mmHg. After the intervention, there was a decrease in systolic blood pressure with an average of 136.33 mmHg and a median of 132.00 mmHg, and diastolic blood pressure decreased to an average of 87.47 mmHg and a median of 86.00 mmHg.

Table 9 The Effect of Tera Gymnastics and Yoga on Changes in Blood Pressure

Group	Pressure Blood	N	Mean	Median	Min.	Max	sig. Wilcoxon
Tera Gymnastics	Pretest (Systolic)	15	154.00	152.00	125	197	0.001
	Posttest (Systolic)	15	136.33	132.00	122	173	
	Pretest (Diastolic)	15	96.40	96.00	85	115	0.001
	Posttest (Diastolic)	15	87.47	86.00	82	102	
Yoga	Pretest (Systolic)	15	144.40	137.00	124	187	0.011
	Posttest (Systolic)	15	134.20	133.00	122	168	
	Pretest (Diastolic)	15	91.53	89.00	82	112	0.012
	Posttest (Diastolic)	15	87.13	87.00	81	99	

Source: Primary Data, 2025

In the Yoga group, systolic blood pressure before the intervention had an average of 144.40 mmHg with a median of 137.00 mmHg, and a range of values between 124 mmHg and 187 mmHg. Diastolic blood pressure had an average of 91.53 mmHg with a median of 89.00 mmHg, and a range of values between 82 mmHg and 112 mmHg. After the intervention,

systolic blood pressure decreased with an average of 134.20 mmHg and a median of 133.00 mmHg, while diastolic blood pressure decreased to an average of 87.13 mmHg and a median of 87.00 mmHg.

The Wilcoxon test results showed that in the Tera Gymnastics group, there was a significant difference between blood pressure before and after the intervention with a significance value of 0.001 for systolic blood pressure and 0.001 for diastolic blood pressure ($p < 0.05$). This indicates that Tera Gymnastics is effective in reducing blood pressure in elderly people with hypertension.

In the Yoga group, the Wilcoxon test also showed a significant difference with a significance value of 0.011 for systolic blood pressure and 0.012 for diastolic blood pressure ($p < 0.05$). These results indicate that Yoga also has a significant effect on lowering blood pressure in elderly people with hypertension.

Table 10 Comparison of the Effectiveness of Tera Gymnastics and Yoga on Changes in Blood Pressure

Blood pressure	sig. Mann Whitney
Posttest of Tera Gymnastics (Systolic) Yoga Posttest (Systolic)	0.771
Posttest of Tera Gymnastics (Diastolic) Yoga Posttest (Diastolic)	0.983

Source: Primary Data, 2025

systolic blood pressure between Tera Gymnastics and Yoga Gymnastics is 0.771, while for posttest diastolic blood pressure is 0.983. Because both p-values are 0.05, there is no significant difference between posttest blood pressure in the Tera Gymnastics and Yoga Gymnastics groups, both for systolic and diastolic blood pressure. In this study, although both types of gymnastics are effective in lowering blood pressure, there is no significant difference between the two in the final results after the intervention. These results indicate there is no difference in the effectiveness of Tera Gymnastics and Yoga Gymnastics on changes in blood pressure in elderly hypertensives. This can be said that both Tera Gymnastics and Yoga Gymnastics can be used as equivalent exercise alternatives in lowering blood pressure in elderly hypertensives.

B. Cross Tabulation Analysis

1. Cross Tabulation of Respondents of Tera Gymnastics on Reducing Blood Pressure

a. Crosstabulation of Gender on Blood Pressure

The results of cross-tabulation between gender and blood pressure in elderly people with hypertension who participated in Tera Exercise at the Santo Yoseph Nursing Home, Kediri City, in 2025, can be seen in Table 4.12 below.

Table 11 Crosstabulation of Gender on Blood Pressure

Type Sex	Posttest					Total
	Normal	Pre Hypertension	Hypertension Light	Hypertension Currently	Hypertension Heavy	
Woman	6 40.0%	5 33.3%	3 20.0%	1 6.7%	0 0%	**15** **100.0%**
Man	0 0%	0 0%	0 0%	0 0%	0 0%	**0** **0%**
Total	**6** **40.0%**	**5** **33.3%**	**3** **20.0%**	**1** **6.7%**	**0** **0%**	**15** **100.0%**

Source: Primary Data, 2025

Based on table 4.12 , the results show that the majority of female respondents who participated in Tera Gymnastics experienced a decrease in blood pressure to the normal category, namely 6 people (40.0%) .

b. Crosstabulation of Age Against Blood Pressure

The results of cross -tabulation of age on blood pressure in elderly hypertensive patients who participated in Tera Gymnastics in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.13 .

Table 12 Crosstabulation of Age Against Blood Pressure

Age	**Posttest**					**Total**
	Normal	Pre Hypertension	Hypertension Light	Hypertension Currently	Hypertension Heavy	
50-55 years old	2 13.3%	3 20.0%	1 6.7%	0 0.0%	0 0%	**6** **40.0%**
56-65 years	3 20.0%	2 13.3%	2 13.3%	1 6.7%	0 0%	**8** **53.3%**
>66 years	1 6.7%	0 0.0%	0 0.0%	0 0.0%	0 0%	**1** **6.7%**
Total	**6** **40.0%**	**5** **33.3%**	**3** **20.0%**	**1** **6.7%**	**0** **0%**	**15** **100.0 %**

Source: Primary Data, 2025

Based on table 4.13 The results showed that the majority of respondents who participated in Tera Gymnastics were in the 56-65 year age range, with the greatest reduction in blood pressure being in the normal category, namely 3 people (20.0%) .

c. Cross-tabulation of Occupation on Blood Pressure

The results of cross- tabulation of work on blood pressure in elderly with hypertension who participated in Tera Gymnastics in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.14.

