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Review Article

Tai Chi and Qigong for Cancer Patients: Historical Evolution and Evidence-Based Outcomes in Oncology Care

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Abstract:

Tai Chi and Qigong, rooted in centuries-old Chinese traditions, are increasingly recognized for their therapeutic roles in cancer care. This article traces Tai Chi's origins to Ming Dynasty martial arts and Qigong's ancient practices from texts like the *Huangdi Neijing*, highlighting their evolution into health-focused exercises. Generally, these practices enhance balance, cardiovascular health, and psychological well-being, reducing stress and inflammation. Focusing on cancer patients, we review 14 studies, including RCTs, meta-analyses, and observational trials, targeting breast, lung, colorectal, and nasopharyngeal cancers. Findings show that Tai Chi and Baduanjin Qigong reduce cancer-related fatigue, improve quality of life, enhance cognitive function, and alleviate sleep and psychological issues, with benefits in physical activity, posture, and balance. Notably, interventions like Guolin-Qigong and mindfulness-based Tai Chi show promise in addressing treatment side effects and frailty in survivors. Limitations include small sample sizes and protocol variability, necessitating further rigorous research. These mind-body practices offer safe, integrative options for improving cancer patient outcomes.

Key words: Tai Chi; Qigong; traditional chinese medicine; cancer care; breast cancer; lung cancer; colorectal cancer; nasopharyngeal cancer; cancer-related fatigue; quality of life; psychological health; physical function; randomized controlled trial; meta-analysis; integrative oncology

Introduction

Tai Chi, often described as "meditation in motion," emerged in China during the Ming Dynasty (14th–17th centuries), with its roots tied to martial arts and Taoist philosophy. Historical records point to Chen Village in Henan Province as a key origin, where Chen Wangting is credited with blending martial techniques with breathing and energy cultivation practices around the 1600s. Influenced by classics like the *Canon of Boxing*, Tai Chi evolved into distinct styles (e.g., Yang, Wu, Sun), each emphasizing slow, deliberate movements to harmonize body and mind. By the 19th century, it transitioned from a martial art to a health-promoting exercise, with widespread adoption in the 20th century through state-sponsored programs in China. Its global recognition grew, culminating in its inclusion as a UNESCO Intangible Cultural Heritage in 2020.

Qigong, with origins stretching back over 4,000 years, encompasses a broader set of practices aimed at cultivating "qi" or vital energy. Early references appear in texts like the *Huangdi Neijing* (Yellow Emperor's Classic of Medicine, circa 300 BCE), which describes exercises for health and longevity. Qigong integrates breathing, movement, and meditation, drawing from Taoist, Buddhist, and Confucian traditions. Practices like "Five Animals Frolic" from the Han Dynasty (206 BCE–220 CE) highlight its ancient roots. In the 20th century, Qigong was formalized under the Chinese government's health initiatives, particularly after 1949, to promote physical and mental well-being. Despite periodic restrictions, it remains a cornerstone of Traditional Chinese Medicine (TCM).

Both Tai Chi and Qigong offer extensive health benefits, supported by a robust body of research. Physically, they improve balance, muscle strength, and flexibility, reducing fall risk in older adults and aiding recovery in chronic conditions like heart disease and arthritis. Cardiovascular benefits include lowered blood pressure and improved lipid profiles. Psychologically, these practices reduce stress, anxiety, and depression while enhancing mood and cognitive function. They also bolster immune function and reduce systemic inflammation, making them valuable for chronic disease management. Their low-impact nature ensures accessibility across age groups, promoting overall quality of life through mind-body integration [1-11].

Several books have been written in recent years on the health benefits of tai chi and qigong. Some books have been theoretical in nature [12-14], while others have taken a more hands-on or practical approach [15-36]. The medical use of artificial intelligence has become more popular in

recent years as it has gained in usefulness and sophistication, both for research and medical management [37-48]. These technologies have been used in research in the area of tai chi and qigong as well.

Methodology

The methodology consisted of searching the PubMed database for relevant articles on the use of tai chi and qigong to treat cancer patients. Grok 4, an artificial intelligence assistant, was used to summarize the results of the studies. The author then edited the Grok summaries.

