

# Tai Chi, Qigong and the Treatment of Cancer

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## ABSTRACT

Qigong has been a part of traditional Chinese medicine [TCM] for thousands of years. Tai chi is a more recent addition to the TCM toolbox. They have been used to treat a wide variety of illnesses. In recent decades they have also been employed to alleviate or reduce the adverse side-effects of chemotherapy and other western medical treatments for cancer and other diseases. Thousands of medical studies have been conducted to determine the effectiveness of these treatments on a wide range of illnesses. This paper reports on or summarizes dozens of studies where tai chi and/or qigong have been used to reduce or alleviate the adverse side-effects that result from surgery, chemotherapy, and other treatments for cancer. A qigong or tai chi regimen can often reduce fatigue, insomnia, dyspnea, numbness, heartburn, dizziness, psychological distress, cognitive impairment, heart rate variability, recovery time, nausea, pain, discomfort, anxiety and depression, and can increase bone density, self-efficacy, muscular strength, immune function, longevity, ambulatory stability, joint flexibility, and the overall quality of life.

## Introduction

Qigong exercises have been practiced for thousands of years to maintain health [1,2]. Although primarily intended to prevent a wide range of illnesses, they are also used by medical practitioners to alleviate pain, discomfort, and various side-effects that result from the treatment of various diseases and illnesses [3-25]. Entire hospitals in China are devoted to the use of qigong to treat disease. Qigong is a subset of tai chi, which is a Chinese martial art as well as a form of exercise. Both are forms of dynamic meditation and are a part of traditional Chinese medicine (TCM). Helen Liang, a Chinese martial artist and cancer survivor, claims to have cured her lymphoma by doing a set of qigong exercises [26- 28] and has made a DVD that includes 15 recommended qigong exercises aimed at those who currently suffer from cancer [29].

Medical practitioners have used a variety of qigong and tai chi exercises to treat their patients for various ailments. Sometimes, programs are customized, using a cafeteria approach of selecting the most appropriate qigong and tai chi exercises to treat specific ailments, while in other cases, practitioners have chosen a set of existing exercises to treat their patients. The most popular set of exercises recommended by practitioners is probably baduanjin [30-33], which consists of eight exercises that stimulate all the

major meridians. It is one of the qigong sets that is recommended by the Chinese Health Qigong Association [31]. Other qigong sets recommended by the Chinese Health Qigong Association include Liu Zi Jue [34,35], Wu Qin Xi [36-38], Yi Jin Jing [39-41], Da Wu [42], Shi Er Duan Jin [43], Daoyin Yangsheng Gong Shi Er Fa [44], Mawangdui [45] and Taiji Yangsheng Zhang [46]. Several bibliographies exist that list scholarly articles and books on various aspects of qigong and tai chi [21,22]. There is also a bibliography that lists the citations to recent qigong and tai chi studies on cancer [47]. The present paper summarizes the results of some of those studies.

## Methodology

The PubMed.gov database was used to find studies on tai chi, qigong and the prevention and treatment of cancer [48]. The Qigong Institute also has research material on the use of qigong for the treatment of cancer. Their database was used as a secondary source.

## Bone Density

One possible side effect of breast cancer treatment is a deterioration in bone strength and balance performance. Fong, et

al. [49] studied bone mineral density (BMD), balance performance, balance self-efficacy and falls in breast cancer survivors. Their sample consisted of 40 breast cancer survivors who had more than three months of qigong practice, 17 breast cancer survivors who had not done any qigong exercises, and 36 healthy individuals in the control group. All participants were Chinese women from Hong Kong between the ages of 35 and 85 who had an expected survival of more than one year. The qigong exercises used in the study were the 18-form tai chi qigong forms.

