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Original Research/Systematic Review

The Effect of Hypertension Exercise on Blood Pressure Reduction in Hypertensive Patients: A Literature Review

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ABSTRACT

Background: *Hypertension is a global disease whose symptoms are often not perceived by patients, causing the condition to be frequently neglected. Therefore, simple interventions are needed to prevent and control hypertension, one of which is exercise*

Methods: *This study employed a literature review method by searching articles in the Google Scholar and PubMed databases and applying predetermined inclusion criteria.*

Results: *Based on ten reviewed articles, various types of exercise, including Tera gymnastics, hypertension exercise, aerobic exercise, and Prolanis exercise, were proven to effectively reduce blood pressure in patients with hypertension.*

Conclusion: *Exercise interventions have been shown to reduce blood pressure and can therefore be used as a reference for the prevention and management of hypertension.*

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INTRODUCTION

Hypertension is one of the major global health problems, with the number of affected individuals continuing to increase over time. According to the World Health Organization (2025), hypertension is a condition in which systolic and diastolic blood pressure levels are elevated, exceeding 140/90 mmHg. Hypertension often occurs without noticeable symptoms, earning it the nickname *the silent killer*. As a result, many individuals are unaware of their condition and tend to neglect it. If not properly managed, hypertension can become a major cause of heart attacks, kidney disease, stroke, and mortality (Efroliza, 2025).

Globally, approximately 600 million adults with hypertension (44%) are unaware that they have the condition, and only about 320 million adults with hypertension (23%) are able to control their blood pressure (World Health Organization, 2025). In Indonesia, based on the 2018 Basic Health Research (Riskesdas) data, the prevalence of hypertension among individual

aged over 18 years was 34.1%, with the highest prevalence reported in South Kalimantan. Based on age groups, older adults showed the highest prevalence, with 55% of individuals aged 55–64 years experiencing hypertension. Of the 34.1% prevalence, 8.8% had been diagnosed with hypertension, 13.3% were diagnosed but did not take antihypertensive medication, and 32.3% did not take medication regularly (Ministry of Health of the Republic of Indonesia, 2019). These findings indicate a lack of awareness regarding the prevention and control of hypertension.

The occurrence of hypertension is influenced by various factors, including genetic predisposition, sex, age, stress, excessive salt and fat intake, smoking, alcohol consumption, obesity, and insufficient physical activity. Hypertension can be controlled by managing its risk factors. Simple interventions can reduce these risks, one of which is exercise. Exercise, as a simple form of physical activity, can improve balance, maintain physical fitness, and reduce the risk of various diseases, including hypertension (Prodi et al., 2025).

Exercise activities can lower blood pressure by promoting vasodilation and reducing the pressure generated by the heart's pumping mechanism. Regular exercise can decrease heart rate, leading to reduced cardiac output and consequently lowering blood pressure (Sakinah et al., 2022). Exercise is considered an appropriate intervention because, in addition to improving organ function, it induces relaxation and reduces levels of the hormone norepinephrine (Natasya Dyah Sifa Khoyrunnisa, 2025).

Previous research by Dwisetyo (2023) demonstrated that hypertension exercise had a significant effect on blood pressure changes among community members in Pineleng 2 Village, Minahasa Regency. The use of exercise as a preventive and control strategy for hypertension can be applied broadly, particularly among individuals with hypertension. The purpose of this literature review is to identify and explain various types of exercise interventions that are effective in reducing blood pressure in patients with hypertension, including hypertension exercise, *senam tera*, healthy heart exercise, Prolanis exercise, as well as aerobic and combination exercises, to serve as a basis for recommendations of non-pharmacological interventions in nursing practice and healthcare service programs.

MATERIALS AND METHOD

The databases used for the literature search were Google Scholar and PubMed, including articles published between 2020 and 2025. The literature selection followed the PRISMA Flow Diagram, with the process consisting of identification, screening, eligibility assessment, and final article selection. The researchers applied the PICO framework, consisting of P (patient/population/problem), I (intervention/prognostic factor/exposure), C (comparison/control), and O (outcome), to facilitate and structure the literature search process.

