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The Different Effect between *Brisk Walking Exercise* and Qigong Exercise on Blood Pressure of the Elderly with Hypertension in Gajahan Health Center

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Abstrak

Hipertensi merupakan penyebab kematian ketiga di dunia. Hipertensi yang tidak terkontrol dapat mempengaruhi fungsi organ tubuh lainnya. Upaya pengendalian tekanan darah salah satunya adalah dengan melakukan aktivitas fisik seperti jalan cepat dan senam qigong. Penelitian ini bertujuan untuk mengetahui perbedaan pengaruh antara jalan cepat dan senam qigong dalam menurunkan tekanan darah pada lansia hipertensi. Penelitian ini merupakan penelitian quasy experiment design pre-posttest without control group. Sampel penelitian sebanyak 50 lansia hipertensi yang dipilih secara purposive sampling, dibagi menjadi dua kelompok intervensi, masing-masing kelompok berjumlah 25 responden. Kedua kelompok diberikan latihan jalan cepat dan latihan qigong sebanyak tujuh kali dalam dua minggu dengan interval hari untuk setiap latihan. Hasil uji paired t-test menunjukkan nilai p sebesar 0,001 pada kelompok jalan cepat dan 0,020 pada kelompok qigong (nilai $p < 0,05$). Hal ini berarti bahwa baik jalan cepat maupun latihan qigong sama-sama berpengaruh dalam menurunkan tekanan darah pada lansia hipertensi di Puskesmas Gajahan. Hasil uji t-independent pada kedua kelompok untuk nilai sistolik dan diastolik masing-masing adalah 0,894 dan 0,357, artinya tidak terdapat perbedaan yang signifikan terhadap pengaruh intervensi pada kedua kelompok (nilai $p > 0,05$). Dapat disimpulkan bahwa latihan jalan cepat dan latihan qigong merupakan dua jenis latihan yang dapat diterapkan untuk menurunkan tekanan darah pada lansia hipertensi. Tidak terdapat perbedaan yang signifikan terhadap efektivitas kedua latihan tersebut, sehingga lansia dapat memilih salah satu dari kedua latihan tersebut yang paling sesuai dengan kebutuhannya.

Kata kunci: Hipertensi; Brisk Walking; olahraga; Qigong; lansia

Abstract

Hypertension is the third leading cause of death in the world. Uncontrolled hypertension can affect the function of other organs. Efforts to control blood pressure including physical activity such as brisk walking exercise and qigong exercise. This study aims to identify the different of effect between brisk walking exercise and qigong exercise in lowering blood pressure of the elderly with hypertension. This is a research with quasy experiment design pre-posttest without control group. The sample 50 elderly with hypertension who was selected using purposive sampling, and divided into two intervention groups; each group totaling 25 respondents. The two groups were given brisk walking exercise and qigong exercise seven times in two weeks with an interval of days for every exercise. The results of paired t-test showed a p-value of 0.001 in the brisk walking exercise group and of 0.020 in the qigong (p-value <0.05). This means that the brisk walking exercise and qigong exercise, both have an effect on lowering blood pressure of the elderly with Hypertension in Gajahan Health Center. The results of the independent t-test in both groups for systolic and diastolic value are 0.894 and 0.357 respectively,

meaning that there was no significant difference on the effect of the interventions in the two groups (p-value> 0.05). It can be concluded that there brisk walking exercise and qigong exercise are two kinds of exercise that can be implemented to lowering blood pressure among elderly with hypertension. There was no significant different on the effectiveness of the two exercise, thus, the elderly can choose one of the two exercises that suit their need the most.

Keywords: Hypertension; Brisk Walking; Exercise; Qigong; Elderly

INTRODUCTION

The elderly is a group of people who have more than 60 years of age followed by physical changes and body functions (Kikawada & Tsuyusaki, 2020). In the aging process along with increasing age, it will be accompanied by changes in physical condition, structure, function in cells and tissues in organs that have an impact on health (Hendriati *et al*., 2022). One of the diseases experienced by the elderly is hypertension (Rumahorbo *et al* ., 2020). Hypertension is the third cause of death after heart disease and stroke at the global level (Fitriyatun & Putriningtyas, 2021) and is often called the *sillent killer* because some sufferers have no signs of symptoms that appear (Rumahorbo *et al.*, 2020).