Lumbar spine, femoral neck, total hip and total radius (BMD) were measured using dual-energy X-ray absorptiometry scans. The activities-specific balance confidence scale was used to assess balance self-efficacy. Face-to-face interviews were used to determine the number of falls experienced by each participant. Participants were also asked to stand on one leg and were timed to determine balance. No significant differences were found among the three groups for the lumbar spine, femoral neck, total hip and total radius (BMD) tests. However, the breast cancer group that practiced qigong exercises outperformed the breast cancer group that did not perform qigong exercises by 27.3 percent in the one-leg stand test ( $P=0.025$ ) and had better scores in self-efficacy ( $P=0.006$ ). The number of falls experienced by the three groups was about the same. The study concluded that qigong exercises might be used to improve balance performance and balance self-efficacy of breast cancer survivors.

## Breast Cancer

Lee, et al. [50] studied the effect of Chan-Chuang qigong on 67 women in Taipei, Taiwan who were experiencing psychological and symptoms distress who were receiving chemotherapy for breast cancer as outpatients. The experimental group practiced Chan-Chuang qigong for 15 to 60 minutes a day for the first 21 days of chemotherapy treatment, while the control group did not practice qigong at all. The authors described the process as follows:

"The practice of Chan-Chuang qigong follows a sequence of nine steps: (1) stand with feet shoulder-width apart and bend the knees slightly as if holding a volleyball; (2) raise the arms to a height over the breasts but under the shoulders as if holding a tree trunk; (3) palms face inward with fingers apart as if holding a ball; (4) relax the shoulders in the stationary stance; (5) open the eyes half, look straight forward and keep the mind tranquil; (6) breathe naturally; (7) maintain the posture and breathe for 15 minutes; (8) stand straight up slowly, place the hands to the waists gently and rest at the same site for 2-3 minutes and (9) place the right hand on the heart and the left hand on the navel for a moment and stop. In order to prevent any potentially negative influences on appetite and digestion, Chan-Chuang qigong was forbidden 30 minutes before and after a meal. Any sites indoor or outdoor with sunlight and fresh air are suitable for practicing. Patients were asked to practice at least 15 minutes, but no more than 1 hour a time [50]."

The study found significant differences between the control and experimental groups in the areas of pain, numbness, heartburn

and dizziness. The practice of Chan-Chuang qigong improved symptom distress and part of the psychological distress during chemotherapy.

Chen, et al. [51] examined the effects that qigong had on 96 women between the ages of 25 and 64 who were receiving radiotherapy (RT) for breast cancer at a treatment facility in Shanghai, China. The study was conducted in collaboration with faculty from the University of Texas MD Anderson Cancer Center in Houston. Women in the qigong group practiced qigong five days a week for 40 minutes over a 5 or 6-week period while undergoing RT. The classes were conducted by a Chinese physician and qigong master, who also gave them DVDs and written instructions, and encouraged them to practice at home on the two days a week when they did not meet with the qigong master. The kind of qigong practiced was a modified form of qigong that was developed by Guo Lin (called Guo-lin New Qigong), which is also referred to as walking qigong [52-55]. Many online videos explain and show the techniques involved [56-63]. Chen, et al. [51] found that, after one month, participants who practiced the qigong exercises had fewer depressive symptoms, less sleep disturbance and fatigue. Overall quality of life improved.

Fong, et al. [64] measured shoulder mobility, muscular strength, and quality of life for female breast cancer survivors in Hong Kong with and without tai chi qigong training. The authors mentioned that the tai chi qigong exercises they used were the 18 Forms Tai Chi Qigong forms mentioned in Mak [65]. Although there were no significant differences in the physical, social/familial, or emotional well-being subscale scores between the experimental and control groups, the experimental group had higher functional well-being subscale scores ( $p = 0.012$ ) and lower breast cancer specific concern subscale scores ( $p = 0.036$ ) than the control group. The quality-of-life scores were also significantly higher for the experimental group. The study concluded that tai chi qigong training might improve overall shoulder strength and functional well-being of breast cancer survivors.

Ying, et al. [66] Conducted a study of 86 breast cancer survivors using the eight baduanjin exercises. The exercises were done over a six-month period., three days per week in the hospital and four days per week at home. The result was a positive outcome for both physical and psychological health recovery. Numerous other studies also found that the practice of tai chi qigong exercises had a beneficial effect on various aspects of breast cancer patient survival [67-85]. Most of those studies limited their samples to females with breast cancer. However, at least one study focused on the effect of qigong exercises on male breast cancer survivors [86]. That study found somewhat beneficial psychosocial outcomes. However, the sample size was small.

