Tai Chi, Qigong, and the Treatment of Hypertension

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ABSTRACT

Qigong and tai chi are both considered tools in the toolbox of traditional Chinese medicine (TCM). Qigong has been in existence for thousands of years, whereas tai chi is of a more recent origin. Both are considered low-impact exercises that have numerous health benefits. The present article reviews some studies on the treatment of hypertension and high blood pressure using one or both of these tools of TCM. Numerous studies have found that tai chi and qigong exercises can have a significant positive impact on blood pressure, nitric oxide and endothelin-1 levels.

Keywords: Qigong; Chi Gong; Tai Chi; Taiji; Taijiquan; Traditional Chinese Medicine; TCM; Hypertension; Blood Pressure; Nitric Oxide; Endothelin-1

Introduction

Tai chi, also referred to as taiji or taijiquan, is considered both a martial art and a kind of low-impact exercise. Its origins are unclear, but it apparently dates back at least to the thirteenth century. The oldest style is the Chen style, which originated in the Chen village in China [1,2]. The second oldest style, and also the most popular style, practiced by more people than any other style, is the Yang style [3]. The other main styles are the Wu and Wu Hao styles [4], and the Sun style [5], which is the youngest of the five main styles. The various styles of tai chi have much in common, although there are some differences, which we need not discuss in this article. One of the main common features of all styles of tai chi is that they generate healing life energy (qi, pronounced chee), which serves to boost the body’s immune system and prevent the onset of illness and disease. Qi energy also has a beneficial effect on treating existing illness. Many articles and books have been written about the health benefits of tai chi [6-7], so we need not go into the details here. Suffice it to say that many medical studies have found that the regular practice of tai chi can lead to many health benefits, including the treatment of existing diseases and illnesses.

Qigong has been around a lot longer than tai chi, perhaps thousands of years [8]. Many books and articles have been written about this traditional Chinese medicine tool as well [9-74]. It is also a set of gentle exercises that generate qi, which has beneficial healing effects for a wide variety of ailments, including, but not limited to ankylosing spondylitis [75-76], anxiety and stress reduction [77-82], arthritis [83-89], autism [90], back pain [91-92], cancer [93-115], cognitive impairment [116-119], COPD [120-121], COVID-19 [122-123], depression [124-134], elder care [135-138], fibromyalgia [139-141], longevity [142-144], Parkinson’s Disease [145-146], and traumatic brain injury [147], to name a few. The present article focuses on the beneficial effects of tai chi and qigong exercises on hypertension and blood pressure. It reviews a few studies that have found beneficial effects and cites a number of other studies for further reading and research.

Methodology

The PubMed.gov database [148] was searched to find studies that had been done to determine the effectiveness of tai chi and qigong exercises on blood pressure and hypertension.

Findings

The findings reported upon in this article are representative of the numerous studies that have been done examining the effects of
tai chi and qigong on blood pressure and hypertension. Additional studies on this topic are cited in the reference section below. Liu et al. [149] conducted a meta-analysis to determine the effectiveness of tai chi and qigong exercises in the treatment of essential hypertension (EH). Specifically, they looked at blood pressure (BP), levels of nitric oxide (NO), and endothelin-1 (ET-1). Exercises were performed from 1.5 to 6 months. Nine randomized controlled tests (RCTs) of 516 EH patients in China found that those who did the exercises were able to reduce both systolic and diastolic blood pressure. The exercises also contributed to higher NO blood levels and lower ET-1 levels. Although the difference in treatment outcomes using tai chi and qigong exercises versus antihypertensive drugs was statistically insignificant, combining the two therapies resulted in significantly better outcomes than what would occur using only tai chi and qigong or drug therapy. Thus, tai chi and qigong exercises were equally effective as drug therapy in the treatment of hypertension, only without the side-effects that may be present with drug therapy. Liu et al. concluded that tai chi and qigong exercises could be an effective complementary and alternative therapy for EH patients.

