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The Effect Of Elderly Gymnastics On Blood Pressure In Hypertensive Elderly

Noor Salsabila[1], Ainun Sajidah[2], Evi Risa Mariana[3], Nurhayati[4], Suroto[5]

[1,2,3,4,5]Poltekkes Kemenkes Banjarmasin
Email : nsalsabila524@gmail.com

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Abstract

Hypertension in the elderly generally comes from changes in the condition of arterial blood vessels that become harder and less elastic. To prevent hypertension, one of them is doing elderly gymnastics. The purpose of this study was to analyse the effect of elderly gymnastics on blood pressure in hypertensive elderly at Panti Perlindungan dan Rehabilitasi Sosial Lanjut Usia (PPRSLU) Budi Sejahtera Martapura. The research method uses Pre-Experimental research type with one group pretest and posttest design. Sampling using purposive sampling with a sample size of 11 respondents. Analysis using paired sample t-test statistical test with a 0,05. The results showed that there was an effect of elderly gymnastics on systolic blood pressure with a p value of 0,029 (<0,05) and no effect of elderly gymnastics on diastolic blood pressure with a p value of 0,185 (>0,05). It can be concluded that there is an effect of elderly gymnastics on blood pressure in hypertensive elderly. It is hoped that hypertensive elderly people will always routinely participate in elderly gymnastics and maintain health patterns to avoid hypertension.

Background

Every year the number of elderly people is increasing in line with the increase in life expectancy, causing various polemics today, various problems due to degenerative processes that arise as a person ages (Yanti et al., 2021). It is estimated that by 2030 at least 1 in 6 people in the world will be 60 years old or older (WHO, 2022). The world's population aged 60 years and over will double (2,1 billion) by 2050, and is even expected to triple to 426 million. Meanwhile, Indonesia since 2021 has entered the aging population structure, where around 1 in 10 people are elderly. In old age, there is a deterioration of cells that affect the function and ability of body systems such as the nervous system, heart, and blood vessels. An elderly disease that has a high morbidity and mortality rate is hypertension. Hypertension or high blood pressure is an increase in systolic blood pressure of more than 140 mmHg and diastolic blood pressure of more than 90 mmHg in two measurements with an interval of five minutes in a state of rest / calm (Infodatin, 2019).

The 2018 Riskesdas data shows the prevalence of hypertension based on measurement results in the population aged ≥18 years is 34,1%, with the province of South Kalimantan in the first place for hypertension at 44,1%. Hypertension occurred in the age group 31-44 years (31,6%), age 45-54 years (45,3%), age 55-64 years (55,2%) (Riskesdas, 2018). Launching from the Satu Data Banua website, the highest number of people with hypertension in South Kalimantan is ranked first by Banjar Regency with 31,013 cases (Diskominfo, 2023). In addition, the prevalence of hypertension in Indonesia tends to increase with age, the prevalence of hypertension in the elderly aged 55-64 years is 55,2%, the elderly aged 65-74 years is 63,2%, and the elderly aged ≥ 75 years is 69,5% (Riskesdas, 2018).

Efforts that can be made by elderly people with hypertension to reduce blood pressure can be done with two types, namely pharmacological and non-pharmacological (Anggraini, 2020). One example of physical exercise or exercise that can be done by people with hypertension is gymnastics (Efliani et al., 2022), because it is one of the ways to lower blood pressure (Sobarina et al., 2022). Elderly gymnastics when done regularly will improve physical fitness, so that it can indirectly improve heart function and lower blood pressure and reduce the risk of fat accumulation in the walls of blood vessels so that it will maintain its elasticity, especially in old age. On the other hand, it will train the heart muscle to contract so that its pumping ability will always be maintained (Susanti et al., 2023). Based on the background description above, researchers are interested in conducting research on how the effect of elderly gymnastics on blood pressure in hypertensive elderly at Panti Perlindungan dan Rehabilitasi Sosial Lanjut Usia (PPRSLU) Budi Sejahtera Martapura?"