Table1. PICO Format

Format	Keyword
Patient	: People aged ≥18 years with hypertension
Intervention	: Exercise
Comparison	: -
Outcome	: blood pressure reduction

A literature search was conducted using the keywords "Hypertension," "Exercise," "Blood Pressure Reduction." Subsequently, articles were selected based on inclusion criteria: research articles typed in Indonesian or English and available in full text, using experimental methods, and published by journal institutions between 2021-2025. The sample or respondents in the study were adult patients ≥18 years old with hypertension, and the research intervention was exercise. Articles were excluded if the participants were pregnant women.

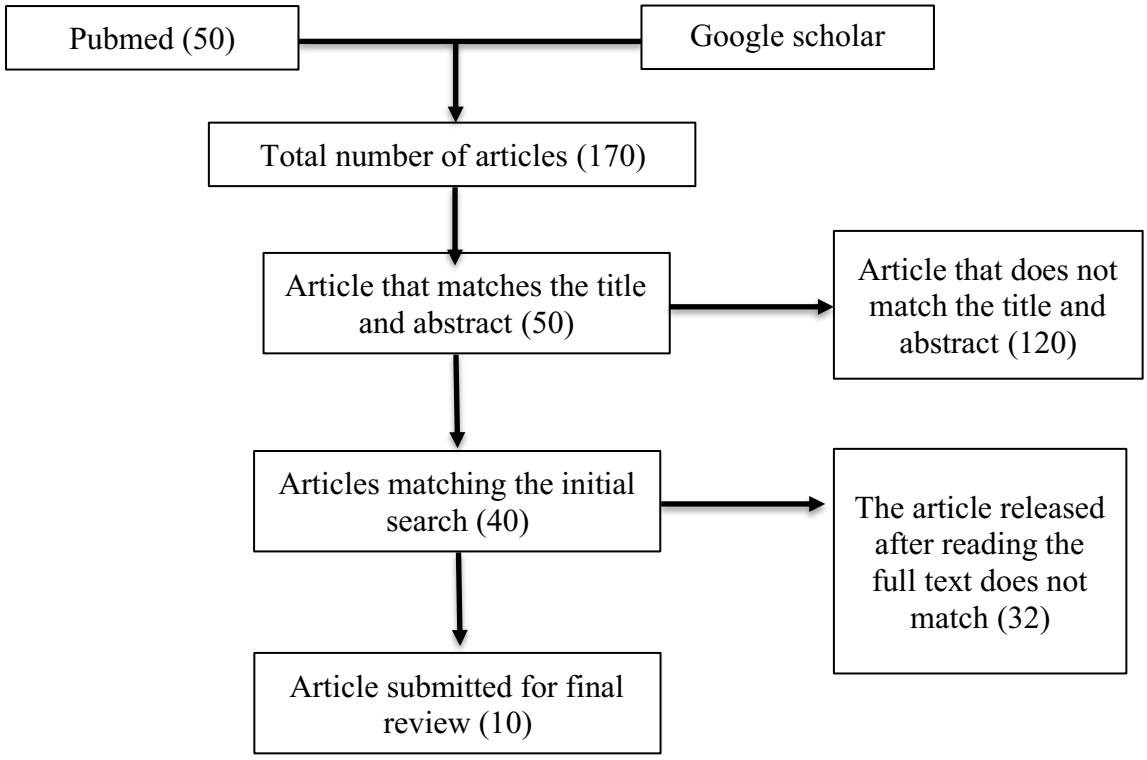

Figure 1. Flowchart of Literature Search and Article Selection Process

RESULTS

From the 10 research articles that were reviewed, we wrote a summary of each article based on the author, title, objective, method, results, and conclusion

Table 2. Summary of Research Findings on Exercise Interventions and Blood Pressure in Elderly with Hypertension

