The Effectiveness of Flexibility Training and Autogenic Relaxation Towards Blood Pressure Change in Hypertension Patients

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Abstract

Hypertension is one of the most common public health problems in the world including Indonesia. Hypertension is a disease caused by blood pressure that passes normal blood pressure (TD Systolic ≥140 mmHg and Diastolic TD ≥ 90 mmHg). Nonpharmacological action Exercise Flexibility and Autogenic Relaxation is one of the alternative therapies for lowering blood pressure in hypertensive patients. The research aimed to determine the effect of autogenic flexibility and relaxation exercises on blood pressure in hypertensive patients. This research used a Quasy Experiment design using pre-test and post-test Group design, using Non-Probability sampling samples involving 30 respondents. The test results of pre and post-differences in a flexibility training group with the Wilcoxon test obtained a p-value of 0.004 <0.05 then Ho was rejected. The test result of pre and post-difference in the autogenic relaxation group with the Wilcoxon test obtained a p-value of 0.001 <0.05 then Ho was rejected. The test result difference of mean-ended systolic blood pressure and final diastolic blood pressure with Mann Whitney U test in autogenic flexibility and relaxation exercise obtained a p-value 0.466>0.05 for systolic and p-value 0.265 >0.05 for diastolic. Then Ho was accepted and H1 was rejected, meaning there was no effectiveness between flexibility and autogenic relaxation exercises. The results of this research might serve as a reference for nurses to make the exercise of autogenic flexibility and relaxation one of the independent nursing interventions and incorporate this autogenic flexibility and relaxation exercise in the management stages of hypertensive patients.

Keywords: hypertension, blood pressure, flexibility exercise, autogenic relaxation

INTRODUCTION

Non-pharmacological management in patients with hypertension to prevent blood pressure, doing flexibility exercises (non-pharmacology) given to patients can have an impact on the flow rate, which in general will increase the blood flow rate and physical exercise also reduces epinephrine hormone so that it affects the blood flow (Sherwood, in Sembiring, 2015: 13). Blood pressure is the force (or impulse) of blood to the arteries when blood is pumped out of the heart throughout the body (Palmer, in Sembiring, 2015: 3).

As well as non-pharmacological actions that can reduce blood pressure one of which is Relaxation. One relaxation that is easily done by patients is autogenic. One study reported a greater increase in anxiety characteristics but not anxiety, compared to controls who were not treated. Furthermore, the autogenic group showed a statistically significant greater decrease immediately after treatment, systolic and diastolic blood pressure and pulse compared with the control group (Atkinson, Thomas, & Cleeremans, 2020, in Schlamann, Naglatzki, Greiff, Forsting, & Gizewski, 2019: 16).

While pharmacological management can be done by administering anti-hypertensive drugs that are recommended for the treatment of hypertension is a type of drug Thiazide or Thiazide Antagonist, Beta Blocker, Calcium Channel Blocker or

Calcium Antagonist, Angiotensin-Converting Enzyme Inhibitor (ACEI), Angiotensin II Receptor Thiazide, Beta Blocker, Calcium Channel Blocker or Calcium Antagonist, Angiotensin-Converting Enzyme Inhibitor (ACEI), Angiotensin II Receptor Thiazide, Beta Blocker, Calcium Channel Blocker or Calcium Antagonist AT Blocker, Receptor antagonist/blocker (ARB) (Wahyudi 2014: 6).

Hypertension is one of the many public health problems suffered throughout the world including in Indonesia. In 2000, SEARO (South East Asia Regional Office) countries under the World Health Organization (WHO) including Indonesia reported that 52% of the causes of death were due to non-communicable diseases.

Non-communicable diseases that have been increasing in the last ten years as the cause of death are heart disease and stroke. According to WHO, in 2012 there were at least 839 million cases of hypertension and it was estimated that by 2025 it would be 1.15 billion or around 29% of the total world population, female sufferers were more (30%) than men (29%).

