



ORIGINAL

## Harmony in Motion: How Wuqinxi Qigong Empowers Menopausal Women's Balance in Paokmotong Village, East Lombok District

### Armonía en movimiento: cómo Wuqinxi Qigong potencia el equilibrio de las mujeres menopáusicas en la aldea de Paokmotong, distrito de East Lombok

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#### ABSTRACT

This study investigates the impact of the Wuqinxi Qigong exercise on improving dynamic balance in menopausal women in Paokmotong village, East Lombok District. The research employed a quasi-experimental design with a one-group pretest-posttest approach. Twenty-four menopausal women participated in a 5-week Wuqinxi Qigong exercise program. Data collection involved experimental techniques in two phases: preparation and actual data collection. The study recommends incorporating BMI characteristics, extending the research duration, and modifying exercises to address balance disorders in the elderly. This research contributes valuable insights into the potential benefits of Qigong exercises for enhancing dynamic balance in menopausal women, highlighting the importance of tailored interventions for this demographic group.

**Keywords:** Wuqinxi Qigong; Dynamic Balance; Menopause; Women's Health Elderly.

#### RESUMEN

Este estudio investiga el impacto del ejercicio Wuqinxi Qigong en la mejora del equilibrio dinámico en mujeres menopáusicas en la aldea de Paokmotong, distrito de East Lombok. La investigación empleó un diseño cuasiexperimental con un enfoque pretest-posttest de un solo grupo. Veinticuatro mujeres menopáusicas participaron en un programa de ejercicios Wuqinxi Qigong de cinco semanas. La recolección de datos implicó técnicas experimentales en dos fases: preparación y recolección de datos reales. El estudio recomienda incorporar características del IMC, ampliar la duración de la investigación y modificar los ejercicios para abordar los trastornos del equilibrio en las personas mayores. Esta investigación aporta información valiosa sobre los beneficios potenciales de los ejercicios de Qigong para mejorar el equilibrio dinámico en mujeres menopáusicas, destacando la importancia de intervenciones personalizadas para este grupo demográfico.

**Palabras clave:** Wuqinxi Qigong; Equilibrio Dinámico; Menopausia; Salud de la Mujer de Edad Avanzada.

#### INTRODUCTION

Menopause refers to the permanent halt of menstrual cycles, marked by a full year without periods. It brings about various physiological, psychological, and social transformations linked to declining ovarian activity. Menopausal symptoms encompass both physical and emotional fatigue, sleep issues, along with urogenital discomfort like vaginal and bladder dryness, and sexual difficulties.<sup>(1)</sup>

Menopause generally occurs at around 51 years of age with a varying age range of 40 to 60 years. The World Health Organization defines menopause as the process of permanent cessation of menstruation due to the loss

of ovarian follicles. Demographic changes in the world's population are increasing aging, physiological damage in adult women can cause a decrease in balance ability, and the elderly face a growing risk of falls, posing a significant concern. To preempt a decline in balance skills, engaging in physical activities is beneficial.<sup>(2)</sup> The adult population continues to grow rapidly from the current 205 million people aged 60 years or older, to a projected 2 billion by 2050.<sup>(3)</sup>

In research conducted by Anh et.al, 2019, it was written that population aging is a substantial phenomenon in Vietnam with the proportion increasing rapidly from 8,9 % in 2009 to 30 % in 2050. One-third of elderly people over 65 years of age living in urban China experience falls every year. Falls have a prevalence of up to 80 % associated with hospitalizations for patients aged 65 years or older. Some risk factors for falls include balance disorders, decreased muscle strength, and gait disorders.<sup>(4)</sup> Changes in balance and gait are known to be risk factors for falls, the menopausal transition is associated with a decrease in balance. Postural stability is related to the risk of falls, and stabilometry measures can forecast falls in postmenopausal women aged 50-65 years. During menopause, there's a rise in intra-abdominal fat and overall body weight, followed by a quicker decline in muscle mass and strength as age progresses. These alterations can impact functional mobility, crucial for assessing dynamic balance during daily tasks.<sup>(1)</sup>

