



The Effect of Tera Gymnastics on Reducing Hypertension in the Elderly in Dukugawing-Kepunduan Cirebon

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Abstract. Elevations in blood pressure and pulse might result from changes in the cardiovascular system that occur with aging, including the loss of artery flexibility. Motion-based exercise for the elderly increases the release of hormones that relax the patient by stimulating the sympathetic and parasympathetic nervous systems. Senior gymnastics is an excellent physical activity for removing fat and cholesterol from blood vessels. This study aimed to determine the impact of senior exercise on hypertension in the older population in the Dukugawing Block, Kepunduan Village, Dukuntang District, and Cirebon Regency. The pre-experimental research design employed in this study included 34 senior hypertensive participants in a one-group pre-posttest design using simple total sampling. As the data were normally distributed, a paired t-test was used for data analysis after blood pressure was taken using a sphygmomanometer and elderly gymnastics was measured using a standard operating procedure (SOP). As a result of the intervention, the average blood pressure dropped from 150/94 mmHg to 140/90 mmHg, according to the data. After administering an aged exercise intervention for the elderly in the Dukugawing Block, Kepunduan Village, Dukuntang District, Cirebon Regency, a paired sample t-test analysis yielded a p-value = 0.00 <0.05, indicating a significant difference in blood pressure before and after participation.

Keywords: Blood Pressure, Elderly, Hypertension, Lanisa Gymnastics

INTRODUCTION

Health conditions classified as noncommunicable (NCDs) are those that cannot be spread to others by direct contact. Present-day human health and development are seriously threatened by noncommunicable diseases, especially diabetes, cancer, hypertension, cardiovascular disease, and chronic respiratory disorders. Noncommunicable illnesses account for about half of all deaths worldwide, or 35 million deaths annually, and are caused mainly by four key behavioral variables, with 80% of cases occurring in poorer nations. In ten years, the WHO projects a 17% increase in deaths from noncommunicable diseases. In addition to environmental factors and genetics, lifestyle factors like smoking, drinking alcohol, eating poorly, and not exercising are the leading causes of noncommunicable diseases. National governments, international and national NGOs, and multilateral organizations like the WHO collaborate to create a broad plan emphasizing illness prevention and control to overcome this (Warganegara, 2016).

Approximately 1.28 billion persons globally are predicted to have hypertension in 2021, according to WHO data. The majority of instances originate from nations whose average economies are lower. As of 2020, 39.9% of Southeast Asians suffered from hypertension. Elderly posyandu patients still receive infrequent particular time for health promotion or counseling activities, even though the prevalence of hypertension has increased from 25.8% to 34.1% of the Indonesian population since 2013. As a result, the elderly are still not well informed about the significance of efforts to prevent hypertension (Riskesdas, 2018).

The Ministry of Health's information elderly report from 2022 states that the prevalence of hypertension varies depending on age category: it is 32.5% in the elderly group and 26.1% in the pre-elderly group. Statistics on Hypertension in the Elderly in Indonesia: 45.9% for those between the ages of 55 and 64, 57.6% for those between the ages of 65 and 74, and 63.8% for those over 75 (Ministry of Health RI 2020). Based on the West Java Provincial Health Office 2022, elderly hypertension ranks fourth in the province with a percentage of 29.4%, or 13,612 individuals. Cirebon Regency Office 2020 reports that 644,577 older adults have hypertension. The 27th most significant group of people receiving health services is those of hypertensive patients. As a result of the continued high prevalence of hypertension, family members can play a part in their care (Health Profile of the Cirebon Regency Health Office, 2020).

Over 140 mmHg in the systolic and 90 mmHg in the diastolic range, measured twice daily at rest, is considered hypertension. Hypertension is a worldwide health concern, with a frequency of 25.8% in Indonesia. The following conditions can be brought on by hypertension: peripheral vascular disease, retinal damage, heart failure, stroke, and chronic kidney disease. Primary or essential hypertension and secondary hypertension are two categories of hypertension. In 90% of patients with hypertension, primary hypertension is a blood pressure condition with no recognized cause. Reducing death and morbidity using pharmacological and nonpharmacological therapy is the main objective of treating hypertension. Physical activity, a low-salt diet, the DASH diet, weight loss in obese people, and minimal alcohol intake are examples of nonpharmacological therapy. Medication therapy starts with a single medication or a combination of medications that reduce blood pressure. Lisiswanti, R. and G. Yulanda (2017). Tera gymnastics, which combines breathing exercises with movement, is one nonpharmacological therapy that can be pursued (2020, Khansanah, U., and Nurjanah, S).