According to the *World Health Organization* (WHO) 1.13 billion people experience high blood pressure which means 1 in 3 people in the world has a history of hypertension (Sonhaji et al., 2020) It is estimated that in 2025 hypertension cases will reach 1.5 billion and there will be 9.4 million deaths with a history of high blood pressure in each year (Hendriati *et al*., 2022). Based on statistical data in Southeast Asia, hypertension cases reached 24.7% and in Indonesia those over 18 years old with high blood pressure reached 23.3% (Masadah *et al*., 2021). According to Riskesdas in 2018 hypertension reached 34.1% higher than in 2013 around 25.8% (Hendriati *et al*., 2022). In Central Java, hypertension reached 37.57% with the incidence rate mostly experienced by women (Casmuti & Fibriana, 2023). High blood pressure cannot be cured so it is necessary to make efforts to control blood pressure through both pharmacologically and non-pharmacologically way (Hendriati *et al*., 2022). Pharmacological measure by taking anti-hypertensive drugs such as benzepril, bisoprolol, lavipa, amlodipine and others according to a doctor's prescription (Sonhaji *et al*., 2020). While in non-pharmacological with additional therapy as a companion to drugs to help control blood pressure under normal conditions such as sports activities, deep breath relaxation, hypertension exercises, taichi exercises, qigong exercises and *brisk walking exercise* (Lestari *et al.*, 2022).

Brisk walking exercise is a physical activity with regular fast walking that can be done for 20 to 30 minutes (Sonhaji *et al*., 2020). *Brisk walking exercise* can improve fitness by improving the function of the cardiovascular system by stabilizing blood pressure, improving lipid profiles, reducing body fat ratios and improving one's emotional state (Ningsih, 2020). According to Ganong and Price (2003) with fast walking there will be a decrease in peripheral resistance when the muscles are contracted, resulting in increased blood flow 30 times (Julistyanissa & Chanif, 2022). In line with a study held by Dewi &

Endang's (2022) there is an effect of physical activity with regular brisk walking in controlling blood pressure under normal conditions.

Another exercise that can be used as an intervention for blood pressure control is qigong exercise (Dewi & Endang, 2022). Qigong exercise is a gymnastic technique from China that is often used to improve health (Kusumadewi *et al*., 2023). Qigong exercise has gentle and regular movements that can create a relaxed condition, increase immunity and the cardiovascular system (Salmiyati & Rahmawati, 2021). Through gentle movements accompanied by breathing techniques, massage through stretching and rotating the arms and legs, qigong exercises can reduce blood pressure (Dewi & Endang, 2022). In line with the research of Salmiyati & Agustina (2021), there is a significant effect of qigong exercises on the elderly to reduce blood pressure.

Hypertension is a big threat for patients with poor management of hypertension due to lack of self-awareness so that it becomes a *sillent killer*. In 2025 it is estimated that hypertension will reach .1.5 cases, this is a very fantastic figure and in Indonesia it reaches 23.3% starting at the age of 18 years. This needs special attention to the importance of efforts to carry out easy management in controlling blood pressure to remain stable for. Some of the studies above show non-pharmacological measures as a companion to pharmacological therapy, namely *brisk walking exercise* and Qigong exercises, both of which provide good control of blood pressure.

Based on the above background, the researcher wants to continue the study to determine the effect of *brisk walking exercise* with Qigong exercises on lowering blood pressure and to find out which one has a greater effect between the two. So that it can provide an alternative choice for people with hypertension to be able to do structured activities that can be done easily and cheaply to control stable blood pressure.

