



Application of Finger Hold Relaxation Therapy for Ineffective Peripheral Perfusion in Elderly Hypertensive Patient

Jessica Galuh Puspitasari¹, Latifa Aini Susumaningrum¹,
Tantut Susanto¹, Syahroni Bachtiar², Fahrudin Kurdi¹

¹Faculty of Nursing, Universitas Jember, Indonesia

²Health Office of Jember Regency, Indonesia

ARTICLE INFO

Article History:

Submitted: 31-01-2025

Revised: 22-04-2026

Accepted: 12-07-2026

Published: 28-08-2026

doi.org/10.58545/jkmi.v5i2.471

Copyright (c) 2026

This is an open-access article under the CC BY-SA license.



ABSTRACT

Introduction: Hypertension is a disorder that occurs in the blood vessels, causing an obstruction of the oxygen supply to the body tissues that need it. **Aim:** This case study was carried out to analyze the effect of administering non-pharmacological therapy, Finger Hold Relaxation Therapy, to accompany medical treatment on the problem of ineffective peripheral perfusion with high blood pressure. **Method:** This case study used a pre-test and post-test approach. Finger-hold relaxation therapy was administered for 10–15 minutes per session, once daily, over 9 consecutive days. After completing the treatment, a post-test was carried out in the form of a blood pressure check again as a comparative assessment. **Results:** Blood pressure examinations decreased at each meeting before and after non-pharmacological treatment. **Conclusion:** The application of finger grip relaxation therapy is practical as a non-pharmacological management in addition to the medical treatment the patient is undergoing. It can be proven that providing finger-held relaxation therapy can help reduce the risk factors for high blood pressure and reduce complaints of pain, muscle cramps, and discomfort felt by clients.

Keywords: Hypertension, Finger Hold Relaxation Therapy, Elderly

Corresponding Author:

Latifa Aini Susumaningrum

Faculty of Nursing, University of Jember

Jl. Kalimantan No 37, Sumbersari, Jember, East Java, 68121, Indonesia

Email: latifa_as.psik@unej.ac.id

How to cite:

Puspitasari, J. G., Susumaningrum, L. A., Susanto, T., Bachtiar, S., & Kurdi, F. (2026). Application of Finger Hold Relaxation Therapy for Ineffective Peripheral Perfusion in Elderly Hypertensive Patient. *Jurnal Kegawatdaruratan Medis Indonesia*, 5(2), 260-270. <https://doi.org/10.58545/jkmi.v5i2.471>

1. INTRODUCTION

Blood pressure sensitivity tends to decrease with age, making the elderly susceptible to hypertension and ineffective peripheral perfusion, which is characterized by dizziness and neck pain.

Arterial stiffness and reduced blood vessel elasticity increase blood pressure (Syamsudin et al., 2022). Hypertension, a blood vessel disorder that inhibits oxygen supply to tissues, is a global health problem, especially in developing countries (Firdaus & Prajayanti, 2024). WHO calls

hypertension The Silent Killer because it often has no symptoms but has the potential to cause premature death ([Zathira](#), 2024)

The global prevalence of hypertension reached 1.3 billion cases in 2018 and is predicted to reach 33% in 2023 ([WHO](#), 2023). In Southeast Asia, prevalence reached 36% ([Ula et al.](#), 2024)), while in Indonesia it increased from 25.8% (2013) to 34.1% (2018). In East Java, the prevalence of hypertension reaches 26.2%, with Jember Regency ranking third highest ([Immanuela et al.](#), 2023).

Risk factors for hypertension are divided into two: modifiable (smoking, obesity, stress) and non-modifiable (age, gender, heredity) ([Arini et al.](#), 2024). Hypertension is sensitive to norepinephrine, which increases vasoconstriction due to the sympathetic nervous response to emotional stress ([Handayani et al.](#), 2024). These changes cause an increase in peripheral resistance, decrease cardiac output, and lead to ineffective peripheral perfusion.

Management of hypertension includes pharmacological and non-pharmacological therapy. One non-pharmacological method is Finger Hold Relaxation Therapy, which helps balance the body's energy, reduces stress and lowers blood pressure ([Siregar](#), 2024).