In developed countries like the United States, it is estimated that 20% of the population suffers from hypertension. One in four people in the United States has hypertension. As an illustration, as many as 20% of American children may have started to develop high blood pressure. Of the 57 million Americans, as many as 90% of cases of high blood pressure, the cause is not known with certainty. This condition is called essential hypertension. The remaining 10% is caused by identifiable diseases, such as atherosclerosis, adrenal gland tumors, or kidney disease (for example kidney failure and kidney inflammation) (Purwati, Salimar & Rahayu, 2019: 6).

High blood pressure can lead to congestive heart failure and cerebrovascular disease, increasing the risk of coronary heart disease 5 times and stroke 10 times. Stroke sufferers 40-70% are hypertension sufferers. Based on the results of the 2007 Basic Health Research (Riskesdas), hypertension is the third leading cause of death (6.8%) in Indonesia after stroke (15.4%) and tuberculosis (7.5). The prevalence of hypertension at the age of 18 years and over based on the results of measurements of 31.7%, in women 31.9%, and 31.3% for men. The results of Riskesdas 2018, showed a decrease in the prevalence of hypertension to 25.8%, women 28.8% and men 22.8%. Hypertension in women tends to be higher than in men. Risk factors for hypertension that cannot be changed are age, sex, and genetics. Risk factors for hypertension that can be changed include obesity/obesity, psychosocial and stress, smoking, lack of exercise, excessive alcohol consumption, excessive salt consumption, and hyperlipidemia/ hypercholesterolemia. While secondary causes of hypertension include kidney disease, endocrine disorders, and the use of drugs.

According to the Indonesian Health Research and Development Agency (Riskesdas) results (2018), the prevalence of hypertension in Indonesia obtained through measurements at the age of ≥18 years was 25.8 percent, the highest in Bangka Belitung (30.9%), followed by South Kalimantan (30.8%), East Kalimantan (29.6%) and West Java (29.4%). The prevalence of hypertension in Indonesia obtained through a questionnaire diagnosed by health workers is 9.4 percent, diagnosed by health workers or taking medication is 9.5 percent. So, there is 0.1 percent who took the medication themselves. Respondents who had normal blood pressure but were taking hypertension medication by 0.7 percent. So the prevalence of hypertension in Indonesia is 26.5 percent (25.8% + 0.7%) (Indonesian Health Research and Development Agency 2018: 88).

From the results of a preliminary study conducted on November 3, 2022, based on the medical records of the top 10 inpatient diseases in Dr. Soedarsono Pasuruan there

was an increase in the number of hypertension or high blood pressure clients from January to October. In January there were 22 clients, in February there were 39 clients, in March there were 41 clients, in April there were 21 clients, in May there were 13 clients, in June 32 clients, in July there were 27 clients, in August there were 26 clients, month September there were 31 clients, and clients increased in October, which was 75 clients. (Medical Record Data of Dr. Soedarsono Pasuruan hospital , 2022). And of the 10 major illnesses hospitalized at Dr. Soedarsono Pasuruan Hypertension is included in the category of 10 major diseases that are only given pharmacological therapy (drugs) and are not done. in hypertensive patients in Interne 1 Room Dr. Soedarsono Pasuruan hospital in the hope that the agency can continue the intervention carried out by researchers.

Hypertension is a symptom of many diseases and is often experienced by humans today. Hypertension better known as high blood pressure is a condition where there is an increase in blood pressure above the normal threshold of 120/80 mmHg. According to the World Health Organization (WHO), estimating the amount of hypertension will continue to increase along with the growing population. In 2025, it is projected that around 29% or around 1.6 billion people around the world experience hypertension.

Flexibility exercises are exercises that make joint work better and movement easier, which can be done every day by stretching muscles with slow movements. (Montagu, in Sembiring 2015: 12). Flexibility training can also reduce the risk of hypertension and is recommended for people with hypertension and when doing physical exercises the increase will increase respiratory activity and skeletal muscle, from the increased respiratory activity will increase venous return, thereby causing a decrease in blood pressure (Sherwood in Sembiring 2015: 13). With the hope of producing decreased blood pressure as from previous studies conducted by Friska Br Sembiring in (2015) with the title "The effect of flexibility exercise on changes in blood pressure in patients with chronic kidney failure undergoing Hemodialysis therapy in the Kidney and Hypertension Rasyida Medan clinic" obtained the result is that flexibility training can stabilize blood pressure in patients with chronic renal failure undergoing hemodialysis therapy.