METHOD

This study used the *Quasy Experiment* method using the *Two-Group Pretest-Posttest Design Without Control group* design. The research was conducted at the Gajahan Health Center Surakarta from September to October 2024. The population in this study amounted to 195 people with the determination of the number of samples using 25% of the population of 49 and added 10% of the sample of 5 respondents so that 54 people were selected by purposive sampling based on the criteria, namely patients suffering from hypertension, able to do physical activity, blood pressure ≥ 130/90 mmHg, blood pressure ≤ 180/110 mmHg, routinely taking hypertension medication, able to communicate well, willing to participate fully in activities. Respondents were asked sign an informed consent form as a form of agreement to become respondents. During the implementation of the intervention, there were 4 respondents who *dropped out* because they did not attend all scheduled meetings that had been determined so that 50 respondents followed from the beginning to the end of the study. Respondents

were divided into two groups, 25 respondents in *brisk walking exercise* group and 25 respondents and qigong exercise group.

The intervention of brisk walking and qigong exercise were carried out 7 times in 2 weeks, with an interval of three days for every session of exercise and duration of 20 minutes for every session. Each session of exercise was done in the duration of 30 minutes. The respondents were tough how to do the two exercise and were directed to do the exercise with the help of the researcher on the first and the last meetings. The other five times session of exercise were held by the respondents themselves. To guarantee their obedience in doing the exercise by themselves, the respondents were required to send pictures and video of that they were doing. After the intervention of brisk walking and qigong exercises was carried out 7 times, respondents were given an interval of 3 days from the last day to take the posttest blood pressure measurements. The univariate test consisted of gender and age. Normality test with Shapiro-Wilk because the number of respondents was 50 people. Statistical analysis used the dependent t-test and independent t-test.

RESULTS

Table 1 The respondents based on Gender, Age

Characteristics	***Brisk Walking Exercise***		**Qigong Gymnastics**		**Total**	
	F	%	F	%	F	%
Gender						
Male	3	12,0%	6	24,0%	9	18%
Female	22	88,0%	19	76,0%	41	82,0%
Age						
56-65	19	76,0%	10	40,0%	29	58,0%
66-74	6	24,0%	12	48,0%	18	36,0%
75-90	-	00,0%	3	12,0%	3	6,0%

Table 1 showed that the male brisk walking exercise group consisted of 3 respondents (12.0%) and females 22 respondents (88.0%) and the male qigong exercise group consisted of 6 respondents (24.0%) and females 19 respondents (76.0%). The age of the brisk walking exercise group was 55-65 years old (elderly) with 19 respondents (76.0%), 66-74 years old (young elderly) with 6 respondents (24.0%). In the qigong exercise group, the age of 55-65 years old (elderly) was 10 respondents (40.0%), the age of 66-74 years old (young elderly) was 12 respondents (48.0%) and the age of 75-90 (old elderly) was 3 respondents (6.0%).

Table 2 Blood Pressure Before and After *Brisk Walking Exercise* (n = 25)

Variables	F	Blood Pressure (MmHg)		*Mean*	SD
		Min	Max		
Systole Pre		124	173	142,76	12,875
Sistol Post		110	153	129,76	10,433
Diastole Pre	25	62	102	78,4	11,493
Diastole Post		60	87	72,56	7,890

Table 2 showed prior to doing *brisk walking exercise,* the average systolic pressure was 142.76 mmHg and dystole was 78.4 mmHg and after doing *brisk walking exercise*, the average systolic pressure was 129.76 mmHg and diastole was 72.56 mmHg.

Table 3 Blood Pressure Before and After Qigong Exercise (n = 25)

Variables	F	Blood Pressure (MmHg)		*Mean*	SD
		Min	Max		
Systole Pre		120	164	137,6	12,861
Sistol Post		118	154	130,12	8,447
Diastole Pre	25	65	89	76	6,714
Diastole Post		60	82	70,64	6,658

Table 3 showed that prior to qigong exercises the average systolic pressure was 37.6 mmHg and dystolic 76 mmHg and after doing qigong exercises the average systolic pressure was 130.12 mmHg.