Research by Handayani et al. (2024) showed that warm water foot soak therapy can improve peripheral perfusion in older people. At the Tresna Werdha Jember Social Services UPT, almost all elderly suffer from hypertension, with a routine exercise program as a control measure.

Management of hypertension includes pharmacological and non-pharmacological therapy. One non-pharmacological method is Finger Hold Relaxation Therapy. Unlike general relaxation techniques, Finger Hold Relaxation Therapy specifically targets peripheral nerve endings and reflexology points on the fingers, which are directly connected to the cardiovascular system. This targeted stimulation promotes localized vasodilation, reduces sympathetic nervous system activity, and improves distal blood flow, making it uniquely advantageous for addressing ineffective peripheral perfusion in hypertensive elderly patients

A case study of a 78-year-old elderly with a history of hypertension showed a blood pressure of 144/65 mmHg (after consuming Captopril 25 mg). The elderly experience anxiety, extremity pain, and decreased peripheral pulses, indicating ineffective peripheral perfusion. It is hoped that the Finger Hold Relaxation Therapy intervention can help reduce blood

pressure and improve the well-being of older people in Nursing Home Jember.

2. METODE

This research is a descriptive study with a case study design, which aims to evaluate the effectiveness of finger grip relaxation therapy in treating ineffective peripheral perfusion in older adults with hypertension.

The research was conducted in a Geriatric Care Facility in Jember, East Java. The sample was selected using a purposive sampling technique, with the inclusion criteria being elderly who were willing to participate in the research, had capillary refill >3 seconds, weak peripheral pulse, cold acral, and decreased skin turgor, and had a history of clinical hypertension.

Data was collected through observation, interviews, and measurements using a blood pressure monitor before and after therapy. The intervention was carried out in 9 sessions of finger-hold relaxation therapy from August 20 to August 28, 2024. The Finger Hold Relaxation Therapy was performed bilaterally on all five fingers of both hands. The therapist applied firm, steady pressure to the base of each finger using the thumb and index finger, holding for 1-2 minutes per finger. The total duration was approximately 10-15 minutes per session. The evaluation was done by

comparing blood pressure and peripheral perfusion parameters before and after the intervention.

3. RESULTS

Based on subjective data obtained through direct examination, Mrs. S said she complained of pain and slight stiffness in her fingers and toes. Mrs. S said her body felt tense, and her sense of comfort was disturbed due to her condition. Based on medical record data, Mrs. S, with the condition that he regularly takes blood pressure control medication every morning, his blood pressure is still in the high category, reaching >150 for his systolic blood pressure.

Throughout the observation period, the patient's antihypertensive medication regimen, daily diet, and physical activity levels remained consistent and unchanged to ensure that the observed improvements were primarily attributable to the non-pharmacological intervention

After providing non-pharmacological therapy through finger-held relaxation therapy, the results showed reduced client complaints, including decreased extremity pain, muscle cramps, systolic blood pressure, and diastolic blood pressure. Major and minor data from ineffective peripheral perfusion problems show that Mrs. S's peripheral perfusion has improved,

as indicated by enhanced capillary refill on day 7, increased peripheral pulse strength, acral, skin turgor, and decreased extremity pain.

Changes in the results of blood pressure measurements before and after being given finger-hold relaxation therapy to Mrs. S were obtained as shown in the

[Table 1.](#)

Table 1. Results of blood pressure measurements at each pre-test and post-test meeting for elderly Mrs. S at the Geriatric Care Facility

Meeting	Pre-Test (mmHg)	Post-Test (mmHg)	Information
20 August 2024	150/90	145/90	Systolic Blood Pressure Decreased
21 August 2024	140/100	140/90	Diastolic Blood Pressure Decreased
22 August 2024	150/110	145/92	Blood Pressure Decreased
23 August 2024	160/110	150/95	Blood Pressure Decreased
24 August 2024	150/90	140/95	Blood Pressure Decreased
25 August 2024	140/90	135/95	Blood Pressure Decreased
26 August 2024	154/100	142/92	Blood Pressure Decreased
27 August 2024	145/93	136/90	Blood Pressure Decreased
28 August 2024	140/90	130/86	Blood Pressure Decreased

