



## **Effectiveness of Chi Kung for controlling high blood pressure in Matanzas, Cuba**

*Efectividad del Chi Kung para el control de la hipertensión arterial en Matanzas, Cuba*

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**Received:** 17/01/2024

**Accepted:** 15/06/2024

**How to cite this article:** Cepero-Silvera D, Hernández-Duarte LP, Hernández-Hervis IT, Guerra-Sánchez M, Castellanos-Milián I, Martínez-Díaz NF. Effectiveness of Chi Kung for controlling high blood pressure in Matanzas, Cuba. MedEst. [Internet]. 2024 [citado acceso fecha]; 4(2):e284. Available in: <https://revmedest.sld.cu/index.php/medest/article/view/284>

## ABSTRACT

**Introduction:** Systemic arterial hypertension is a multifactorial clinical condition characterized by elevated and sustained blood pressure levels. It is one of the main cardiovascular risks and is linked to the most frequent causes of death worldwide.

**Objective:** To evaluate the outcomes of patients with high blood pressure treated with Chi Kung exercises.

**Methodological Design:** An observational, descriptive, prospective study was conducted. A series of Chi Kung exercises were applied to hypertensive patients, with blood pressure measurements. After the exercises, they were questioned about symptoms experienced. The sample consisted of 40 subjects. Variables studied were those measuring clinical diagnosis and outcome.

**Results:** The age group was 65-75 years, and the female gender predominated. Symptoms of headache, tinnitus, dizziness, dyspnea, and chest tightness improved. The majority of patients were in the normal blood pressure group at the end of treatment.

**Conclusions:** The outcome of patients with high blood pressure treated with Qigong exercises was considered satisfactory, with changes in clinical manifestations and improvements in the degree of high blood pressure.

**Keywords:** High Blood Pressure; Exercises; Qigong

## RESUMEN

**Introducción:** la hipertensión arterial sistémica es una condición clínica multifactorial caracterizada por niveles elevados y sostenidos de presión arterial, es uno de los principales riesgos cardiovasculares que está relacionado con las causas de muerte más frecuentes a nivel mundial.

**Objetivo:** evaluar la evolución de los pacientes con Hipertensión Arterial tratados con ejercicios del Chi Kung.

**Diseño Metodológico:** se realizó un estudio observacional, descriptivo, prospectivo, donde se les aplicó una serie de ejercicios del Chi Kung, a hipertensos, midiéndoles la tensión arterial, posterior a los ejercicios, se

indagó sobre síntomas experimentados. La muestra quedó constituida por 40 sujetos. Se estudiaron variables: que miden diagnóstico clínico y evolución.

**Resultados:** predominó la edad de 65-75 años, el sexo femenino, mejoraron los síntomas de cefalea, tinnitis, vértigos, disnea y opresión torácica, la mayoría de los pacientes al final del tratamiento se encontraban en el grupo de tensión arterial normal.

**Conclusiones:** se evaluó de satisfactorio la evolución de los pacientes con hipertensión arterial tratados con ejercicios del Chi kung logrando modificarse las manifestaciones clínicas y mejorando los grados de hipertensión arterial.

**Palabras claves:** Hipertensión Arterial; Ejercicios; Chi Kung

## INTRODUCTION

Arterial Hypertension (HTA) is a disease with high prevalence and progressive growth, associated with potentially disabling complications. It represents a significant public health problem due to its clinical impact and the socioeconomic burden it generates. <sup>(1)</sup> Furthermore, it is the most common chronic condition in the adult population and one of the greatest challenges in modern medicine due to its systemic consequences and complex management. <sup>(2)</sup>

High blood pressure levels are the leading cause of mortality worldwide, with an estimated impact of 15 million deaths annually. Of these, 7.2 million correspond to coronary heart diseases and 4.6 million to cerebrovascular disease, with arterial hypertension (HTA) being a determining risk factor in most cases (World Health Organization, WHO). Globally, it is estimated that 1.39 billion people are diagnosed with hypertension, reaching a prevalence exceeding 60 % among those over 60 years old. <sup>(3,4)</sup>