## Cognitive Impairment and Cancer

Campbell, et al. [87] studied the effects of various kinds of exercise, including qigong, on cancer-related cognitive impairment. They studied and synthesized the results of 29 trials. Their conclusion was that more targeted research is needed. Myers, et al. [88] conducted a study evaluating the feasibility of an eight-week qigong intervention to assess cognitive function in breast cancer survivors who were two months to eight years post completion of radiation and chemotherapy. The study found that cognitive function improved the most for the qigong group ( $p=0.01$ ). The conclusion was that mindfulness exercise may be superior to either gentle exercise alone or survivorship support.

Oh, et al. [89] conducted a study on the effect of medical qigong [MQ] on cognitive function, quality of life, and a biomarker of inflammation in cancer patients. Eighty-one cancer patients participated in the study; 37 of them participated in the MQ program for 10 weeks. The MQ group had significant improvement in cognitive function ( $p=0.014$ ), had significantly improved quality of life ( $p<0.001$ ), and had reduced inflammation levels ( $p=0.042$ ) compared to the control group. Other studies have also found that qigong exercises can have a positive effect on cognitive ability [90,91].

## Colorectal Cancer

Lu, et al. [92] examined the effect that baduanjin qigong exercises have on cancer-related fatigue (CRF) on 90 patients having colorectal cancer. After 12 weeks, there were no significant differences between the exercise group and the control group. However, after 24 weeks, the exercise group had significantly better results ( $p < 0.01$ ). The study concluded that baduanjin exercises can relieve CRF, can improve their physical activity level and their sleep quality. Yan, et al. [93] found that qigong has potent cytotoxic effect on HT-29 cells.

## Depression and Cancer

Several studies cited elsewhere in this paper have found that the use of qigong or tai chi has reduced depression in cancer patients. Henshall, et al. [94] found that to be the case for lung cancer patients. Gaik [95] wrote a doctoral thesis examining the effect of Spring Forest Qigong [96] on depression.

## Dyspnea and Cancer

Henshall, Allin and Aveyard [94] examined numerous prior studies and found that an exercise regimen often had a significant effect on reducing dyspnea (shortness of breath).

## Fall Prevention and Cancer

Fong, et al. [49] found that the practice of qigong might be a suitable exercise regimen to improve balance and self-efficacy for breast cancer survivors. Another Fong, et al. [97] study concluded

that the practice of tai chi qigong could improve balance among survivors of nasopharyngeal cancer. De Sousa [98] wrote a master's degree thesis that examined the effects of qigong on the balance of elderly people. Dr. Paul Lam, a Chinese doctor currently practicing in Australia, developed a Sun style tai chi program to help patients improve their balance [99,100].

## Fatigue and Cancer

The practice of tai chi and qigong has been shown to reduce fatigue in a variety of cancer patients. Arring, et al. [101] did a literature review of studies on this topic. Campo, et al. [102] conducted a 12-week qigong intervention program on 40 prostate cancer patients and concluded that qigong exercises were feasible and potentially efficacious in improving their levels of fatigue and distress levels. Henshall, Allin and Aveyard [94] also found qigong exercises to be beneficial in reducing fatigue. Larkey, et al. [103,104] conducted trials using Tai Chi Easy [105] to examine the effects of qigong practice on fatigue and other symptom of female breast cancer survivors. The Tai Chi Easy webpage describes Tai Chi Easy as follows:

"Tai Chi Easy™ is a method and approach to Tai Chi and Qi (Chi) cultivation carefully developed by Dr. Roger Jahnke, O.M.D.. The Tai Chi Easy™ technique makes the practices easy, beneficial and fun from the very beginning. The student does not have to devote years to learning the traditional 108 movement form or even the shortened (24, 36, 42 movement) form to enjoy the calming emotional and health Benefits of Tai Chi. The Tai Chi Easy™ methods are designed to improve the quality of life for people of all ages – whether well or unwell. This includes those who may be dealing with disease, chronic pain and health conditions, limited mobility, deficient immune systems, anxiety or depression. Using simplified Tai Chi based on the four major recognized styles of Tai Chi, this program is straightforward and highly adaptable resulting in empowerment in self-care and self-management skills [105]."