When done regularly, tera gymnastics is perfect for the body and can enhance physical and spiritual well-being. Specifically, physical well-being focuses on strengthening heart resistance, blood circulation, food digestion, joint flexion, and nerve function. Meanwhile, the elderly should

be able to concentrate better, lower their stress levels, sleep better, and maintain stability in their self-confidence (Nuryada, 2021). There were 20,290 senior citizens with hypertension, 10,319 men, and 9,971 women, according to the findings of an initial survey that researchers carried out in the Sindangjawa Health Center's working region. Dukugawing Block, Kepunduan Village, Dukupuntang District, has 34 senior citizens who suffer from hypertension. Since many older persons have blood pressure issues, researchers are interested in studying the elderly in light of this phenomenon. The purpose of this study is to determine whether tera gymnastics, as a form of prevention and treatment for older adults who already have hypertension, affects lowering hypertension in this population. The study will occur in Dukugawing, Kepunduan, Cirebon Regency.

METHOD

A quasi-experiment group pretest and posttest research design was employed to determine if these activities could impact quantitative descriptive statistical research methodologies (William et al., H, 2019). Before receiving therapy, seniors are required to complete a pretest, followed by a posttest. Three times per week, the study was carried out. We will be able to determine the impact of tera gymnastics on lowering blood pressure in the elderly in Dukugawing Block, Kepunduan Village, Dukupuntang District, and Cirebon Regency once this study is completed. According to Nursingam (2015), independent variables are those that affect other variables or whose value influences other variables. Tera gymnastics was the study's independent variable. According to Nursingam (2015), dependent variables are those whose values are influenced by other variables. Hypertension in the Elderly is the dependent variable in this research.

DISCUSSION

Researchers will go through the findings of a study conducted on June 20–26, 2023, titled "The Effect of Tera Gymnastics on Blood Pressure Reduction in the Elderly in Dukugawing-Kepunduan, Cirebon Regency" in this part. An overall of 34 responders received tera gymnastics therapy as part of this observation sheet-based study. Bivariate and univariate analyses were performed by researchers using the study's findings.

Univariate Analysis

The results of statistical analysis on the influence before and after doing tera gymnastics in Dukugawing-Kepunduan, Cirebon Regency, can be seen from the following table.

Table 4.1

Category	Pre	Post
	F %	F %
Grade II hypertension	13 38%	0 0%
Grade I hypertension	21 62%	7 21%
Pre-Hypertensive	0 0%	27 79%
Total	34	34

Pre-hypertension had 0 respondents (0%), hypertension level I had 21 respondents (62%), and hypertension level II had 13 respondents (38%). These findings were derived from a study analysis of 34 respondents before the exercise. The research revealed that there were 0 respondents (%) in the level II hypertension category, seven respondents (21%) in the level I hypertension category, and 27 respondents (79%) in the pre-hypertension category. It can, therefore, be argued that there are variations in the elderly's blood pressure before and after performing tera gymnastics.

Bivariate Analysis

Bivariate analysis is used to compare the averages before and after tera gymnastics.

Table 4.2 Paired T-Test

Category	N	Mean		P Value
		Pretest	Posttest	
Sistol	34	153.09	130.29	.000
Diastole	34	99.41	86.47	.000

Based on the results of the statistical test above with 34 respondents, it can be seen that the p value (2 tailed) is 0.00 or less than <0.05 , thus it can be said that H_0 was rejected and H_a was accepted, which means that there is an effect of doing tera gymnastics on reducing blood pressure in hypertensive elderly in Dukugawing-Kepunduan, Cirebon Regency.

Hypertension in the elderly before tera gymnastics

The majority of the elderly who suffer from hypertension in the Dukugawing block, Kepunduan Village, Dukupuntang District, Cirebon Regency, range in age from 45 to 65 years. Of the 34 elderly who suffer from hypertension, 15 are women (44.1%), and 19 are men (55.9%). These findings come from a research analysis of the elderly community in the area. There were 13 (38%) level II hypertension, 21 (62%) level I hypertension, and 0 (0%) pre-hypertension among the older people with hypertension before receiving tera gymnastics treatment. People of all ages, even the elderly, can suffer from hypertension. Symptoms of the condition include headaches and irregular heartbeat.

Level I and Tinngkat II hypertension were identified from the data collected on the elderly prior to tera gymnastics. This indicates that older adults must know effective ways to manage high blood pressure. For older adults, these exercises performed three times a week have been shown to reduce blood pressure without needing pharmaceutical medication. The researchers explain the benefits of tera gymnastics for senior people with hypertension, who also test blood pressure with a sphygmomanometer and give an observation sheet before the tera gymnastics class.

High blood pressure in many older adults with hypertension results from arterial stiffness. For individuals with hypertension, non-pharmacological therapy has long been preferred over pharmaceutical therapy due to its cost-effectiveness, ease of use, and ability to prevent adverse effects that could exacerbate the condition (Maryam, 2015). Hypertension is more likely to occur as people age. Hypertension is more frequently observed in individuals 35 or older, while it can occur in anyone. The slight rise in blood pressure that occurs with aging is entirely average. The heart, blood arteries, and hormones naturally change due to it. However, if additional causes are present, these alterations may exacerbate hypertension. Tera gymnastics is one non-pharmacological treatment that can lower blood pressure (Ekasari et al., 2018).