Methods

This type of research is quantitative with Pre-Experimental design with one group pretest and posttest design. This research will be conducted at Panti Perlindungan dan Rehabilitasi Sosial Lanjut Usia Budi Sejahtera Martapura and carried out from April to May 2024 which is done 3× a week for 15-45 minutes. The population of this study were all elderly people suffering from hypertension with a total sample of 11 people and sampling was carried out by purposive sampling with the inclusion criteria of respondents diagnosed with hypertension, respondents taking antihypertensive drugs and willing respondents, while the exclusion criteria were elderly people with limited movement (bedrest). Data collected in the form of primary data obtained directly from respondents by direct measurement of blood pressure and secondary data obtained from the Budi Sejahtera Elderly Social Protection and Rehabilitation Centre. The analysis of this study used a paired sample t-test statistical test at an error rate of 5% with the expected level of significance is $\alpha = 0,05$ using a statistical analysis programme.

Results and Discussion

Table 1. Frequency Distribution of Respondents Characteristics according to Gender, Age, and Last Education at PPRSLU Budi Sejahtera Martapura

Characteristics	Frequency	Percentage
Gender		
a. Male	5	45,5
b. Female	6	54,5
Total	11	100
Age		
a. 60-74 (elderly)	9	81,8
b. 75-90 (old)	2	18,2
Total	11	100
Last Education		
a. Not in School	3	27,3
b. Primary School	4	36,4
c. Junior High School	3	27,3
d. Senior High School	1	9,1
Total	11	100

Source: General Data of Respondents, 2024

The characteristics of respondents based on gender in this study were dominated by women, namely 6 people (54,5%). Gender can affect the occurrence of hypertension. Men have a 2,3

times more risk of experiencing an increase in systolic blood pressure compared to women because men tend to have a lifestyle that tends to increase blood pressure, but in contrast to women entering menopause, the prevalence of hypertension in women will increase after the age of 65 years due to hormonal changes in these conditions (Martani et al., 2022). The results of this study are supported by research conducted by Putri (2020) with the title Overview of Blood Pressure in Hypertensive Elderly in the Kademangan Health Centre Working Area, Cianjur Regency with a total of 352 subjects, saying that almost all respondents were female with 318 people (90,3%) and very few male respondents, namely 34 elderly people (9,7%) (Putri & Meriyani, 2020).

In this study, the characteristics of respondents based on age were also obtained, the majority of respondents had an age range of 60-74 years as many as 9 respondents (81,8%). Blood pressure tends to be higher with age. This is because with increasing age, especially old age, blood vessels will naturally thicken and become more rigid. These changes can increase the risk of hypertension (Ekasari et al., 2021). The results of this study are in accordance with research conducted by (Susanti) 2023, which says blood pressure will increase after the age of 45-55 years, the arterial wall will experience thickening, so that the blood vessels will gradually narrow to become stiff with increasing age, the risk of hypertension increases, although hypertension can occur at any age, but is most often found at the age of 35 years or more (Susanti et al., 2023).

The characteristics of respondents based on the last education of the results of this study were dominated by respondents who graduated from elementary school as many as 4 people (36,4%). The level of education indirectly affects blood pressure in the elderly because education is the basis of intellectual knowledge that a person has, the higher the education, the greater the ability to absorb and receive information. Extensive knowledge and insight is one of the factors behind the actions taken and further influences one's behaviour (Yuswatiningsih & Suhariati, 2021). The results of this study are in line with research by Khotimah (2023) entitled Overview of the Incidence of Hypertension in the Elderly in Adisara Village, Jatilawang District, Banyumas Regency with a total sample of 63 people, it was found that the highest level of education was elementary school, namely 27 people (42,86%) (Khotimah, 2023).