Dynamic balance is very important for carrying out daily activities. The term balance provides an overview of the dynamics of body posture to prevent falls. Therefore, balance is very important to support various activities in daily life. In the literature, there is generally a distinction between static balance and dynamic balance. Then, static stability is related to balance in safe conditions such as when standing calmly, while dynamic stability is said to be the perception of restoring balance in response to internal or external disturbances.<sup>(5)</sup>

Some cognitive benefits from various exercise modalities among individuals with complaints of mild cognitive decline, according to existing research that physical exercise, including aerobic and resistance training, can show low to moderate effects on the cognitive function of a population. However, the cognitive benefits of physical exercise are still being investigated among older people with mild cognitive impairment, so this condition poses a considerable challenge for patients with complaints about daily activities, and the effect of physical exercise on health-related quality of life in elderly patients. is still rarely studied.<sup>(6)</sup> Exercise therapy is the key to managing knee pain and knee strength.

The Wuqinxi Qigong exercise program starts with a warm-up for 10-15 minutes, then core Wuqinxi Qigong movements for 30-45 minutes, and a cool-down for 5 minutes. In previous research, it was found that the wuqinxi qigong exercise provided a change of 70,59 % in the group given the exercise 3 times a week.<sup>(7)</sup>

Wuqinxi qigong is a traditional exercise for the mind and body, to improve physical strength and mental health practiced by the Chinese people. Wuqinxi is defined as training for 3 components namely body, breathing, and mind packaged into one.<sup>(8)</sup> In a field study conducted by researchers, it was found that there was a phenomenon of decreased balance in the elderly in Paok Cut Village, which was characterized by complaints related to limitations in carrying out daily activities such as difficulty standing from a sitting position, then there was a history of falls and this was confirmed by carrying out tests via the BBS questionnaire. Berg Balance Scale, on average the elderly who took the pre-test experienced balance problems, especially dynamic balance, which was indicated by the number of questionnaire points being below the normal number, so there was a risk of falls in the elderly due to poor balance. Based on the researchers' review above and looking at the phenomena found, it is hoped that there will be potential implications for developing interventions that are expected to improve the health of older people in the future and can support activities in daily life. This research aims to determine and analyze the effect of wuqinxi qigong training on improving dynamic balance in menopausal women and to provide benefits that can be used as literature related to the effects of wuqinxi qigong training.

Based on a book written by<sup>(8)</sup> it is written that aging is defined as the progressive deterioration of general function, loss of adaptive responses to stress, and an increase in the risk of related diseases. There is a fairly clear consensus that the aging process is caused by the accumulation of molecular damage. Therefore, the rate of aging in individuals is a complex interaction between damage, maintenance, and repair. This interaction is influenced by several factors such as genetic and environmental factors. Aging is associated with functional decline, including in peripheral sensory structures, so this can affect vision, hearing, and balance. In addition, older people are more likely to suffer from chronic conditions, which often cause weakness and a risk of falls.

The aging process in humans is universal and unavoidable and is associated with decreasing physiological function. There are two different aging phenotypes, formed by lifestyle patterns, experiences, and behavior, in particular the presence or absence of structured physical activity and exercise or one could say a sedentary lifestyle which is associated with a decrease in muscle function and cardiorespiratory fitness. Resulting in impaired capacity to carry out daily activities related to maintaining independent functions. However, with adequate exercise or physical activity, changes in muscle and aerobic capacity with age will decrease significantly. Then, structured exercise and overall physical activity have an important role as a strategy for preventing many chronic diseases, cardiovascular disease, stroke, diabetes, obesity, and osteoporosis, increasing mobility, quality of life, and mental health.<sup>(9)</sup> Menopause marks the culmination of female ovarian function, signifying

the loss of reproductive capacity due to the complete exhaustion of ovarian reserves, leading to a finite follicle supply. The transition to menopause involves a decline in the ovarian follicle pool, marked by hormonal fluctuations and alterations in menstrual cycles.<sup>(10)</sup>

It has been observed that women have a higher risk of falling, this risk may also increase after menopause. Balance in women is influenced by menopause. The vestibular system produces reflexes such as maintaining the visual axis and keeping the head and body aligned. The vestibular sensory organ is located in the petrous part of the temporal bone, the cochlear septum. The vestibular system may be influenced by hormonal changes that occur during menopause because they can directly influence enzyme cycles and neurotransmitter function which can disrupt the homeostasis of the vestibular system's labyrinthine fluid.<sup>(11)</sup>

