

THE EFFECT OF BRISK WALKING ON BLOOD PRESSURE OF HYPERTENSIVE PATIENTS

Endrat Kartiko Utomo^{1*}, Sitti Rahma Soleman², Ady Irawan AM¹

¹Program Studi Sarjana Keperawatan dan Profesi Ners, Fakultas Ilmu Kesehatan, Universitas Duta Bangsa Surakarta, Jl. Pinang No.47, Jati, Cemani, Sukoharjo, Jawa Tengah 57552, Indonesia

²Program Studi Sarjana Keperawatan, Fakultas Ilmu Kesehatan, Universitas 'Aisyiyah Surakarta, Jl. Ki Hajar Dewantara No.10, Jawa, Surakarta, Jawa Tengah 57146, Indonesia

*Endrat_kartiko@udb.ac.id

ABSTRACT

Hypertension is one of the non-communicable diseases characterised by clinical symptoms of high blood pressure above $\geq 140/90$ mmHg. one of the non-pharmacological implementations is physical activity or exercise, brisk walking physical activity is one way to control blood pressure in hypertensive patients. Objective to determine the effect of fast walking exercise on blood pressure of hypertensive patients. Quasy Experiment research method with Pre and Post Test with Control design, sampling technique with consecutive sampling with 48 respondents. fast walking exercise intervention for 20-30 minutes at a walking speed of 4-6 km / hour in the morning for 2 weeks. Blood pressure measurements were taken using a sphygmomanometer and analysed using Independent T - Test and paired T-Test. the average age was between 54 to 56 years old, female gender, the last education was high school, and the profession was labourer. There was a significant difference in systolic blood pressure with a P-value = 0.020*. While based on the results of the analysis of diastolic blood pressure between groups there was no significant difference in change with a P-value = 0.189 *. Fast exercise training for 20-30 minutes at a walking speed of 4-6 km / h in the morning for 2 weeks is able to reduce blood pressure in hypertensive patients, this shows that there is a great opportunity for hypertensive patients to improve their health and avoid complications.

Keywords: blood pressure; brisk walking; hypertension

INTRODUCTION

Hypertension is a non-communicable disease with clinical symptoms of high blood pressure above $\geq 140/90$ mmHg (Mills, Stefanescu, & He, 2020). Hypertension causes the heart to work harder to circulate blood throughout the body through the blood vessels. This can disrupt blood flow, damage blood vessels, even cause degenerative diseases, and death (Unger et al., 2020). The worldwide prevalence of hypertension is estimated to be 1.28 billion adults aged 30-79 years, an estimated 46% of adults with hypertension do not realise they have the condition and less than half of adults (42%) with hypertension seek treatment and around 21% of people with hypertension are uncontrolled (WHO, 2023). Hypertension in Indonesia currently reaches 51.3 million patients aged 30 to 79 years, 50% or 23.4 million people with hypertension need to be treated effectively (WHO, 2023). The estimated number of people with hypertension in Boyolali Regency in 2023 is 208,770 people, the working area of banyudono 1 health centre reaches 6,902 people with hypertension (Dinkes, 2023).

Hypertension is the leading cause of early death worldwide, with approximately 7.5 million (12.8%) deaths worldwide due to hypertension (WHO, 2023). Indonesia in 2019 had a total of 1.8 million deaths due to hypertension (WHO, 2023). Risk factors for high blood pressure can be divided into two categories, namely unchangeable factors such as genetic factors, age, and gender, and changeable factors such as obesity, diet, smoking habits, stress levels, alcohol consumption, and levels of physical activity or exercise (Rahmadhani, 2021). The management of hypertension can be through two methods: pharmacological and non-pharmacological. Pharmacological method is a

method that uses medical drugs. Meanwhile, non-pharmacological therapy is a therapy provided by managing a healthy lifestyle and lifestyle, maintaining a diet, exercising regularly, getting enough rest, reducing stress, and avoiding smoking (Santoso & Sudarsih, 2022; Verma et al., 2021). The American Heart Association (AHA) recommends that in dealing with hypertension non-pharmacologically is to do aerobic exercise or physical exercise such as brisk walking exercises, running, jogging, cycling and swimming (Gibbs et al., 2021). Physical activity or exercise is one way to control blood pressure in patients with hypertension, besides that physical activity can also maintain patient fitness. Brisk walking exercise performed for 30 minutes every 3 times a week can improve the cardiovascular system, muscle strength and body flexibility. Research (Rezky, Nur, Samad, & Puspitha, 2019) explains that 30 minutes of brisk walking exercise can reduce blood pressure in hypertensive patients. Brisk walking is a mild exercise and has a low risk of complications. Based on this background, the purpose of this research is to determine the effect of brisk walking on blood pressure in hypertensive patients.