Table 2. Frequency Distribution of Systolic - Diastolic Blood Pressure Before and After Intervention Elderly Gymnastics

Variabel	n	Mean	Min	Maks	SD
Systolic (pre-test)		138,64	121	181	17,368
Systolic (post-test)	11	129,64	104	160	18,035
Diastolic (pre-test))		79,64	68	98	8,663
Diastolic (post-test)		75,27	62	87	9,264

Source: Primary data processed, 2024

Table 2 shows the pre-test data before being given elderly gymnastics obtained the mean value of systolic blood pressure 138,64 mmHg and the lowest systolic blood pressure value 121 mmHg and the highest systolic blood pressure 181 mmHg with a standard deviation of 17.368. While the diastolic blood pressure obtained the mean value of 79,64 mmHg and the lowest diastolic pressure value of 68 mmHg and the highest diastolic blood pressure of 98 mmHg with a standard deviation of 8,663.

In the post test data after being given elderly gymnastics, the mean systolic value was 129,64 mmHg and the lowest systolic pressure value was 104 mmHg and the highest systolic pressure value was 160 mmHg with a standard deviation of 18,035. While the diastolic blood pressure

obtained the mean value of 75,27 mmHg and the lowest diastolic blood pressure of 62 mmHg and the highest diastolic blood pressure of 87 mmHg with a standard deviation of 9,264.

The effect of elderly gymnastics on reducing blood pressure in elderly people with hypertension is caused by movements in the form of elderly gymnastics performed by the elderly stimulating an increase in heart pump strength and stimulating vasodilation of blood vessels so that blood flow is smooth and there is a decrease in blood pressure. Gymnastics also stimulates the release of endorphin hormones that function as natural sedatives produced by the brain so that it creates a sense of comfort and increases endorphin levels in the body to reduce high blood pressure (Sartika et al., 2020).

The results of this study are in line with research by Hamat (2023) with the title Empowering the Elderly Through Elderly Gymnastics for Hypertension Prevention in Kalo Hamlet, Lelak District, activities are carried out every morning for 3 consecutive days with the same number of elderly people present, namely 12 people, the results showed that there was a decrease in blood pressure in 9 participants and those who did not experience a decrease in 3 participants (Hamat et al., 2023). Also supported by research from Purwandari & Suwarno (2020) entitled The Effectiveness of Elderly Gymnastics on Decreasing Blood Pressure in Hypertensive Elderly Groups in Sukoharjo Village with a total sample of 30 people who were carried out twice a week for four weeks, with the results of elderly gymnastics affecting the blood pressure of hypertensive elderly (Purwandari & Suwarno, 2020).

Table 3. Paired T-test Results of Elderly Gymnastics Intervention

Variable	Mean	Sig.
Systolic blood pressure (pre-test)	138,64	0,029
Systolic blood pressure (post-test)	129,64	
Diastolic blood pressure (pre-test)	79,64	0,185
Diastolic blood pressure (post-test	75,27	

Source: Primary data processed, 2024

Table 3 shows the results of the paired sample t-test, indicating that there is a difference in the mean value of pre and post data on systolic and diastolic blood pressure before and after being given elderly gymnastics. In the respondent's systolic blood pressure, the p value = 0,029 (<0,05), so H_0 is rejected and H_1 is accepted, which means that there is an influence on systolic blood pressure. In the respondent's diastolic blood pressure, the p value = 0,185 (>0,05), so H_0 is accepted and H_1 is rejected, which means that there is no effect on diastolic blood pressure.

Elderly gymnastics is very important, especially for the elderly, by doing elderly gymnastics, the elderly can maintain and even improve their health status. Elderly gymnastics that is done regularly is beneficial for improving physical fitness, so that it can indirectly improve heart function and lower blood pressure and reduce the risk of fat accumulation in the walls of blood vessels and will maintain their elasticity, so that the heart can pump more blood with minimal effort. In effect, the heart's work becomes lighter so that there is less resistance to the artery walls. Thus, blood pressure also decreases. On the other hand, it will train the heart muscle to contract so that its pumping ability will always be maintained (Emilda et al., 2023). Gymnastic activities are very beneficial for the management of hypertension if done regularly 3 times a week with a duration of 15-45 minutes will have a good effect on elderly people with hypertension, which can increase vascular permeability (Pratama et al., 2023).