In addition to these flexibility exercises, autogenic relaxation can also reduce blood pressure in hypertensive patients. Non-pharmacological actions can reduce blood pressure, one of which is relaxation. One relaxation that can be done easily by patients is autogenic. (Oberg, in Wicaksono 2016: 2). Further research conducted by Muhammad TaufanAryoWicaksono (2016) with the title "Effectiveness of autogenic relaxation on blood pressure in the elderly with hypertension at Lerep Health Center, Ungaran Barat Semarang Regency" found that the results showed that the results showed autogenic relaxation effective against blood pressure elderly with p = 0,000 (α = 0.05) for systole blood pressure and p-value = 0.003 (α = 0.05) for diastole blood pressure with a decrease in average blood pressure of 21,429 / 11,905 mmHg in the intervention group and a decrease in average blood pressure of 4.048 / 2,619 mmHg in the control group.

METHODS

This study used quasi-experimental Quasi Experiment using the Pre-test and Post-test Group design. In this design, observations were made 2 times, namely before the experiment and after the experiment. Observations made before experiments are called pre-tests and observations after experiments are called post-tests. This study aims to determine the effect of autogenic flexibility and relaxation exercises on changes in blood pressure in hypertensive patients in the internal space 1 of Dr. Soedarsono Pasuruan hospital .

Intervention in both groups blood pressure assessment was carried out (pre-test), and intervention in the form of flexibility training was carried out for 20-30 minutes for 3 days. The second intervention was autogenic relaxation carried out for 15 minutes for 3 days. The sample of this research is 30 people and the technique used is the Non Probability Sampling technique by taking consecutive samples. Inclusion Criteria: 1) Clients are willing to be respondents; 2) Clients are cooperative.

The instruments of this research are 1) a Guide to flexibility exercise, 2) a Guide to autogenic relaxation, 3) a Spigmomanometer (mercury), 4) a Stethoscope, and 5) an Observation sheet is arranged to observe changes in blood pressure. Bivariate analysis in this study used the Wilcoxon Signed Rank Test and the Mann-Whitney U-Test because all of the distribution data was abnormal and the scale was ordinal.

RESULT

Table 4.1 Table of Gender Distribution of Respondents in Internal Space 1 of RSUD. Dr. Soedarsono Pasuruan 22 May-17 June 2023

Gender	Group LF		Group RA		Total	
	F	%	F	%	F	%
Male	6	40%	4	26.6%	10	33.3%
Female	9	60%	11	73.3%	20	6.7%
Total	15	100%	15	100%	30	100%

Based on data from Table 4.1 it is known that the flexibility training respondents contained 6 people (40%) were male and there were 9 people (60%) were female. Whereas in the autogenic relaxation respondents, there were 4 (26.6%) male sex and there were 11 people (73.3%) female.

Table 4.2 Table of Age Distribution of Respondents Exercise Flexibility and Relaxation in Autogenic Hospital. Dr. Soedarsono Pasuruan 22 May-17 June 2023

Group of Variable		N	Mean	SD	Min	Max	Median
Practice F.	Age	15	42.07	7,469	28	52	43,00
Relaxation A.	Age	15	53.87	2,509	38	68	56,00

Based on Table 4.2 above it is known that the average age of respondents in the Flexibility Exercise group was 42.07 years, with a Standardization of 7,469. The youngest is 28 years old and the oldest is 52 years old. The average age of respondents in the Autogenic Relaxation group was 53.87 years, with a Standardization of 2,509. The youngest is 38 years old and the oldest age is 68 years.

Table 4.3 Distribution Table based on Education Level at RSUD. Dr. Soedarsono Pasuruan 22 May-17 June 2023.

