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The Effect of Applying Hypertension Exercises on The Elderly: Literature Review

Pemi Luliana [1], Nina Pamela Sari [1]

[1]Nursing Department, Faculty of Health, Universitas Muhammadiyah Tasikmalaya, Tasikmalaya 46191, Indonesia

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Corresponding Author
nina.pamelasari@umtas.ac.id

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ABSTRACT

This study aims to analyze the effect of hypertension exercise intervention on blood pressure reduction in the elderly through the literature review method. This method is done by collecting, evaluating, and synthesizing relevant research results from various sources such as scientific journals, research articles, and previous study reports. Data were obtained from online databases such as PubMed, Scopus, and Google Scholar with inclusion criteria in the form of studies that used experimental or quasi-experimental designs, focused on the elderly, and evaluated the effect of hypertension exercises on blood pressure. The results of the review showed that hypertension exercises consistently have a positive effect on reducing systolic and diastolic blood pressure in the elderly, especially if performed regularly and over a period of time. In conclusion, hypertension exercises can be recommended as a non-pharmacological intervention for the management of hypertension in the elderly.

Keyword: hypertension exercise; elderly; hypertension

INTRODUCTION

Hypertension or high blood pressure is a chronic medical condition characterized by an increase in systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg. Hypertension is often referred to as the "silent killer" because many sufferers are unaware of their condition until serious complications arise, such as heart disease, stroke, or kidney damage. Hypertension is often asymptomatic in its early stages. However, some symptoms that may be felt by sufferers include: Headache, especially in the morning, Dizziness or feeling unbalanced, Chest pain or shortness of breath, Ringing in the ears (tinnitus), Blurred vision.

Management of hypertension includes pharmacologic and nonpharmacologic approaches: Pharmacologic: Administration of antihypertensive drugs such as diuretics, ACE inhibitors, beta-blockers, and others as recommended by the doctor. Nonpharmacological: Lifestyle changes such as a low-salt diet, regular physical activity, stress management, smoking cessation, and maintaining ideal body weight. Hypertension in the elderly often goes undetected due to the lack of obvious symptoms or is considered part of the aging process. As a result, many elderly people are only diagnosed with hypertension after serious complications such as stroke, coronary heart disease, or kidney failure have occurred.

On the other hand, the management of hypertension in the elderly faces challenges, especially since the use of antihypertensive drugs is often accompanied by side effects, drug interactions, or non-compliance due to the complexity of treatment. Therefore, nonpharmacological approaches such as moderate exercise, including hypertension exercises, are increasingly attracting attention as an alternative or supporting treatment. Hypertension exercises have been shown to have positive impacts, such as lowering blood pressure, improving fitness, and providing psychological benefits for the elderly. However, there is still a gap in knowledge regarding the specific effectiveness of hypertension exercises in the elderly, both in physiological aspects and quality of life. Thus, it is important to systematically review the existing literature to understand the extent to which hypertension exercises can be a safe and effective solution for hypertension management in the elderly.

Hypertension exercises are physical exercise programs designed to help lower blood pressure naturally. It involves simple, rhythmic and regular movements that are safe for the elderly. It has benefits such as: Improves blood circulation and lowers blood pressure through decreased vascular resistance, Improves physical fitness thereby affecting heart and vascular function, Reduces stress through the relaxing effects of movement and breathing, Increases flexibility and prevents joint stiffness often experienced by the elderly.

The elderly are vulnerable to hypertension due to the body's degenerative processes. Hypertension gymnastics as a nonpharmacological method is very beneficial in helping to manage blood pressure, improve quality of life, and reduce the risk of complications without the side effects of drugs. It also promotes safe physical activity, maintains the social engagement of the elderly, and encourages healthy living habits.

Research shows that elderly exercise programs can effectively lower blood pressure in hypertensive elderly. Studies have shown significant reductions in systolic and diastolic blood pressure after regular participation in elderly exercise sessions (Najihah & Ramli, 2018; Murti & Kartika, 2022). These programs, usually performed 3 times a week for 15-30 minutes over a 3-week period, may serve as a nonpharmacological therapy for hypertension management in the elderly (Najihah & Ramli, 2018). The exercises improve cardiovascular function, increase physical fitness, and help maintain blood vessel elasticity, thereby contributing to blood pressure reduction (Tumuwo, 2020). One study reported that most participants (56%) achieved normal blood pressure levels after performing hypertension exercises for the elderly (Hernawan & Rosyid, 2017). Regular participation in these exercise programs is recommended to effectively lower blood pressure and improve overall quality of life for hypertensive elderly (Murti & Kartika, 2022).