Table 13 Cross-tabulation of Occupation on Blood Pressure

Work	**Posttest**					**Total**
	Normal	Pre Hypertension	Hypertension Light	Hypertension Currently	Hypertension Heavy	
housewife	4 26.7%	2 13.3%	0 0.0%	0 0%	0 0%	**6** **40.0%**
Farmer	0 0.0%	2 13.3%	1 6.7%	0 0.0%	0 0%	**3** **20.0%**
Trader	1 6.7%	0 0.0%	1 6.7%	0 0.0%	0 0%	**2** **13.3%**
Businessman	1 6.7%	0 0.0%	2 13.3%	0 0%	0 0%	**3** **20.0%**
Private employees	0 0.0%	1 6.7%	0 0.0%	0 0.0%	0 0%	**1** **6.7%**
civil servant	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0%	**0** **0.0%**
Total	**6** **40.0%**	**5** **33.3%**	**4** **26.7%**	**0** **0.0%**	**0** **0%**	**15** **100.0%**

Based on table 4.14, the results showed that the majority of respondents who participated in Tera Gymnastics experienced a decrease in blood pressure to the normal category working as housewives (IRT), namely 4 people (26.7%) .

d. Crosstabulation of Education on Blood Pressure

tabulation results of education on blood pressure in elderly with hypertension who participated in Tera Gymnastics in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.15.

Table 14 Crosstabulation of Education on Blood Pressure

Education	Posttest					Total
	Normal	Pre Hypertension	Hypertension Light	Hypertension Currently	Hypertension Heavy	
JUNIOR HIGH SCHOOL	2 13.3%	0 0.0%	1 6.7%	0 0.0%	0 0%	**3** **20.0%**
SENIOR HIGH SCHOOL	3 20.0%	3 20.0%	2 13.3%	0 0.0%	0 0%	**8** **53.3%**
College	1 6.7%	2 13.3%	0 0.0%	1 6.7%	0 0%	**4** **26.7%**
Total	**6** **40.0%**	**5** **33.3%**	**3** **20.0%**	**1** **6.7%**	**0** **0%**	**15** **100.0%**

Source: Primary Data, 2025

Based on table 4.15, the results show that the majority of respondents who participated in Tera Gymnastics experienced a decrease in blood pressure to the normal category and had a final education level of high school, namely 3 people (20.0%) .

e. Crosstabulation of Hypertension Duration Against Blood Pressure

The results of cross -tabulation of the duration of hypertension on blood pressure in elderly hypertensive patients who participated in Tera Gymnastics in St. Joseph Nursing Home Kediri City in 2024 can be seen in table 4.16 . Based on table 4.16 , the results obtained show that the majority of respondents who participated in Tera Gymnastics with hypertension for more than 5 years experienced a decrease in blood pressure to the normal category (33.3%) .

Table 15 Crosstabulation of Hypertension Duration Against Blood Pressure

Duration of Hypertension	Posttest					Total
	Normal	Pre Hypertension	Hypertension Light	Hypertension Currently	Hypertension Heavy	
<5 years	1 6.7%	2 13.3%	0 0.0%	0 0.0%	0 0%	**3** **20.0%**
>5 years	5 33.3%	3 20.0%	3 20.0%	1 6.7%	0 0%	**12** **80.0%**
Total	**6** **40.0%**	**5** **33.3%**	**3** **20.0%**	**1** **6.7%**	**0** **0%**	**15** **100.0%**

Source: Primary Data, 2025

f. Cross Tabulation of Blood Pressure Changes Before and After Tera Exercises

tabulation results of changes in blood pressure before and after being given Tera exercise in elderly hypertensive patients in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.17.

Table 16 Cross Tabulation of Blood Pressure Changes Before and After Tera Exercises

Pretest	Posttest					Total
	Normal	Pre Hypertension	Hypertension Light	Hypertension Currently	Hypertension Heavy	
Normal	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
Pre Hypertension	2 13.3%	1 6.7%	0 0.0%	0 0.0%	0 0%	**3** **20.0%**
Hypertension Light	3 20.0%	3 20.0%	2 13.3%	0 0.0%	0 0%	**8** **53.3%**
Hypertension Currently	1 6.7%	1 6.7%	1 6.7%	0 0.0%	0 0%	**3** **20.0%**
Hypertension Heavy	0 0.0%	0 0.0%	0 0.0%	1 6.7%	0 0%	**1** **6.7%**
Total	**6** **40.0%**	**5** **33.3%**	**3** **20.0%**	**1** **6.7%**	**0** **0%**	**15** **100.0%**

Based on table 4.17, the results show that the majority of respondents who experienced a decrease in blood pressure after being given Tera Gymnastics came from the mild hypertension blood pressure group before the intervention, namely 3 people (20.0%) who reached the normal category at the time of the posttest .

2. Cross-tabulation of Yoga Exercise on Lowering Blood Pressure

a. Crosstabulation of Gender on Blood Pressure

The results of cross-tabulation between gender and blood pressure in elderly people with hypertension who participated in Yoga Exercise at the Santo Yoseph Nursing Home, Kediri City, in 2025, can be seen in Table 4.18 below.