Educational Level	LF Group		RA Group		Total	
	F	%	F	%	F	%
Elementary Schoo	6	40%	10	66.6%	16	53.3%
Junior High School	5	33.3%	5	33.3%	10	33.3%
Senior High School	3	20%	0	0%	3	10%
Bachelor	1	6.7%	0	0%	1	3.3
Total	15	100%	15	100%	30	100%

Based on Table 4.3 above it is known that the level of education of respondents Autogenic Flexibility and Relaxation Training of 10 people (66.6%) with an elementary education level.

Table 4.4 Distribution Tables of Respondents Smoking History in RSUD. Dr. Soedarsono Pasuruan 22 May-17 June 2023

Smoking History	LF Group		RA Group		Total	
	F	%	F	%	F	%
Yes	4	26.6%	3	20%	7	23.3%
No	11	73.3%	12	80%	23	76.6%
Total	15	100%	15	100%	30	100%

Based on Table 4.4 above it is known that in the Smoking History of the Flexibility Exercise respondents there were 4 people (26.6%) with a history of smoking and 11 people (7.33%) with a history of not smoking. Whereas in respondents Autogenic Relaxation there are 3 people (20%) with a history of smoking. And 12 people (80%) with a history of not smoking.

Table 4.5 Distribution Table of Autogenic Exercises for Flexibility and Relaxation at RSUD. Dr. Soedarsono Pasuruan 22 May-17 June 2023

History	LF Group		RA Group		Total	
	F	%	F	%	F	%
Yes	0	0%	0	0%	0	0%
No	15	100%	15	100%	30	100%
Total	15	100%	15	100%	30	100%

Based on Table 4.5 above it is known that the history of respondents Flexibility Training 15 people (100%) with a history of never doing flexibility exercises. Of the respondents on Autogenic Relaxation, there are 15 people (100%) with a history of never doing autogenic relaxation.

Blood Pressure before (Pre) Flexibility Exercises

Table 4.6 Table of Initial Blood Pressure Measurement Before Flexibility Exercises in RSUD. Dr. SoedarsonoPasuruan 22 May-17 June 2023

| Code | Category | LF Group | | | | Total | |
| | | Sistole | | Diastole | | | |
		F	%	F	%	F	%
1	Normal	0	0%	0	0%	0	0%
2	HT limits	0	0%	0	0%	0	0%
3	HT Light (Stadium 1)	0	0%	1	6.7%	1	3.3%
4	HT Medium (Stadium 2)	7	46.6%	4	26.6%	11	36.6%
5	HT (Stadium 3)	6	40%	10	66.6%	16	53.3%
6	HT (Stadium 4)	2	13.3%	0	0%	2	6.6%
	Total	15	100%	15	100%	30	100%

Based on Table 4.6 above it is known that in the Classification of Blood Pressure Systolic respondents Pre LF there are 7 people (46.6%) with the category HT Medium (Stage 2), 6 people (40%) with the category HT (Stadium 3), 2 people (13.3%) with HT (Stadium 4) category. And Pre pre-LF diastolic there is 1 person (6.7%) with the category of Light HT (Stage 1), 4 people (26.6%) with the category of Medium HT (Stage 2), and 10 people (66.6%) with the category HT (Stage 4).

Blood Pressure Before (Pre) Autogenic Relaxation.

Table 4.7 Initial blood pressure measurement table before autogenic relaxation in RSUD. Dr. Soedarsono Pasuruan 22 May-17 June 2023.

| Code | Category | RA Group | | | | Total | |
| | | Sistole | | Diastole | | | |
		F	%	F	%	F	%
1	Normal	0	0%	0	0%	0	0%
2	HT limits	0	0%	0	0%	0	0%
3	HT Light (Stadium 1)	0	0%	0	0%	0	0%
4	HT Medium (Stadium 2)	6	40%	6	40%	12	40%
5	HT (Stadium 3)	8	53.3%	8	53.3%	16	53.3%
6	HT (Stadium 4)	1	6.7%	1	6.7%	2	6.6%
	Total	15	100%	15	100%	30	100%

Based on Table 4.7 above it is known that in the Classification of Blood Pressure Systolic Pre RA respondents there are 6 people (40%) with the category of moderate HT (Stadium 2), 8 people (53.3%) in the category HT (Stadium 3), 1 person (6.7%) with HT (Stadium 4) category. In diastolic Pre RA, there are 6 people (40%) with the category of Medium HT (Stage 2), 8 people (53.3%) with the category HT (Stage 3), and 1 person (6.7%) with the category HT (Stage 4).