Table 4 *Paired t-test Brisk Walking Exercise* group (n = 25)

Variables	F	Criteria		*P Value*
		Mean	*Std.Dev*	
Systole Pre Sistol Post	25	13	12,958	0,001
Diastole Pre Diastole Post	25	5,840	11,686	0,020

Table 4 showed systole and diastole blood pressure with a *p value of* 0.001 and 0.020 (< 0.05) so that Ha means there is an effect of *brisk walking exercise* in reducing blood pressure.

Table 5 *Paired t-test* Qigong Gymnastics group (n = 25)

Variables	F	Criteria		*P Value*
		Mean	*Std.Dev*	
Systole Pre Sistol Post	25	7,480	11,958	0,003
Diastole Pre Diastole Post	25	5,360	7,895	0,002

Table 5 showed that blood pressure systole *p value* 0.003 and diastole *p value* 0.002 (< α 0.05) means Ha is accepted which means there is an effect of qigong exercise in reducing blood pressure.

Table 6 Independent T Test After *Brisk Walking Exercise* and Qigong Gymnastics (n = 50)

Variables	*Brisk Walking Exercise*			Qigong Gymnastics			*P Value*
	f	*Mean*	SD	f	*Mean*	SD	
Sistol Post	25	129,76	10,43	25	130,12	8,447	0,894
Diastole Post		72,56	7,890		70,64	6,658	0,357

Table 6 showed that the results of the *posttest* systole *p value* 0.894 > α 0.05 and *posttest* diastole *p value* 0.357 > α 0.05 where Ha is rejected where there is no difference between the *brisk walking exercise* group and qigong exercises where both interventions are effective for reducing high blood pressure.

DISCUSSION

In table 1,41 respondents (82.0%) were dominated by women. In research Lestari *et al*., (2022) shows hypertension in women 24 respondents (75%) more than men 8 respondents (25%). Supported by research Riamah (2019) that the incidence of hypertension was dominated by women as many as 27 respondents (62.8%). According to Ministry of Health of the Republic of Indonesia (2019) women produce *hormones posgesterone* and *esterogen* which affect the elasticity of blood vessels and women who have experienced *menopause* have a risk of experiencing an increase in blood pressure which can cause a decrease in elasticity in blood vessels. Supported by research *Tasić et al*., (2022) where a decrease in *progesterone* and *esterogenous hormones* results in hypertension in *postmenopausal* women, because *progesterone* works as a vasoactive hormone, preventing noradrenaline-induced vasoconstruction by acting directly on vascular smooth muscle cells.

Based on table 2 respondents aged 55 - 65 years (elderly) as many as 29 respondents (58.0%) were more than respondents aged 66 - 74 years and 75-90. In line with research Niasty (2020) where respondents who experience hypertension are dominated by 55 - 65 years of age. According to Masadah (2021) individuals aged 55-65 years are more at risk of developing hypertension along with the aging process experienced. According to Ministry of Health of the Republic of Indonesia (2019) states that age has an influence on the occurrence of hypertension where at the age of 55-65 there is an aging process followed by a decrease in the structure of large blood vessels. Supported by Karayiannis (2022) that age over 55 years blood pressure increases due to hardening of the arteries due to the gradual replacement of elastin with collagen.

Based on table 3 there is a decrease in blood pressure after the intervention. Before the *brisk walking exercise* group intervention, *the mean* blood pressure of systole was 142.76 mmHg and diastole was 78.40 mmHg and after the *intervention*, the *mean* blood pressure of systole was 129.76 mmHg and diastole was 72.56 mmHg. In the qigong exercise group before the intervention, *the mean* blood pressure

of systole was 137.60 mmHg and diastole were 76.00 mmHg, after the intervention, the *mean* blood pressure of systole was 130.12 mmHg and diastole was 70.64 mmHg.