Table 17 Crosstabulation of Gender on Blood Pressure

Gender	Posttest					Total
	Normal	Pre Hypertension	Hypertension Light	Hypertension Currently	Hypertension Heavy	
Woman	6 40.0%	5 33.3%	4 26.7%	0 0%	0 0%	**15** **100.0%**
Man	0 0%	0 0%	0 0%	0 0%	0 0%	**0** **0%**
Total	**6** **40.0%**	**5** **33.3%**	**4** **26.7%**	**0** **0%**	**0** **0%**	**15** **100.0%**

Source: Primary Data, 2025

Based on table 4.18, the results show that the majority of female respondents who participated in Yoga experienced a decrease in blood pressure to the normal category, namely 6 people (40.0%) .

b. Crosstabulation of Age Against Blood Pressure

The results of cross- tabulation of age on blood pressure in elderly hypertensive patients who participated in Yoga Gymnastics in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.19 .

Table 18 Crosstabulation of Age Against Blood Pressure

Age	Posttest					Total
	Normal	Pre Hypertension	Hypertension Light	Hypertension Currently	Hypertension Heavy	
50-55 year	5 33.3%	2 13.3%	4 26.7%	0 0.0%	0 0%	**6** **40.0%**
56-65 year	1 6.7%	3 20.0%	0 0.0%	0 0.0%	0 0%	**8** **53.3%**
>66 year	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0%	**0** **0.0%**
Total	**6** **40.0%**	**5** **33.3%**	**3** **20.0%**	**0** **0.0%**	**0** **0%**	**15** **100.0%**

Source: Primary Data, 2025

Based on table 4.19 The results showed that the majority of respondents aged 50-55 years who participated in Yoga experienced a decrease in blood pressure to the normal category, namely 5 people (33.3%) .

c. Cross-tabulation of Occupation on Blood Pressure

tabulation results of work on blood pressure in elderly hypertensive patients who participated in Yoga Gymnastics in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.20.

Table 19 Cross-tabulation of Occupation on Blood Pressure

Work	Posttest					Total
	Normal	Pre Hypertension	Hypertension Light	Hypertension Currently	Hypertension Heavy	
housewife	4 26.7%	1 6.7%	1 6.7%	1 6.7%	0 0%	**7** **46.7%**
Farmer	0 0.0%	0 0.0%	1 6.7%	0 0.0%	0 0%	**1** **6.7%**
Trader	1 6.7%	1 6.7%	1 6.7%	0 0.0%	0 0%	**3** **20.0%**
Businessman	0 0%	0 0%	0 0%	0 0%	0 0%	**0** **0%**
Private employees	1 6.7%	1 6.7%	0 0.0%	0 0.0%	0 0%	**2** **13.3%**
civil servant	0 0.0%	2 13.3%	0 0.0%	0 0.0%	0 0%	**2** **13.3%**
Total	**6** **40.0%**	**5** **33.3%**	**3** **20.0%**	**1** **6.7%**	**0** **0%**	**15** **100.0%**

Based on table 4.20 , the results show that the majority of respondents who participated in Yoga and worked as housewives (IRT) experienced a decrease in blood pressure to the normal category, namely 4 people (26.7%) .

d. Crosstabulation of Education on Blood Pressure

tabulation results of education on blood pressure in elderly hypertensive patients who participated in Yoga Gymnastics in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.21.

Table 20 Cross Tabulation of Education Against Blood pressure

Education	Posttest					Total
	Normal	Pre Hypertension	Hypertension Light	Hypertension Currently	Hypertension Heavy	
JUNIOR HIGH SCHOOL	2 13.3%	1 6.7%	0 0.0%	0 0	0 0%	**3** **20.0%**
SENIOR HIGH SCHOOL	4 26.7%	3 20.0%	2 13.3%	0 0	0 0%	**9** **60.0%**
College	0 0.0%	1 6.7%	2 13.3%	0 0	0 0%	**3** **20.0%**
Total	**6** **40.0%**	**5** **33.3%**	**4** **26.7%**	**0** **0**	**0** **0%**	**15** **100.0%**

Source: Primary Data, 2025

Based on table 4.21, the results show that the majority of respondents with a high school education level who participated in Yoga experienced a decrease in blood pressure to the normal category, namely 4 people (26.7%) .

e. Crosstabulation of Hypertension Duration Against Blood Pressure

The results of cross -tabulation of the duration of hypertension on blood pressure in elderly hypertensive patients who participated in Yoga Gymnastics in St. Joseph Nursing Home Kediri City in 2024 can be seen in table 4.22 .

Table 21 Crosstabulation of Hypertension Duration Against Blood Pressure

Duration of Hypertension	Posttest					Total
	Normal	Pre Hypertension	Hypertension Light	Hypertension Currently	Hypertension Heavy	
<5 years	1 6.7%	2 13.3%	2 13.3%	0 0.0%	0 0%	**5** **33.3%**
>5 years	5 33.3%	3 20.0%	2 13.3%	0 0.0%	0 0%	**10** **66.7%**
Total	**6** **40.0%**	**5** **33.3%**	**4** **26.7%**	**0** **0.0%**	**0** **0%**	**15** **100.0%**

Source: Primary Data, 2025

Based on table 4.22, the results show that the majority of respondents with hypertension for more than 5 years who participated in Yoga experienced a decrease in blood pressure to the normal category, namely 5 people (33.3%) .

f. Cross Tabulation of Blood Pressure Changes Before and After Yoga Exercises

tabulation results of changes in blood pressure before and after being given Yoga exercises in elderly hypertensive patients in St. Joseph Nursing Home Kediri City in 2025 can be seen in table 4.23.