Hypertension in the elderly after doing tera gymnastics

Pre-hypertension as much as 27 (79%), hypertension level I as much as 7 (21%), and hypertension Tinngkat II as much as 0 (0%), according to research results on elderly patients with hypertension who underwent tera gymnastics therapy three times in a week. Men with hypertension affected as many as 19 (55.9%) and women as many as 15 (44.1%), according to the data that the researchers collected. After undergoing the gymnastics therapy, it may be determined that older adults with hypertension saw a drop in blood pressure and felt lighter and more at ease when performing daily tasks. Researchers have found that compared to women, a more significant

number of men suffer from high blood pressure.

Gender characteristics influence the likelihood of developing hypertension. Males have hypertension at a higher rate than females, per the notion. Because men tend to have more hypertensive lifestyles than women, such as smoking and consuming alcohol, men are perceived to have higher blood pressure than women (Chasanah & Syarifah, 2017). Doing < 45 minutes of tera gymnastics three times a week for blood pressure reduction will help the body relax and feel lighter afterward. This can be attributed to the positive effects of tera gymnastics on the heart and blood vessel system. The body relaxes and dilates capillaries with slow breathing movements, enhancing blood circulation. This is because deep breathing causes more oxygen and carbon dioxide to be circulated. Moreover, regular breathing in and out helps improve the heart's ability to lessen the tension in the body and mind that raises blood pressure (Khannah and Nurjanah, 2020).

The effect of tera gymnastics on reducing hypertension in the elderly

The elderly hypertensive population in Dukugawing Block, Kepunduan Village, Dukupuntang District, Cirebon Regency, showed a significant reduction in hypertension when they participated in tera gymnastics, as demonstrated by statistical tests using paired t-tests with p values of 0.00 or less. Therefore, it can be concluded that H_a was accepted and H_o was rejected. Patients who engage in tera gymnastics regularly perform three high-intensity workouts per week, enhancing physical fitness, strengthening heart function, lowering blood pressure, and lessening the likelihood of fat buildup on blood vessel walls, preserving their elasticity.

In addition to causing a decrease in catecholamine, adrenaline, and norepinephrine hormones, tera gymnastics can also cause a decrease in sympathetic nerve activity and increase parasympathetic nerve activity. This can lead to vasodilation, or the dilation of blood vessels, which facilitates oxygen transport throughout the body, especially the brain, allowing blood pressure and pulse to return to normal. Frequent exercise burns glucose by activating muscles, which releases ATP and causes the release of endorphins, which are feel-good, pleasurable, and comforting chemicals. Along with increasing serotonin and melatonin secretion from the pineal gland, exercise also activates the hypothalamus-pituitary-adrenal (HPA) axis. Triyanto (2014) states that beta-endorphins and enkephalin, which induce relaxation and pleasurable sensations, are produced by the pituitary gland in response to hypothalamic cues.

A previous study by Totok & Rosyid (2017) produced similar results; the pre- and post-systole blood pressure tests, as well as the Wilcoxon Signed Rank Test, yielded a calculated Z

value of 4.370 with a significant value (p-value) of 0.001. Pre- and post-test diastole blood pressure measured a Z value of 4.311 with a significance value (p-value) of 0.001, indicating that the test significance value (p-value) is less than 0.05 ($0.001 < 0.05$). The average systole blood pressure and diastole blood pressure before and after the test differ significantly, as indicated by the test significance value (p-value), which is less than 0.05 ($0.001 < 0.05$). As a result, H_0 is rejected. Sidiq's (2019) research supports the analysis outcomes: Pvalue = 0.002 was achieved for the systole blood pressure values before and after therapy. It was determined that romantic gymnastics had an impact on the respondents' systolic and diastolic blood pressure based on the analysis of their diastolic blood pressure before and after treatment, as evidenced by the results of the analysis that showed a value of Pvalue = 0.001 at a significance level of 0.05, rejecting hypothesis H_0 and accepting hypothesis H_a . Using protein gymnastics to treat hypertensive patients can lower their blood pressure drastically, both systolic and drastic.

CONCLUSION

Specific gymnastics exercises impact blood pressure, particularly in older adults. If performed three times a week, tera gymnastics can effectively boost the heart's capacity to pump blood to fulfill the body's oxygen needs and prevent the heart from beating more quickly. This is the finding of a study carried out in June 2023 in Dukugawing-Kepunduan, Cirebon Regency, on the impact of tera gymnastics on lowering blood pressure in the elderly:

1. Characteristics of respondents based on age, the majority of respondents have an age range of 45-60 years. Based on gender: Female 15 respondents (44.1%), Gender: Male is 19 respondents (55.9%).
2. The average blood pressure of the elderly with hypertension before the intervention of elderly gymnastics obtained an average value of systole pressure of 153.09 mmHg. The average diastole pressure is 99 mmHg.
3. The average blood pressure of the elderly with hypertension after being given elderly gymnastics intervention obtained an average value of systole pressure of 130 mmHg. The average diastole pressure is 86 mmHg.
4. There is an influence on pre and post blood pressure data of systole and diastole before and after intervention in the form of tera gymnastics in the elderly with p value = 0.000 < 0.05 which means that there is a significant influence on blood pressure before and after tera exercise.

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