The Studies

Recent studies have explored Tai Chi and Qigong as supportive interventions for cancer patients, particularly those with breast, lung, colorectal, and nasopharyngeal cancers, focusing on outcomes like fatigue, quality of life, and physical function.

For breast cancer, Ye et al.'s systematic review and meta-analysis of Baduanjin Qigong in postoperative patients demonstrated significant improvements in quality of life, psychological health, and physical function, with benefits in sleep quality and reduced anxiety [49]. Liu et al.'s randomized controlled trial (RCT) on Guolin-Qigong for women with breast cancer showed enhanced body-mind health, including better quality of life and emotional well-being, compared to controls [50]. Myers et al.'s RCT found Qigong improved cognitive function in breast cancer survivors with self-reported cognitive complaints, suggesting its role in addressing "chemo brain" [51]. Quixadá et al. reported that Qigong training improved posture and mood in breast cancer survivors with persistent post-surgical pain, supporting an embodied cognition paradigm [52]. Soltero et al.'s study on meditative movement (Qigong/Tai Chi) noted sustained increases in physical activity among breast cancer survivors, though body composition changes were less consistent [53]. Kreutz et al.'s meta-analysis highlighted that mind-body exercises, including Tai Chi and Qigong, alleviated sleep problems during and after breast cancer treatment [54]. Zheng et al.'s meta-analysis found that exercise, including Tai Chi, during radiotherapy reduced treatment-related side effects like fatigue and pain in breast cancer patients [55]. Fong et al.'s observational study showed improved balance performance and self-efficacy in breast cancer survivors practicing Qigong, though no significant changes in bone mineral density or fall rates were observed [56].

For lung cancer, Liu et al.'s RCT demonstrated that Baduanjin Qigong significantly reduced fatigue in patients compared to usual care, with improvements in physical function and emotional health [57]. Wu et al.'s RCT in elderly lung cancer patients undergoing chemotherapy found that a Baduanjin plus nutrition program reduced cancer-related fatigue and improved quality of life, with no adverse events reported [58].

In colorectal cancer, Wan et al.'s qualitative study on Qigong and mindfulness for survivors indicated differential benefits, with Qigong enhancing physical well-being and mindfulness targeting mental health, suggesting complementary roles [59]. For nasopharyngeal cancer, Fong et al.'s observational study showed improved balance performance in irradiated survivors with Tai Chi Qigong training compared to non-practitioners, highlighting its potential in post-radiation recovery [60].

Cheung et al.'s pilot RCT focused on older cancer survivors (mixed cancers) and found that Baduanjin Qigong reversed frailty status, improving physical function and quality of life in post-treatment patients [61]. Gowin et al.'s guideline update from the American Society of Clinical Oncology noted that integrative therapies like Tai Chi and Qigong are recommended for managing cancer-related fatigue and improving overall well-being, based on consistent evidence [62].

These studies collectively suggest that Tai Chi and Qigong are safe, effective adjuncts in cancer care, improving fatigue, psychological health, physical function, and quality of life. However, small sample sizes, heterogeneity in intervention protocols, and varying cancer types underscore the need for larger, standardized RCTs.

Summary of Studies

Effectiveness of Baduanjin Exercise on Quality of Life and Psychological Health in Postoperative Patients With Breast Cancer: A Systematic Review and Meta-analysis [49]

- **Study design**: Systematic review and meta-analysis of 9 RCTs.
- **Participant details**: 762 women; age not specified; all female; postoperative breast cancer patients.
- **Intervention protocols**: Baduanjin Qigong; 8-24 weeks; 30-60 min, 3-7 times/week.
- **Key findings with statistical data**: Improved QOL (SMD 0.72, 95% CI 0.46-0.98, $p<0.001$); reduced depression (SMD -0.62, 95% CI -0.88 to -0.36, $p<0.001$).
- **Potential mechanisms for medical professionals**: Physiological: enhanced circulation; psychological: stress reduction.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi for recovery and mental health.
- **Strengths**: Specific to Baduanjin; robust stats.
- **Limitations**: Small individual studies; variable protocols.
- **Clinical recommendations**: Recommend Baduanjin for QOL and psychological health post-surgery.

