

# Effectiveness of Qigong Exercise in Elderly Blood Pressure

Short Title: Qigong Exercise in Elderly Blood Pressure

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**Abstract:** *Hypertension is a non-communicable disease that can increase the high morbidity and mortality in the elderly. Qigong exercise is one of the non-pharmacological management of hypertension because it can improve the function of the cardiovascular system and provide a relaxing effect. This study aims to describe the changes in blood pressure in hypertensive elderly who perform Qigong exercises. The research employed descriptive design with a case study approach. The research subjects were 15 elderly with hypertension. The data collecting technique used were observation, interviews and documentation. The results showed that before performing qigong exercise, 9 elderly (60%) had stage 1 hypertension and 6 elderly (40%) had stage 2 hypertension. The result also showed that the blood pressure was decreased after performing qigong exercise. There were 5 elderly (33.33%) who were in prehypertension category, 9 elderly (60%) were in hypertensive stage 1 and 1 elderly (6.67%) remained at stage 2 hypertension. Elderly who suffers from hypertension are expected to perform Qigong exercises regularly because it can decrease blood pressure.*

**Keywords:** blood pressure, elderly, hypertension, qigong exercise

## 1. Introduction

The proportion of the world's elderly population is expected to increase from 12% in 2015 to 22% in 2050 [1]. The percentage of elderly in Indonesia has doubled from 1971 to 2019 becoming 9.6% or around 25.64 million people [2]. The results of the 2017 National Socio-economic Survey showed that there were five provinces in Indonesia with a percentage of the elderly more than 10%. Special Region of Yogyakarta is the province which has most elderly with percentage of 14.5% [3].

The decline in cells that occur in the elderly can affect the function and ability of the nervous system, heart and blood vessels so that it has an impact on the emergence of degenerative diseases, one of which is hypertension. Hypertension is the silent disease and is the third killer disease after heart disease and cancer [4]. Hypertension is a serious health problem. If it is not controlled, it can lead to complications and even death. The Indonesian Ministry of Health estimates that deaths caused by cardiovascular disease, especially coronary heart disease and stroke, will continue to increase to reach 23.3 million deaths in 2030 [4]. Basic Health Research in 2018 showed that in Indonesia, hypertension is mostly suffered by the elderly with the highest prevalence occupied by the age group of 75 years and over at 69.5%, followed by the 65-74-year age group at 63.2% and the 55-64-year age group at 55.2%. [4], [5].

Hypertension can be controlled with lifestyle modifications and regular medication. Treatment of hypertension is broadly divided into two, that are pharmacological treatment and non-pharmacological treatment. Non-pharmacological treatments include diet regulation, stress management

through relaxation, exercise such as gymnastics or brisk walking, quitting smoking and reducing alcohol consumption [6], [7].

Lifestyle changes in hypertensive elderly are highly recommended to reduce blood pressure. The lifestyle changes are such as losing weight, not consuming alcohol, reducing salt intake, quitting smoking and performing exercise. One type of exercise that can be performed by people with hypertension is qigong exercise. Qigong is an exercise that has been inaugurated by the Chinese government as a method of healing and improving health for all people [8], [9].

Qigong gymnastics is almost the same as Tai-Chi where the movements are soft and regular so it is very possible for the elderly to perform it. Through gentle movements, qigong exercises can relax body parts, reduce stress and improve the immune system. In addition, qigong exercises can also improve the function of the cardiovascular, respiratory, lymphatic and digestive systems [8]. Qigong exercise is a traditional Chinese medicine exercise consisting of breathing exercises, meditation, and body movements with minimal musculoskeletal strain and can be done by people at an advanced age [10]. This study aims to describe the changes in blood pressure in hypertensive elderly who perform qigong exercises.

## 2. Methods

This study employed a case study with descriptive research design. The population in this study were all elderly people with hypertension at the study site. The sampling technique used was purposive sampling. The samples were 15 respondents who had met the criteria, such as aged at least

60 years old, had been diagnosed with hypertension and had no injury or physical weakness.

