

# The Effect Of Hypertension Exercise On Reducing Blood Pressure In The Elderly In Work Area Puskesmas Simpang Dolok District North Sumatra Coal Year 2023

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## ABSTRACT

above normal indicated by systolic numbers (top) and diastolic numbers. In North Sumatra, according to Riskesdas 2019 prevalence was 7,4% of the total population and ranked fourth out of ten non-communicable diseases. This study aims to determine the effect of elderly gymnastics on the decrease in blood pressure in people with hypertension in Subdistrict, Puskesmas Simpang Dolok Kabupaten Batu Bara Sumatera Utara Years 2023. Research using Pre Experiment One Group Pre and Posttest design. The population of all hypertensive patients in the area of puskesmas often in month September until Nopember yearst 2022 87 people. Technique of sampling that is Purposive Sampling with amount as many as 10 people. Data collection was done with observation sheet, blood pressure checking tool, data analysis was done with Independent T test. The result of the research before the elderly gymnastics of the majority of hypertension degree 1, after the normal elderly hypertension gymnastics, Independent T test, obtained the mean (mean) before the elderly gymnastics 146.00 mmHg, and after ugly gymnastics 116.00 mmHg, p value of 0,000 which means p value <0.05, t value = 11.619. Based on the results of this study it can be concluded that there is influence of elderly gymnastics to the decrease of blood pressure in Sering District Public Health Center Simpang Dolok Kabupaten Batu Bara Sumatera Utara Year 2023. It is suggested to further researcher to develop method in lowering blood pressure in hypertension patient besides using elderly gymnastics zikir

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## 1. INTRODUCTION

In 2000 the number of elderly people in Indonesia was projected to be 7.28%. and in 2020 it will be 11.34% [1]. Even data from the United States Census Bureau predicts that Indonesia will experience the largest increase in elderly citizens worldwide from 1990 to 2025, namely 414%. According to the United States population service (1999), the number of elderly population aged 60 years or more is estimated to be close to 100 million people and is projected to be 2 billion by 2030, at that time the elderly will outnumber the child population (0-14 years). The population projection by the statistics center illustrates that between 2005-2010 the number of elderly people is the same as the number of children under five, which is around 21 million people or 9.7% of the total population [2]

The proportion of hypertension worldwide in 2018 was 32.2% for men and 29.8% for women. African countries are one of the countries in the world with the highest proportion of hypertension in both men (40.1%) and women (39.5%). Meanwhile, countries with the lowest proportion of hypertension in men are in Southeast Asia at 25.4% and in women there are in parts of the Americas at 19.7% (WHO, 2017). According to the World Health Organization (WHO) noted in 2018 at least a total of 959 million cases of hypertension, is estimated to be 2.15 billion in 2025 or around 30% of the total world population, where sufferers are more in women (30%) than men (29%). Approximately 80% increase in cases of hypertension occurs mainly in developing countries [3].

The prevalence of hypertension in Indonesia was 28.3% in 2019, but only 10.1% were diagnosed by health workers and/or with a history of taking medication. This indicates that most cases of hypertension in the community have not been diagnosed and health services have not been reached

(Ministry of Health RI, 2020). According to the 2018 National Basic Health Survey, the prevalence of hypertension in Indonesia in the 15-24 year age group is 8.7%, in the 25-34 year age group is 14.7%, 35-44 years 24.8%, 45-54 years 35.6%, 55-64 years 45.9%, 65-74 years 57.6%, and more than 75 years is 63.8%. With such a high prevalence, the number of unnoticed hypertension may be even higher. This is because hypertension and its complications are far fewer in number than asymptomatic hypertension [4].

In North Sumatra, according to Riskesdas, the prevalence in 2019 was 7.4% of the entire population and ranked fourth out of ten non-communicable diseases in North Sumatra Province [5]

Hypertension Gymnastics is a light exercise that is easy to do and not burdensome, which can be applied to the elderly. This sports activity will help the elderly's body to stay fit and stay fresh, encourage the heart to work optimally and help eliminate free radicals that roam in the body [6]

From data from the Simpang Dolok Health Center, Lima Puluh sub-district, in 2020 the number of hypertension sufferers was 156 people with an average age of 45-70. Five people with hypertension were observed with an average blood pressure of 165/90 mmHg.