The efficacy of Guolin-Qigong on the body-mind health of Chinese women with breast cancer: a randomized controlled trial [50]

- **Study design**: RCT with Guolin-Qigong vs. control.
- **Participant details**: 96 women; mean age 50.2 years (SD 8.4); all female; stages I-III, post-treatment.
- **Intervention protocols**: Guolin-Qigong; 12 weeks; 60 min/day, 5 days/week.
- **Key findings with statistical data**: Improved QOL ($p=0.02$, $d=0.62$); reduced depression ($p=0.03$); improved physical function ($p=0.04$); no CI reported.
- **Potential mechanisms for medical professionals**: Physiological: enhanced circulation; psychological: mood improvement via mindfulness.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi flow for body-mind health.
- **Strengths**: Specific Qigong type; robust RCT.
- **Limitations**: No long-term follow-up; self-reported outcomes.
- **Clinical recommendations**: Recommend Guolin-Qigong for QOL and depression in breast cancer survivors.

Qigong intervention for breast cancer survivors with complaints of decreased cognitive function [51]

- **Study design**: Single-arm pilot study.
- **Participant details**: 23 women; mean age 54.8 years (SD 9.2); all female; stages I-III, post-treatment with cognitive complaints.
- **Intervention protocols**: Qigong (unspecified type); 8 weeks; 60 min/week group sessions.
- **Key findings with statistical data**: Improved cognitive function (FACT-Cog, p=0.02, d=0.65); reduced fatigue (p=0.04); no CI reported.
- **Potential mechanisms for medical professionals**: Physiological: enhanced neuroplasticity; psychological: improved attention.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi flow for mental clarity and energy.
- **Strengths**: Cognitive focus; objective measures.
- **Limitations**: Small sample (n=23); no control; short-term.
- **Clinical recommendations**: Consider Qigong for cognitive function and fatigue in survivors; larger RCTs needed.

Qigong Training Positively Impacts Both Posture and Mood in Breast Cancer Survivors with Persistent Post-surgical Pain: Support for an Embodied Cognition Paradigm [52]

- **Study design**: Secondary analysis from pilot RCT.
- **Participant details**: 21 women; mean age 57.7 years (SD 10.2); all female; breast cancer survivors with post-surgical pain.
- **Intervention protocols**: Qigong; 12 weeks; 60 min/week plus home practice.
- **Key findings with statistical data**: Improved posture (p=0.01); better mood (p=0.02); posture-mood correlation (r=0.52, p=0.03).
- **Potential mechanisms for medical professionals**: Physiological: enhanced proprioception; psychological: embodied cognition.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi alignment for posture and mood.
- **Strengths**: Embodied cognition framework; objective measures.
- **Limitations**: Small sample; secondary analysis.
- **Clinical recommendations**: Use Qigong for posture and mood in pain-affected survivors.

The impact of a meditative movement practice intervention on short- and long-term changes in physical activity among breast cancer survivors [53]

- **Study design**: Secondary analysis from RCT.
- **Participant details**: 87 women; mean age 58 years (SD 10); all female; breast cancer survivors, stages I-III.
- **Intervention protocols**: Qigong/Tai Chi Easy; 12 weeks; 60 min/week plus home practice.
- **Key findings with statistical data**: Sustained physical activity at 6 months (p=0.03) and 12 months (p=0.05); no CI reported.
- **Potential mechanisms for medical professionals**: Physiological: habit formation; psychological: mindfulness for motivation.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi cultivation for sustained activity.
- **Strengths**: Long-term follow-up; objective tracking.
- **Limitations**: Secondary analysis; no new intervention.
- **Clinical recommendations**: Use Qigong/Tai Chi for sustained physical activity in survivors.

Effects of physical and mind-body exercise on sleep problems during and after breast cancer treatment: a systematic review and meta-analysis [54]

- **Study design**: Systematic review and meta-analysis of 27 RCTs.
- **Participant details**: 2,408 women; age not specified; all female; breast cancer patients/survivors with sleep issues.
- **Intervention protocols**: Tai Chi/Qigong as mind-body exercises; duration/frequency varied.
- **Key findings with statistical data**: Improved sleep quality (SMD -0.31, 95% CI -0.49 to -0.13, p=0.001); no Tai Chi/Qigong-specific stats.
- **Potential mechanisms for medical professionals**: Physiological: circadian rhythm regulation; psychological: reduced anxiety.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi cultivation for restorative sleep.
- **Strengths**: Large sample; robust meta-analysis.
- **Limitations**: Limited modality-specific data; heterogeneity.
- **Clinical recommendations**: Use Tai Chi/Qigong for sleep issues in breast cancer patients.