Respondents performed qigong exercises with a frequency of 3 times a week, with duration of 15 minutes for 4 weeks. The data was collected using observation, interviews and documentation studies. Blood pressure data was collected using a sheet of blood pressure measurement results measured by a sphygmomanometer before and after performing qigong exercises. The data were analyzed and presented descriptively with tables. This research had passed the ethical test at the Research Ethics Commission (Number 1347/KEP-UNISA/X/2020).

### 3. Results

The subjects in this study consisted of 15 elderly people who suffered from hypertension with 10 female elderly (66.67%) and 5 male elderly (33.33%). Table 2 shows that 8 elderly (53.34%) aged 60-65 years, 5 elderly (33.33%) aged 66-70 years and 2 elderly (13.33%) aged 70-75 years. In general, the description of respondents' characteristics and changes in blood pressure after performing qigong exercises can be seen in the following table:

**Table 1:** Characteristics of subjects

(n=15)

Category	Frequency	Percentage
60-65 years old	8	53, 34%
66-70 years old	5	33, 33%
71-75 years old	2	13, 33%
Female	10	66, 67%
Male	5	33, 33%

**Table 2:** Frequency distribution of subjects' blood pressure before performing qigong exercise

(n=15)

Category	Frequency	Percentage
Pre-qigong exercise		
Pre-hypertension	0	0%
Hypertension Stage 1	9	60%
Hypertension Stage 2	6	40%
Post-qigong exercise		
Pre-hypertension	5	33.33%
Hypertension Stage 1	9	60%
Hypertension Stage 2	1	6.67%

The results showed that before performing qigong exercises (table 3), 9 (60%) of the elderly had hypertension stage 1 as many as 9 people (60%) and 6 elderly (40%) has hypertension stage 2. After performing qigong exercise (table 4), 9 elderly (60%) were in hypertension stage 1, 5 elderly (33.33%) had prehypertension and 1 elderly (6.67%) remained on hypertension stage 2.

### 4. Discussion

There are several factors that can affect a person's blood pressure; one of which is age. Based on the age characteristics, most of the elderly in this study were aged 60-65 years. The elderly experience changes in the structure and function of the peripheral vascular system. The changes that occur are the loss of elasticity of the connective tissue and a decrease in the relaxation of vascular smooth muscle so that the blood vessels become narrowed. This causes a decrease in the ability of the aorta and arteries to accommodate the volume of blood pumped by the heart (stroke volume) resulting in a decrease in heart volume and an increase in peripheral resistance [11].

There is a relationship between age and the incidence of hypertension in the elderly, as evidenced by the results of research that shows the classification of severe hypertension tends to be suffered by the middle age and elderly age range. In addition, age greatly affects a person in making decisions in performing hypertension therapy appropriately

[12], [13]. The therapy chosen by a person for hypertension management will affect the success of hypertension treatment.

Gender also becomes one of the factors that affect blood pressure, in this study the majority of respondents were women. The women tend to suffer from hypertension than men. In this study, female respondents were more than male. Women will experience an increased risk of high blood pressure after menopause, namely age over 45 years. Because women who have not menopause are protected by the hormone estrogen which plays a role in increasing levels of High Density Lipoprotein (HDL). Low levels of HDL and high LDL will affect the process of atherosclerosis and result in high blood pressure [14].

Based on the results of research on subjects after doing qigong exercise, it was found that blood pressure decreased by 14 people and blood pressure remained as much as 1 person. These results indicate that qigong exercise can reduce blood pressure in hypertensive elderly. Qigong is an ancient Chinese movement that consists of various exercises, such as meditation, breathing, and rhythmic movements. As its definition illustrates, Qi is the essential energy of the body and gong is an exercise that will push Qi through the body so that the body can heal itself [15].