METHOD

This study used a Quasy Experiment design with Pre and Post Test With Control design, which is research conducted with intervention and control groups, then comparing before and after the intervention. This research was conducted at Banyudono 1 Health Centre. The population of this study is all hypertensive patients at Banyudono 1 health centre with a total of 231 respondents. The sample of this study amounted to 48 people with consecutive sampling technique by setting the inclusion criteria, including willing to be a respondent, blood pressure $\geq 140/90$ mmhg, aged 45 - 59 years, not having musculoskeletal weakness. Furthermore, at the implementation stage before the intervention, blood pressure measurements were taken using a sphygmomanometer in the intervention group and control group, then brisk walking exercise intervention was performed for 20-30 minutes at a walking speed of 4-6 km / hour in the morning for 2 weeks. Univariate analysis in this study describes the distribution and presentation of the frequency of variables before and after brisk walking exercise. Bivariate analysis of how the effect of brisk walking exercise on reducing high blood pressure. Bivariate analysis using the Independent T - Test and paired T-Test with the degree of significance of the p value (<0.05) with a confidence level.

RESULT

Table 1.
Respondent characteristics (n= 48)

Respondent characteristics	Intervention		Control	
	f	%	f	%
Age (mean)	54		56	
Gender				
Male	10	42%	8	33%
Female	14	58%	16	67%
Education				
Junior High School	9	38%	9	37%
Senior High School	10	41%	12	50%
Bachelor	5	21%	3	13%
Profession				
Laborer	11	46%	8	33%
government employees	5	21%	7	29%
Self-employed	8	33%	9	38%

Source: primary data

Based on table 1, it is known that respondents with hypertension in the intervention group have an average age of 54 years, 14 respondents (58%) are female, 10 respondents (41%) have a Senior High School education and 11 respondents (46%) work as labourers. The control group

had an average age of 56 years, 16 respondents (67%) were female, 12 respondents (50%) had a Senior High School education and 9 respondents (38%) worked as self-employed.

Table 2.
Mean blood pressure before brisk walking (n=48)

Blood Pressure	Mean	SD	Min	Max
Sistole				
Intervention	154,33	18,232	132	189
Control	149,43	19,124	139	192
Diastole				
Intervention	99,74	8,432	90	110
Control	98,66	9,347	93	119

Source: primary data

Based on table 2, the average systole blood pressure of the intervention group before being given Brisk Walking Physical Exercise was 154.33 with a minimum blood pressure of 132 and a maximum of 189, while the average diastole blood pressure before being given Brisk Walking Physical Exercise was 99.74 with a minimum blood pressure of 90 and a maximum of 110. In the control group, the average systole blood pressure was 149.43 with a minimum blood pressure of 139 and a maximum of 192, while the average diastole blood pressure was 98.66 with a minimum blood pressure of 93 and a maximum of 119.

Table 3.
Mean blood pressure after brisk walking (n=48)

Blood Pressure	Mean	SD	Min	Max
Sistole				
Intervention	142,56	17,346	130	167
Control	146,88	18,656	137	195
Diastole				
Intervention	97,54	7,768	93	108
Control	97,79	9,763	90	120

Source: primary data

Based on table 3, the average systole blood pressure of the intervention group after being given Brisk Walking Physical Exercise is 142.56 with a minimum blood pressure of 130 and a maximum of 167, while the average diastole blood pressure after being given Brisk Walking Physical Exercise is 97.54 with a minimum blood pressure of 93 and a maximum of 108. In the control group, the average systole blood pressure was 146.88 with a minimum blood pressure of 137 and a maximum of 195, while the average diastole blood pressure was 97.79 with a minimum blood pressure of 90 and a maximum of 120.

Table 4.
Results of Pretest and Posttest Blood Pressure Analysis In the Intervention Group and Control Group (n=48)

Blood Pressure	Group	Mean		Mean diff.	SD	t	P-value
		pre	post				
Sistole	Intervention	154,33	142,56	-11,77	16,8	-3,77	0,001*
	Control	149,43	146,88	-2,55	18,7	1,98	0,064
Diastole	Intervention	99,74	97,54	-2,2	11,3	-1,21	0,004*
	Control	98,66	97,79	0,87	13,5	1,23	0,232

*P<0.05 based on Paired-T test

The results of blood pressure analysis showed that in the intervention group systolic blood pressure decreased with a significance value of P-value = 0.001. As for diastolic pressure, it has a significant difference with a P-value = 0.004. The test results in the control group showed that

systolic blood pressure had no significant change with a P-value = 0.064. In the control group's diastolic blood pressure there was also no significant difference with a P-value = 0.232.

