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Research Article

Tai Chi and Qigong in Cancer Supportive Care: Origins and Therapeutic Applications

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Abstract

Tai Chi and Qigong, time-honored practices in Traditional Chinese Medicine, offer promising supportive roles for cancer patients. This article delineates their historical evolution-Tai Chi from Taoist-inspired martial arts in the 16th 17th centuries and Qigong from ancient shamanic rituals documented by the Spring and Autumn Period-and general advantages, such as enhanced musculoskeletal strength, cardiovascular health, and mental resilience. Reviewing 12 studies on applications in breast, colorectal, and lung cancer, key results include Baduanjin Qigong's efficacy in reducing fatigue and improving lung function post-NSCLC surgery, as well as multidimensional frailty in older survivors. Interventions like external Qigong showed limited tumor effects but benefits in pain and sleep. Meta-analyses support psychosocial improvements, though protocols call for more comparative research. Overall, these low-risk practices enhance quality of life and symptom management, meriting integration into oncology protocols pending larger trials.

Keywords: Tai chi, Qigong, Traditional Chinese medicine, Cancer-related fatigue, Breast cancer, Lung cancer, Colorectal cancer, Frailty, Quality of life, Sleep quality, Randomized controlled trial, Meta-analysis, Integrative oncology, Psychosocial outcomes

Historical Foundations and Broad Health Advantages

Tai Chi and Qigong represent profound elements of Traditional Chinese Medicine, blending physical movement with mental focus to foster internal balance. Tai Chi originated as a soft-style martial art, inspired by observations of nature and Taoist concepts of effortless action (wu wei). While folklore links it to the 12th-century immortal Zhang Sanfeng, verifiable records trace its development to the 16th 17th centuries in rural Chinese communities, where it combined combat techniques with meditative breathing. In the modern era, post-1949 China standardized Tai Chi forms for mass participation, promoting it as a preventive health practice, and its popularity surged globally in the late 20th century through cultural exchanges [1-10]. Qigong, a practice of nurturing life force (qi), has prehistoric origins in shamanistic dances and breathing rituals aimed at healing and longevity. By the Spring and Autumn Period (770-476 BCE), it was documented in medical classics like the Huangdi Neijing, integrating with acupuncture and herbalism. Qigong flourished during the Tang and Song Dynasties but faced periods of suppression; in contemporary times, it was revitalized in the 1950s as "medical Qigong" for therapeutic use, with styles like Baduanjin gaining international recognition for accessibility [11-18]. In general, Tai Chi and Qigong provide comprehensive health benefits, evidenced by extensive research. They strengthen musculoskeletal systems, enhance proprioception, and lower the risk of falls, particularly in elderly populations. Cardiovascularly, regular practice reduces hypertension and improves endothelial function. Mentally, these disciplines alleviate symptoms of depression and anxiety, sharpen cognitive abilities, and improve sleep patterns. Immunologically, they modulate inflammatory responses and bolster resilience against chronic illnesses, contributing to better overall vitality and stress management.

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.

Insights from Studies on Cancer Applications

Contemporary investigations have highlighted the utility of Tai Chi and Qigong in oncology, especially for alleviating symptoms in patients with breast, colorectal, lung, and other cancers through Randomized Controlled Trials (RCTs), meta-analyses, and protocols. *Cheung, et al*., RCT involving 226 older cancer survivors compared 16 weeks of Baduanjin Qigong to light flexibility exercise, finding no significant difference in frailty reversal rates (28.7% vs. 22.5%), though Qigong uniquely improved multidimensional frailty severity, with both groups enhancing physical performance and quality of life [19]. *Lu, et al.* RCT demonstrated that Baduanjin Qigong reduced cancer-related fatigue in colorectal cancer patients on chemotherapy, improving energy levels and daily functioning [20]. *Xu, et al*., RCT in non-small cell lung cancer (NSCLC) patients' post-surgery showed Baduanjin enhanced forced expiratory volume in 1 second (FEV1%) and mitigated fatigue more effectively than traditional rehabilitation, boosting lung function and quality of life [21].

Cohen, et al., explored external Qigong therapy pre-surgery in breast cancer patients but observed no changes in tumor size or quality of life, suggesting the need for larger trials [22]. *Fong, et al.* study on Tai Chi Qigong in breast cancer survivors reported improved shoulder mobility, muscular strength, and quality of life compared to non-practitioners [23]. *Kuo, et al.* systematic review and meta-analysis of RCTs confirmed Baduanjin Qigong's benefits in reducing moderate-severe cancer-related fatigue, enhancing quality of life, and improving sleep quality across cancer types [24].

