

## Research Article

# The Effect of Brisk Walking on Blood Pressure in Hypertension Patients: A Literature Review

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**Abstract.** Hypertension is a condition caused by disruption in the bloodstream which can make it more difficult for oxygen and food substances (nutrients) from the blood to be delivered to the tissues in need. Hypertension is also known as a silent disease, which can lead to more dangerous and life-threatening complications. As a chronic condition, hypertension requires proper treatment not only pharmacologically but non-pharmacologically. One alternative in improving the circulatory system in the body is brisk walking exercise. The aim of this literature review was to find out the effect of brisk walking on blood pressure in hypertension patients. 10 articles were included, which were found from searching through three databases, namely Google Scholar, PubMed and Science Direct, for experimental studies published from 2017 to 2020. According to the results, brisk walking can control blood pressure from an average of 150 and diastolic measurements of 100 mmHg to an average of 140 and 80 mmHg, respectively, with significant average values from the 10 articles. Brisk walking can reduce blood pressure in hypertension patients when carried out three times a week in the morning, with a duration of 30-45 minutes, for at least three months (regularly).

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**Keywords:** hypertension, brisk walking exercise, blood pressure

## 1. Introduction

Hypertension is a condition due to disruptions in the bloodstream that can make the supply of oxygen and food substances (nutrients) from the blood experience obstacles in the tissues in the parts in need. It is said to have hypertension when systolic in blood pressure is above 140 mmHg and diastolic there is blood pressure is at 90 mmHg. This blood pressure disease is a non-communicable disease. Dimanna, hypertension is also known as *the silent disease* because many people do not know if they have hypertension, before they check their blood pressure, so that most people who are misled and only realize that the condition is already in a chronic state [1,2].

According to data from the *World Health Organization* (WHO) 2020, the death rate from non-communicable diseases is 63% compared to infectious diseases, non-communicable diseases in Indonesia are at the level of 37% in 1990 while 57% in 2017. This blood pressure disease is a disease in the world with the highest number of cases.

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Based on data from the *American Heart Association* (AHA) 2017 that americans aged 20 years and over who have hypertension reached 74.5 million people, but the number of 90-95% of cases has not been found definitive problems, cases of blood pressure disease are expected to increase in developing countries in 2025. Based on data [3] based on the results of the diagnosis from health workers of hypertension incidence and the results of the assessment can be seen an increase in age. The incidence of hypertension at the age of 18 years and above is 34.1%. The incidence rate increased from 2013-2018 with a percentage result of 25.8%. Based on the results of the assessment of hypertension affects more female sex (28.8%) than men (22.8%). Based on data on the incidence of hypertension in south Sulawesi in 2018 reached 27.61% compared to the mortality rate which reached 18.6%. Meanwhile, there is a health center in one of the cities in south Sulawesi with a fairly high incidence of hypertension in Ballaparang Health Center. in the last 3 (three) years that always increase with the last data obtained by people with hypertension reached 35.7% [3].

Based on the theory [4] that hypertension occurs due to the change of pressure that can be caused by systematic changes in the peripheral blood flow system. Lack of exercise can lead to a buildup of cholesterol, especially LDL (*lowdensity lipoprotein*) in the artery walls. Where, the entry of lipoproteins into the lining of the walls of blood vessels can increase along with increased high blood pressure and increased permeability of blood vessel walls, the malfunction of the lining of the blood vessel wall is the beginning of a process of atherosclerosis. Due to less physical activity can result in the incidence of obesity risk in people who rarely do sports activities, the heart muscle will have a faster rate in working more every contraction. Arterial blood vessels will be harder if pumped when the heart muscle works [5].

In theory [6] Proposed that Hypertension is a cardiovascular disease, which claims high health care costs, pharmacotherapy which currently, people with hypertension tend to be more recommended with nonpharmacological methods than pharmacology by considering the pathological mechanisms of hypertension. Where, in nonpharmacological methods can modify lifestyle through a low-sodium diet, low-fat diet, increase potassium and calcium intake, and can decrease weight in individuals who are obese [7].