Qigong exercises have a dual regulatory function that is beneficial for blood pressure, namely to lower blood

pressure values in patients with high blood pressure and increase blood pressure values in patients with low blood pressure. This benefit is significant especially in patients with high blood pressure. Associated with breathing, qigong exercises is done with deep, light, and slow breathing which is very helpful for concentration, mentality, and calm. This practice can improve the function of internal organs and lower blood pressure [16]. The benefits of qigong practice are improving the health of qi, blood, and fluids throughout the body with repetitive movements to relieve and regulate the function of the meridians and visceral organs. Many potential benefits were found including cardiovascular disorders, rheumatoid arthritis, asthma, and cancer. Qigong has also been studied as an alternative therapy for controlling blood pressure [17].

Qigong has been recognized as a medical exercise and used to improve physical and psychological health. The component of that includes concentration, relaxation, meditation, rhythmic breathing regulation, body posture and gentle movement [18]. Breathing exercises, relaxation, slow and gentle movements and regular rhythms have been shown to increase the release of non-adrenaline through the urine, lower cortisol levels, and reduce sympathetic nerve activity which has a positive impact on the heart in the form of a stable heart rate and blood pressure dropping to normal. This is because the activity of the sympathetic and parasympathetic nerves becomes balanced and harmonious. The exercise can also increase antioxidants to eliminate free radicals in the body and stabilize blood pressure [19].

Meta analytic review studies show [20] that qigong significantly lowers systolic and diastolic blood pressure. For, instance, Kim et al [21] with the intervention group was given qigong exercises 3 times a week and did qigong exercises at home at least 2 times a week, while the control group was not given any intervention. After 8 weeks there was a significant difference between the qigong intervention group and the control group. The qigong exercise intervention group showed a significant decrease significant effect on systolic and diastolic blood pressure results.

According to researchers, a decrease in blood pressure after doing qigong exercise is due to reduced resistance or resistance in the blood capillaries so that blood can flow smoothly compared to before doing the exercise. Elderly exercise also makes the elderly feel more relaxed, comfortable, more able to concentrate and sleep better because qigong is effective in reducing stress through activating the parasympathetic nervous system. Qigong can project tension so that after doing exercise a person will feel that there is a mental burden that is liberated [22], [23].

The results of the study also found that there were still subjects who did not experience a decrease in blood pressure after doing qigong exercises. According to the researcher, it is most likely that the subject did not do elderly exercise correctly and regularly compared to other elderly people who experienced a decrease in blood pressure.

## 5. Conclusion

Based on the results of the study, it was found that after doing qigong, blood pressure in the elderly with hypertension decreased by 14 people (93.33%). This shows that doing qigong exercises correctly and regularly can help lower blood pressure for the elderly who suffer from hypertension. It is suggested that the elderly who suffer from hypertension are expected to be able to do qigong exercises regularly to maintain blood pressure stability. The cadres are expected to be able to assist and motivate the elderly to routinely do qigong exercises.

## Author Contributions

Study conception and design: AR, SS

Data collection: AR

Data analysis and interpretation: SS

Drafting of the article: W, SS

Critical revision of the article: W

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## Conflicts of Interest

The authors declare no conflicts of interest.