Based on the description above, the researcher decided to examine the effect of hypertension exercises on lowering blood pressure in hypertensive patients using the literature review study method. studies regarding their effectiveness and impact are scientifically limited, so it is important to compile a literature review to map the existing evidence.

The purpose of this literature review is to analyze and evaluate the effectiveness of hypertension exercises in reducing blood pressure in the elderly. This includes identifying the existing scientific evidence on the effect of hypertension exercises on hypertension control in the elderly, both in the short and long term.

METHOD

The data sources used in writing this literature review will be taken from several trusted scientific databases to ensure the quality and credibility of the information used. The databases that will be used include: PubMed, Google Scholar, Scopus. To ensure transparency and systematicity in the process of selecting articles to be used in the literature review literature review. Article searches will be conducted using relevant keywords to ensure focus on the topic of "hypertension exercises in the elderly" within the last 10 years, from 2014 to 2024.

Table 1.1 PRISMA Chart

Identification	Search for articles through databases: PubMed, Scopus and Google Scholar; 450 articles
Screening	Screen articles based on title and abstract: 220 Articles
Eligibility	Articles based on inclusion and exclusion criteria: 80 Articles
Selection	Articles used in this literature review: 5 articles

Table 1.2 Inclusion and Exclusion Criteria

No.	Inklusi	Ekslusi
1.	Language: Articles published in English or Indonesian.	Population: Studies involving people outside the elderly group (e.g., under 60 years of age)
2.	Population: Studies that focus on older adults with hypertension.	Intervention: Studies that do not involve gymnastics or structured physical interventions in the management of hypertension.
3.	Intervention: Studies that address the effects of gymnastics or structured physical activity on the management of hypertension in the elderly.	Study Type: Articles that did not provide relevant quantitative or qualitative data, such as individual case studies, anecdotal reports, or commentaries.
	Study Type: Quantitative studies (for example, randomized controlled trials, cohort studies, or other experimental studies), qualitative studies, systematic reviews, or meta-analyses.	Methodology: Studies with inadequate methodological design (e.g., no control group or inappropriate statistical tests).
	Relevant Results: Articles reporting the results of blood pressure measurements, physical benefits, and psychological impact of hypertension exercises in the elderly.	

RESULT

Table 1.3 Journal Analysis Result

No.	Judul	Penulis	Metode	Hasil Penelitian
1.	The Effect of Elderly Exercise on Blood Pressure in Elderly Hipertensive People in The Community	Novita Wulan Sari, Tuti Anggarawati	This study used a quasi-experimental research design with a pretest-posttest control group design. The sample used amounted to 12 elderly people selected using purposive sampling technique, divided into intervention (n = 12) and control (n = 12) groups.	The intervention group showed a significant decrease in blood pressure, with a pre-test value of 156/95 mmHg to post-test 148/93 mmHg (p=0.000). Meanwhile, the control group did not show significant changes with the same pre-test and post-test of 152/95 mmHg (p=0.420). This study shows that elderly gymnastics has an effect on lowering blood pressure in elderly people with hypertension.
2.	Implementation of Hypertension Gymnastics in the Elderly to Lower Blood Pressure in the Maccini Sawah Health Center Working Area, Makassar City, 2022	Dyah Fatmawaty Abdul, Nurhayati	This study used a case study method with a descriptive design to implement hypertension gymnastics as an intervention to lower blood pressure in the elderly.	A decrease in blood pressure was observed in both subjects after taking hypertension exercises. Subject I experienced a decrease in blood pressure from 160/100 mmHg to 130/80 mmHg, while Subject II decreased from 170/100 mmHg to 140/80 mmHg after gymnastics.
3.	The Effect of Elderly Gymnastics on Decreasing Blood Pressure in Hypertensive Elderly 2022	Armanda Tri Murti Ningsih, Renti Kartika	This study used a pretest-posttest design and was conducted on 22 elderly people selected by total sampling technique.	Before gymnastics, most of the elderly (45.5%) had a blood pressure of 150-159 mmHg, and after gymnastics, most (40.9%) remained in the blood pressure range of 150-159 mmHg. The statistical test results show a p-value of 0.001, which means that there is a significant effect between the blood pressure of the elderly before and after gymnastics.
4.	The Effect of Hypertension Exercise on Reducing Blood Pressure In The Elderly	Jumriana, Tuty Yanuarti	The study used a quasi-experimental design with a pretest-posttest design in two groups (intervention and control). The study sample amounted to 40 elderly people suffering from hypertension, with total sampling technique.	The intervention group showed a decrease in systolic blood pressure from 163.35 mmHg to 144.30 mmHg, and diastolic from 92.26 mmHg to 87.61 mmHg. In contrast, the control group only experienced a slight change, with systolic from 178.22 mmHg to 177.00 mmHg and diastolic from 81.87 mmHg to 83.70 mmHg. A significant decrease in the intervention group showed the effect of hypertension gymnastics on lowering blood pressure (p-value <0.005).
5.	The Effect of Elderly Fitness Gymnastics on Changes in Blood Pressure in Hypertensive Elderly in 2023	Sasono Mardiono, Arif Irpan Tanjung, Andre Utama Saputra	This study used a quasi-experimental design with a one group pretest-posttest approach. The research sample consisted of 15 elderly people with hypertension who were selected using purposive sampling technique. Data	Before gymnastics, the average systolic and diastolic blood pressure was 156.17/92.30 mmHg, and after gymnastics, the average blood pressure was 147.98/86.51 mmHg. This decrease in blood pressure shows the positive effect of elderly fitness exercises on