Blood Pressure after (Post) Flexibility Exercises

Table 4.8 Table of Measurement of Blood Pressure After Flexibility Exercises in RSUD. Dr. Soedarsono Pasuruan 22 May-17 June 2023

Code	Category	LF Group				Total	
		Sistole		Diastole			
		F	%	F	%	F	%
1	Normal	0	0%	0	0%	0	0%
2	HT limits	2	13.3%	0	0%	2	6.7%
3	HT Light (Stadium 1)	6	40%	7	46.6%	13	43.3%
4	HT Medium (Stadium 2)	5	33.3%	5	33.3%	10	33.3%
5	HT (Stadium 3)	2	13.3%	3	20%	5	53.3%
6	HT (Stadium 4)	0	0%	0	0%	0	16.7%
	Total	15	100%	15	100%	30	100%

Based on Table 4.8 above it is known that the Post LF Systolic Blood Pressure Classification respondents contained 2 people (13.3%) with the Border HT category, 6 people (40%) with the category of Light HT (Stadium 1), 5 people (33.3%) with the category of Medium HT (Stage 2), and 2 people (13.3%) in the HT category (Stage 3). And there are 7 posts of diastolic LF (46.6%) in the category of mild HT (Stage 1), 5 people (33.3%) in the moderate HT category (Stadium 2), and 3 people (20%) in the HT category (Stage 3).

Blood Pressure after (Post) Autogenic Relaxation

Table 4.9 Table of Measurement of Blood Pressure after Autogenic Relaxation in RSUD. Dr. Soedarsono Pasuruan 22 May-17 June 2023.

Code	Category	RA Group				Total	
		Sistole		Diastole			
		F	%	F	%	F	%
1	Normal	0	0%	0	0%	0	0%
2	HT limits	1	6.7%	0	0%	1	3.3%
3	HT Light (Stadium 1)	10	66.7%	9	60%	19	63.3%
4	HT Medium (Stadium 2)	3	20%	6	40%	9	30%
5	HT (Stadium 3)	1	6.7%	0	0%	1	3.3%
6	HT (Stadium 4)	0	0%	0	0%	0	0%
	Total	15	100%	15	100%	30	100%

Based on Table 4.9 above it is known that in the Post RA Systolic Blood Pressure Classification there is 1 person (6.7%) with the Border HT category, 10 people (66.6%) with the category of Light HT (Stage 1), 3 people (20%) with the category of Medium HT (Stage 2), and 1 person (6.7%) in the HT category (Stage 3). And there are 9 post-RA diastolic people (60%) with the category of mild HT (Stage 1), and 6 people (40%) with the category of moderate HT (Stage 2).

DISCUSSION

1. Effects of flexibility training on changes in blood pressure in hypertensive patients.

Based on Table 4.6 above it is known that in the Classification of Blood Pressure Systolic respondents Pre LF there are 7 people (46.6%) with the category HT Medium (Stage 2), 6 people (40%) with the category HT (Stadium 3), 2 people (13.3%) with HT (Stadium 4) category. And Pre pre-LF diastolic there is 1 person (6.7%) with the category of Light HT (Stage 1), 4 people (26.6%) with the category of Medium HT (Stage 2), and 10 people (66.6%) with the category HT (Stage 4). Whereas in Table 4.8 it is known that the Post LF Systolic respondents' Blood Pressure Classifications are 2 people (13.3%) in the Border HT category, 6 people (40%) in the Light HT category (Stadium 1), 5 people (33.3%) with the Medium HT category (Stage 2), and 2 people (13.3%) in the HT category (Stage 3). And there are 7 posts of diastolic LF (46.6%) in the category of mild HT (Stage 1), 5 people (33.3%) in the moderate HT category (Stadium 2), and 3 people (20%) in the HT category (Stage 3). Based on statistical testing with SPSS to find out whether there is a significant difference between the conditions before being given flexibility training and after being given flexibility training, a significant test result is obtained at 0.004 with a significance level of 0.05 because p-Value <0.05, then Ho is rejected and H1 accepted or there are differences in results between before and after the flexibility exercise. Based on the results of tests with SPSS exercise flexibility affects the changes in blood pressure in hypertensive patients.

