



# Tai chi and Qigong as a form of physical activity of people of all ages in the context of modern physiotherapy

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## Abstract

Tai Chi and Qigong are forms of movement derived from Traditional Chinese Medicine (TCM), gaining more and more popularity around the world. Qigong is the oldest branch of TCM, whose oldest forms are over 5000 years old, dating back to the legendary Yellow Emperor. Tai Chi is a new form which approximately dates back to 13th century. Qigong is a system of breathing exercises, body postures and movements, alongside with mental concentration, intended to maintain good health and control the flow of vital energy. Tai Chi is an ancient discipline of meditative movements practiced as a system of exercises. Tai Chi and Qigong exercises consist in performing slow, coordinated movements, controlling the position of the body in space, learning how to gradually move the weight from leg to leg. They focus on attention, movement, relaxation of the body and silence of the mind. Tai Chi and Qigong have invaluable health benefits and strengthen the body, both physically and mentally. The results of the study confirm the beneficial effects of Tai Chi and Qigong exercises in patients with neurological disorders, imbalance, lowered bone density, weakened muscular strength, increased risk of falls, diseases of the cardiopulmonary system, cervical and lumbar spine pain, depression, anxiety, stress and many more.

**Keywords:** Tai Chi, Qigong, physical activity

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## **INTRODUCTION**

Tai Chi and Qigong are forms of movement derived from Traditional Chinese Medicine (TCM), performed for preservation of health [1,2]. Today they are gaining popularity all over the world, also in Poland. Tai Chi and Qigong are most often practiced by the elderly due to their mild form and moderate intensity [3].

These forms of exercise, even though they are derived from martial arts [4], are characterized by the distinctive combination of movement sequences with breathing techniques, relaxation of the body, and concentration on exercises. They are often called "meditation in motion" [5]. The increasing popularity of Tai Chi and Qigong, and the positive effects they have on the physical and mental health, have attracted the attention of researchers to these forms of movement. The results of many experimental studies conducted over the past twenty years largely confirm the beneficial effects of Tai Chi and Qigong on the body of people who practice this art, regardless of their age or health status [6-9].

Tai Chi and Qigong exercises, due to their comprehensive nature [1], can be widely used in modern physiotherapy programs and in the prevention of many diseases. However, due to the limited knowledge of this form of movement among physiotherapists and doctors, it is essential to popularize it. It is important to note that Tai Chi and Qigong exercises are an integral part of rehabilitation programs not only in many hospitals in China, but also in Germany, where the health insurance funds take over part of the cost of teaching this form of exercise [10].

## **TAI CHI AND QIGONG DEFINITION**

Qigong is a system of exercises that aims to regulate the flow of vital energy (Qi) in meridians (paths of energy flow). Literally, this term means training that requires a long time and a great effort to maintain or strengthen Qi [11,12]. It is worth noting that the above universal translation of the term Qi does not convey the full understanding of this concept in the tradition of the Far East, where the term also means "breath", "life breath", "cosmic energy" [11,12].

In TCM there are two types of Qigong: active and passive. In the first case, visible movements are the same - as in Tai Chi. In the passive Qigong, the body remains stationary, but consciousness and Qi are directed to individual areas of the body. According to traditional transmission, Qi energy is driven by breathing that plays a key role in these exercises [13,14]. Both forms of Qigong and their modifications serve to prolong life and improve its quality by treating and preventing various illnesses that originate in the Chinese tradition out of disrupting the circulation of Qi in the meridians. The Qigong's goal is to remove these disturbances by relaxing the mind, body and calm the emotions [12,15], for this reason Qigong is also called gymnastic meditation.

Tai Chi is a body and mind exercise derived from Chinese martial arts, originally intended to teach effective defense against the attacker by applying soft movements that dissipate the attack's energy [16]. Tai Chi (also Taiji or T'ai Chi) is translated as "the highest peak" [16].

Tai Chi and its main principles are firmly rooted in Taoist philosophy and the concept of two primitive, opposing and complementary forces of Yin and Yang. By continually transforming these two elements, they remain in a dynamic balance.