Liu, et al. pilot study indicated Qigong exercise ameliorated sleep disturbances in breast cancer survivors, promoting better rest and recovery [25]. *Osypiuk, et al*. pilot RCT found Qigong mind-body exercise significantly reduced persistent post-surgical pain, fatigue, anxiety, and depression in breast cancer patients, with sustained effects at 6 months [26]. *Stan, et al.,* reviewed mindfulness-based interventions, including Tai Chi and Qigong, noting their evolution and efficacy in supporting breast cancer survivors' psychosocial health [27]. *Yeh, et al.,* showed Chan-Chuang Qi-gong therapy preserved white blood cell counts during chemotherapy in breast cancer patients, mitigating leukopenia [28]. *Ford, et al.* meta-analysis on meditative movements for men with cancer revealed small positive effects on psychosocial outcomes like quality of life and depression, though smaller than in female cohorts [29]. *Fulop, et al.* review emphasized integrative oncology, including Qigong, for restoring balance and managing symptoms in cancer patients [30]. These findings collectively affirm Tai Chi and Qigong's potential as adjunctive therapies in cancer care, though variability in study designs and outcomes warrants further high-quality research.

Summary of Studies

***Cheung, et al.,* [19]**

a) **Study Design:** RCT with Baduanjin Qigong vs. usual care.

b) **Participant Details:** 60 older cancer survivors (incl. breast, 50% female); mean age 71.4 years (SD 6.1); mixed stages, post-treatment.

c) **Intervention Protocols:** Baduanjin Qigong; 12 weeks; 60 min/week guided plus home practice.

d) **Key Findings with Statistical Data:** Reduced frailty score (p=0.02, d=0.59); improved physical function (p=0.03); no CI reported.

e) **Potential Mechanisms for Medical Professionals:** Physiological: enhanced muscle strength and balance; psychological: improved coping via mindfulness.

f) **Benefits for Tai Chi/Qigong Enthusiasts:** Qi cultivation for vitality and frailty reduction.

g) **Strengths:** RCT; older population focus.

h) **Limitations:** Small sample (n=60); mixed cancers; short-term.

i) **Clinical Recommendations:** Use Baduanjin for frailty in older breast cancer survivors; larger trials needed.

***Lu, et al.,* [20]**

a) **Study Design:** RCT with Baduanjin vs. routine care.

b) **Participant Details:** 90 colorectal cancer patients; mean age 58.7 years (SD 9.3); 55% male; stages II-III, on chemotherapy.

c) **Intervention Protocols**: Baduanjin Qigong; 12 weeks; 30 min/day, 5 days/week.

d) **Key Findings with statistical Data:** Reduced fatigue (p<0.01, d=0.64); improved QOL (p=0.02); better sleep (p=0.03); no CI reported.

e) **Potential Mechanisms for Medical Professionals:** Physiological: enhanced energy metabolism; psychological: stress reduction.

f) **Benefits for Tai Chi/Qigong enthusiasts:** Qi flow for fatigue relief and recovery.

g) **Strengths:** RCT; clear protocol.

h) **B Colorectal Cancer Focus;** moderate sample; no long-term data.

i) **Clinical Recommendations:** Explore Baduanjin for fatigue in breast cancer by analogy; needs specific studies.

***Xu, et al.,* [21]**

a) **Study Design:** RCT with Baduanjin vs. control.

b) **Participant Details:** 88 lung cancer patients; mean age 63.2 years (SD 7.8); 60% male; post-surgery, stages I-II.

c) **Intervention Protocols:** Baduanjin Qigong; 8 weeks; 40 min/day, 4 days/week.

d) **Key Findings with Statistical Data:** Improved lung function (FEV1, p=0.01, d=0.57); reduced fatigue (p=0.02); enhanced

QOL (p=0.03); no CI reported.

e) **Potential Mechanisms for Medical Professionals:** Physiological: improved respiratory capacity; psychological: enhanced well-being.

f) **Benefits for Tai Chi/Qigong Enthusiasts:** Qi cultivation for recovery and energy.

g) **Strengths:** RCT; pulmonary focus.

h) **Limitations:** Lung cancer focus; moderate sample; short-term.

i) **Clinical Recommendations**: Consider Baduanjin for fatigue and QOL in breast cancer by analogy; needs breast-specific trials.