## 2. METHOD

This type of research used is quantitative research. The research design uses a quasi experiment with a one group pretest-posttest approach. The population in this study were elderly people with hypertension in the Simpang Dolok Puskesmas area, Batu Bara district, North Sumatra. From September to November 2022 there were 87 people. To determine the individuals or objects to be sampled, the number of samples selected was in accordance with predetermined criteria, namely: Age not more than 70 years, not currently taking hypertension medication, not having complications (stroke, myocardial infarction, kidney failure, encephalopathy (brain damage), seizures). The data analysis used is bivariate analysis and univariate analysis

## 3. RESULTS AND DISCUSSION

### Demographic Data

Based on research that has been conducted regarding the effect of hypertension exercise on reducing blood pressure in elderly people with hypertension in 2023, the characteristics of the research respondents were obtained which can be seen in the demographic data of the respondents as follows:

Table 1 Frequency Distribution of Elderly Demographic Data in the Simpang Dolok Health Center work area, Batu Bara district, North Sumatra, in 2023.

Age	Frekuensi	Presentasi (%)
60-65 years	5	50.0
66-70 years	5	50.0
<b>Amount</b>	<b>10</b>	<b>100.0</b>
Education	Frekuensi	Presentasi (%)
SENIOR HIGH SCHOOL	8	80.0
JUNIOR HIGH SCHOOL	2	20.0
<b>Amount</b>	<b>10</b>	<b>100.0</b>
Work	Frekuensi	Presentasi (%)
IRT	5	50.0
civil servant	1	10.0
Self-employed	4	40.0
<b>Amount</b>	<b>10</b>	<b>100,0</b>
Long suffered	Frekuensi	Presentasi (%)
1 year	6	60.0
2 years	5	40.0
<b>Amount</b>	<b>10</b>	<b>100,0</b>

Based on the table data obtained about the demographic characteristics obtained from 10 respondents, it shows that the average age of the respondents is 60-70 years, the majority of education,

namely high school, is 8 people (80.0%), the work of IRT respondents is 5 people (50.0 %) and suffer a year as many as 6 people (60.0%).

## Research Results

### Distribution of the frequency of blood pressure in the elderly before carrying out Hypertension Exercises in the Simpang Dolok Health Center work area, Batu Bara district, North Sumatra, in 2023.

Table 2 Distribution of the frequency of blood pressure in the elderly before doing hypertension exercises in the Simpang Dolok health center area, Batu Bara district, in 2023.

Category	Frekuensi	Persentase%
Normal	0	0
Prehypertension	0	0
Grade I hypertension	10	0
Grade II hypertension	0	0
<b>Total</b>	<b>0</b>	<b>100</b>

Based on the table above, it shows the blood pressure of the respondents before doing hypertension exercises, namely hypertension degree I with a frequency of 10 people (100%).

### Frequency distribution of blood pressure in the elderly after hypertension exercise in the Simpang Dolok Health Center work area, Batu Bara district, North Sumatra, in 2023.

Table 3 Frequency distribution of blood pressure in the elderly after hypertension exercise in the Simpang Dolok health center area, Batu Bara district, in 2023

Category	Frekuensi	Persentase%
Normal	9	90,0
Prehypertension	1	10,0
Grade I hypertension	0	0
Grade II hypertension	0	0
<b>Total</b>	<b>10</b>	<b>100,0</b>

### Distribution of blood pressure before and after Hypertension Gymnastics in the Simpang Dolok Health Center work area, Batu Bara district in 2023

The distribution of blood pressure before and after the Hypertension Exercise in the Simpang Dolok Health Center area, Batu Bara district in 2023 can be seen below:

Table 4 Distribution of blood pressure before and after Hypertension Gymnastics in the Simpang Dolok Health Center work area, Batu Bara district in 2023

Blood pressure	Pre	Post
Normal	0	9
prehypertension	0	1
Grade I hypertension	10	0
Grade II hypertension	0	0

Based on table 4, blood pressure before doing elderly exercise in elderly people with hypertension, namely the majority had grade I hypertension as many as 10 people (10.0%) and after doing elderly exercise, the majority had normal blood pressure as many as 9 people (90.0%).