Based on the application of the previous research theory by [8] proposed that hypertension disease can not only be overcome by taking drugs, however, there is another alternative way in the form of nonpharmacology with physical activity in the form of light exercise called "*Briskwalking exercise*" which, *Brisk walking exercise* is a physical exercise with light exercise that is done for three days per week for 30 minutes

/ day with a long period (at least three months) on a regular basis, which can result in a reduction in the development of cardiovascular disease, heart attack, hypertension, arthritis, osteoporosis, depression, and various types of cancer. With physical exercise this systolic and diastolic blood pressure of 11 and 8 mmHg can be controlled [9].

## 2. Method

In this case, the study uses that research in the form of *Literature Review*. Research is used to combine data or sources that can be obtained from various sources such as journals, the internet and other libraries. The study searched various databases including: Google Scholar, *Pubmed* and *Scient direct* using keywords: Hypertension, Brisk Walking Exercise and Blood Pressure. Then articles or journals that fit the criteria of inclusion and exclusion are taken to be further analyzed. The criteria inclusion for this study are : Brisk Walking Exercise therapy is a intervention, Focus on hypertension patients, Article was publish from 2015-2020, and Eligible full text.

## 3. Result

Based on the results found, that the application of *Brisk walking exercise* can control blood pressure grades of systolic blood pressure before being given brisk walking exercise average measurement of 150 mmHg and diastole blood pressure with an average value of 100 mmHg and after exercise Brisk walking exercise averaged measurement value obtained on systolic blood pressure 140 mmHg and diastol average 80 mmHg. In this case through a comparative assessment of blood pressure before and after brisk walking exercise intervention was given, it has obtained significant average results from the 10 reviews obtained *p* value (<0,0,5) meaning that there is an effect of Brisk walking exercise *treatment* on blood pressure in patients with hypertension.

Discussion Hypertension is a state of the occurrence of a gradual increase in blood pressure that is more than 1 period, experiencing hypertension when it is at the systole blood pressure of 140 mmHg and 90 mmHg is in diastol. Where, the Application of *Brisk walking exercise* is a physical exercise / form of brisk walking that can lower blood pressure, which can be done under certain conditions with a time of 15-30 minutes as much as 3 times a week with an average speed of 4-6 km / hours for  $\pm 3$  months regularly and routinely where 5 minutes Before brisk walking exercise activities are carried out first conducted blood pressure measurements using stethoscopes and spignomanometers.