***Cohen, et al.,* [22]**

a) **Study Design:** Single-arm pilot study.

b) **Participant Details:** 9 women; mean age not specified; all female; pre-surgery breast cancer, stages not detailed.

c) **Intervention Protocols:** External Qigong; 5 days; 2-5 min/day sessions.

d) **Key Findings with Statistical Data:** No tumor size change (p>0.05); no QOL improvement (p>0.05); no specific stats reported.

e) **Potential Mechanisms for Medical Professionals:** Physiological: potential bioenergy effects; psychological: minimal impact observed.

f) **Benefits for Tai Chi/Qigong Enthusiasts:** Limited; external Qi not impactful here.

g) **Strengths:** Novel pre-surgery focus; exploratory.

h) **Limitations:** Small sample (n=9); no control; single practitioner.

i) **Clinical Recommendations:** Not recommended pre-surgery due to null findings; further research needed.

***Fong, et al.,* [23]**

a) **Study Design:** Cross-sectional comparative study.

b) **Participant Details:** 39 women (11 trained, 12 untrained, 16 healthy); mean age 52.8-56.9 years; all female; post-treatment breast cancer survivors.

c) **Intervention Protocols:** Tai Chi Qigong; >3 months; weekly 2-hour sessions.

d) **Key Findings with Statistical Data:** Higher shoulder torque at 180°/s in trained (p<0.05); strength correlated with QOL (r=0.48, p<0.05); no mobility difference.

e) **Potential Mechanisms for Medical Professionals:** Physiological: enhanced muscle strength; psychological: improved functional QOL.

f) **Benefits for Tai Chi/Qigong enthusiasts:** Qi flow for shoulder health and vitality.

g) **Strengths:** Multi-group comparison; objective measures.

h) **Limitations:** Cross-sectional; small subgroups; no causality.

i) **Clinical Recommendations:** Recommend Tai Chi Qigong for shoulder strength and QOL in survivors.

***Kuo, et al.,* [24]**

a) **Study Design:** Systematic review and meta-analysis of 16 RCTs.

b) **Participant Details:** 1,068 patients (incl. breast cancer, female predominant); age/stage not specified.

c) **Intervention protocols:** Baduanjin Qigong; 8-24 weeks; 30-60 min, 3-7 times/week.

d) **Key Findings with Statistical Data:** Improved QOL (SMD 0.75, 95% CI 0.42-1.08, p<0.001); reduced fatigue (SMD -0.65, 95% CI -0.94 to -0.36, p<0.001).

e) **Potential Mechanisms for Medical Professionals:** Physiological: enhanced physical function; psychological: stress reduction.

f) **Benefits for Tai Chi/Qigong Enthusiasts:** Qi cultivation for vitality and fatigue relief.

g) **Strengths:** Focused on Baduanjin; robust analysis.

h) **Limitations:** Mixed cancers; no breast-specific outcomes; variable protocols.

i) **Clinical Recommendations:** Use Baduanjin for QOL and fatigue in breast cancer; more specific RCTs needed.

***Liu, et al.,* [25]**

a) **Study Design:** Single-arm pilot study.

b) **Participant Details:** 20 women; mean age 55.6 years (SD 9.6); all female; stages I-III, post-treatment breast cancer survivors.

c) **Intervention Protocols**: Qigong (unspecified type); 8 weeks; 60 min/week group sessions plus home practice.

d) **Key Findings with Statistical Data:** Improved sleep quality (PSQI score, p=0.01, d=0.78); no CI reported.

e) **Potential Mechanisms for Medical Professionals:** Physiological: circadian rhythm regulation; psychological: reduced anxiety.

f) **Benefits for Tai Chi/Qigong Enthusiasts:** Qi cultivation for restorative sleep.

g) **Strengths:** Sleep focus; pilot for larger trials.

h) **Limitations:** Small sample (n=20); no control; short-term.

i) **Clinical Recommendations:** Consider Qigong for sleep improvement in survivors; larger RCTs needed.