In Cuba, between 2020 and 2023, the deleterious vascular and metabolic risk profile accompanying HTA is evident according to surveys conducted, which has been increasing, as reflected by the rates of 208.9, 214.9, and 217.5 per 1,000 inhabitants, predominantly in females and in the age group of 60 and older. <sup>(4,5)</sup>

The Matanzas province, in this chronological series, has shown rates higher than those mentioned above, with 246.8, 258.3, and 236.4, except in 2015 with 226.4 per 1,000 inhabitants. <sup>(4)</sup>



Current conventional therapeutic strategies sometimes do not resolve this health condition, may cause adverse reactions, and increase government spending on medication production and costs for the patient; this highlights the importance of treatments that offer advantages and report savings in medication and resources. <sup>(5,6)</sup>

Within the modalities of Traditional Chinese Medicine (TCM) is Chi Kung or Qi Gong, a type of therapeutic exercise that promotes the flow of energy through the body, reduces stress, increases flexibility and overall endurance of the human body, and also constitutes a group therapy by calming the mind and relaxing the body; it also has a hypotensive effect. <sup>(7,8)</sup>

Due to the difficulties observed in the study area, it is assumed that conventional treatment and exercises belonging to a series of Chi Kung can be performed on patients suffering from Arterial Hypertension, which could be an effective therapeutic strategy to incorporate, considering that in the province there is no evidence in this regard.

The high prevalence and complications caused by Arterial Hypertension make it a health problem in the country and in the province of Matanzas. Scientific evidence supports the multidisciplinary management of this disease, making diagnosis and treatment with Natural and Traditional Medicine (NTM) an important tool to improve the health and quality of life of affected patients. <sup>(4,5)</sup>

This study aimed to evaluate the evolution of patients with Arterial Hypertension treated with Chi Kung exercises in the health area of the "Reynold García" polyclinic in Versalles, Matanzas municipality, Matanzas province (2022-2023). The evaluated variables were sociodemographic (age and sex) and those that measured evolution, such as clinical manifestations and physical examination of blood pressure.

## **MATERIALS AND METHODS**

An observational, descriptive, and prospective study was conducted in the Health Area of the "Reynold García" Polyclinic, located in Versalles, Matanzas municipality, Cuba, between January 2022 and January 2023. The study population consisted of 65 patients diagnosed with arterial hypertension (HTA), from which a final sample of 40 patients who met the established criteria was selected.

The inclusion criteria were: patients who voluntarily signed the informed

consent, of both sexes, aged between 40 and 75 years, diagnosed with HTA, and physically and mentally fit to perform Qi Gong exercises. Patients with decompensated chronic diseases, acute infections, contraindications for Qi Gong practice, or those who dropped out of the study were excluded.

All participants were initially evaluated by a General Medicine specialist to classify the degree of HTA and characterize their cardiovascular risk. In the Natural and Traditional Medicine (NTM) consultation, a baseline evaluation and another at the end of the 12-week intervention were conducted, recording symptoms such as headache, tinnitus, vertigo, dyspnea, and chest tightness, as well as blood pressure readings according to Cuban classification: normal (120-139/80-84 mmHg), high normal (130-139/85-89 mmHg), Grade I (140-159/90-99 mmHg), Grade II (160-179/100-109 mmHg), Grade III (>180/110 mmHg). The treatment effect was considered satisfactory if more than 80 % of blood pressure measurements were normal and symptoms decreased by more than 50 %; otherwise, it was classified as unsatisfactory.

The intervention consisted of applying the exercise series "The 8 Brocades of Silk" (Qi Gong), supervised by a certified instructor. Each session included 15 minutes of warm-up and stretching, followed by the execution of the exercises, with a frequency of 5 days per week in the morning for three months. Before and after each session, blood pressure, heart rate, and respiratory rate were measured using a sphygmomanometer calibrated according to Cuban standards. Data were recorded in collection sheets and processed using SPSS version 15, applying descriptive statistics (absolute and relative frequencies) and measures of central tendency.