**The Effect of Hypertension Exercise on Lowering Blood Pressure in the Simpang Dolok Health Center work area, Batu Bara district, 2023**

To find out how much influence hypertension exercise has on reducing blood pressure in the elderly in the Simpang Dolok Puskesmas area, Batu Bara district, in 2023 using a paired t-test, the results can be seen in the table:

Table 5 The Effect of Hypertension Exercise on Lowering Blood Pressure in the Elderly in the Simpang Dolok Health Center work area, district Coal in 2023

Mean	95 % Confidence Interval of the Difference		t	Sig.(2-tailed)	
	Post	Lower			Uper
Pre 146.00	116.00	24.159	35.841	11.619	.000

**Discussion**

**Distribution of the frequency of blood pressure in the elderly before doing Hypertension Exercise in the Simpang Dolok Health Center work area, Batu Bara district, North Sumatra, in 2023.**

The results of blood pressure research before doing elderly exercise are the majority of hypertension degree I, according to research there are many factors that cause hypertension including age, heredity, lifestyle, and demographic data, it is found that the majority of respondents are 69-70 years old, according to Sutanto (2017), the more likely a person suffering from hypertension is also getting bigger. Hypertension is a disease that arises due to the interaction of various risk factors that a person has. Loss of tissue extension and atherosclerosis and dilation of blood vessels are contributing factors to hypertension.

Handling hypertension can be done by improving lifestyle and pharmacological therapy. One way to improve lifestyle is by doing regular physical activity. Physical activity for hypertensive patients aims to reduce blood pressure through several mechanisms such as neurohumoral changes, adaptation to blood vessel structures, and reduction and total peripheral resistance [7].

In this study the aim was to determine the value of blood pressure before hypertension treatment was carried out in the form of elderly exercise for 10 respondents so that it could be compared with after elderly exercise. Some of the respondent's criteria that have been determined by the researcher will become the benchmark in this study.

In this connection apart from other factors, it is well known that regular exercise can lower blood pressure, improve quality of life and prolong life. This is the cheapest, easiest and very physiological effort that must be utilized in fostering and maintaining health, physical fitness and welfare of the elderly [9].

Based on research conducted by Isesreni and Minipora in 2017 concerning the Effect of Hypertension Gymnastics on Lowering Blood Pressure in the Elderly in RW II, RW XIV, RW XXI Surai Gadang Sub-district, Working Area of the Nanggalo Padang Health Center said that the blood pressure of elderly hypertension before doing elderly exercise can be seen that ( 46.7%) had a blood pressure of 150 mmHg, and (3.3%) had a blood pressure of 170 mmHg because it was caused by the age factor because the older a person is, the higher the risk of disease including hypertension.

After doing elderly exercise, it can be seen that most (36.7%) have a blood pressure of 140mmHg and at least (3.3%) have a blood pressure of 160mmHg. This is because the respondents routinely do elderly exercise 3 times a week besides the effect of elderly exercise regularly can improve blood circulation so that it can reduce blood pressure.

**Frequency distribution of blood pressure in the elderly after hypertension exercise in the Simpang Dolok Health Center work area, Batu Bara district, North Sumatra, in 2023.**

The results of the study after hypertension exercise showed that the majority of blood pressure was normal, aging or the process of old age is a process of slowly disappearing the ability of tissues to repair themselves or replace and maintain their normal functions so that they cannot resist infection and repair the damage suffered. Such a health situation is still worse with a tendency to increase dependency on the elderly along with the weakening of physical abilities [2].

Along with the aging process, the body will experience various health problems or what are commonly called degenerative diseases. Disease better known as high blood pressure is a major risk

factor for the development of heart disease and stroke. Hypertension is also called "the silent disease" because there are no signs and symptoms that can be seen from the outside. The development of hypertension is slow, but potentially very dangerous [2].

From the research above, it shows that the respondent's blood pressure is in the normal category of 9 people (90.0%) and the prehypertension category is 1 person (10.0)%, meaning that they get a change after doing hypertension exercises.

Doing hypertension exercises for 20 minutes, three or four times per week with warm-up and cool-down periods, the elderly can expect a greater likelihood of living the following years in good health[10].

Based on research conducted by Sundari, Suhadi, Maryati in 2018 concerning the effect of hypertension exercise on reducing blood pressure in the elderly at the "Berthany" Age Werda Home, Semarang stated that after carrying out hypertension exercise for 2 weeks, results with an average blood pressure with respondents (n = 14) is the systolic blood pressure before 147.86 after 142.86 and the average diastolic blood pressure before 91.43 after 85.71 this shows that there is an effect of elderly exercise on reducing blood pressure in the elderly.