No	Author	Title	Objective	Method	Results	Conclusion
1	Manik et al. (2025)	The Effect of Tera Exercise on Blood Pressure Reduction among Elderly with Hypertension at Deli Tua Primary Health Center	To determine the effect of Tera exercise on reducing blood pressure in elderly patients with hypertension	Quasi-experimental study with a one-group pretest–posttest design involving 23 participants. Data were analyzed using the Wilcoxon test due to non-normal distribution	Tera exercise significantly reduced blood pressure, with an average systolic decrease of 11.051 mmHg and diastolic decrease of 11 mmHg (p = 0.001)	Tera exercise is effective in lowering systolic and diastolic blood pressure in hypertensive elderly and can be used as a safe and simple non-pharmacological intervention
2	Sridani et al. (2024)	The Effect of Hypertension Exercise on Blood Pressure Changes	To identify the effect of hypertension exercise on blood pressure	Quasi-experimental pretest–posttest control group design	No significant change in the control group (p > 0.05). The intervention group showed	Hypertension exercise significantly reduces blood pressure in elderly with

		among Elderly with Hypertension in Huntap 1 Tondo, Palu City	changes in elderly with hypertension	involving 17 elderly with mild hypertension. Analysis used Shapiro–Wilk and Paired T-test	a significant decrease in systolic BP (150.3 to 126.3 mmHg) and diastolic BP (94.9 to 82.9 mmHg) ($p = 0.001$)	mild hypertension and is effective as a community-based non-pharmacological intervention
3	Rahmawati et al. (2025)	The Effect of Hypertension Exercise on Quality of Life among Elderly at Nogosaren Elderly Health Post	To determine the effect of hypertension exercise on improving quality of life among elderly with hypertension	Quasi-experimental one-group pretest–posttest involving 32 elderly. Quality of life measured using WHOQOL-BREF and analyzed with Wilcoxon test	High quality of life increased from 43.8% to 75% after intervention ($p = 0.002$)	Hypertension exercise significantly improves quality of life in elderly with hypertension and is recommended as a routine non-pharmacological program
4	Muriza et al. (2025)	The Effect of Healthy Heart Exercise on Blood Pressure among Hypertensive Patients at Babahrot Health Center	To assess the effect of healthy heart exercise on systolic and diastolic blood pressure	Quasi-experimental one-group pretest–posttest involving 20 patients; data analyzed using paired t-test	Significant reduction in systolic and diastolic blood pressure after 8 exercise sessions	Healthy heart exercise is effective in lowering blood pressure and can be applied as a non-pharmacological hypertension control method
5	Herlanda et al. (2024)	The Effect of Tera Exercise on Blood Pressure Levels among Elderly with Hypertension in Cianjur City	To examine the effect of Tera exercise on systolic and diastolic blood pressure reduction	Quasi-experimental non-equivalent control group design involving 30 elderly; analysis using paired and independent t-tests	Tera exercise showed greater reductions in systolic and diastolic BP compared to control ($p < 0.05$)	Tera exercise effectively reduces blood pressure levels and can serve as an alternative non-pharmacological therapy
6	Caminiti et al. (2021)	Effects of Aerobic versus Combined Aerobic and Resistance Training on Blood Pressure Variability in	To compare aerobic and combined training effects on short-term blood pressure variability	Randomized controlled trial involving 60 hypertensive men over 12 weeks using ABPM	Both training types reduced BP; combined training showed greater reduction in 24-hour and nighttime	Combined aerobic and resistance training is more effective in reducing blood pressure variability, though both reduce mean BP