Based on the presentation of [Table 1](#), there are significant changes related to the results of the blood pressure examination of the elderly Mrs. S before and after the finger-holding relaxation therapy. The average results of the blood pressure examination before and after treatment on Mrs. S showed a decrease. In the implementation of the first finger-holding relaxation therapy on 1st meeting, the results showed that Mrs. S's blood pressure

was 150/90 mmHg before therapy, and the blood pressure examination after treatment showed a result of 145/90 mmHg. Meanwhile, the implementation of finger-holding relaxation therapy at the last meeting, before therapy, Mrs. S's blood pressure was 140/90 mmHg, while the results of Mrs. S's blood pressure examination after therapy were 130/86 mmHg.

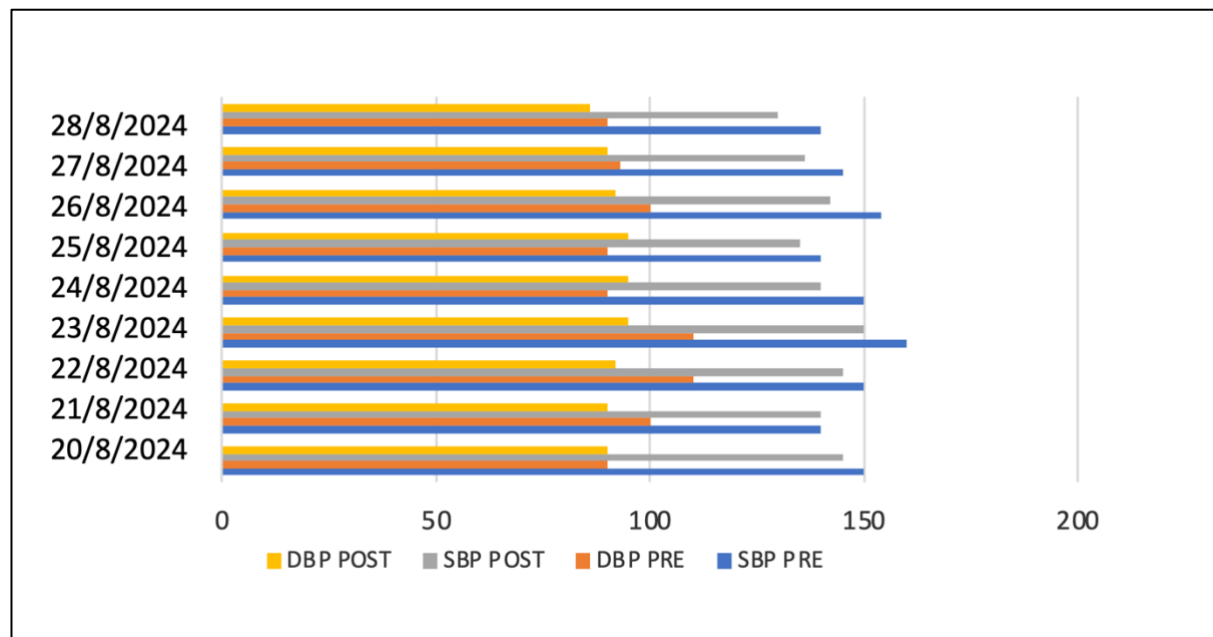


Figure 1. Blood Pressure Monitoring

The implementation of finger grip relaxation therapy was carried out in 9 meetings from August 20, 2024 to August 28, 2024. The implementation procedure began with a pre-test before the provision

of finger grip relaxation therapy, then the elderly Mrs. S carried out the intervention given after which a post-test was carried out after the therapy was given.

Table 2. Peripheral Perfusion Indicator

Day/Date	CRT Inspection	Acral	Turgor	Edema	Wound
19 August 2024	>3 second	Feels cold	>2 second (bad)	No edema	No injuries
21 August 2024	>3 second	Feels cold	>2 second (bad)	No edema	No injuries
23 August 2024	>3 second	Feels warm	< 2 second (Normal)	No edema	No injuries
26 August 2024	< 3 second	Feels warm	< 2 second (Normal)	No edema	No injuries
27 August 2024	< 3 second	Feels warm	< 2 second (Normal)	No edema	No injuries
28 August 2024	< 3 second	Feels warm	< 2 second (Normal)	No edema	No injuries

Based on the presentation of Table 2, there are significant changes related to the results of capillary, acral, and turgor filling examinations in the elderly Mrs. S before and after finger-holding relaxation therapy.