### Balance

Balance is the ability to maintain the line of gravity that supports body weight. Several factors can affect balance such as age, musculoskeletal disorders, gender, sensory disorders, cognitive function, and muscle tone. Decreased balance ability can limit the daily activities a person can do and increase the risk of falls. As women age, their postural balance also worsens due to a decrease in functional capacity and decreased movement. Estrogen has been shown to increase blood flow to the brain, then act as an anti-inflammatory, increase synaptic activity in nerves, and show direct neuroprotective and neurotropic effects on brain tissue. Estrogen itself also has a positive effect on muscle strength by improving muscle quality quantitatively. The loss of estrogen during menopause is thought to affect postural stability and balance.<sup>(12)</sup>

Balance issues and falls represent prevalent and serious health concerns among the elderly. The vestibular system plays a crucial role in balance and walking abilities, with compelling epidemiological data indicating that vestibular disorders significantly contribute to imbalance and falls in older individuals.<sup>(13)</sup>

Maintaining balance or posture is a multifaceted process shaped by the interplay of specific postural objectives, an individual's physiological capabilities, and the surrounding environment. Various postural tasks are regulated by distinct networks within the central and peripheral nervous systems and can be classified into three categories: 1) Maintaining static posture, like sitting, standing, and walking, 2) Reacting to sudden external disturbances to posture, and 3) Taking proactive measures for postural stability. The brain's integration of diverse sensorimotor signals is crucial for effective balance control.<sup>(13)</sup>

Balance is essential for individuals to uphold body posture, execute voluntary movements, and respond to external disruptions. Maintaining balance requires individuals to stay within a base of support, which is determined by their biomechanical characteristics. [30]. Balance disorders often occur in older adults or those who have entered old age, and can cause substantial morbidity by increasing the risk of falls. Most individuals who never exercise often experience the risk of falling due to balance problems. Balance disorders in elderly people can be roughly divided into vestibular or nonvestibular causes.<sup>(14)</sup>

The vestibular system, situated within the inner ear, plays a vital role in survival by detecting head movements and orientation relative to gravity. Serving as the "sixth sense," it relays sensory data to the brain regarding head motion and position. This information is extensively distributed throughout the brain, brainstem, and spinal cord, influencing various physiological and behavioral responses related to head movement and orientation.<sup>(13)</sup>

Vestibular input stimulates spinal vestibular responses crucial for preserving postural stability. Imbalance stemming from vestibular disorders arises from insufficient postural stabilization when the head position or orientation changes, potentially leading to falls.<sup>(13)</sup>

Proprioception has an important role in planning precise and coordinated movements, maintaining balance, and controlling body posture. Proprioception allows stability of body orientation during static and dynamic activities. Decreased proprioception can alter joint biomechanics and neuromuscular control of the extremities, resulting in impaired balance and a higher likelihood of falls. Age-related proprioceptive decline is associated with decreased dynamic responses of muscle spindles and atrophy of axons leading to defects in the processing and input of sensory information.<sup>(15)</sup>

### Exercise

Exercise encompasses any bodily movement involving the skeletal system that elevates energy consumption. It involves structured activities performed with regularity to preserve or enhance various aspects of fitness like balance, flexibility, muscle strength, and cardiovascular endurance.<sup>(16)</sup>

Exercise has a consistent effect in reducing the risk of falls in healthy elderly populations and is done with the correct intensity. Multicomponent group exercise programs can reduce fall rates and fall risk, as can Tai Chi and individually prescribed multicomponent home exercise programs. A new meta-analysis has concluded that exercise can reduce fall rates in community-dwelling older adults by 21 % and shows greater effects than balance-challenging exercise programs lasting more than 3 hours/week. Researchers also show that exercise has a fall-prevention effect in community-dwelling people with Parkinson's disease or cognitive impairment.<sup>(17)</sup>