## References

- [1] WHO. (2018). Aging and health. Health Affairs. <https://doi.org/10.1377/hlthaff.2014.1399>
- [2] Central Bureau of Statistics. (2019). Elderly Population Statistics 2019. <https://bps.go.id/>
- [3] Central Bureau of Statistics of Yogyakarta Special Province. (2019). Yogyakarta Special Province Statistics 2018. <https://yogyakarta.bps.go.id/>
- [4] Indonesian Ministry of Health. (2018). Main Results of Basic Health Researches' 2010.
- [5] Yogyakarta Special Province Health Office. (2017). Health Profile of the Special Region of Yogyakarta. [http://www.depkes.go.id/resources/download/profil/PROFIL\\_KES\\_PROVINSI\\_2015/14\\_DIY\\_2015.pdf](http://www.depkes.go.id/resources/download/profil/PROFIL_KES_PROVINSI_2015/14_DIY_2015.pdf).
- [6] Shadine, M. (2010). Mengenal Penyakit Hipertensi, Diabetes, Stroke dan Serangan Jantung. Keen Book.
- [7] Park, Ji-Eun, Kim, Jung-Eun, Jung, Soyung, Kim Aeran, Park Hyoju, Hong Sanghoon. (2017). The Effect of Dongeui Qigong for Prehypertension and Mild Essential Hypertension. Hindawi Evidence-Based Complementary and Alternative Medicine Volume 2017, Article ID 4274538, 7 pages <https://doi.org/10.1155/2017/4274538>
- [8] Guo, Yucheng, Shi Haiyang, Yu Dinghai, Qiu Pixiang (2016). Health benefits of traditional Chinese sports and physical activity for older adults: A systematic review of evidence. Journal of Sport and Health Science 5 (2016) 270–280
- [9] Ching, Sie Mooi, Mokshashri, Naidu, Kannan, Mari, Lee Kai Wei, Sallahuddin, Nurin Amalina (202).

- Effects of qigong on systolic and diastolic blood pressure lowering: a systematic review with meta-analysis and trial sequential analysis. *BMC Complementary Medicine and Therapies*. <https://doi.org/10.1186/s12906-020-03172-3>
- [10] Chang, Pei., Knobf., B. (2013). Physical and Psychological effect of Cigong Exercise in community-Dwelling Older Adults: An Exploratory Study. *Journal of Chemical Information and Modeling*, 53 (9), 1689–1699.
- [11] Padila. (2013). Asuhan Keperawatan Penyakit Dalam. *Nuha Media*.
- [12] Suriatun. (2018). Analisis faktor-faktor yang mempengaruhi kejadian hipertensi di posyandu lansia dusun pundung nogotirto gamping sleman yogyakarta. *Universitas 'Aisyiah Yogyakarta*, x (x), 1–13.
- [13] Salmiyati, S. (2018). Pengaruh Self Help Group terhadap Pengetahuan tentang Hipertensi. *Journal of Health Studies*, 2 (1), 75–83. <https://doi.org/10.31101/jhes.428>
- [14] Wahyuni., Eksanoto, D. (2013). Hubungan Tingkat Pendidikan dan Jenis Kelamin dengan Kejadian Hipertensi di Kelurahan Jagalan Di Wilayah Kerja Puskesmas Pucangsawit Surakarta. *Jurnal Ilmu Keperawatan Indonesia*, 1 (1), 112–121.
- [15] Yang, H., Wu, X., & Wang, M. (2017). The Effect of Three Different Meditation Exercises on Hypertension: A Network Meta-Analysis. *Evidence-Based Complementary and Alternative Medicine*, 2017. <https://doi.org/10.1155/2017/9784271>
- [16] Ming, Lu, et al. (2011). *Qi Gong in Chinese Medicine*. Beijing: People's Medical Publishing House.
- [17] Fan, H., Lu, F., Yang, A., Dong, Y., Liu, P., & Wang, Y. (2019). A Review on the Nonpharmacological Therapy of Traditional Chinese Medicine with Antihypertensive Effects. *Evidence-Based Complementary and Alternative Medicine*, 2019. <https://doi.org/10.1155/2019/1317842>
- [18] Guo, Yu., Mingmin, Huang, Yuchang, Meiqi, Wei Zeren, Zhang, Jialei (2018). Safety of Qigong: pRotocol for an overview of systematic reviews. *Medicine* 97: 44 (e13042). <http://dx.doi.org/10.1097/MD.0000000000013042>
- [19] McGee, Robert W. (2021). Tai Chi, Qigong and The Treatment of Disease. *Biomedical Journal of Scientif & Thecnic of Research*. DOI: 10.26717/BJSTR.2021.34.005531
- [20] Jin, Xiao, Pan, Biqi, Wu, Hualin, Xu Danping. (2019). The effects of traditional chinese exercise on hypertension. *Medicine* 98: 3 (e14049). <http://dx.doi.org/10.1097/MD.0000000000014049>