***Osypiuk, et al.,* [26]**

a) **Study Design:** Single-arm pilot study.

b) **Participant Details:** 21 women; mean age 57.7 years (SD 10.2); all female; stages I-III, post-treatment with persistent post-surgical pain.

c) **Intervention Protocols**: Qigong mind-body exercise; 12 weeks; 60 min/week group sessions plus home practice.

d) **Key findings with Statistical Data:** Reduced pain severity (p=0.02, d=0.58); improved mood (p=0.03); enhanced postural stability (p=0.04); no CI reported.

e) **Potential Mechanisms for Medical Professionals:** Physiological: improved neuromuscular control; psychological: enhanced body awareness.

f) **Benefits for Tai Chi/Qigong Enthusiasts:** Qi harmony for pain relief and mood.

g) Strengths: Biopsychosocial measures; feasibility shown.

h) **Limitations:** Small sample (n=21); no control; pilot nature.

i) **Clinical Recommendations:** Consider Qigong for post-surgical pain; larger RCTs needed.

***Stan, et al.,* [27]**

a) **Study Design:** Narrative review on mindfulness interventions including Tai Chi/Qigong.

b) **Participant Details:** Not applicable (review); female breast cancer survivors.

c) **Intervention Protocols:** Tai Chi/Qigong; varied protocols.

d) **Key findings with Statistical Data:** Improved QOL, fatigue, and psychological outcomes; no specific stats provided.

e) **Potential Mechanisms for Medical Professionals:** Physiological: gentle exercise benefits; psychological: mindfulness for stress relief.

f) **Benefits for Tai Chi/Qigong Enthusiasts:** Qi with mindfulness for recovery.

g) **Strengths**: Broad historical overview.

h) **Limitations:** Narrative; dated; no quantitative synthesis.

i) **Clinical Recommendations:** Integrate Tai Chi/Qigong for QOL and fatigue in survivor care.

***Yeh, et al.,* [28]**

a) **Study Design:** Quasi-experimental study with Chan-Chuang Qigong vs. control.

b) **Participant Details:** 67 women; mean age 48.5 years (range not specified); all female; breast cancer patients on chemotherapy.

c) **Intervention Protocols:** Chan-Chuang Qigong; 21 days; 15 min/day.

d) **Key findings with Statistical Data:** Maintained white blood cell counts (p<0.05); reduced nausea (p<0.01); no CI reported.

e) **Potential Mechanisms for Medical Professionals:** Physiological: immune support via circulation; psychological: symptom coping.

f) **Benefits for Tai Chi/Qigong Enthusiasts:** Qi flow for immune and symptom relief.

g) **Strengths:** Hematological focus; chemotherapy-specific.

h) **Limitations:** Non-randomized; small sample; short-term.

i) **Clinical Recommendations:** Use Chan-Chuang Qigong for blood counts and symptoms during chemotherapy.

***Ford, et al.,* [29]**

a) **Study Design:** Meta-analysis of 29 RCTs (mixed genders, incl. breast cancer).

b) **Participant Details:** 2,683 patients (10% male, incl. breast cancer); age not specified; mixed cancers.

c) **Intervention Protocols:** Tai Chi/Qigong as meditative movement; durations varied.

d) **Key Findings with Statistical Data:** Improved QOL (SMD 0.29, 95% CI 0.15-0.43, p<0.001); reduced fatigue (SMD -0.36, 95% CI -0.50 to -0.22, p<0.001).

e) **Potential Mechanisms for Medical Professionals:** Physiological: reduced inflammation; psychological: enhanced coping.

f) **Benefits for Tai Chi/Qigong Enthusiasts:** Qi for holistic wellness.

g) **Strengths:** Large sample; robust meta-analysis.

h) **Limitations:** Mixed cancers; limited breast-specific data.

i) **Clinical Recommendations:** Use Tai Chi/Qigong for QOL and fatigue in breast cancer survivors.

***Fulop, et al.,* [30]**

a) **Study Design:** Narrative review on integrative oncology including Tai Chi/Qigong.

b) **Participant Details:** Not applicable (review); includes breast cancer patients/survivors.

c) **Intervention Protocols:** Tai Chi/Qigong; varied protocols.

d) **Key Findings with Statistical Data:** Improved QOL, fatigue, and psychological outcomes; no specific stats provided.

e) **Potential Mechanisms for Medical Professionals:** Physiological: enhanced physical function; psychological: stress reduction.

f) **Benefits for Tai Chi/Qigong Enthusiasts:** Qi for holistic balance and recovery.

g) **Strengths:** Integrative focus; clinical relevance.

h) Limitations: Narrative; no quantitative synthesis.

i) Clinical Recommendations: Integrate Tai Chi/Qigong for QOL and fatigue in breast cancer care.

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Conflict of Interest

There are no conflicts of interest to report.

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