		Hypertensive Patients			systolic BP variability	
7	Hidayat (2021)	The Effect of Hypertension Health Education and Exercise on Blood Pressure among Elderly	To determine the effect of health education and exercise on blood pressure	Pre-experimental one-group pretest–posttest with 9 elderly; Wilcoxon test	Significant improvement in knowledge and reduction in blood pressure ($p = 0.008$)	Health education improves understanding, while hypertension exercise effectively lowers blood pressure
8	Basuki & Barnawi (2021)	The Effect of Hypertension Exercise on Blood Pressure among Elderly Community in Banyumas	To assess the effect of hypertension exercise on systolic and diastolic blood pressure	Pre-experimental one-group pretest–posttest involving 25 elderly women; Wilcoxon test	Significant reduction in systolic ($p = 0.001$) and diastolic BP ($p = 0.002$)	Hypertension exercise is effective in lowering blood pressure among elderly women
9	Maulana et al. (2025)	The Effect of Prolanis Exercise on Blood Pressure Reduction in Hypertensive Patients	To determine the effect of Prolanis exercise on blood pressure reduction	Pre-experimental one-group pretest–posttest involving 30 hypertensive patients	Significant reduction in systolic (8.1 mmHg) and diastolic BP (1.83 mmHg) ($p = 0.000$)	Prolanis exercise is effective as a non-pharmacological intervention for hypertension
10	Alemayehu & Teferi (2023)	Effectiveness of Aerobic, Resistance, and Combined Training in Hypertensive Patients	To compare aerobic, resistance, and combined training effects on blood pressure and fitness	Randomized controlled trial involving 48 hypertensive men over 12 weeks	All exercise groups showed significant improvements; combined training produced the greatest overall benefits	Combined aerobic and resistance training is the most effective intervention for comprehensive hypertension management

Based on the table above, the findings from the ten studies examining exercise-based interventions among patients with hypertension consistently demonstrate a positive pattern, indicating that exercise has beneficial effects in reducing blood pressure and improving the quality of life of elderly individuals. The first and second studies reported significant reductions in both systolic and diastolic blood pressure following regular exercise interventions, supported by statistically significant test results. The third study further strengthened these findings by showing a significant improvement in the quality of life of elderly participants who regularly engaged in hypertension exercise programs. Physiologically, the reduction in blood pressure is attributed to increased vascular elasticity, relaxation of the cardiac muscle, and decreased peripheral vascular resistance, as reported in several studies. Other studies, such as the ninth article examining Prolanis exercise and the eighth article evaluating hypertension exercise in elderly communities, also demonstrated significant reductions in blood pressure as a result of the interventions. In addition to blood pressure reduction, several studies reported additional benefits, including improved elderly understanding of hypertension, as observed in the seventh article, as well as enhanced quality of life and healthier behavioral knowledge.

DISCUSSION

Hypertension is often referred to as a "silent disease" because it frequently presents without noticeable symptoms, leading many individuals to neglect the condition as they feel physically well. However, simple lifestyle modifications can be implemented to help maintain stable blood pressure levels. One such approach is engaging in regular physical activity, including exercise-based gymnastics (Adiguna et al., 2025). The results of this review demonstrate that various types of exercise interventions—such as hypertension exercise, Tera exercise, Prolanis exercise, and aerobic training—consistently contribute to blood pressure reduction among patients with hypertension.

In addition to lowering blood pressure, several studies reported that exercise-based interventions are safe, easy to implement, and have strong potential as non-pharmacological strategies for hypertension management, particularly among elderly populations. These exercises can be performed in groups and repeated over long periods, making them suitable for community-based implementation (Rahmawati et al., 2025).

Physiologically, these findings align with existing theories that regular physical activity improves vascular elasticity, reduces peripheral vascular resistance, and lowers resting heart rate, resulting in more stable cardiac output and decreased blood pressure. This pattern is reflected in multiple studies that reported significant reductions in blood pressure following routine exercise programs conducted over several weeks, including Tera exercise, hypertension exercise, and healthy heart exercise (Sakinah et al., 2022).

Based on the ten reviewed articles, the majority of evidence indicates that hypertension exercise interventions represent an effective approach for reducing blood pressure in patients with hypertension. Beyond their blood pressure–lowering effects, exercise-based interventions are considered safe, practical, and accessible, supporting their role as viable non-pharmacological strategies for hypertension control within community settings.

CONCLUSION

Interventions such as Tera exercise, hypertension exercise, Prolanis exercise, aerobic training, resistance training, and combined exercise programs have been proven to reduce blood pressure and its variability, improve cardiac function and vascular elasticity, enhance the quality of life of elderly individuals, and optimize physical fitness indicators. Therefore, these interventions are appropriate to be integrated into routine hypertension prevention and rehabilitation programs.

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