The results of this study are in line with research from Sartika (2020) entitled Elderly Gymnastics Lowers Blood Pressure in the Elderly at Posbindu Cempaka Permai Bengkulu City, this study was conducted for 3× in one week with a total sample of 20 elderly people with the results of the effect of elderly gymnastics on lowering blood pressure (Sartika et al., 2020).

The absence of influence on diastolic pressure in this study is also in line with research from Sartika and Vebi (2020) who did elderly gymnastics 1 time a week for 4 weeks, with the observation of a significant value of 0,083 ≥ 0,05. The results of the research obtained from the statistical test results are that there is no effect of elderly gymnastics on blood pressure in the elderly with hypertension at the Samata Health Centre Kec. Somba Opu Kab. Gowa (Sartika & Vebi, 2020). According to the researcher's opinion, this could be due to the many factors that affect blood pressure even though they have done elderly exercises, for example respondents do not do elderly exercises seriously and the frequency of movements performed is less, or maybe because the respondent's lifestyle while doing elderly exercises is less healthy because some respondents are active smokers so that it can affect blood pressure.

Based on the results of this study, it shows that there is an effect of elderly gymnastics on blood pressure in the elderly with hypertension at PPRSLU Budi Sejahtera Martapura with the results of the influence on systolic blood pressure on respondents and no effect on diastolic blood pressure as evidenced by the p value after paired sample t-test.

Conclusion

Based on the results of research conducted by researchers, it was concluded that the level of blood pressure in hypertensive elderly before doing elderly gymnastics at PPRSLU Budi Sejahtera Martapura showed a mean value of systolic blood pressure of 138,64 mmHg and diastolic blood pressure of 79,64 mmHg. The level of blood pressure in hypertensive elderly after doing elderly gymnastics shows the mean value of systolic blood pressure 129,64 mmHg and diastolic blood pressure 75,27 mmHg. It was found that there was an effect of elderly gymnastics on systolic blood pressure with a p value of 0,029 (<0,05), so H_0 was rejected and H_1 was accepted, meaning that there was a decrease in systolic blood pressure in the elderly because the p value was significant or meaningful and there was no effect of elderly gymnastics on diastolic blood pressure with a p value of 0,185 (>0,05), so H_0 was accepted and H_1 was rejected, meaning that there was no decrease in diastolic blood pressure in the elderly because the p value was not significant or not meaningful. It is hoped that hypertensive elderly people will always routinely participate in elderly gymnastics and maintain health patterns to avoid hypertension.

Reference

Anggraini, Y. (2020). Efektifitas Teknik Relaksasi Nafas Dalam Terhadap Tekanan Darah Pada Pasien Hipertensi di Jakarta. *JKFT: Universitas Muhammadiyah Tanggerang*, *5*(1), 41–47.

Diskominfo. (2023). *Table Jumlah Penderita Penyakit Hipertensi*. https://data.kalselprov.go.id/dataset/data/1318/column/y

Efliani, D., Ramadia, A., & Hikmah, N. (2022). Efektifitas Senam Hipertensi Terhadap Penurunan Tekanan Darah Pada Lansia Di Upt Pstw Khusnul Khotimah Pekanbaru. *Menara Medika*, *4*(2), 183–191. https://doi.org/10.31869/mm.v4i2.3172

Ekasari, M. F., Suryati, E. S., Badriah, S., Narendra, S. R., & Amini, F. I. (2021). *Hipertensi : kenali penyebab, tanda gejala dan penangannya*.

Emilda, Yuniwati, C., & Dewi, S. (2023). Hubungan Senam Dengan Tekanan Darah Pada Lansia. *Femina*, *3*(1), 163–170.

Hamat, V., Adar, O. A., Janggu, J. P., Afrinita, M., & Miniarti, Y. (2023). Pemberdayaan Lansia Melalui Senam Lansia Untuk Pencegahan Hipertensi Di Dusun Kalo Kecamatan Lelak. *Jurnal Pengabdian Masyarakat Berkemajuan*, *7*(2), 866–870.