The average results of capillary, acral and turgor examinations before and after therapy in Mrs. S showed a decrease. The assessment on the first day on August 19, 2024 showed that the CRT examination

was > 3 seconds after it was carried out. Meanwhile, after the provision of finger-holding relaxation therapy at the last meeting on August 28, the Capillary Refill Time (CRT) examination showed < 3 seconds, warm acral and skin turgor improved < 2 seconds. The description of the results of the periodic CRT examination has been stated in table 2.

4. DISCUSSION

Overview of Ineffective Peripheral Perfusion in Elderly with Hypertension

Ineffective peripheral perfusion in the elderly is a multifactorial clinical challenge primarily driven by age-related physiological decline and the pathophysiology of hypertension. As individuals age, arterial stiffness increases and endothelial function declines, which elevates peripheral vascular resistance and forces the heart to work harder, thereby exacerbating high blood pressure (Manungkalit et al., 2024). In hypertensive patients, chronic vasoconstriction and sympathetic nervous system overactivity further compromise microcirculation. This pathophysiological cascade manifests clinically as delayed capillary refill time (CRT), cold extremities (acrals), and decreased skin turgor, indicating inadequate tissue oxygenation and perfusion (Brady et al., 2014; Saputri et al.,

2023). Addressing these peripheral circulatory deficits is crucial, as prolonged poor perfusion significantly increases the risk of severe cardiovascular complications, including stroke and coronary artery disease.

Physiological Mechanisms of Finger Hold Relaxation Therapy

The improvement in peripheral perfusion indicators observed in this case can be explained through the neurophysiological mechanisms of Finger Hold Relaxation Therapy. Physiologically, applying sustained, gentle pressure to the fingers stimulates peripheral mechanoreceptors and specific reflexology points. This tactile stimulation sends afferent signals via A-beta nerve fibers to the brainstem, specifically modulating the autonomic nervous system (Thristyaningsih et al., 2011; Atik, 2022). This neural modulation decreases sympathetic nervous system outflow while simultaneously enhancing parasympathetic activity (Ramanlal & Gupta, 2023; Kim, 2016).

The shift toward parasympathetic dominance promotes systemic and local vasodilation, thereby reducing peripheral vascular resistance and improving microcirculatory blood flow. Furthermore, this relaxation technique triggers the

hypothalamic-pituitary-adrenal axis to release endogenous opioids (endorphins) and serotonin (Boutouyrie et al., 2021). These neurochemicals not only alleviate pain and reduce anxiety but also possess direct vasodilatory properties that enhance vascular relaxation. Consequently, the therapy effectively reverses the sympathetic-induced vasoconstriction characteristic of hypertensive crises, leading to warmer acral and normalized CRT.

Clinical Outcomes and Comparison with Existing Literature

The clinical outcomes in this case strongly align with and extend recent empirical evidence. Firdaus and Prajayanti (2024) reported that finger-holding techniques significantly reduce blood pressure by improving peripheral circulation; similarly, our case demonstrates a notable reduction in systolic and diastolic blood pressure alongside objective improvements in microcirculatory markers (CRT and turgor). Furthermore, Siregar (2024) demonstrated that this therapy effectively lowers sympathetic nerve activity, thereby stabilizing the pulse and warming cold extremities in hypertensive patients.

While previous studies have predominantly focused on hemodynamic

outcomes (e.g., blood pressure reduction), this case report provides additional clinical value by documenting the improvement of objective peripheral perfusion indicators. The patient's transition from cold, pale acral with a CRT of >3 seconds to warm skin with a CRT of <2 seconds provides tangible evidence that the therapy successfully restores microvascular hemodynamics, not just systemic blood pressure.