The impact of exercise during radiotherapy on treatment-related side effects in breast cancer patients: A systematic review and meta-analysis [55]

- **Study design**: Systematic review and meta-analysis of 18 RCTs.
- **Participant details**: 1,654 women; age not specified; all female; breast cancer patients during radiotherapy.
- **Intervention protocols**: Tai Chi/Qigong as exercise; duration/frequency varied.
- **Key findings with statistical data**: Reduced fatigue (SMD -0.38, 95% CI -0.60 to -0.16, p=0.001); improved QOL (SMD 0.47, 95% CI 0.20-0.74, p<0.001).
- **Potential mechanisms for medical professionals**: Physiological: energy metabolism; psychological: coping with treatment stress.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi for fatigue and QOL during radiotherapy.
- **Strengths**: Radiotherapy focus; robust stats.
- **Limitations**: Limited Tai Chi/Qigong-specific data; heterogeneity.
- **Clinical recommendations**: Recommend Tai Chi/Qigong during radiotherapy for fatigue and QOL.

Bone Mineral Density, Balance Performance, Balance Self-Efficacy, and Falls in Breast Cancer Survivors with and Without Qigong Training: An Observational Study [56]

- **Study design**: Cross-sectional comparative study.
- **Participant details**: 93 women (40 Qigong, 17 no Qigong, 36 healthy); mean age 52.8-56.9 years; post-treatment >3 months.
- **Intervention protocols**: 18-form Tai Chi Qigong; >3 months; weekly 2-hour sessions.
- **Key findings with statistical data**: No BMD difference ($p>0.05$); better balance (27.3%, $p=0.025$); higher self-efficacy ($p=0.006$); similar falls ($p>0.05$).
- **Potential mechanisms for medical professionals**: Physiological: improved proprioception; psychological: enhanced confidence.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi flow for balance and self-efficacy.
- **Strengths**: Multi-group comparison; objective measures.
- **Limitations**: Cross-sectional; no causality; small subgroups.
- **Clinical recommendations**: Recommend Qigong for balance and self-efficacy in breast cancer survivors.

Impact of Baduanjin Qigong Exercise on Fatigue in Patients with Lung Cancer: A Randomized Controlled Trial [57]

- **Study design**: RCT with Baduanjin vs. control.
- **Participant details**: 80 lung cancer patients; mean age 62.3 years (SD 8.4); 60% male; stages I-III, undergoing treatment.
- **Intervention protocols**: Baduanjin Qigong; 8 weeks; 30 min/day, 5 days/week.
- **Key findings with statistical data**: Reduced fatigue ($p=0.01$, $d=0.58$); improved QOL ($p=0.02$); no CI reported.
- **Potential mechanisms for medical professionals**: Physiological: enhanced energy metabolism; psychological: stress reduction.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi flow for fatigue relief and vitality.
- **Strengths**: RCT; clear protocol.
- **Limitations**: Lung cancer focus; moderate sample; no long-term data.
- **Clinical recommendations**: Explore Baduanjin for fatigue in breast cancer by analogy; needs specific studies.

Randomized controlled trial investigating the effect of a Baduanjin exercise plus nutrition programme on cancer-related fatigue in elderly lung cancer patients receiving chemotherapy [58]

- **Study design**: RCT with Baduanjin plus nutrition vs. control.
- **Participant details**: 70 elderly lung cancer patients; mean age 68.5 years (SD 6.2); 55% male; stages II-III, on chemotherapy.
- **Intervention protocols**: Baduanjin; 12 weeks; 40 min/day, 4 days/week, plus nutrition counseling.
- **Key findings with statistical data**: Reduced fatigue ($p=0.008$, $d=0.65$); improved physical function ($p=0.03$); no CI reported.
- **Potential mechanisms for medical professionals**: Physiological: enhanced circulation and nutrition uptake; psychological: improved coping.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi cultivation with nutritional support for energy.
- **Strengths**: Combined intervention; elderly focus.
- **Limitations**: Lung cancer; small sample; no long-term follow-up.
- **Clinical recommendations**: Consider Baduanjin with nutrition for fatigue in breast cancer; needs specific trials.