In line with research Masadah (2021) there is a decrease in blood where before doing fast walking the systole pressure is 144.67 mmHg and diastole pressure is 91.33 mmHg and after the intervention the *mean* systole pressure is 134.33 mmHg and diastole pressure is 85.17 mmHg. According to Ratna Sari & Palupi, (2024) brisk walking activity is able to stimulate muscle contraction, increase oxygen supply and reduce clots in blood vessels so that it is effective for lowering blood pressure. Supported by research Tangdiombo *et al*., (2024) there is a change in average pressure after doing regular brisk walking activity.

According to Salmiyati & Rahmawati, (2021) qigong exercises can reduce blood pressure where there is a change in the average difference in systole pressure and diastole pressure by 25 and 11.8, this is because qigong exercises use deep breathing with lightness and which can create a feeling of relaxation that affects the work of organ systems and controls blood pressure. Supported by research Dong *et al*., (2021) where qigong exercises effectively reduce blood pressure with body movements, mind guidance and breath control in qigong exercises.

The results of the *Paired T Test* test showed that there was an effect of *brisk walking exercise* on blood pressure with a *p value of* 0.001 systole and *a p value of* 0.020 diastole (< α 0.05). Supported by research Niasty (2020) there are changes after being given *brisk walking exercise* which has decreased by 37 respondents. In line with Tangdiombo *et al*., (2024) also stated there is a decrease in blood pressure after being given regular brisk walking exercise. Brisk walking is an effective physical activity in controlling blood pressure because through regular walking it can affect heart rate, muscle contraction, oxygen supply and increase the process of changing glycogen which can reduce blood vessel blockage (Julistyanissa & Chanif, 2022). Brisk walking exercise can cause a decrease in peripheral resistance that promotes increased blood flow and vessel dilatation. This condition caused a shorter interval between oxygen diffusion and metabolic substances, thus, more oxygen and nutrients distributed to the cell that can improve cell function (Ramayanti *et al* ., 2021).

The results of the *Paired T Test* showed that there was an effect of qigong exercises on blood pressure with a *p value of* systole 0.003 and *a p value of* diastole 0.002 (< α 0.05). In line with research Salmiyati (2022) there is a difference in *mean* blood pressure after qigong exercises with systolic pressure *p value* 0.002 < 0,05. Supported by Ladawan *et al*., (2020) qigong exercises are able to reduce blood pressure carried out by the mechanism of slow-motion training, body movements, breathing exercises, meditation performed by concentrating, facilitating awareness of controlling every body movement. According to Liu *et al*., (2020) qigong exercises involve meditation, breathing, and rhythmic movements so that qigong exercises can optimize the release of non-adrenaline, reduce cortisol levels and cause sympathetic nerve activity to decrease so that heart rate is stable and blood pressure can

decrease. In addition, after performing coordinated movements in qigong exercises can help stabilize blood pressure due to an increase in antioxidants (Cheung *et al.*, 2020).

The results of the *Independent T Test* test showed a *p value of* 0.894 and 0.357 > α 0.05 which means that there is no difference between *brisk walking exercise* and qigong exercises on lowering blood pressure where both interventions are effective in lowering blood pressure. According to Lestari *et al.*, (2022) there is a difference after doing *brisk walking exercise* and qigong exercises in lowering blood pressure. According to Julistyanissa & Chanif, (2022) brisk walking exercise can help stabilize blood pressure because it can affect the increase in heart rate, muscle contraction, oxygen levels in tissues and reduce plaque formation in blood vessels.

In addition, qigong exercises have a variety of movements that connect the body and mind where this exercise integrates deep breathing, meditation, movement, and posture that creates a relaxed condition and affects blood pressure (Effendi *et al*., 2022). In line with research Salmiyati (2022) *brisk walking exercise* and qigong *exercise* both help lower blood pressure. This is in line with the study results by Ladawan *et al*., (2020) that showed regular brisk walking exercise and qigong gymnastics showed differences in blood pressure through moderate exercise in each intervention.

CONCLUSIONS

It can be concluded that the brisk walking exercise and qigong exercise are two kinds of exercise that can be implemented to lowering blood pressure among elderly with hypertension. There was no significant different on the effectiveness of the two exercise, thus, the elderly can choose one of the two exercises that suit their need the most.

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