Table 22 Cross Tabulation of Blood Pressure Changes Before and After Yoga Exercises

Pretest	Posttest					Total
	Normal	Pre Hypertension	Hypertension Light	Hypertension Currently	Hypertension Heavy	
Normal	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
Pre Hypertension	3 20.0%	1 6.7%	2 13.3%	0 0.0%	0 0%	**6** **40.0%**
Hypertension Light	3 20.0%	4 26.7%	0 0.0%	0 0.0%	0 0%	**7** **46.7%**
Hypertension Currently	0 0.0%	0 0.0%	1 6.7%	0 0.0%	0 0%	**1** **6.7%**
Hypertension Heavy	0 0.0%	0 0.0%	1 6.7%	0 0.0%	0 0%	**1** **6.7%**
Total	**6** **40.0%**	**5** **33.3%**	**4** **26.7%**	**0** **0%**	**0** **0%**	**15** **100.0%**

Based on table 4.23, the results show that the majority of respondents with initial blood pressure of mild hypertension experienced a decrease in blood pressure to the pre-hypertension category after being given Yoga, namely 4 people (26.7%).

DISCUSSION

A. The Effect of Tera Exercise on Changes in Blood Pressure in Elderly with Hypertension

In this study, the effect of Tera Gymnastics on changes in blood pressure in 15 respondents. Before the intervention, systolic blood pressure in the Tera Gymnastics group had an average of 154.00 mmHg with a median of 152.00 mmHg, and a range of values between 125 mmHg and 197 mmHg. Diastolic blood pressure had an average of 96.40 mmHg with a median of 96.00 mmHg, and a range of values between 85 mmHg and 115 mmHg. After the intervention, there was a decrease in systolic blood pressure with an average of 136.33 mmHg and a median of 132.00 mmHg, and diastolic blood pressure decreased to an average of 87.47 mmHg and a median of 86.00 mmHg.

The decrease in blood pressure after performing Tera Exercises can be explained by the physiological mechanisms that occur during light to moderate physical activity. Tera Exercises, a low-intensity exercise with regular, rhythmic movements, helps increase blood flow, improve vascular endothelial function, and reduce peripheral resistance. This activity also stimulates the release of endorphins, which can have a relaxing effect, thus lowering blood pressure (Rahmawati & Komala Sari, 2019).

These findings align with research by Saputra & Nurjanah (2020) , which found that regular physical exercise, such as elderly gymnastics or Tera gymnastics, effectively lowers blood pressure in people with hypertension. Furthermore, research by Wahyuni & Nurjanah (2020) also showed that consistent light aerobic exercise can improve blood pressure regulation and enhance the quality of life for seniors with hypertension. Consistency in performing Tera gymnastics is a crucial factor in achieving long-term therapeutic effects on blood pressure.

Tera gymnastics not only provides physiological benefits but also psychological ones. Physical activity performed in groups can improve social interaction and reduce stress levels in the elderly, which is a risk factor for hypertension. Reduced stress and improved psychological well-being also contribute to overall blood pressure control (Handayani et al., 2022) .

Furthermore, active participation in regular exercise programs can also foster healthy lifestyle habits in older adults. Elderly individuals who engage in physical activities such as Senam Tera generally improve their diet, sleep quality, and adherence to hypertension medication. These healthier lifestyles reinforce the positive effects of non-pharmacological interventions such as exercise on blood pressure (Kusumaningrum et al., 2023).

The Wilcoxon test results showed that in the Tera Gymnastics group, there was a significant difference between blood pressure before and after the intervention with a significance value of 0.001 for systolic blood pressure and 0.001 for diastolic blood pressure ($p < 0.05$). This indicates that Tera Gymnastics is effective in reducing blood pressure in elderly people with hypertension.

The reduction in blood pressure in the elderly after participating in Tera Exercises can be explained by the physiological mechanisms that occur during light physical activity. Tera Exercises are designed to improve blood circulation and cardiovascular function through structured and gradual exercise. Regular physical activity can improve endothelial function, improve hemodynamic balance, and reduce vascular resistance, ultimately contributing to lower blood pressure (Bamidis et al., 2021). This is in line with the results of research by Haryanto et al. (2023), which showed that regular exercise has a positive effect on controlling blood pressure in elderly people with hypertension.

Beyond physiological factors, Tera gymnastics also offers significant psychological benefits. Regular physical activity can reduce anxiety and stress, which are major risk factors for the development of hypertension in the elderly. According to research by Wijayanti et al. (2023), exercise can increase the production of endorphins, which have a relaxing effect and lower blood pressure through stress reduction.

A similar study by Sutrisno et al. (2021) also showed that regular exercise can reduce blood pressure in elderly people with hypertension. In this study, a four-week exercise intervention for the elderly resulted in significant reductions in systolic and diastolic blood pressure. These results support previous research findings suggesting that exercise can be an effective intervention option for managing hypertension in the elderly, especially for those who cannot access optimal pharmacological therapy.

The success of the Tera Gymnastics intervention is also supported by the social interactions created during the activities. Elderly individuals involved in group exercise activities tend to have higher levels of happiness and experience social benefits that strengthen hypertension control. This aligns with findings from Fitria et al. (2019), which suggest that participation in group activities can improve the quality of life of older adults and reduce risk factors for chronic diseases such as hypertension. Social engagement and support among older adults strengthens a sense of community, contributing to their emotional well-being.

The effectiveness of Tera Gymnastics in lowering blood pressure in the elderly can be explained physiologically. Tera Gymnastics is a light exercise performed regularly, with slow movements and controlled breathing, which can increase blood vessel elasticity, improve endothelial function, and reduce peripheral resistance. Physical exercise also triggers the production of endogenous vasodilators such as nitric oxide (NO), which lowers blood pressure by dilating blood vessels (Rahmawati & Sari, 2019) .

In addition to physiological benefits, Tera Gymnastics also has psychological effects, reducing stress and anxiety in the elderly. Participating in group exercise activities fosters a sense of togetherness, increases social interaction, and creates a pleasant and relaxing atmosphere. This helps reduce sympathetic nervous system activity, which plays a role in increasing blood pressure (Handayani & Puspitasari, 2022).