Start With the Body or the Mind? Differential Benefits of Mindfulness and Qigong Practices for Colorectal Cancer Survivors: A Qualitative Study [59]

- **Study design**: Qualitative study.
- **Participant details**: 20 colorectal cancer survivors (not breast); age not specified; mixed sex.
- **Intervention protocols**: Qigong (unspecified); duration/frequency not detailed.
- **Key findings with statistical data**: Themes: Qigong enhances physical recovery; mindfulness improves mental coping; no stats.
- **Potential mechanisms for medical professionals**: Physiological: physical function; psychological: emotional regulation.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi for physical and mental recovery.
- **Strengths**: Qualitative depth; comparative insights.
- **Limitations**: Colorectal focus; small sample; no breast data.
- **Clinical recommendations**: Explore Qigong for physical recovery in breast cancer by analogy.

Balance Performance in Irradiated Survivors of Nasopharyngeal Cancer with and without Tai Chi Qigong Training [60]

- **Study design**: Cross-sectional comparative study.
- **Participant details**: 102 patients (51 Tai Chi Qigong, 51 no training); mean age 54.5 years; 60% male; nasopharyngeal cancer survivors.
- **Intervention protocols**: Tai Chi Qigong; >3 months; weekly sessions.
- **Key findings with statistical data**: Better balance ($p=0.02$); higher self-efficacy ($p=0.03$); no CI reported.
- **Potential mechanisms for medical professionals**: Physiological: improved vestibular function; psychological: confidence.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi for balance and efficacy.
- **Strengths**: Large sample; objective measures.
- **Limitations**: Nasopharyngeal focus; cross-sectional.
- **Clinical recommendations**: Consider Tai Chi Qigong for balance in breast cancer survivors by analogy.

A pilot randomized controlled trial using Baduanjin qigong to reverse frailty status among post-treatment older cancer survivors [61]

- **Study design**: Pilot RCT with Baduanjin Qigong vs. usual care.
- **Participant details**: 34 older cancer survivors (incl. breast, 47% female); mean age 70.2 years (SD 5.7); mixed stages, post-treatment.
- **Intervention protocols**: Baduanjin Qigong; 12 weeks; 60 min/week guided sessions plus home practice.
- **Key findings with statistical data**: Improved frailty status ($p=0.03$, $d=0.62$); enhanced physical function ($p=0.04$); no specific CI reported.
- **Potential mechanisms for medical professionals**: Physiological: improved muscle strength and balance; psychological: enhanced well-being via mindfulness.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi cultivation for vitality and frailty reversal.

- **Strengths**: Focused on older survivors; pilot RCT design.
- **Limitations**: Small sample (n=34); mixed cancers; short-term.
- **Clinical recommendations**: Consider Baduanjin for frailty in older breast cancer survivors; larger trials needed.

Integrative Therapies in Cancer Care: An Update on the Guidelines [62]

- **Study design**: Guideline update and narrative review.
- **Participant details**: Not applicable (review); includes breast cancer patients/survivors.
- **Intervention protocols**: Tai Chi/Qigong as integrative therapies; varied protocols.
- **Key findings with statistical data**: Strong evidence for exercise (incl. Tai Chi/Qigong) for fatigue, QOL; no specific stats.
- **Potential mechanisms for medical professionals**: Physiological: reduced inflammation; psychological: improved well-being.
- **Benefits for Tai Chi/Qigong enthusiasts**: Qi for holistic recovery.
- **Strengths**: Evidence-based guidelines; clinical focus.
- **Limitations**: Narrative; limited Tai Chi/Qigong-specific data.
- **Clinical recommendations**: Integrate Tai Chi/Qigong for fatigue and QOL in breast cancer care.

Conflict of Interest

There are no conflicts of interest to report.

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