TABLE 1: Table results of literature livelihood

No.	Writer	Method (Design, Variables)	Population,	Research results
1.	Nirnasari, M, 2020	Design: <i>Quasi eksperiment</i> Population: Conducted by 13 respondents in the outpatient hospital dr. midiyato suratani tanjungpinang Variables: <i>Brisk Walking Exercise</i> , Blood Pressure and Hypertension		Blood pressure value before exercise <i>Brisk walking exercise</i> on the cystol obtained by 150 mmHg to 113.54 mmHg while diastol blood pressure 100 mmHg after given <i>Brisk walking exercise</i> obtained diastol 95.59 mmHg. Nilai <i>p value</i> 0.001 (<0.05)
2.	Zaen, N. L., & Sinaga, F, 2020	Design : <i>One Group pre-test and post-test</i> Population: Carried out by 50 elderly in UPT Elderly Social Services Range Rantau Prapat who have hypertension Variables: <i>Brisk walking exercise</i> , Blood Pressure and Hypertension		Blood pressure values before being given <i>brisk walking exercise</i> on cystol obtained 159 mmHg to 140 mmHg and at diastole blood pressure before being given <i>brisk walking exercise</i> 120 mmHg after being given 80 mmHg diastol. Nilai <i>p value</i> 0.000 (<0.05)
3.	Moomina, S., Embuai ,S & Tuasikal, H, 2020	Design: <i>Quasi-experiment</i> Population: All hypertension clients in Kulur Village. The number of samples used is as many as 60 patients with variable hypertension: <i>Brisk walking exercise</i> , blood pressure and hypertension.		Blood pressure values before being given <i>brisk walking exercise</i> on cystol obtained by 160 mmHg and diastol 100 mmhg while after giving <i>Brisk walking exercise</i> there is a decrease to the cystol 133.00 mmHg and in diastole obtained 93.50 mmHg. Nilai <i>p value</i> 0.001 (<0.05)
4.	Sonhaji&Hapsari, 2020	Design : <i>Quasi experiment</i> Population: as many as 29 respondents to hypertension patients Variable : Blood pressure and elderly hypertension patients		Blood pressure value before exercise <i>Brisk walking exercise</i> on cystol obtained at 161.21mmHg and diastol 110.31 mmHg and after given <i>Brisk walking exercise</i> systolic blood pressure to 140.34 mmHg andn diastol 80.10 mmHg. Nilai <i>p value</i> 0.000 (<0.05)
5.	Nurbaiti,S & Ratna,A, 2020	Design: <i>Quasi Experiment</i> Population: as many as 2 respondents, namely Mrs. S aged 60 years and Ny.M age 55 years in The Village of Angkatan Kidul District Tambakromo Pati Regency. Variables: <i>Brisk walking exercise</i> , Blood Pressure and Hypertension		Blood pressure values before administering <i>brisk walking exercise</i> on cystol were obtained by 1 in respondents 1 by 150 mmHg and distol 90 mmHg after being given <i>Brisk walking exercise</i> obtained 130 mmHg and diastol 80 mmHg while in respondents 2 blood pressure before given <i>Brisk walking exercise</i> on systolic blood pressure of 145 mmHg and diastol 90 mmHg after given <i>brisk walking exercise</i> on cystol to 125 mmHg and diastole 80 mmHg. Nilai <i>p value</i> 0.001 (<0.05)
6.	Kazeminia, M., et al, 2020	Design: <i>Quasi Experiment</i> Population: The sample consisted of 2272 people Variable: <i>Brisk Walking Exercise and patient hypertension</i> .		Blood pressure value before exercise <i>Brisk walking exercise</i> on cystol obtained at 137.8 mmHg and diastole 86.3 mmHg while after given blood pressure cystol obtained 132.08 and diastole 80.6 mmHg. Nilai <i>p value</i> 0.001 (<0.05)