Increased physical activity levels can significantly decrease both illness and death rates, as well as the

likelihood of falls by 30 % to 50 %. Specifically, leg exercises and balance training are recognized as effective strategies for fall prevention. However, since balance underpins the ability to stand and move, balance training should also play a crucial role in fall prevention. Research shows that older adults with declining balance are at higher risk of falls compared to those with unimpaired postural control.<sup>(2)</sup> Research indicates that engaging in balance and functional exercises can decrease the incidence of falls by 24 % and reduce the number of elderly individuals who fall once or more by 13 %. Additionally, participating in a multi-component exercise regimen, combining balance and functional training with resistance exercises, has been shown to lower the fall rate by 34 % and decrease the number of individuals experiencing one or more falls by 22 % (Javier et.al 2020). Core stability was initially explained as the ability to control the position and movement of the pelvic trunk to allow optimal development, transmission, and control of force and movement in the limbs in an activity.<sup>(18)</sup> Core stability is very important for almost all movements, particularly crucial during challenges like uneven surfaces or sudden disruptions, the core muscles centered around the lumbopelvic-hip region play a key role in preserving vertebral column balance by minimizing postural shifts following unexpected disturbances. This demands rapid central nervous system activation to ensure optimal muscle engagement for both stability and mobility. These core muscles are essential for generating force in the lower limbs and effectively managing body movements.<sup>(19)</sup>

Strong core stability provides support in a challenging, training concept that improves sports performance. Enhanced core stability is thought to enhance performance by dynamically controlling the forces exerted by both the upper and lower extremities, thereby enhancing biomechanical efficiency.<sup>(20)</sup>

Sitting balance exercises are employed for evaluating postural control, while electromyography and kinematics are utilized to gauge neuromuscular control when the trunk faces sudden disturbances. Additionally, interactive tasks involving trunk repositioning are utilized to examine the relationship between postural control, trunk neuromuscular control, and trunk proprioception during training sessions, highlighting their diverse applications.

Evidence shows that poor core stability can alter the kinetic chain activity involved in athletic movements by placing additional stress on the knee joint, making it susceptible to injury.<sup>(21)</sup> The core has an important role in providing local strength and balance and is the center of all kinetic chains in daily activities. Core stability is defined as the ability to control the position and movement of the trunk over the pelvis and legs, allowing for optimal production, transfer, and control of force and movement to the terminal segments in an integrated kinetic chain of activity.<sup>(22)</sup>

### *Wuqinxi Qigong*

Wuqinxi, created by Hua Tuo, a traditional Chinese medicine practitioner, imitates the movements of five animals: tigers, monkeys, cranes, bears, and deer. Within its diverse movements, numerous positions can offer advantages for the knee joint. Beyond its physical aspects, Wuqinxi encompasses various philosophical concepts from Chinese medicine, such as “Qi,” in addition to its therapeutic practice.<sup>(23)</sup> Qigong is a mind skill that combines the three adjustments of body, breath, and mind into one. Qi denotes the vital life energy that flows in the energy channels (meridian system) of the body, and Gong means practice or skill. The characteristic of Qigong is that it is self-directed, and the basic components of Qigong are self-relaxation, meditation, regulation of breathing rhythm, body posture, and gentle movements.<sup>(8)</sup> Qigong is a mind and body training skill that can regulate the body, breath, and mind. Qigong regulates the body through adjustments to movement and posture. The body setting is aimed at relaxation, so the movements are usually soft and smooth.<sup>(24)</sup>

Various movements within Wuqinxi offer advantages for the knee joint, like redistributing knee weight in a semi-squat stance during tiger and deer postures, along with dynamic knee flexion and extension on one leg. Beyond physical activity, Wuqinxi incorporates diverse Chinese medical philosophies like Qi, distinct from other common functional exercises. According to traditional Chinese medicine, Wuqinxi aids in rebalancing the body’s yin and yang by employing specific breathing techniques alongside intentional movements. Wuqinxi qigong particularly underscores the utilization of Qi while enhancing physical conditioning through movement and breath control.<sup>(23)</sup>