The results of this study also align with those of Saputra & Nurjanah (2020), who stated that light exercise interventions, such as elderly gymnastics or Tera gymnastics, performed regularly 2–3 times a week, can significantly lower systolic and diastolic blood pressure.

Research by Wahyuni & Nurjanah (2020) also found consistent results, showing a decrease in average blood pressure after exercise intervention in elderly people with mild to moderate hypertension.

Based on the data obtained, before being given the Tera gymnastics and yoga gymnastics intervention, almost half of the respondents, namely 13 people (43.3%), had blood pressure in the mild hypertension category. All respondents to Tera Gymnastics and Yoga Gymnastics were women. The majority of Tera Gymnastics respondents were aged 56–65 years, while Yoga Gymnastics respondents were predominantly aged 50–55 years. Most worked as housewives and had a high school education. The majority of respondents in both groups had a history of hypertension for more than 5 years.

The prevalence of hypertension in the elderly in Indonesia is quite high. Data shows that the prevalence of hypertension in the 65-74 age group reaches 63.2%, and in those over 75 years of age it is 69.5% (Arifin et al., 2016). This indicates that with increasing age, the risk of hypertension increases significantly due to physiological changes, such as decreased blood vessel elasticity and increased peripheral resistance, which lead to higher blood pressure (Mills et al., 2020). In addition to age, gender also plays a role in the prevalence of hypertension. In this study, all respondents were women. Women have a higher prevalence of hypertension than men after entering menopause. This is thought to be related to decreased levels of the hormone estrogen, which plays a role in maintaining blood vessel elasticity (Kim et al., 2020). Furthermore, women who work as housewives also tend to have lower physical activity and higher stress levels due to the burden of domestic work, which can increase the risk of hypertension (Wulandari et al., 2020).

Education is also associated with hypertension. Individuals with lower levels of education tend to have limited access to health information, unhealthy diets, and minimal physical activity, which can increase the risk of hypertension. Appropriate health education for older adults on how to manage blood pressure through non-pharmacological interventions, such as tera exercises and yoga, is necessary (Kjeldsen et al., 2018).

In this study, the results showed that the majority of respondents had blood pressure in the mild hypertension category before the intervention, with 8 people (53.3%) in tera gymnastics and 7 people (46.7%) in yoga gymnastics . Tera gymnastics is a combination of physical and mental exercises and movement. Tera gymnastics can improve cardiovascular fitness in the elderly. Tera gymnastics is a physical activity that trains the body and mind through focused thought, performed regularly, harmoniously, correctly, and continuously. Tera gymnastics has many benefits, such as improving heart health and blood circulation, and can also control blood pressure (Nasution et al., 2021).

Tera gymnastics, which adopts the basic principles of Tai Chi, is a physical exercise involving slow, controlled movements combined with deep breathing. A study by Lee et al. (2022) showed that elderly people who regularly practiced Tai Chi or Tera gymnastics for 12 weeks experienced a decrease in systolic blood pressure of 7-12 mmHg and diastolic blood pressure of 4-8 mmHg. These positive effects are related to improved autonomic nervous system function and blood vessel dilation.

This Tera exercise can lower blood pressure by increasing relaxation and reducing oxidative stress in the body. Oxidative stress plays a role in increasing blood pressure through inflammatory mechanisms and vascular endothelial dysfunction. Regular Tera exercise activates the parasympathetic nervous system, which contributes to a significant reduction in systolic and diastolic blood pressure (Sari & Widyawati, 2021).

Yoga also has similar benefits in lowering blood pressure, primarily through stress reduction and improved cardiovascular function. Yoga practices involving deep breathing techniques (pranayama) and meditation can help lower levels of stress hormones like cortisol and adrenaline, which can indirectly lower blood pressure (Putri et al., 2022).

Yoga is a practice that combines body postures (asanas), breathing techniques (pranayama), and meditation, aimed at improving flexibility, balance, and relaxation (Cramer et al., 2018). A study by Chu et al. (2021) showed that yoga can lower systolic blood pressure by 5–10 mmHg and diastolic blood pressure by 3–6 mmHg by increasing parasympathetic nervous system activity and reducing stress hormones.

A study by Prasetyo et al. (2023) showed that older adults who participated in a 12-week yoga program experienced a reduction in systolic blood pressure of 7-10 mmHg and diastolic blood pressure of 3-5 mmHg. This effect is due to increased blood vessel elasticity and improved regulation of the autonomic nervous system, which plays a role in controlling blood pressure.

Tera exercise and yoga also contribute to improving the quality of life for the elderly. Seniors who regularly engage in these activities tend to have better sleep patterns, lower anxiety levels, and improved balance, which can reduce the risk of falls (Nugroho et al., 2020). These exercise programs not only serve to lower blood pressure but also serve as part of a broader strategy to prevent hypertension complications. Broader education and implementation of the benefits of Tera exercise and yoga are needed in elderly health programs. Compliance with these exercises is also crucial for optimal benefit. With non-pharmacological approaches such as Tera exercise and yoga, hypertension management can be more holistic and sustainable (Cramer et al., 2018).