Synergistic Effects and the Role of Pharmacological Management

It is imperative to interpret these findings within the context of the patient's comprehensive medical management. During the intervention period, the patient continued to receive pharmacological therapy (Captopril 25 mg). The observed reduction in blood pressure from 150/90 mmHg to 130/86 mmHg is likely the result of a synergistic effect between the pharmacological agents and the non-pharmacological Finger Hold Relaxation Therapy.

While antihypertensive medications target the renin-angiotensin-aldosterone system to lower blood pressure, they do not always immediately resolve the sympathetic overactivity and anxiety associated with the disease state. Finger Hold Relaxation Therapy complements

pharmacological treatment by mitigating stress-induced sympathetic surges, thereby optimizing the overall hemodynamic response (Putri & Widaningsih, 2017). This highlights that non-pharmacological interventions should not be viewed as standalone replacements, but rather as vital, low-risk adjuncts that enhance the efficacy of medical treatment, improve patient comfort, and maintain blood pressure stability without introducing adverse side effects (Firdaus & Prajayanti, 2024).

5. CONCLUSION

The implementation of Finger Hold Relaxation Therapy over nine consecutive sessions, as a complementary intervention alongside pharmacological treatment, demonstrated significant clinical improvements in elderly patients with hypertension and ineffective peripheral perfusion. The therapy successfully reduced blood pressure to 130/86 mmHg and markedly improved peripheral perfusion indicators, including a capillary refill time of <2 seconds, warm acral temperature, and improved skin turgor. Furthermore, patients reported a substantial reduction in pain, muscle cramps, and general discomfort. These findings confirm that Finger Hold Relaxation Therapy is an effective, safe, and

easily implementable non-pharmacological nursing intervention. It is highly recommended to integrate this therapy into routine geriatric and cardiovascular nursing care protocols to optimize peripheral perfusion, manage hypertension symptoms, and enhance the overall quality of life for elderly patients.

ACKNOWLEDGEMENT

The authors would like to thank the Faculty of Nursing at the University of Jember for supporting this research. They also thank the participant for cooperation throughout the data collection process.

AUTHOR CONTRIBUTIONS

JGP and LAS contributed to the research concept, data collection, data analysis, and drafting of the manuscript. TS and SB contributed to the research, supervising and critically reviewing the manuscript's methodology and content. FK contributed to manuscript revision and editing. All authors read and approved the final version.

CONFLICT OF INTEREST

The authors declare no conflicts of interest with respect to the research, authorship, and/or publication of this article. There was no funding from any

party with a commercial interest in the results of this research.

DATA AVAILABILITY STATEMENT

The data is not publicly available due to privacy or ethical restrictions.

DECLARATION OF USE OF AI

During the preparation of this work, the authors used Grammarly to assist with language and grammar editing. The authors reviewed and edited the content as needed and take full responsibility for the manuscript

REFERENCES

Arini, Wijaksono, M. A., Mohtar, M. S., & Basit, M. (2024). Efektivitas penggunaan kartu kontrol obat (KKO) terhadap kepatuhan mengkonsumsi obat antihipertensi pada lansia. *Jurnal Ilmiah Permas: Jurnal Ilmiah STIKES Kendal*, 14(1), 375–382. <https://doi.org/10.32583/pskm.v14i1.1660>

Atik, W. (2022). Penerapan senam hipertensi terhadap gangguan perfusi perifer tidak efektif pada pasien hipertensi. *Repository Universitas Widya Husada Semarang*. <http://eprints.uwhs.ac.id/id/eprint/1757>

Boutouyrie, P., Chowienczyk, P., Humphrey, J. D., & Mitchell, G. F. (2021). Arterial stiffness and cardiovascular risk in hypertension. *Circulation Research*, 128(7), 864–886. <https://doi.org/10.1161/CIRCRESAHA.121.318061>

Brady, A.-M., McCabe, C., & Margaret, M. (2014). *Fundamentals of medical-surgical nursing: A systems approach*. Wiley Blackwell.