Tai Chi training exercises are performed to prepare the practitioners for the fight by teaching smooth, soft movements, carried out with the least amount of energy, with the greatest possible effect. Many Tai Chi masters stress that in everyday practice the most important thing is to learn the so-called "energy leading" and relaxation of the body during the exercise. Training in the use of particular techniques during combat should not take much time, even though "(...) develops the ability to sense and understand the partner's strength, intentions, and balance" [17].

By closely associating Tai Chi exercises with the spiritual sphere, which is characteristic of the Far East gyms, this technique is called "meditation in motion" and next to Yoga and the Pilates method, it is classified as "body-mind exercises" [18,19]. Performing slow, controlled, complex movements, similar to functional movements, combined with conscious breathing, tranquility of mind and

normalization of muscle tone provides the basis for incorporating this form of movement into comprehensive physiotherapy and physioprophyllaxis programs.

## HISTORY OF TAI CHI AND QIGONG

Qigong is generally considered to be the oldest branch of TCM, the oldest of which (among hundreds of known today) counts more than 5000 years [1], dating back to the legendary Yellow Emperor (2690-2590 BC).

In the history of Chinese Qigong there are four periods:

1. The period before the Han dynasty (before 206 BC). There are two types of training: healing and health. The whole exercise was rather passive than active.
2. The period between the Han dynasty and the beginning of the Liang Dynasty (206 BC-502 AD). It was dominated by three Qigong religious schools that exerted a strong influence on training and stimulated its spiritual development. All were secret and taught in monasteries. The purpose of the exercises was to achieve enlightenment. The Qigong system was more effective in comparison with the earlier, as the principles of Qi energy circulation in the body were better understood.
3. The period from the Liang dynasty to the end of the Qing dynasty (502-1911). Qigong was adapted to martial arts and the Qigong style of combat appeared. The peak of their development was achieved by the Qi circulation theory and acupuncture technique. More papers on medical Qigong were published. An increase in popularity of exercisr took place in the Chinese sojety.
4. The period from the later Qing dynasty until today. It's not just an era of reconstruction and synthesis, but also a new era for Qigong exercises. During this period, secret documents on Qigong teaching were published, and many Qigong styles developed. Contemporary mass media provide many opportunities to learn and practice Qigong exercises for a wide variety of people of all ages [20].

Compared to Qigong exercises, Tai Chi is a new form, which dates back approximately to the 13th century. According to the legend, at the beginning of 6th century AD a buddhist monk Bodhidharma invented a Qigong-based fighting technique for the monks of Shaolin monastery to effectively defend against temple attacks and improve their physical fitness. Then, for the first time, the internal Qi was used for fight.

The main semi-mythical character in Tai Chi's history was Chang San-Feng, probably living in the 13th century AD. He was a Shaolin monk, who, on the basis of the observation of nature and Taoist principles, created new rules of struggle. According to the legend, he experienced an illumination after watching the snake fight with the crane. Whenever the crane tried to attack the snake, the snake avoided the blow and hit the crane with its tail. This incident resulted in the basic concept of Tai Chi such as evasion, submissiveness and attack. According to these assumptions, the traditional exercises were refined and modified to form a fluid-based, harmonized, rotating, health-mediated movement in Tai Chi, as a form of meditation, as well as a method of self-defense.

General Chen Wang-Ting (1580-1660), who re-merged the fight techniques with meditating and health Qigong exercises, was particularly important for the development of Tai Chi. Next Chen masters introduced modifications or created new styles. Yang Luchan (1799-1872) played a particularly important role in popularizing this form of movement outside China. His style of Yang is currently the most popular in Europe and the United States. In this version of Tai Chi the exercises are less tiring and less associated with martial arts.

Since the mid-twentieth century, Tai Chi has also been passed on to non-Chen students. Today, we have a variety of Tai Chi styles including Yang, Wu, Hao Sun, but they share a common root style of Chen. Today, Tai Chi is becoming increasingly popular around the world. It is an art that is constantly developing, and the characteristic form of movement - slow tempo, fluidity, harmony and balance - allows to adapt these exercises to the diverse needs and abilities of those exercising [21].