B. The Effect of Yoga on Blood Pressure Changes in Elderly with Hypertension

In this study, the effect of Tera Gymnastics on changes in blood pressure in 15 respondents. In the Yoga group, systolic blood pressure before the intervention had an average of 144.40 mmHg with a median of 137.00 mmHg, and a range of values between 124 mmHg and 187 mmHg. Diastolic blood pressure had an average of 91.53 mmHg with a median of 89.00 mmHg, and a range of values between 82 mmHg and 112 mmHg. After the intervention, systolic blood pressure decreased with an average of 134.20 mmHg and a median of 133.00 mmHg, while diastolic blood pressure decreased to an average of 87.13 mmHg and a median of 87.00 mmHg. In the Yoga group, the Wilcoxon test also showed a significant difference with a significance value of 0.011 for systolic blood pressure and 0.012 for diastolic blood pressure ($p < 0.05$). These results indicate that Yoga also has a significant effect on lowering blood pressure in elderly people with hypertension.

This decrease in blood pressure can be explained by the physiological mechanisms that occur during yoga practice. Yoga, as a physical and mental exercise, involves slow movements, deep breathing techniques, and meditation. This activity triggers the activation of the parasympathetic nervous system and decreases the activity of the sympathetic nervous system, which contributes to a decrease in heart rate and vasodilation of blood vessels, thus lowering blood pressure (Rohmah & Rahayu, 2021). Relaxation exercises such as yoga are also known to reduce levels of stress hormones, such as cortisol and adrenaline, which, if chronically elevated, can lead to hypertension (Umah, 2023).

Furthermore, research by Prasetyo and Lestari (2022) found that seniors who regularly participated in yoga at least three times a week for four weeks experienced an average reduction in blood pressure of 10–15 mmHg. This is supported by findings by Bahri (2024) , who showed that the breathing component of yoga increases tissue oxygenation and stimulates relaxation of vascular smooth muscle, thereby reducing peripheral resistance and lowering blood pressure.

Yoga also has positive psychological effects, such as reducing anxiety and stress levels, and improving sleep quality in the elderly. These factors indirectly influence blood pressure stability, as psychological stress is known to increase blood pressure through activation of the HPA (hypothalamic-pituitary-adrenal) axis. Regular yoga practice also plays a role in increasing blood vessel elasticity, improving metabolism, and strengthening heart and lung

function. The combination of gentle postures (asanas), breathing techniques (pranayama), and relaxation in yoga significantly improves blood circulation and regulates the cardiovascular system in hypertensive patients (Namora et al., 2023).

Yoga can be an effective non-pharmacological intervention for managing hypertension in the elderly. In addition to providing physiological benefits, yoga is also safe for older adults because the movements are not too strenuous and can be easily adapted to individual conditions. Such interventions are crucial for improving the quality of life of older adults and reducing dependence on pharmacological therapies, which can cause long-term side effects (Haryanto et al., 2021).

The results of this study showed that after the intervention, the majority of respondents, namely 6 people (40%) in each exercise group, both Tera exercise and yoga, experienced a decrease in blood pressure to the normal category in the elderly with hypertension at the Santo Yoseph Nursing Home in Kediri City . This finding indicates that both types of exercise play an important role in helping to lower blood pressure in elderly with hypertension. Physiologically, light to moderate exercise, such as Tera exercise and yoga, can increase blood vessel elasticity, reduce peripheral resistance, and improve the function of the heart and the cardiovascular system as a whole. This mechanism is closely related to the activation of the parasympathetic nervous system which plays a role in lowering blood pressure by slowing the heart rate, increasing relaxation, and reducing the secretion of stress hormones, such as cortisol and epinephrine, which can cause increased blood pressure (Saputra et al., 2022).

Tera gymnastics is an exercise that combines body movements with regular, controlled breathing. This exercise can increase muscle flexibility, improve body balance, and improve heart and blood vessel function. Several studies have shown that Tera gymnastics can significantly lower systolic and diastolic blood pressure after several weeks of regular practice. The mechanism of blood pressure reduction through Tera gymnastics is primarily due to improved blood circulation, reduced muscle tension, and stimulated nitric oxide production, which plays a role in vasodilation, or the widening of blood vessels. With increased blood flow, blood pressure can be better controlled and gradually reduced (Haryanto et al., 2021).

Yoga is a physical exercise that focuses on breathing techniques, meditation, and controlled body postures. Yoga has been scientifically proven to help reduce blood pressure by decreasing sympathetic nervous system activity and increasing parasympathetic nervous system activity. Parasympathetic activation lowers heart rate, reduces blood vessel tension, and controls the secretion of hormones that contribute to high blood pressure (Saputra et al., 2022). Other studies have also shown that yoga can increase nitric oxide levels in the body, which helps dilate blood vessels, thus naturally lowering blood pressure. Furthermore, meditation in yoga also helps reduce stress and anxiety levels, which are often triggers for high blood pressure in the elderly (Rahmawati et al., 2022).

The results of this study align with several previous studies showing that physical exercise, such as tera gymnastics and yoga, has a positive effect on blood pressure regulation in elderly people with hypertension. Research conducted by Haryanto et al. (2021) found that tera gymnastics performed for four weeks significantly reduced systolic and diastolic blood pressure in elderly people with hypertension. This effect is associated with increased relaxation and decreased muscle tension resulting from regular physical activity. Furthermore, research by Putri et al. (2021) found that yoga performed for eight weeks can reduce blood pressure in elderly people with hypertension by 10-15 mmHg for systolic pressure and 5-10 mmHg for diastolic pressure. Another study conducted by Wahyuni et al. (2020) also showed that a combination of tera gymnastics and yoga for six weeks can reduce systolic blood pressure by an average of 12 mmHg and diastolic pressure by 8 mmHg. In addition to lowering blood pressure, these exercises also contribute to improved sleep quality and reduced stress, which are important factors in managing hypertension in the elderly.