### *Berg Balance Scale*

The Berg Balance Scale was originally developed as a balanced assessment to objectively evaluate a person’s ability to control their balance while carrying out functional tasks. Apart from that, the Berg Balance Scale is often used in clinical practice to predict the risk of falls in the elderly, one of which is the Berg Balance Scale (BBS) where the instruments in it evaluate different tasks from postural conditions.<sup>[25]</sup> The Berg Balance Scale assesses common daily activities such as sitting, standing, turning the body, and reaching forward. The use of BBS itself has 14 activity items which are included in the assessment items to predict whether there is a risk of falling or not.<sup>(26)</sup>

On the Berg Balance Scale, each item is scored on an ordinal scale ranging from 0 (unable to do things) to 4

(normal or able to carry out activities independently). Mean BBS scores for older adults indicated an effect on the scale. A score of 0-20 refers to patients who have limitations such as using a wheelchair, a score of 21-40 refers to assistive devices when walking or requiring assistance from other people, then a score of 41-56 falls into the independent category.<sup>(27)</sup>

Assessment is based on the individual's ability to perform each task independently or meet requirements. Elderly people aged around 70 years without any influencing health conditions show the effect or results of the BBS score close to the maximum value, namely 56. Therefore, the BBS score shows several varied results which can be influenced by the sample size and research characteristics.<sup>(27)</sup>

## **METHOD**

This research method uses a quasi-experimental type of research with a one-group pretest-posttest research design, with a sample size of 24 menopausal women, who were given wuqinxi qigong training for 5 weeks. Meetings in the first and second weeks were held 3 times per week, and in weeks 3 to 5, there were 4 meetings per week. Data Retrieval and Collection Procedures Data collection and collection in this research will be carried out using experimental techniques. The steps for collecting this data are carried out in 2 stages, namely:

1. Preparatory stage
  - a. Researcher preparation
    - 1) The researcher prepares and prepares the research design
    - 2) Researchers prepare permits related to research that will be submitted to the Faculty of Medicine, Airlangga University
    - 3) Researchers prepare regarding ethical feasibility
    - 4) Researchers prepare related permits at the research site
    - 5) The researcher prepares the research location that has been arranged and the time related to conducting the research
    - 6) Researchers prepare the necessary tools and materials that will support research
    - 7) The researcher is in good health
    - 8) Researchers provide explanations to potential respondents regarding the research and interventions that will be provided
    - 9) Researchers prepare informed consent and ask for consent from research respondents
  - b. Researchers prepare for the need to maintain health protocols
    - 1) Research respondents first fill out informed consent which will be used as proof of availability to take part in the research
    - 2) Research respondents wore comfortable clothes
    - 3) Research respondents are not sick
2. Implementation stage
  - a. Pre-test (initial measurement)
    - 1) The researcher explains the measurements or examinations that will be carried out
    - 2) Initial measurements in the form of checking dynamic balance using the Berg Balance Scale (BBS)
    - 3) Respondents are positioned for initial measurements to be taken
    - 4) The measurement results obtained are then input or recorded as pre-test results
  - b. Providing intervention
    - 1) At the initial meeting, after the respondent carried out a pre-test, it was continued with providing intervention in the form of the wu qin xi qigong exercise which was carried out actively by the respondent
    - 2) Respondents are positioned to carry out the intervention that will be provided
    - 3) The intervention is given according to the determined dose, namely with an intensity of 3-4 times/week for 17 meetings with a break of 1 day per meeting
    - 4) At the next meeting, research respondents will immediately intervene as in the initial meeting, namely by doing wuqinxi qigong exercise movements
  - c. Post-test (final measurement)
    - 1) When entering the final meeting providing the intervention, the respondent will again have their dynamic balance measured using a Berg balance scale by the researcher.
    - 2) Respondents are positioned ready to carry out the post-test
    - 3) The measurement results that have been obtained are then inputted as the results of the post-test

## **Data Processing Techniques**

- 1) Data Normality Test The data normality test is a test used to determine the probability value (p) which will show the significance of data. This research uses the Shapiro-Wilk test with a p-value (sig) <

0,05, so it can be concluded that the data is not normally distributed or there are significant differences between the groups analyzed. The normality test uses Shapiro-Wilk because the research sample is <50 which is one of the classic tests besides the t-test. <sup>(28)</sup>