The research protocol was approved by the Ethics Committee of the institution (Act No. 4/Agreement No. 5/2023), in compliance with the principles of the Declaration of Helsinki. All participants signed written informed consent, ensuring confidentiality and respect for the ethical aspects of the research.

## RESULTS

Table 1 shows the study of 40 patients according to age group distribution, where the highest representation was the 65-75 years group with 80 %.

**Table 1.** Distribution of patients according to age groups

Age groups	Patients	%
50-54	2	5
55-59	2	5
60-64	4	10
65-75	32	80
<b>Total</b>	<b>40</b>	<b>100</b>

**Source:** Data collection form.

Table 2 shows the distribution by biological sex, with female sex being the most prevalent with 33 patients (82 %).

**Table 2.** Distribution of patients by sex

Sex	Patients	%
Female	33	82,5
Male	7	17,5
<b>Total</b>	<b>40</b>	<b>100</b>

**Source:** Data collection form.

Table 3 shows that at the start of the study, 60 % of patients (24/40) presented symptoms associated with high blood pressure. Headache was the most common symptom in 25 % of patients.

After 12 weeks of practicing Ba Duan Jin, a significant reduction in symptoms was observed: only 11 patients remained symptomatic, representing a 54 % decrease in the prevalence of symptoms. The improvement was most notable in headache, the most frequently reported symptom initially.

**Table 3:** Distribution of patients according to reported symptoms

Symptoms referred	Before performing the series of exercises, Chi Kung		After performing the series of exercises, Chi Kung	
	No	%	No	%
Headache	10	25	6	15

Tinnitus	5	12,5	3	7,5
Vertigo	4	10	1	2,5
Dyspnea	3	7,5	0	--
Chest tightness	2	5	1	2,5
<b>Total</b>	<b>24</b>	<b>60</b>	<b>11</b>	<b>27,5</b>

**Source:** Data collection form.

Table 4 shows grades according to blood pressure readings, recorded at the beginning of the exercise series and then at the follow-up at the end of the Ba Dua Jin series. It was found that 12 patients had normal BP (30 %), 22,5 % had high-normal BP, 45 % had grade I BP, and one patient had a follow-up blood pressure above 160/100 mmHg who was referred to the emergency room of the local polyclinic for compensation. At the follow-up after the Ba Dua Jin series (12 weeks), it was found that 33 patients had normal BP (45 %), 37,5 % had high-normal BP, 17,5 % had grade I BP, and there were no cases with a blood pressure above 160/100 mmHg.

**Table.4:** Changes according to blood pressure readings

Blood Pressure Levels According to Grade Classification	Before performing the series of exercises, Chi Kung		After performing the series of exercises, Chi Kung	
	No	%	No	%
Normal	12	30	33	45
Normal high	9	22,5	5	37,5
Grade I	18	45	2	17,5
Grade II	1	2,5	-	-
Grade III	-	-	-	-

**Source:** Data collection form.

Table 5 shows the progress of patients during and at the end of the Ba Dua Jin exercise series. Patients with normal blood pressure levels were considered satisfactory in more than 85 % of the follow-up visits, while 7 patients (12,5 %) had unsatisfactory progress.

**Table 5.** Evaluation of the effect of the exercise series at the end of treatment.

Evaluation	No	%
Satisfactory	33	87,5



Unsatisfactory	7	12,5
<b>Total</b>	<b>40</b>	<b>100</b>

Source: Data collection form.

## DISCUSSION

The results of this study demonstrate that the systematic practice of Ba Duan Jin (Chi Kung) for 12 weeks significantly improved the control of arterial hypertension (HTA) and reduced associated symptoms in the majority of patients. These findings are consistent with current scientific evidence on mind-body therapies in the management of HTA. Previous studies, such as the systematic review by Xiong et al. <sup>(13)</sup>, which analyzed 20 studies between 1982 and 2013, had already reported that Chi Kung reduces blood pressure levels, especially diastolic pressure, and improves symptoms such as headache and dizziness. Likewise, the review by Guan et al. <sup>(16)</sup> on Ba Duan Jin in 961 patients confirmed its effectiveness as an adjunct to pharmacological treatment or even as monotherapy in mild cases, results that align with those obtained in our research.