The tai chi exercises varied by study, and included the Yang-24 form, Yang-8, and Chen-style tai chi. The qigong exercises also varied by study, and included Mawangdui Daoyinshu and Baduanjin, among others. Subgroup analyses were performed for the different types of tai chi and qigong, and some were found to be more effective than others. One subgroup analysis of changes in systolic blood pressure ranked the effectiveness of the various exercises as follows, from most to least effective:

a. Chen-style tai chi  
b. Mawangdui Daoyinshu Qigong  
c. Self-compiled qigong  
d. Yang-style tai chi

An examination of different subgroups found that some tai chi and qigong exercises were more effective than others in lowering diastolic blood pressure. The ranking, from most to least effective, was:

a. Chen-style tai chi  
b. Self-compiled qigong  
c. Mawangdui Daoyinshu Qigong  
d. Yang-style tai chi

Liu et al. concluded that Chen-style tai chi might be most effective in reducing blood pressure, while Yang-style tai chi might be the least effective. The authors also compared the effectiveness of the various tai chi and qigong exercises on improving NO levels. The ranking from most to least effective was:

a. Yang-style tai chi  
b. Baduanjin Qigong  
c. Mawangdui Daoyinshu Qigong

Chen-style tai chi and self-compiled qigong were not statistically significant in improving NO levels. The authors also analyzed subgroup data on the effectiveness of tai chi and qigong in reducing ET-1. The ranking from most to least effective was:

a. Baduanjin Qigong  
b. Yang-style tai chi  
c. Mawangdui Daoyinshu Qigong

Self-compiled qigong was found not to be statistically significant in lowering ET-1 levels. Thus, it appears that Baduanjin and Yang-style tai chi may be more effective than other exercises in improving NO and ET-1 scores.

If one were to interpret the findings of this study, one might conclude that choosing qigong and or tai chi therapy might be superior to drug therapy for the treatment of EH for two reasons. Although the study found that qigong/tai chi therapy and drug therapy are equally effective in treating EH, qigong/tai chi therapy has two distinct advantages over drug therapy: qigong/tai chi therapy has no adverse side-effects, and it does not cost anything. Drug therapy, on the other hand, sometimes has adverse side-effects, and it is not free. The study also found that combining qigong/tai chi therapy with drugs might be superior to choosing just one of the two options.

Pan et al. [150] conducted a systematic review of randomized controlled trials on the effects of tai chi on blood pressure, body mass index (BMI), and quality of life (QOL) on patients suffering from hypertension. Their meta-analysis of 24 studies containing 2,095 patients (1,074 in the treatment group and 1,021 in the control group) found that the intervention group had significantly better outcomes for systolic blood pressure (SBP) \( p \leq 0.001 \), diastolic blood pressure (DBP) \( p \leq 0.001 \), physical functioning \( p \leq 0.001 \), role-physical \( p \leq 0.001 \), general health \( p = 0.001 \), bodily pain \( p = 0.001 \), vitality \( p \leq 0.001 \), social functioning \( p = 0.027 \), role-emotional \( p = 0.003 \), and mental health \( p = 0.001 \) compared to the control group. However, the differences in BMI between the groups were insignificant. Pan et al. concluded that tai chi is an effective therapy to improve SBP and DBP for patients suffering from essential hypertension. Zhou et al. [151] found that the practice of baduanjin was beneficial for quality of life \( p = 0.004 \), sleep quality \( p = 0.001 \), balance \( p = 0.004 \), handgrip strength \( p = 0.007 \), trunk flexibility \( p = 0.006 \), systolic \( p = 0.0004 \) and diastolic \( p = 0.005 \) blood pressure, and resting heart rate \( p = 0.0005 \). They examined the results of various studies on each of these topics. In the case of the effect of baduanjin on blood pressure, they examined 9 studies having a total of 743 participants.
Ladawan et al. [152] investigated the effects of qigong exercise on cognitive function, blood pressure and cardiorespiratory fitness in 12 healthy middle-aged subjects who performed qigong exercises in 60-minute sessions, three times a week for eight weeks. They found that the exercises resulted in significant improvements in Trail Making Tests Part A (p = 0.04), systolic blood pressure (p = 0.0001), diastolic blood pressure (p = 0.005), mean arterial pressure (p < 0.001) and maximal workload (p = 0.032). Twelve weeks after cessation of the exercises, they had all returned to the baseline. The authors concluded that it is necessary to perform qigong regularly to maintain the improved health effects.

Ching et al. [153] examined data on 370 subjects from seven randomized controlled trials (RCTs). The following six types of qigong exercises were used:

- **Conventional Qigong**
- **Guolin Qigong**
- **Shuxinpingxue Gong**
- **Dongeui Qigong**
- **Ba Duan Jin Qigong**
- **Mawangdui Daoyinquan**

They found that the practice of qigong exercises had a significant effect on reducing systolic (p < 0.001) and diastolic (p < 0.001) blood pressure. The above studies are representative of the studies that have been done in recent years on the effectiveness of tai chi and qigong on reducing high blood pressure. Some other recent studies are listed in the reference section at the end of this article [154-188].

**Conflict of Interests**

None.

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