Infodatin. (2019). Hipertensi Si Pembunuh Senyap. *Pusat Data dan Informasi Kementrian Kesehatan RI*. https://pusdatin.kemkes.go.id/resources/ download/pusdatin/infodatin/infodatin- hipertensi-si-pembunuh-senyap.pdf

Khotimah, K. (2023). Gambaran Kejadian Hipertensi Pada Lansia Di Desa Adisara Kecamatan Jatilawang Kabupaten Banyumas Tahun 2022. *Jurnal Bina Cipta Husada*, *XIX*(1), 37–46.

Martani, R. W., Kurniasari, G., & Angkasa, M. P. (2022). Pengaruh Senam Hipertensi Terhadap Tekanan Darah Pada Lansia. *Jurnal Kesehatan Samodra Ilmu*, *13*(1), 83–87. https://doi.org/10.55426/jksi.v12i2.150

Pratama, E. Y., Z, M. H., & Lestari, W. (2023). Pengaruh Senam Lansia terhadap Kebugaran Jasmani Lansia di Desa Tanjung Kecamatan Hamparan Rawang Kota Sungai Penuh. *Journal on Education*, *5*(4), 13465–13476. https://doi.org/10.31004/joe.v5i4.2354

Purwandari, K. P., & Suwarno, S. A. (2020). Efektifitas Senam Lansia Terhadap Penurunan Tekanan Darah Pada Kelompok Lansia Hipertensi Di Kelurahan Sukoharjo. *Jurnal Keperawatan GSH*, *9*(2), 1–5.

Putri, N. N., & Meriyani, I. (2020). Gambaran Tekanan Darah Pada Lansia Hipertensi di Wilayah Kerja Puskesmas Kademangan Kabupaten Cianjur. *Jurnal Keperawatan Komprehensif*, *6*(1), 64–69.

Riskesdas. (2018a). Hasil Utama Riset Kesehatan Dasar 2018. *Kementrian Kesehatan Republik Indonesia*. http://www.kemkes.go.id.

Riskesdas. (2018b). *Hasil Utama Riskesdas 2018*. https://kesmas.kemkes.go.id/assets/upload/dir_519d41d8cd98f00/files/Hasil-riskesdas-2018_1274.pdf

Sartika, A., Betrianita, Andri, J., Padila, & Nugrah, A. V. (2020). Senam Lansia Menurunkan Tekanan Darah Pada Lansia. *Journal of Telenursing (JOTING)*, *2*(1), 11–20. https://doi.org/10.1016/C2009-0-39360-5

Sartika, D., & Vebi, W. O. (2020). Efektivitas Senam Lansia (Lanjut Usia) Terhadap Tekanan Darah Pada Lansia Dengan Hipertensi Di Puskesmas Samata Kecamatan Somba Opu Kabupaten Gowa. *Jurnal Ilmiah Kesehatan Diagnosis*, *15*(1), 1–5. https://doi.org/10.35892/jikd.v15i1.306

Sobarina, D., Rohimah, S., & Ginanjar, Y. (2022). Literature Review Pengaruh Senam

Hipertensi Terhadap Penurunan Tekanan Darah Tinggi Pada Lansia. *Jurnal Mahasiswa Keperawatan Galuh*, *1*(1), 39–46. https://ojs.unigal.ac.id/index.php/juwara/article/view/2850

Susanti, E. T., Siswanto, Nurhayati, & Egytama, M. O. (2023). Senam Lansia Terhadap Tekanan Darah Pada Lansia Hipertensi. *Jurnal Keperawatan Karya Bhakti*, *9*(2), 31–43.

WHO. (2022). *Ageing and health*. https://www.who.int/news-room/fact-sheets/detail/ageing-and-health

Yanti, M., Alkafi, & Yulita, D. (2021). Senam Lansia terhadap Tekanan Darah pada Lansia Hipertensi. *Jurnal Ilmu Kesehatan*, *5*(1), 44–52. https://doi.org/10.33757/jik.v5i1.361.g154

Yuswatiningsih, E., & Suhariati, H. I. (2021). Hubungan Tingkat Pendidikan Dengan Kemandirian Lansia Dalam Memenuhi Kebutuhan Sehari hari. *Hospital Majapahit*, *13*(1), 61–70.