This is supported by several studies revealing that blood pressure is influenced by various factors. These factors include gender, age, occupation, environment, and factors contained in the process of measuring blood, such as room temperature, physical activity before being examined, upper arms depressed by sleeves, speed of cuff decline, posture during examination, anxiety, and sharpness of the examiner's hearing (Purwati et al, 2017).

Flexibility training can also reduce the risk of hypertension and is a recommendation for people with hypertension when doing physical exercises the increase will increase respiratory activity and skeletal muscle, from the increased respiratory activity will increase venous return, thereby causing a decrease in blood pressure (Sherwood, in Sembiring 2015: 13). With the expectation of producing blood pressure to decrease as from previous research conducted by Friska Br Sembiring in (2015) with the title "Effect of flexibility exercise on changes in blood pressure in patients with chronic renal failure undergoing hemodialysis therapy in the kidney clinic and Rasyida Medan Hypertension "obtained results that flexibility training can stabilize blood pressure in patients with chronic renal failure undergoing hemodialysis therapy.

The results of the study above show that blood pressure is still high in hypertensive patients before doing flexibility exercises and changes in blood pressure after flexibility exercises. Factors that influence the occurrence of high blood pressure in hypertensive patients can be caused by factors of age, sex, smoking history, etc. The results of the study showed that the average age of respondents was 42.07 and 53.87 respondents were female and male. Therefore, researchers believe that the incidence of hypertension can be caused by factors of age, gender, smoking history, and hypertension. Normally the blood pressure of the elderly (> 46 years) is 140 mmHg for systolic pressure and 80 mmHg for diastolic pressure. Elderly blood pressure increases due to decreased elasticity of blood vessels. Risk factors can increase after menopause; women tend to have higher blood pressure than men at that age. Besides, stress can also result in

sympathetic stimulation which increases blood frequency, cardiac output, and peripheral vascular resistance. The effects of sympathetic stimulation can increase blood pressure (Perry & Potter, 2015: 796 - 798). Researchers also believe that flexibility training can reduce the risk of developing hypertension and is a recommendation for people with hypertension to stabilize blood pressure.

2. Effects of autogenic relaxation on changes in blood pressure in hypertensive patients.

Based on Table 4.7 above it is known that in the Classification of Blood Pressure Systolic Pre RA respondents, there are 6 people (40%) with the category of moderate HT (Stadium 2), 8 people (53.3%) in the category HT (Stadium 3), 1 person (6.7%) with HT (Stadium 4) category. In diastolic Pre RA, there are 6 people (40%) with the category of Medium HT (Stage 2), 8 people (53.3%) with the category HT (Stage 3), and 1 person (6.7%) with the category HT (Stage 4). Whereas in table 4.9 it is known that the Post RA Systolic Blood Pressure Classification respondents contained 1 person (6.7%) with the Border HT category, 10 people (66.6%) with the category of Light HT (Stadium 1), 3 people (20%) with the category of Medium HT (Stage 2), and 1 person (6.7%) in the HT category (Stage 3). There are 9 post-RA diastolic people (60%) with the category of mild HT (Stage 1) and 6 people (40%) with the category of moderate HT (Stage 2). Based on statistical testing with SPSS to find out whether there is a significant difference between conditions before being given autogenic relaxation and after being given autogenic relaxation, a significant test result of 0.001 is obtained with a significance level of 0.05 because p-value <0.05, then Ho is rejected and H1 accepted or there are differences in results between before and after autogenic relaxation. Based on the results of tests with SPSS, autogenic relaxation is likely to influence blood pressure changes in hypertensive patients.