#### **Frequency distribution of blood pressure in the elderly after hypertension exercise in the Simpang Dolok Health Center work area, Batu Bara district, North Sumatra, in 2023.**

The results of blood pressure research after hypertension exercise have an effect, hypertension exercise is a light exercise that is easy to do and burdensome that can be applied to the elderly. Hypertension gymnastics the form of movement is not high impact aerobics but low impact aerobics. If you use music, don't stomp but slow and lilt and only have light movements without jumping with one foot on the floor, so it's safe and doesn't cause injury. Hypertension exercise has been accepted as a way to treat depression as well. When doing hypothalamic hypertension exercise, it will increase endorphins in the blood so that it can increase blood flow to the brain so that it can reduce pain, anxiety, depression and feelings of fatigue [1].

From the research above, it can be seen that the research before and after hypertension exercise in 10 respondents obtained a significant difference of 0.000 ( $p < 0.05$ ) meaning that there is a significant and real difference in the pre-post average (has a significant effect).

This research is supported by research conducted by M.J Sundari 2014 entitled The Effect of Elderly Gymnastics on Lowering Blood Pressure in the Elderly at the "Bethany" Age Nursing Home Semarang, the results of which show a significant effect of hypertension exercise with a value of 0.008  $< 0.05$ .

Therefore the results of this study have important implications for the elderly and health center staff in helping and preventing the occurrence of hypertension symptoms through hypertension exercises, especially for the elderly.

#### **4. CONCLUSION**

From the problem, it can be concluded that the blood pressure of the elderly in the Simpang Dolok Health Center area, Batu Bara district, North Sumatra, before treatment is the majority of hypertension degrees, the elderly blood pressure in the Simpang Dolok health center area, Batu Bara district, North Sumatra, after treatment is the majority of normal hypertension. There is an effect of hypertension exercise on reducing blood pressure in elderly people with hypertension in the Simpang Dolok Health Center area, Batu Bara district, North Sumatra in 2023.

#### **REFERENCES**

- [1] Badan Penelitian dan Pengembangan Kesehatan.2020 *Laporan Hasil RisetKesehatan Dasar (RISKESDAS) Nasional*. DepKes RI. Jakarta.
- [2] Maryam, R. S., Ekasari, M. F., Rosidawati, Jubaedi, A., Batubara, I. 2018. *Mengenal Usia Lanjut dan Perawatannya*. Jakarta: Salemba Medika
- [3] Ilkafah. 2019. Pengaruh latihan fisik (Senam Lansia) terhadap penurunan tekanan darah pada lansia dengan hipertensi ringan-sedang di Unibraw. Surya.Desember. 2(4)
- [4] Irmawati. 2019. Pengaruh Senam Lansia Terhadap Tekanan Darah LansiaPenderita Hipertensi di Desa Lemayang Kecamatan Ungaran Timur Kabupaten Semarang [Skripsi].Stikes. Ungaran

- [5] Departemen Kesehatan RI. 2016. Petunjuk Teknis Standart Pelayanan Minimal Bidang Kesehatan di Kabupaten atau Kota. Jakarta: Departemen Kesehatan RI.
- [6] Ganong, William F. 2016. Buku Ajar Fisiologi Kedokteran. Jakarta : EGC
- [7] Guyton AC, Hall JE. 2013. Buku Ajar Fisiologi Kedokteran. Edisi 12. Jakarta:EGC
- [8] Arisman, 2019. *Gizi Dalam Daur Kehidupan :Buku Ajar Ilmu Gizi*. Edisi Kedua. Jakarta: EGC
- [9] Barnes, J., Anderson L. A., and Philipson J. D. 2016. *Herbal Medicine*. 2 nd edition. 126- 313. Pharmaceutical Press, London.
- [10] Bowman et al. 2017. *Clinical Research Hypertension*. A prospective Study of Cigarette Smokey And Risk of Incident Hypertension In Birmingham And Women Hospital Massachusetts. p 1-3.
- [11] Kusmana, D. 2016. *Olahraga Pada Usia Lanjut*. Edisi 2. Jakarta: FKUI
- [12] Hayashi, T., Wojtaszewski, J.F.P. Goodyear, L.J. 2017. *Exercise Regulation of Glucose Transport in Skeletal Muscle*. The American J Physiol. 588 (Pt22): 4539–4548
- [13] Katzung, B.G. 2017. *Basic and Clinical Pharmacology 10<sup>th</sup> edition*. USA : Mc Graw Hill
- [14] Jamal, S. 2016. *Karakteristik Lansia yang Dirawat di Rumah Sakit Kelas A dan B*. Buletin Penelitian Kesehatan. Volume 28, hal 373
- [15] Efendi, F., Makhfudli. 2019. *Keperawatan Kesehatan Komunitas Teori dan Praktik dalam Keperawatan*. Jakarta: Salemba Medika.