2) Test the Difference The difference test was carried out using the Wilcoxon test for data that was not normally distributed. This test was carried out to determine the significance of the difference in values. The significance value is 0,05, so in this study, the results of the data distribution have a p-value smaller than 0,05 ( $p < 0,05$ ) so it can be concluded that there is a significant difference. <sup>(29)</sup>

## RESULTS

### Characteristics of Research Subjects

The characteristics of the subjects in the study were obtained using descriptive statistical analysis which aims to obtain an overview of the research sample according to the criteria controlled in the Wuqinxi Qigong exercise group. Below is a descriptive analysis of the sample criteria according to the controlled variables. The age groups used as respondents in this study were 16 elderly women aged 55 to 65 years, and 8 elderly women aged 67 to 75 years, with a total of 24 respondents.

Age	Frequency	Percentage
55-66 years	16	66,7
67-75 years	8	33,3
Amount	24	100,0

Source: Primary Data, 2023

BBS Test	n	Mean $\pm$ SD	Nilai p Wilcoxon Test Significance
Pre	24	18,79 $\pm$ 4,33	,000
Post	24	42,58 $\pm$ 11,48	

Source: Primary Data, 2023

### Frequency

Category	Frequency	
	Pretest (%)	Posttest (%)
Elderly		
0-20 = <i>restricted</i>	6 (25,0 %)	0
21-40 = <i>assistance</i>	18 (75,0 %)	7 (29,2 %)
41-56 = <i>independence</i>	0	17 (70,8 %)
Total	24 (100 %)	24 (100 %)

Source: Primary Data, 2023

The results of the Berg Balance Scale values before and after the intervention were given as shown in table 3 above. The restricted category (limited) before the intervention was given was 6 people and became 0 people after the intervention was given, the assisted category was 18 people before the intervention was given and became 11 people after the intervention was given, then the independence category saw a significant increase significant after being given the intervention, namely 17 people.

## DISCUSSION

As individuals age, there's often a noticeable decline in balance. This decline can manifest at a younger age as the complexity of tasks increases due to diminished sensory feedback. Among elderly women, there's a notable acceleration in instability, particularly after reaching the age of 60, observed when standing upright with closed eyes or in a bilateral stance. Generally, there's an early onset of reduced postural stability as balance challenges escalate, with a continual decline in balance observed with each passing decade of life. Consequently, a decline in postural stability is evident when standing on one leg with eyes open by the sixth

decade of life.<sup>(30)</sup>

Older adults often tend to activate opposing muscles more frequently than their younger counterparts when attempting to sustain balance. Additionally, older adults demonstrate a notable reduction in their ability to perceive the position of their feet compared to younger adults, likely stemming from diminished sensory perception in the toes and heels. Age-related declines in vestibular function are also evident, with a significant decrease typically observed after the age of 65.

Numerous studies have explored the various factors influencing balance maintenance in older individuals. Past research has revealed that diminishing visual or limb proprioceptive input can impair balance in aging populations. Alongside sensory input, diminished muscle strength also contributes to balance disturbances among the elderly. Notably, for each kilogram increase in lower extremity muscle strength, the risk of balance loss decreases by 20 %.

The central nervous system is responsible for regulating balance by integrating sensory information from the peripheral nervous system, including receptors and nerves, along with motor commands to the musculoskeletal system. Brainstem nuclei, in conjunction with the basal ganglia, cerebellum, and other subcortical structures like the thalamus, play a vital role in processing sensory signals from the somatosensory, visual, and vestibular systems. These structures continually synthesize a comprehensive understanding of body movement, acceleration, and positioning.<sup>(31)</sup>

This beneficial movement is similar to the heel lift exercise, namely increasing ankle strength and strength in the ankle plantar flexors which can significantly affect balance and functional health. This can explain why doing Qigong exercises can achieve better balance.<sup>(32)</sup>

Doing Qigong exercises can also improve the ability to utilize somatosensory and proprioceptive input, which can provide the body with information about the environment. In Qigong exercises that use the basic standing position with the knees slightly bent which has the function or effect of increasing the strength of the lower leg muscles so that it can produce good balance when standing or walking, there is a reciprocal relationship between mobility in the spine, sagittal shape spine and balance disorders caused by a shift in the center of gravity. Increased flexibility that occurs in the thoracolumbar spine area and body posture will increase spinal mobility which can improve balance.<sup>(32)</sup>

In this study, the Berg Balance Scale score before the intervention was given, and after the intervention was given, the case group had a high score. This shows that Wuqinxi Qigong can improve function in the elderly as measured using the Berg Balance Scale. The increase in the Berg Balance Scale score after the Wuqinxi Qigong intervention was caused by several underlying mechanisms. Balance training is done by strengthening weak muscles, improving stiff joints, and training muscle coordination. In this way, elderly people can control themselves against the risk of falling.