Firdaus, S. M., & Prajayanti, E. D. (2024). Penerapan terapi genggam jari dan nafas dalam terhadap tekanan darah pada penderita hipertensi di Kecamatan Mojosongo Kota Surakarta. *Jurnal Mahasiswa Ilmu Kesehatan*, 2(4), 197–207. <https://doi.org/10.59841/jumkes.v2i4.1846>

Handayani, E., Roni, F., Camelia, D., Pratiwi, T. F., & Wijaya, A. (2024). Asuhan keperawatan gerontik pada pasien hipertensi dengan masalah keperawatan perfusi perifer tidak efektif menggunakan terapi rendam kaki air hangat di UPT PSTW Jo Mbang. *Jurnal Kesehatan Tambusai*, 5(1), 5–24. <https://doi.org/10.31004/jkt.v5i1.24032>

- Immanuela, J. F., Noveyani, A. E., & Meikalynda, A. (2023). Epidemiologi deskriptif hipertensi di Puskesmas Arjasa Kabupaten Jember. *Sehat Rakyat: Jurnal Kesehatan Masyarakat*, 2(1), 148–159. <https://doi.org/10.54259/sehatrakyat.v2i1.1509>
- Kim, M. S. (2016). Investigation of factors affecting body temperature changes during routine clinical head magnetic resonance imaging. *Iranian Journal of Radiology*, 13(4), e34016. <https://doi.org/10.5812/iranjradiol.34016>
- Manungkalit, M., Novita, S. N., & Puput, N. A. (2024). Pengaruh aktivitas fisik terhadap tekanan darah pada lansia dengan hipertensi. *JPK: Jurnal Penelitian Kesehatan*, 14(1), 1–8. <https://doi.org/10.54040/jpk.v14i1.249>
- Putri, H. D., & Widaningsih. (2017). Relaksasi otot progresif terhadap penurunan kadar gula darah pada pasien diabetes mellitus tipe 2. *Indonesian Journal of Nursing and Health Sciences*, 3, 27–31.
- Ramanlal, R., & Gupta, V. (2023). Physiology, vasodilation. *StatPearls Publishing*. <https://www.ncbi.nlm.nih.gov/books/NBK557562/>
- Saputri, S., Minarningtyas, A., & Puspitasari, I. (2023). Penerapan Buerger Allen Exercise terhadap nilai capillary refill time (CRT) pada klien diabetes melitus tipe 2. *Jurnal Gema Keperawatan*, 16(1), 99–110. <https://doi.org/10.33992/jgk.v16i1.2411>
- Siregar, R. N. (2024). Efektivitas teknik relaksasi genggam jari terhadap penurunan tekanan darah pada pasien hipertensi di RS Islam Malahayati Medan. *Jurnal Kesmas Prima Indonesia*, 8(1), 24–28. <https://doi.org/10.34012/jkpi.v8i1.4664>
- Syamsudin, A. I., Salman, & Sholih, M. G. (2022). Analisis faktor kepatuhan minum obat pada pasien hipertensi di Puskesmas Cilamaya Kabupaten Karawang. *Pharmacon*, 11, 1651–1658. <https://doi.org/10.35799/pha.11.2022.41559>
- Thristyaningsih, S., Probosuseno, P., & Astuti, H. (2011). Senam bugar lansia berpengaruh terhadap daya tahan jantung paru, status gizi, dan tekanan darah. *Jurnal Gizi Klinik Indonesia*, 8, 14. <https://doi.org/10.22146/ijcn.17726>

Ula, M. R., Etikasari, R., Trisanti, I., & Dahbul, N. A. (2024). Hubungan rasionalitas penggunaan antihipertensi dengan efektivitas terapi pada pasien hipertensi di Puskesmas Trucuk II Kabupaten Klaten. Indonesia Jurnal Farmasi, 8(2), 93–101. <https://doi.org/10.26751/ijf.v8i2.2267>

Zathira, A. T., Hendrati, L. Y., Diyanah, K. C., & Pawitra, A. S. (2024). Hipertensi sebagai silent killer disease: Edukasi pada masyarakat beresiko di Desa Pakuwon. Jurnal Layanan Masyarakat, 8(2), 200–209. <https://doi.org/10.20473/jlm.v8i2.2024.200-209>

WHO. (2023). First WHO report details devastating impact of hypertension and ways to stop it. New York. <https://www.who.int/news/item/19-09-2023-first-who-report-details-devastating-impact-of-hypertension-and-ways-to-stop-it>