Several other studies on the relationship of qigong practice and fatigue in cancer patients have been conducted in recent years [106-111].

## Immune Function

Oh, et al. [112] reviewed the effects of medical qigong on quality of life, immune function and cancer patient survival. Their literature review indicated that the application of medical qigong can often be effective in improving immunity, quality of life, and cancer patient survival.

## Insomnia and Cancer

Several recent studies have found that tai chi and qigong can improve the quality of sleep in a variety of cancer patients [113-119].

## Joint Mobility

Fong, et al [113] found that a six-month tai chi qigong program improved joint mobility in nasopharyngeal cancer survivors.

## Lung Cancer

Several studies on the effects of tai chi and qigong on lung cancer patients have been conducted in recent years. Henshall, et al. [94] examined the literature and found several studies that concluded that the practice of tai chi or qigong could have beneficial effects on fatigue, dyspnea and depression in lung cancer patients. Yan, et al. [120] found that the application of Yan Xin Qigong [121] induces apoptosis and inhibits signaling pathways important for metastasis in non-small cell lung carcinoma cells. Another Yan et al study [122] found that Yan Xin Qigong induces cell death and gene expression alterations promoting apoptosis and inhibiting proliferation, migration and glucose metabolism in small-cell lung cancer cells.

## Lymphedema

Panchik, et al. [123] found that qigong can be a safe and effective way to manage the symptoms of those with breast cancer-related lymphedema.

## Nasopharyngeal Cancer

Fong et al. conducted several studies on the effects of tai chi and qigong on nasopharyngeal cancer [113, 124-127].

## Non-Hodgkin Lymphoma

Chuang, Yeh and Chung [128] found that a 21-day Chan-Chuang Qigong program improved the health status of non-Hodgkin lymphoma patients receiving chemotherapy.

## Pain Management

Several studies in addition to those mentioned above have found that tai chi and qigong can aid in pain management of cancer patients [129-133].

## Prostate Cancer

Campo, et al. [134] found that levels of fatigue and distress in senior prostate cancer survivors that were enrolled in a 12-week randomized controlled trial. Kinney, et al. [135] found that tai chi qigong promotes recovery from prostate cancer. They combined various qigong movements with simplified tai chi movements, such as Tai Chi Ruler [136], Cloud Hands [137-139] and Wild Goose [140]. McQuade, et al. [141] studied the effects of tai chi and qigong on fatigue and quality of sleep for prostate cancer patients undergoing radiotherapy. Yan, et al. [142] found that the External Qi of Yan Xin Qigong induced G2/M arrest and apoptosis of androgen-independent prostate cancer cells by inhibiting Akt and NF-kappa B pathways.

## Quality of Life

Numerous studies have found that tai chi and qigong can have positive effects on the quality of life for a wide range of cancer patients [143-162].

## Recovery and Cancer

Several studies have found that the practice of tai chi and qigong can aid in recovery [163-165].

## Rehabilitation

Studies have found that the practice of tai chi and qigong can aid in the rehabilitation.

## Other Cancer Research

Readers who are interested in additional studies of the effects of tai chi and qigong on cancer patient treatment can find a listing at the end of the reference section [166-212].

## Conclusion

The evidence is clear that the practice of tai chi and qigong can aid in alleviating the negative effects of cancer treatment and can improve patient health in several ways.

## Conflict of Interest

There is no conflict of interest.

## Author Bio

Robert W. McGee is a professor in the Broadwell College of Business and Economics of Fayetteville State University, USA. He holds 13 earned doctorates from universities in the United States and four European countries, and has published more than 60 books, as well as more than 700 scholarly papers. He holds black belt/duan rank in eight martial arts, including tai chi, and is a world champion in tai chi (both Sun and Yang styles), taekwondo, kung-fu, karate and qigong.

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