A relevant aspect of our study is the 54 % reduction in the prevalence of symptoms, highlighting headache as the symptom with the greatest improvement. This effect could be explained by the mechanisms proposed by Traditional Chinese Medicine, where Chi Kung regulates energy flow (Qi) and promotes vascular relaxation. However, from a pathophysiological perspective, authors such as Jahnke et al. <sup>(19)</sup> attribute these benefits to the modulation of the autonomic nervous system and the reduction of oxidative stress, mechanisms also observed in similar practices like Tai Chi.

Unlike other studies evaluating Chi Kung in Asian populations <sup>(13,16)</sup>, our research focused on Cuban patients, a group with particular sociodemographic characteristics and comorbidities. The fact that 87,5 % of participants achieved satisfactory progress suggests that this therapy is adaptable to different cultural contexts. Nevertheless, the 12,5 % of unsatisfactory cases indicates the need to personalize interventions, considering factors such as adherence, severity of HTA, and the presence of associated chronic diseases. <sup>(5,6)</sup>

From the authors' perspective, these results support the integration of Chi Kung into cardiovascular rehabilitation protocols, especially in resource-limited settings where access to medication may be irregular. Its low cost, minimal side effects, and additional benefits (improved flexibility, stress reduction) make it a viable option for public health systems. <sup>(20)</sup> However,



studies with long-term follow-ups and larger samples are required to evaluate its impact on reducing cardiovascular complications. <sup>(14,15)</sup>

Although this study demonstrates benefits of Chi Kung in hypertensive patients, it has significant limitations. The small sample size (n=40) reduces statistical power and generalizability of the results. The short follow-up (12 weeks) does not allow assessment of long-term effects, and the absence of a control group makes it difficult to attribute the findings exclusively to the intervention. Factors such as medication adherence, diet, or physical activity, which could influence the outcomes, were not controlled.

The inclusion criteria (patients fit for exercise) might have created a selection bias towards a healthier baseline population. Furthermore, the evaluation was based on subjective symptom reports and spot blood pressure measurements, without using validated scales or ambulatory blood pressure monitoring (ABPM), considered the gold standard. Future research should include larger samples, longer follow-ups, randomized control groups, and standardized objective measurements to strengthen evidence on this complementary therapy. Despite these limitations, the study provides valuable data for the non-pharmacological management of hypertension in resource-limited settings.

## CONCLUSIONS

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The study demonstrated that practicing Chi Kung (Ba Duan Jin) for 12 weeks significantly improved arterial hypertension control, reducing both blood pressure levels and associated symptoms in 87,5 % of patients. These results support its use as a complementary non-pharmacological therapy, especially in resource-limited contexts, due to its low cost, safety, and additional benefits (stress reduction and physical capacity improvement). Although methodological limitations require cautious interpretation, the findings align with international evidence on mind-body therapies. Its integration is recommended in multidisciplinary hypertension management programs, complementing education on healthy lifestyles and standard medical treatment.

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## **AUTHORSHIP CONTRIBUTION**

**DCS:** conceptualization, data curation, funding acquisition, research, methodology, project administration, resources, software, supervision, validation, visualization, draft writing, writing, reviewing, and editing the final manuscript.



**LPHD:** conceptualization, data curation, research, methodology, supervision, validation, visualization.

**ITHH:** conceptualization, data curation, research, methodology, supervision, validation, visualization.

**MGS:** conceptualization, data curation, research, methodology, supervision, validation, visualization.

**ICM:** conceptualization, data curation, research, methodology, supervision, validation, visualization.

**NFMD:** conceptualization, data curation, research, methodology, supervision, validation, visualization.

### **CONFLICT OF INTERESTS**

The authors declare that they have no conflicts of interest.

### **SOURCES OF FUNDING**

The authors did not receive funding for the development of this article.