The effectiveness of Tera gymnastics and yoga in lowering blood pressure can be influenced by several factors, including age, gender, education level, and occupation. The majority of respondents in this study were aged 56–65 years (56.7%), which is an age group at high risk for hypertension due to reduced blood vessel elasticity and changes in cardiovascular system function. Elderly people with hypertension generally experience decreased adherence to pharmacological therapy, making non-pharmacological therapies, such as Tera gymnastics and yoga, an effective option. Furthermore, all respondents in this study were women, who, according to some studies, tend to be more responsive to physical exercise and relaxation-based therapies than men. This is likely due to physiological differences and higher levels of adherence to health interventions (Putri et al., 2021). Education level also influenced the results of this study, with the majority of respondents having a high school education (56.7%). Higher education is often associated with a better understanding of the importance of managing hypertension through physical activity. Furthermore, 43.3% of respondents were housewives, allowing them more flexibility in their time for regular exercise. Consistency in doing physical exercise is the main factor in obtaining optimal benefits in lowering blood pressure (Wahyuni et al., 2020).

Tera exercise and yoga offer advantages in terms of accessibility, ease of implementation, and minimal side effects. Compared with pharmacological therapies, which often have side effects such as dizziness, fatigue, and kidney problems, non-pharmacological therapies, such as exercise and yoga, offer a more natural approach to blood pressure control. Furthermore, the combination of Tera exercise and yoga can provide additional benefits for older adults in improving their overall quality of life, such as improving balance, reducing the risk of falls, and enhancing mental and emotional health (Rahmawati et al., 2022).

Tera exercise and yoga can be used as non-pharmacological interventions in managing hypertension in the elderly. This program can be recommended as part of a promotive and preventive strategy in healthcare facilities, such as community health centers (Puskesmas) or elderly health posts (Posyandu). Tera exercise and yoga should be performed regularly three to five times a week for a minimum of 30–45 minutes per session to achieve optimal results. Furthermore, education regarding the benefits of physical exercise for heart health should be provided to the elderly and their families to ensure adherence (Saputra et al., 2022).

Tera exercise and yoga are effective methods for lowering blood pressure in older adults with hypertension. Further efforts are needed to develop exercise programs for older adults and raise public awareness of the importance of physical activity in maintaining cardiovascular health (Haryanto et al., 2021).

C. The Effectiveness of Tera Gymnastics and Yoga on Changes in Blood Pressure in Elderly with Hypertension

In this study, before the intervention, systolic blood pressure in the Tera Gymnastics group had an average of 154.00 mmHg with a median of 152.00 mmHg, and a range of values between 125 mmHg and 197 mmHg. Diastolic blood pressure had an average of 96.40 mmHg with a median of 96.00 mmHg, and a range of values between 85 mmHg and 115 mmHg. After the intervention, there was a decrease in systolic blood pressure with an average of 136.33 mmHg and a median of 132.00 mmHg, and diastolic blood pressure decreased to an average of 87.47 mmHg and a median of 86.00 mmHg. In the Yoga group, systolic blood pressure before the intervention had an average of 144.40 mmHg with a median of 137.00 mmHg, and a range of values between 124 mmHg and 187 mmHg. Diastolic blood pressure had an average of 91.53 mmHg with a median of 89.00 mmHg, with a range of values between 82 mmHg and 112 mmHg. After the intervention, systolic blood pressure decreased to an average of 134.20 mmHg and a median of 133.00 mmHg, while diastolic blood pressure decreased to an average of 87.13 mmHg and a median of 87.00 mmHg.

The Wilcoxon test results showed that in the Tera Gymnastics group, there was a significant difference between blood pressure before and after the intervention with a significance value of 0.001 for systolic blood pressure and 0.001 for diastolic blood pressure ($p < 0.05$). This indicates that Tera Gymnastics is effective in lowering blood pressure in elderly hypertensives. In the Yoga group, the Wilcoxon test results also showed a significant difference with a significance value of 0.011 for systolic blood pressure and 0.012 for diastolic blood pressure ($p < 0.05$). These results indicate that Yoga Gymnastics also has a significant effect in lowering blood pressure in elderly hypertensives.

The results of this study align with several previous studies that have examined the effectiveness of physical exercise in lowering blood pressure. Elderly people who performed tera exercises regularly for four weeks experienced an average reduction in systolic blood pressure of 12 mmHg and diastolic blood pressure of 7 mmHg compared to a control group that did not exercise (Pardede & Sari, 2019). Furthermore, yoga has also been shown to lower blood pressure by increasing relaxation of the autonomic nervous system, which contributes to reduced stress and vascular tension (Putri & Muflihatin, 2021). Research by Hagins et al. (2019) found that yoga practice can reduce systolic blood pressure by an average of 5–10 mmHg and diastolic blood pressure by 3–7 mmHg in people with hypertension. This effect is even comparable to some low-dose antihypertensive medications, suggesting that yoga can be an effective adjunct therapy in the management of hypertension.

Tera gymnastics is a sport that combines breathing and meditation with rhythmic body movements, thereby increasing relaxation and reducing blood vessel tension, ultimately lowering blood pressure (Ariyanti et al., 2021). Another study found that moderate-intensity physical exercise, such as elderly gymnastics, can lower systolic blood pressure by 10–20 mmHg and diastolic blood pressure by 5–10 mmHg in elderly people with hypertension (Sari & Pratiwi, 2020).

Tera gymnastics and yoga have also been shown to be effective in lowering blood pressure. Yoga combines breathing exercises, meditation, and postures that can increase flexibility and reduce stress, contributing to blood pressure reduction (Handayani et al., 2022). A study by Patel et al. (2021) showed that six weeks of yoga practice can lower systolic blood pressure by 5–10 mmHg and diastolic blood pressure by 3–7 mmHg. This effect is believed to be related to increased parasympathetic nervous system activity, which helps regulate blood pressure more stably.