Table 5.
 Results of Brisk Walking Analysis on Blood pressure in the Intervention and Control Groups
 (n = 48)

Blood Pressure	Group	Mean	Mean diff.	SD	t	P-value
Sistole	Intervention	142,56	-4,32	21,2	-2,34	0,020*
	Control	146,88		23,5		
Diastole	Intervention	97,54	-0,25	10,3	-1,35	0,189*
	Control	97,79		11,2		

*P value <0.05 based on Independent T-test

The results of data analysis after the implementation of Briks Exercise showed that the value of systolic blood pressure between the intervention and control groups had a significant difference with a P-value = 0.020 *. While based on the results of the analysis of diastolic blood pressure between groups did not have a significant difference with a P-value = 0.189 *.

DISCUSSION

Based on the results of this study, that the average patient with hypertension is 54-56 years old, this is because as you get older the blood vessels will thicken and stiffen, increasing blood pressure. In addition, the influence of hormones can also increase blood pressure in the elderly. Research states that with increasing age, changes occur in the arteries in the body to become wider and stiffer which results in reduced capacity and recoil of blood accommodated through blood vessels (Unger et al., 2020). This reduction causes the systole pressure to increase. Ageing also causes disruption of neurohormonal mechanisms such as the renin-angiotensin-aldosterone system and also causes increased peripheral plasma concentrations and also the presence of glomerulosclerosis due to aging and intestinal fibrosis resulting in increased vasoconstriction and vascular resistance, resulting in increased blood pressure (hypertension). Research suggests that the renin-angiotensin-aldosterone (SRAA) system is an important regulator of sodium balance, extracellular fluid volume, renal vascular resistance, and systemic vascular resistance (Burrello et al., 2021). Gender is related to the incidence of hypertension because women who have menopause experience a decrease in esterogenous levels which play a role in raising High Density Lipoprotein (HDL) levels which prevent the process of atherosclerosis (Rahmadhani, 2021). Other mechanisms responsible for this blood pressure trajectory may include the sustained vascular influence of hypertensive disorders of pregnancy, interactions between the renin-angiotensin-aldosterone system and sex hormones or even psychosocial gender factors such as socioeconomic deprivation (Connelly, Currie, & Delles, 2022).

The education in this study was Senior High School. Education can affect the incidence of hypertension. A number of studies have shown that people with low education are more at risk of developing hypertension than people with higher education. This is because people who have higher education tend to have a better level of health awareness. Research Podungge, (2020) shows that the level of education of elementary school criteria reduces the risk of developing hypertension by 66%, while those with junior high school education range from 72%. this concludes that the higher the level of education of a person, the smaller the risk of suffering from hypertension and a low level of education has a 2.9 times greater risk of suffering from hypertension compared to respondents with a high level of education (Pahria, Nugroho, & Yani, 2022). Hypertension is caused by modern lifestyle factors, people today are busy prioritising

work to achieve success. Busyness and hard work and tough goals result in a sense of stress and cause high pressure. The feeling of pressure makes blood pressure rise. In addition, busy people also do not have time to exercise. As a result, the fat in the body is getting more and more hoarded which can inhibit the flow of blood vessels that are crushed by piles of fat making blood pressure high (Setiandari, 2022). Stress and negative emotions affect the body in a variety of very real and psychological ways. Mental stress triggers a decrease in blood flow to the heart and increases the need for oxygen as blood pressure heart rate increases. Stress can also cause the hormones cortisol and adrenaline to increase which can cause an increase in blood pressure (Hidayati, Purwanto, & Siswantoro, 2022).

This study shows the effect of brisk walking on blood pressure in hypertensive patients. Brisk walking is one of the physical exercises that can be done using walking techniques faster than normal speed for 20-30 minutes at an average speed of 4-6 km / hour. Walking is one of the safest and simplest exercises for hypertensive patients of all age groups (Leli & Wahyuni, 2023). Brisk Walking Exercise can be performed at all age levels and reduces the risk of hypertension patients through helping the body relax, calorie burning mechanisms, maintaining body weight, and increasing beta endorphin compounds that can reduce stress and level of application safety. When routinely done regularly, the muscles will be trained, blood circulation and oxygen in the body become smooth so that the body's metabolism becomes optimal (Rachmatullah, Widyatuti, & Sukihananto, 2022).

CONCLUSION

Based on the results of research conducted on 48 patients with hypertension in the work area of the banyodono 1 health centre, it can be concluded that brisk exercise for 20-30 minutes at a walking speed of 4-6 km / hour in the morning for 2 weeks can reduce blood pressure in hypertensive patients. This shows that there is a great opportunity for people with hypertension to improve their health and avoid complications. The results of this study are expected to be a reference for hypertensive patients to do physical exercise independently. kan to 48 patients with hypertension in the work area of the banyodono 1 health centre can be concluded that brisk exercise for 20-30 minutes at a walking speed of 4-6 km / h in the morning for 2 weeks is able to reduce the blood pressure of hypertensive patients. This shows that there is a great opportunity for people with hypertension to improve their health and avoid complications. The results of this study are expected to be a reference for people with hypertension to do physical exercise independently.

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