TABLE 2: Table continued

No.	Writer	Method (Design, Population, Variables)	Research results
7.	Rachmawati, I. D., Sugiarto, A., 2019	Design: <i>Quasi experiment</i> . Population: as many as 116 essential hypertension patients treated at Puskesmas Secang 1 Variables: <i>Brisk Walking Exercise, Blood Pressure and hypertension patient</i> .	Blood pressure values before administered <i>brisk walking exercise</i> on cystol were obtained at 150 mmHg and diastol 89 mmHg and after being given <i>Brisk walking exercise</i> sistol 140 mmHg and diastole 83 mmHg, systolic blood pressure decrease of 9.9 mmHg and diastolic obtained 5.3 mmHg while in the control group there was a decrease in systolic blood pressure of 2.9 mmHg and diastole of 1.6 mmHg. Nilai <i>p value</i> 0.001 (<0.05)
8.	Yulisa, D. K., & Baitul,S, 2018	Design : <i>Quasi experiment</i> Population: : Involving 10 respondents to hypertension normal nutritional status 5 people while respondents hypertension nutritional status obesity 5 people Variables: <i>Walking Exercise, Blood Pressure, and Hypertension</i> .	Blood pressure values before <i>brisk walking exercise</i> in the intervention group were obtained by 152.20 mmHg system after being given 147.60 mmHg, while diastol before <i>brisk walking exercise</i> was given 95.80 mmHg to 93.60 mHg while in the control group before doing walking gymnastics averaged at sistol blood pressure of 151.00 mmHg and diastol 94.40 mmHg and after doing walking gymnastics obtained by 150.00 / 94.20 mmHg. Nilai <i>p value</i> 0.002 (<0.05)
9.	Suryati, I., et al, 2017.	Design : <i>Quasi experiment</i> The population :D conducted by 19 respondents in puskesmas plus mandiang bandung city. Variables: <i>Brisk Walking Exercise, Blood Pressure and Hypertension</i> .	Blood pressure value before being given <i>brisk walking exercise</i> for 2 weeks is done can control blood pressure, blood pressure before given <i>Brisk walking exercise</i> on systolic blood pressure of 140 mmHg and diastole 94.21 mmhg, following after given <i>Brisk walking exercise</i> decreased to cystol 128.95 mmHg and diastole obtained 86.12 mmHg. Nilai <i>p value</i> 0.000 (<0.05)
10	May ,H, C., Tafwidha,Y & Wulandari,D, 2017	Design: <i>Quasi experimental</i> Population: Carried out by 36 respondents in pontianak district health center of the city Variables: <i>Effectiveness of Brisk walking exercise, blood pressure and hypertension</i> .	Blood pressure value before exercise <i>Brisk walking exercise</i> systolic blood pressure of 140 mmHg and diastole 100 mmhg while after given <i>Brisk walking exercise</i> decreased to cystol 122 mmHg and in diastole obtained 82 mmHg. Nilai <i>p value</i> 0.000 (<0.05)

Before *brisk walking exercise* has not been given, systolic blood pressure is at 150 mmHg and diastole 100 mmHg. While after *Brisk walking exercise* is given obtained blood pressure patients with an average cystol of 140 mmHg and diastol 80 mmHg According to theory [8] The mechanism of decreased blood pressure can be due to reduced heart pumping activity, where the work of the heart in an individual who exercises regularly is stronger than individuals who rarely do sports activities. In individuals

who exercise consistently, their heart contracts less to be able to pump blood at the same volume. The activeness of exercise can control the decrease in heart rate and will continuously control cardiac output, which causes a decrease in blood pressure. The efficient rate of a heart activity can be seen from the decrease in systolic blood pressure, and the decrease in peripheral resistance can be seen in the decrease in diastol blood pressure. This exercise in the form of walking is a simple exercise that seems light that can control blood pressure. Leg muscles when walking will add oxygen suplay to the heart and to the brain. During active and consistent muscle training, blood will flow between muscle tissues will become smoother. Suplay oxygen and glucose under the blood that will be used to act as a burning agent in the development of muscle contractions, when doing sports in the form of brisk walking with tens of minutes of time, it is very useful to be able to relax nerves that experience tension, restore hormonal function, and in charge of regulating blood pressure, in this case walking exercise with *Brisk walking exercise*/ brisk walking exercise can control blood pressure in hypertension patients who when done regularly and consistently at least 3 times a week every morning for 30 minutes, everyone who does his blood pressure exercises can be controlled differently from those who do not follow fast walking activities.

In line with research conducted by [10] blood pressure can be controlled with *Brisk walking exercise* that is carried out for a duration of 15-30 minutes every morning 1 week, while in research by [11] *Brisk walking exercise* can also reduce blood pressure done for 20-30 minutes in the morning within 2 weeks, Thus from the other 6 studies [1,2,4,7] suggests that *Brisk walking exercise* can control blood pressure that can be done within 30-45 minutes for 3 times in 1 week in the morning with an average of 4-6 km / h regularly  $\pm$  3 months.

## 4. Conclusion

*Brisk walking exercise*/ brisk walking is one form of physical activity in the form of light exercise with fast walking techniques that affect changes in blood pressure experienced by hypertension patients. By routinely doing this activity can reduce blood pressure in hypertension patients so that it can reduce the risk of anti-hypertension drug dependence.

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