## **TAI CHI AND QIGONG PRINCIPLES**

The main principle of Tai Chi and Qigong exercises is slow, coordinated and smooth leading movement. During Tai Chi and Qigong exercises, the body should be straight but relaxed to prevent unnecessary muscle tension. The head should be slightly raised, which keeps the whole body relaxed. Sight should follow the intention of movement, but be ahead of the movement. During exercise, attention is paid to the relaxation of the whole body: facial muscles, shoulder and upper limb muscles, hip muscles and lower limbs. Shoulders should be lowered, which is achieved by gradual loosening of the shoulder muscles and learning to use the body in movement. The elbows should be lowered and slightly bent and pointing inwards, so that the elbow line forms one line with the knee line. The wrists can be set at an angle and straight. The entire upper limb should form one line. Hip and knee joints should be slightly flexed to allow for smooth and firm work of the legs. In Tai Chi and Qigong, every step and movement of the hand is carried out from the hips (the movement starts at the hips). Hips are set in different positions. Their turn depends on the intent and type of movement. The knee should be comfortable. The knee should not exceed the leg line. The knee should be held in the toes of the legs, which provides a natural setting for the foot. Proper knee alignment with the body leads to the opening of the knee joint, thereby reducing the tension and load. Feet should be evenly distributed, adhering to the ground with 9 points (5 fingers, Jongquan point in the middle of the foot, heel and two points at the edge), so that the foot gives the practitioner a sense of stability and rooting. The weight distribution of the entire foot is a condition for feeling the load in the leg. Maintaining the body posture described above during exercise is one of the most difficult parts for people learning Tai Chi and Qigong.

Every movement of the trunk and limbs should be carried out from the so-called Energy Centre (Dan Tien), which is located inside the body slightly below the navel. According to the Taoist philosophy, during the tranquil inhalation performed during Tai Chi exercises, the vital energy of Qi is directed from the limbs to Dan Tien, and the exhaust leads the energy from Dan Tien to the limbs. Natural breathing while practicing Tai Chi and Qigong regulates the circulation of Qi being a condition for maintaining health.

When performing forms, steps are taken in different directions: forward, backward, and oblique steps. Steps forward are made from the heel, placing the foot first on the ground, then smoothly transferring weight to it. The steps backward start from toes. The slow pace of movement allows you to feel the position of your body and maintain your balance. Properly distributed weight (usually in the proportion of 30% -70%) provides not only stability but also allows for a smooth transfer of body weight from one leg to the other. This is an excellent strength training for the muscles of the legs and the skeletal system. Continuous, relaxed and repetitive movements in a full physiological range cause dynamic stretching, which in turn increases the flexibility of the body.

An extremely important principle of Tai Chi and Qigong exercises is the fluidity of movements at different speeds and directions requiring good coordination of the whole body. Synchronization of motion requires concentration and attention during exercises. An important element of exercise is also the economics of movement, which could be achieved through systematic and regular practice [22].

## **APPLICATION OF TAI CHI AND QIGONG IN HEALTH CARE AND PSYCHOPHYSICAL IMPROVEMENT**

In Traditional Chinese Medicine (TCM) Qigong exercises are considered as one of the basic components of the treatment of illnesses whose cause is seen in Qi's circulatory disorders. The Tai Chi exercises originally had a combat aspect, but their beneficial preventive effects on psychophysical fitness were soon recognized. Current high interest in this form of movement around the world and its growing popularity mainly among the elderly tend to define the influence of Tai Chi and Qigong on the body of the practitioners.

Long-term negative stimuli affect the human body every day, causing a number of adverse changes which can cause serious dysfunctions in the circulation, respiratory system, nervous system,

immune system and others. In the light of current research, it is believed that both Tai Chi and Qigong exercises can slow down this process by affecting the physical, mental, emotional and social spheres.