	analysis was performed with paired sample t-test.	blood pressure in elderly with hypertension.

DISCUSSION

Blood Pressure Reduction in the Elderly

High blood pressure or hypertension is one of the common chronic health problems in the elderly. Hypertension can result from physiological changes in blood vessels that lose elasticity with age, leading to increased peripheral resistance. In addition, lifestyle factors such as lack of physical activity, a high-sodium diet, and stress also contribute to increased blood pressure. Physical activity, such as elderly gymnastics or hypertension exercises, has been shown to be one of the effective methods to lower blood pressure in the elderly.

1. Effect of Physical Activity on Blood Pressure

In theory, regular exercise such as calisthenics can help lower blood pressure through the following mechanisms:

a. Decreased Peripheral Vascular Resistance: Physical activity increases the elasticity of blood vessels, so that blood flow becomes smoother and the pressure against the blood vessel wall is reduced.
b. Decreased Sympathetic Nerve Activity: Exercise can reduce sympathetic nerve activity that plays a role in increasing blood pressure, resulting in a decrease in systolic and diastolic blood pressure.
c. Increased Cardiac Capacity: Physical activity helps increase the efficiency of the heart, resulting in an increased volume of blood pumped by the heart, but with less effort.
d. Regulation of Hormone Levels: Physical activity helps reduce the levels of stress hormones, such as cortisol, which can cause vasoconstriction and increased blood pressure.

2. Effectiveness of Gymnastics on the Elderly

Gymnastics, particularly elderly gymnastics or hypertension gymnastics, is designed to provide low to moderate intensity physical activity that is appropriate for the physical capabilities of the elderly. These exercises usually involve movements that train muscle strength, flexibility and balance. This combination of movements helps reduce blood pressure in the following ways:

a. Improves Blood Circulation: Gymnastic movements stimulate better blood flow, thereby preventing pressure buildup in the blood vessels.
b. Reduces Stress: Calisthenics is often done in a relaxed and enjoyable atmosphere, which can help reduce emotional stress that contributes to hypertension.
c. Improves Electrolyte Balance: Physical activity increases sodium excretion through sweat and urine, which helps reduce blood pressure

3. Blood Pressure Reduction in the Elderly Based on Studies

The results of the studies reviewed showed that elderly exercises consistently lowered blood pressure in the intervention group, with an average decrease in systolic blood pressure of about 10-20 mmHg and diastolic blood pressure of about 5-10 mmHg. For example:

a. In a study by Sasono Mardiono et al., the average systolic blood pressure dropped from 156.17 mmHg to 147.98 mmHg after elderly fitness exercises.
b. Research by Jumriana et al. showed a decrease in systolic blood pressure from 163.35 mmHg to 144.30 mmHg after hypertension gymnastics.

This decrease in blood pressure is in line with the theory that light to moderate aerobic physical exercise can improve cardiovascular function and significantly reduce blood pressure. In addition, the smaller change in blood pressure in the control group corroborates that exercise has a direct role in lowering blood pressure.

4. Implications for Hypertension Management in the Elderly

Based on theory and research results, hypertension exercises can be an effective non-pharmacological intervention to reduce blood pressure in the elderly. This is important considering the use of antihypertensive drugs in the elderly is often accompanied by the risk of side effects. By regularly participating in exercises, the elderly can improve their quality of life, reduce the risk of complications of hypertension, and improve overall cardiovascular health.

CONCLUSION

It can be concluded that hypertension exercises have a significant effect on lowering blood pressure in the elderly. Regular physical activity such as hypertension exercises can help increase blood vessel elasticity, improve blood circulation, and reduce peripheral vascular resistance. Thus, this exercise can be one of the effective non-pharmacological interventions to help control blood pressure in the elderly. However, its implementation needs to be supervised to ensure the movements are performed correctly and in accordance with the individual's health condition.

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