Sex factors, in general, the incidence of hypertension is higher in men than women until the age of 55 years. Between the ages of 55-74 years, the risk is almost the same, after the age of 74 years the woman's risk is greater. Age factors of the World Health Organization (WHO) classify hypertension by age in three categories namely, Age group 20-29 years, blood pressure> 150/90 mmHg. Age group 30-64 years, blood pressure> 160/95 mmHg, and Age group> 65 years, blood pressure> 170/96 mmHg. At a young age, if you have a blood pressure of 140 / 90mmHg, you should start watching. This is more attention for patients with kidney disorders because their health can deteriorate rapidly (Purwati, et al, 2017).

Further research conducted by Muhammad Taufan AryoWicaksono (2016) with the title "Effectiveness of autogenic relaxation on blood pressure in elderly with hypertension in Lerep Health Center, Ungaran Barat Semarang Regency" showed that the results showed that autogenic relaxation was effective against elderly blood pressure with a value of p = 0,000 (α = 0.05) for systole blood pressure and p-value = 0.003 (α = 0.05) for diastolic blood pressure with a decrease in average blood pressure of 21.442 / 11.905 mmHg in the intervention group and a decrease in average blood pressure of 4.048 / 2,619 mmHg in the control group.

According to researchers, the results above show that blood pressure is still high in hypertensive patients before autogenic relaxation and blood pressure changes occur after autogenic relaxation. Factors that influence the occurrence of high blood pressure in hypertensive patients can be caused by factors of age, sex, smoking history, etc. The results of the study showed that the average age of respondents was 42.07 and 53.87

respondents were female and male. Therefore, researchers argue that the incidence of hypertension can be caused by factors of age, gender, smoking history, and hypertension. Researchers also argue that with the above factors, autogenic relaxation can be used to lower blood pressure in hypertensive patients, we can see autogenic relaxation originates from, using several words, such as short sentences with peace of mind so respondents feel relaxed and comfortable.

3. Analyze the Effectiveness of Autogenic Exercise Flexibility and Relaxation on Changes in Blood Pressure in Hypertensive Patients.

Based on Table 4.10, the results of the analysis test using U Mann Whitney obtained data for post-LF post-RA. 466 systolic blood pressure and Post LF post-RA .265 diastole. It means the p-value> 0.05 which means that Ho is accepted means that there is no significant difference between the Flexibility and Autogenic Relaxation Exercise groups before and after the intervention.

Sports and physical activity are also very important to consider in the case of hypertension because exercise is carried out regularly and physical activity can often reduce the risk of hypertension. Regular exercise can reduce the risk factors for hypertension by affecting other risk factors such as weight loss due to obesity, and burning fatter in the blood so that it will facilitate the flow of blood in the arteries and strengthen the heart muscles. As well as exercise above will be very influential in the status of blood pressure in patients because in this case blood pressure plays an important role in determining the sport carried out by patients (Sharman, J.E., Stowasser, M., 2019).

Autogenic relaxation exercises are behavioral interventions to deal with stress, anxiety, stress, and pain. This relaxation can reduce pressure and affect physiological processes such as lowering blood pressure, pulse, and respiration, and increasing body temperature. This is because relaxation can activate the parasympathetic system. The goal of autogenic relaxation is to divert attention away from stress or anxiety stimuli to pleasure and relaxation. During practice, someone is guided to relax in a calm and quiet situation (Micah, 2021).

Researchers believe that autogenic flexibility and relaxation exercises do not directly reduce blood pressure right away. However, if autogenic flexibility and relaxation exercises are carried out according to the implementation procedure it will have a positive impact on reducing blood pressure in hypertensive patients. And if it is not following the procedure of implementing the results it does not fit properly.

CONCLUSION

Based on the results of data analysis obtained from the study it can be concluded as follows:
1. There is an effect of changes in pre and post-blood pressure in the flexibility exercise group of hypertensive patients in the internal room 1 of Dr. Soedarsono Pasuruan hospital
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2. There is an influence of changes in pre and post-blood pressure in the autogenic relaxation group of hypertensive patients in the internal room 1 of Dr. Soedarsono Pasuruan hospital.
3. There is no effectiveness between flexibility training and autogenic relaxation in reducing blood pressure before and after the intervention. So autogenic flexibility and relaxation exercises are just as effective when used to lower blood pressure.

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