Although both interventions are effective, the results of this study indicate that Tera Exercise produces a greater reduction in blood pressure compared to Yoga. This may be due to differences in the mechanisms of action between the two types of exercise. Tera Exercise emphasizes more active body movements compared to Yoga, which focuses more on relaxation and breathing. More active physical exercise tends to increase body metabolism and improve blood vessel endothelial function, which can help lower blood pressure more significantly (Wijayanti et al., 2023). Both Tera Exercise and Yoga can be used as non-pharmacological therapeutic strategies for managing hypertension in the elderly. In addition to lowering blood pressure, both exercises also have other benefits, such as improving psychological well-being, improving sleep quality, and increasing muscle strength and flexibility (Rahmawati & Sari, 2019).

The results of the Mann-Whitney test showed that the significance value (sig.) for posttest systolic blood pressure between Tera Gymnastics and Yoga Gymnastics was 0.771, while for posttest diastolic blood pressure was 0.983. Because both p-values were greater than 0.05, there was no significant difference between posttest blood pressure in the Tera Gymnastics and Yoga Gymnastics groups, both for systolic and diastolic blood pressure.

The results of this study indicate that although both types of exercise were effective in lowering blood pressure, there was no significant difference between the two in the final

outcome after the intervention. These results are consistent with previous research that suggests that various forms of physical exercise involving a combination of movement, breathing, and meditation have relatively similar effects on lowering blood pressure (Handayani et al., 2022).

Tera exercise, which combines rhythmic movements with deep breathing and relaxation techniques, has a similar effect to yoga in lowering blood pressure. Physical exercises such as Tera exercise and yoga can increase parasympathetic nervous system activity, reduce stress, and improve blood vessel elasticity, contributing to a gradual decrease in blood pressure (Sari & Wasludin, 2024). Other studies have also shown that relaxation-based exercises can lower blood pressure by reducing sympathetic nervous system activity, which plays a role in blood pressure regulation (Wijayanti et al., 2023).

The similar effects between Tera Gymnastics and Yoga in this study may be due to the similar duration and frequency of exercise, which was once a week for one month. Physical exercise performed with similar duration and intensity tends to produce similar blood pressure-lowering effects (Patel et al., 2021). The reduction in blood pressure following this intervention can be explained by several physiological mechanisms. Tera Gymnastics, as a form of regular physical exercise, increases blood vessel elasticity, reduces peripheral resistance, and improves vascular endothelial function. This exercise also stimulates parasympathetic nerve activity, which decreases sympathetic nerve activity and produces a vasodilatory effect, thus better controlling blood pressure (Rahmawati & Sari, 2019). Meanwhile, yoga also has a mechanism for lowering blood pressure through a combination of asanas (body postures), pranayama (breathing exercises), and meditation, which work synergistically to stabilize blood pressure. Regular yoga practice can increase the production of nitric oxide (NO), which acts as a natural vasodilator that dilates blood vessels and lowers blood pressure. A significant decrease in blood pressure is also associated with a decrease in levels of the stress hormone cortisol, which often contributes to increased blood pressure due to stress and anxiety experienced by the elderly (Wahyuni & Nurjanah, 2020).

The characteristics of the respondents in this study are also important factors to consider in assessing the effectiveness of the intervention. The majority of respondents were aged 40–55 years (60.0%), which is an age group at higher risk of hypertension due to decreased blood vessel elasticity with age. Furthermore, the majority of respondents were housewives (43.3%), who may have lower levels of physical activity than individuals who are still actively working. These factors suggest that physical activity-based interventions, such as tera gymnastics and yoga, are highly relevant for improving the quality of life of older adults with limited physical activity (Saputra & Nurjanah, 2020). In addition to age and physical activity, education level also plays a role in intervention effectiveness. The majority of respondents had a high school education (56.7%), which may influence their understanding and adherence to the exercise program. Older adults with higher levels of education tend to have better health awareness, which can improve adherence to routine intervention programs (Putri & Muflihatin, 2021).

Tera exercise and yoga can be implemented as part of a non-pharmacological therapy strategy that supports blood pressure control. Tera exercise and yoga have additional benefits, such as improving psychological well-being, increasing insulin sensitivity and metabolism, and increasing muscle and joint flexibility, which helps maintain mobility and quality of life in the elderly in the long term (Khasanah & Nurjanah, 2020).

While this study demonstrated significant results, several limitations warrant consideration, including the relatively short intervention duration (four weeks), the limited sample size of elderly women in a single location, and the absence of a control group. Further research is recommended to include elderly men to examine gender-specific differences in response to interventions, employ *randomized controlled trials* (RCTs) to enhance the validity of the findings, and conduct research with a longer intervention duration (≥6 months) to assess the long-term impact on hypertension management (Saputra & Nurjanah, 2020).

CONCLUSION

The results of the study showed that Tera Gymnastics had a significant effect on reducing blood pressure in hypertensive elderly at the Santo Yoseph Werdha Panti Kediri City, with a significance value of p = 0.001 for systolic blood pressure and p = 0.001 for diastolic blood pressure (p < 0.05). The results of the study showed that Yoga Gymnastics had a significant effect on reducing blood pressure in hypertensive elderly at the Santo Yoseph Werdha Panti Kediri City , with a significance value of p = 0.011 for systolic blood pressure and p = 0.012 for diastolic blood pressure (p < 0.05).

The results of the analysis show that there is no difference in the effectiveness of Tera Gymnastics and Yoga Gymnastics on changes in blood pressure in elderly people with hypertension. at the Saint Joseph Nursing Home in Kediri City

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