According to TCM, through circular movements of gaps and arms, performed smoothly and continuously, Qigong and Tai Chi have a positive effect on increasing lung capacity and immune function. Concentration associated with performing forms improves mental stability, calm and regular breathing during exercise regulates metabolism, digestion and blood pressure. Movements in the wrists normalize the tension of the nerves and blood vessels in this area. Slow and smooth turns of the trunk increase the flow of blood through the abdominal and pelvic organs regulating their function, gently mobilizing the spine and simultaneously strengthening and stretching its structures [23].

The health effects of Tai Chi and Qigong exercises are perceived and increasingly appreciated by western medicine, including the forms of movement in various rehabilitation programs, where they are an important complement to traditional healing and rehabilitation methods.

Due to the slow nature of their movement in Tai Chi and Qigong, control of body positioning in space and the gradual shift of body weight, can be particularly useful for those who need to improve their sense of balance. to prevent falls [1,2,24].

Tai Chi in its basic form is performed in high positions, therefore it is a very effective workout for the spine and lower limbs. Dynamic axial load plays an important role in maintaining adequate bone density and in the prevention of osteopenia and osteoporosis [25]

Tai Chi exercises are composed of a dozen or more movements (depending on the style), so their performance time is very different. Movements in all forms are performed physiologically, and longer forms additionally increase the strength and endurance of muscles, especially postural muscles [26].

Tai Chi is aerobic training of moderate intensity [27]. This is a safe form of movement as there are no negative side effects. With its variety and possibilities of modifying the intensity of exercises, it enables to adapt to individual of practitioners, regardless of their age and psychophysical fitness. Regular exercise as a type of physical activity brings significant health benefits to older people [28], for example, improved exercise capacity in patients with chronic cardiovascular disease [6], heart failure [29], reduced gaseous efficacy [30], also among asthmatics [31] and patients with chronic obstructive pulmonary disease [7].

The results of many studies indicate a particularly beneficial effect of this form of movement on people suffering from locomotor disorders, particularly degenerative changes [9], osteoporosis [25] and rheumatic diseases [8].

Control of the placement of individual body parts in space and movement during practising Tai Chi and Qigong develop sensory awareness and contribute to the improvement of balance, as pointed out by Fong et al. [32].

More and more scientific studies confirm the positive effects of Tai Chi and Qigong exercises in reducing pain and improving quality of life as the ability to consciously relax and calm the body, while exercising has a toning effect on the nervous system. Clinical studies have shown that massage of the internal organs of the respiratory tract induced by breathing (primarily by diaphragmatic movements) reduce pain and improve the functioning of patients with spinal low back pain [33].

It is important for both prevention and rehabilitation to exercise Tai Chi and Qigong together, in bigger groups (friends, peers, patients with similar diseases, etc.), in particular for people with cardiac, oncological, depressive or anxiety disorders. Social support and interactions with others are a particularly important part of complex therapeutic treatment because they alleviate the course of the disease and shorten the recovery period [34].

The practice of Tai Chi also has a positive impact on the assessment of one's functional capabilities. Memorization and correct performance of complex movement sequences, which for many practitioners, especially the elderly, is a success, improves their mood and allows them to believe in their own strength [35]. People who practice Tai Chi regularly do better in cognitive tests [36].

## SUMMARY

Over the past twenty years, exercises from the Far East have become a popular form of physical activity around the world. In the United States alone, three million Americans practice Tai Chi

for health purposes [37]. This growing interest in the exercise of Tai Chi and Qigong among people of all ages also translates into an increased number of scientific publications on the effects of these forms of movement to maintain or improve the health of people practicing regularly. The results of many studies indicate a beneficial effect of Tai Chi exercises on the improvement of balance [4], cardiovascular [38] and immune functions [39], general mood [40], sleep quality [41]. Results of those studies corresponds with benefits, that comes with practice of other chosen combat sport and martial arts [42-47]. This evidence suggests that Tai Chi and Qigong occupy a special place in the modern world, not only in terms of physiotherapy, but also in the wider preventive healthcare.

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