Research suggests that engaging in balance and functional exercises can decrease the incidence of falls by 24 % and reduce the number of elderly individuals experiencing one or more falls by 13 %. The neuromuscular systems and sensory systems (including vestibular, visual, and somatosensory), as well as cognitive systems such as the cerebellum, cortex, hippocampus, prefrontal, and parietal regions, play significant roles in maintaining balance. However, with aging, these systems deteriorate, consequently heightening the risk of falls.<sup>(16)</sup>

Wuqinxi qigong practice will emphasize dynamic postural control and gradual shifts in body weight with lateral-medial and anterior-posterior movements, as well as coordinated eye and hand movements. During the initial 2 weeks, training emphasized learning and practicing several movements through several repetitions, the exercises in each session concentrated on the lower and upper limbs, rotation, as well as back and forth and sideways movements. Most of the wuqinxi qigong movements involve the lower extremities which contribute to improving stride and knee extension when walking.<sup>(33)</sup>

Wuqinxi qigong is an exercise that involves slow, simple, and easy movements. Wuqinxi qigong exercise, which is carried out with a warm-up duration of 5-10 minutes, 45 minutes of core movements, and a cool-down of 5 minutes per session, is an exercise with low to moderate intensity and is very safe. Wuqinxi qigong exercise can improve static and dynamic balance, and cardiovascular function in elderly people.<sup>(34)</sup> Several reasons may explain the possible beneficial effects of Qigong in this study. Muscle tension caused by uncoordinated alternative and antagonist muscle contractions affected a series of motor symptoms in the sample. Qigong movements include physical coordination, weight shifting as well as breathing and relaxation exercises throughout the Qigong practice process.

Training based on Qigong over a long period can improve the connection between mind and body, and increase the synergistic contraction of active muscles and antagonist muscles, the changes that occur and the continuous motor stimulation that occurs during Qigong exercises can activate more muscle activity which contributes to improved motor function.<sup>(35)</sup>

The limitations of this research are (1) There is no control group as a comparison in this research, so it can cause bias in the research results, (2) It only uses elderly women as subjects, (3) The characteristics used are only age and do not use measurement characteristics. BMI, nutritional monitoring.

## CONCLUSIONS

The study conducted on the impact of Wuqinxi Qigong training on dynamic balance in menopausal women yielded significant results. The participants, after undergoing the 5-week Qigong training, showed a remarkable improvement in their Berg Balance Scale (BBS) scores. The mean BBS score increased from 18,79 before the intervention to 42,58 after the intervention, indicating a substantial enhancement in balance.

The findings suggest that regular practice of Wuqinxi Qigong exercises can effectively enhance balance in menopausal women. This improvement is crucial as balance issues often escalate with age, leading to increased instability and risk of falls, especially in women post-menopause. By addressing balance deficits through targeted interventions like Qigong, women can potentially mitigate the age-related decline in postural stability and reduce the risk of falls and related injuries.

Furthermore, the study highlights the importance of structured physical activity and exercise in promoting overall health and well-being in menopausal women. Engaging in regular exercise not only improves balance but also contributes to maintaining muscle function, cardiorespiratory fitness, and independence in daily activities. Therefore, incorporating Qigong or similar exercises tailored to the needs of menopausal women can be a valuable strategy for enhancing their physical and mental health during this life stage.

The suggestions proposed are:

- 1) The addition of BMI characteristics in this study is necessary to obtain various points of view that influence balance and intervention delivery because in this study there was no BMI measurement
- 2) The research time can be added longer to get significant results
- 3) Modify the exercises given to create and find out what exercises are good for correcting balance disorders, especially in the elderly.

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