



Using Tai Chi and Qigong to Treat Rheumatoid Arthritis: An Application of Artificial Intelligence to Traditional Chinese Medicine

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Abstract

Rheumatoid Arthritis (RA) is a chronic autoimmune disorder marked by joint inflammation, pain, stiffness, and functional impairment that substantially reduces quality of life for millions of patients worldwide. While pharmacotherapy remains the cornerstone of RA management, growing interest in complementary mind-body practices has prompted investigation into the potential benefits of tai chi and qigong as adjunctive therapies. This study utilizes Artificial Intelligence (AI) specifically the Grok AI assistant to summarize a selection of peer-reviewed studies drawn from the PubMed database that examined the effects of tai chi and qigong on RA outcomes. Six studies are reviewed, including narrative biomedical reviews, a Cochrane systematic review, an overview of systematic reviews, a clinical management review, a comparative safety evaluation, and a pragmatic evaluation of tai chi combined with auricular acupressure. Across these studies, tai chi and qigong demonstrate a favourable safety profile and are associated with improvements in joint range of motion, balance, physical function, pain, and psychosocial well-being. Evidence also suggests benefits in self-efficacy and quality of life. However, the overall body of evidence remains limited by small sample sizes, methodological heterogeneity, and low evidence quality. The present study builds on a broader series of AI-assisted analyses of traditional Chinese medicine applications and contributes to the emerging literature on integrative approaches to RA management. AI-assisted research synthesis is offered as an efficient and reproducible tool for reviewing rapidly growing bodies of clinical literature..

Keywords: Tai Chi, Qigong, Rheumatoid Arthritis, Mind-Body Exercise, Pain Management, Functional Improvement, Systematic Review, Randomized Controlled Trial, Psychosocial Benefits, Complementary Therapy.

Introduction

Tai chi and qigong are both forms of Traditional Chinese Medicine (TCM). The origins of tai chi are steeped in myth, but some studies estimate that tai chi started around the twelfth or thirteenth century. Qigong is much older, going back several thousand years. Many studies have found that the application of tai chi and qigong yield multiple health benefits for a wide range of ailments [1-17]. Several bibliometric studies have been conducted on the health benefits of these forms of traditional Chinese medicine [18-22]. In recent years artificial intelligence has been used as both a research

and administrative tool in Western medicine [23-30]. The present study utilizes artificial intelligence to summarize studies where tai chi and qigong have been used to treat rheumatoid arthritis.

Rheumatoid Arthritis (RA) is a chronic autoimmune disorder characterized by joint inflammation, pain, and functional impairment, affecting millions worldwide and often leading to reduced quality of life. Traditional treatments focus on pharmacotherapy, but complementary mind-body practices like Tai Chi and Qigong offer potential benefits through gentle movements,

breathing, and meditation. This compilation summarizes key studies on their effects in RA, highlighting evidence from reviews, RCTs, and qualitative explorations. Building on prior analyses for conditions like osteoarthritis and depression, it examines study designs, outcomes, and implications to guide clinical and personal use.

Methodology

Studies were selected from the PubMed database. Grok, an artificial intelligence assistant, was then used to summarize the studies. The author then edited the summaries.

The Studies

The studies are summarized below.

Study 1 Summary [31]

Study Design: Narrative biomedical review synthesizing evidence from case-control, interventional, case series (>3 cases), and randomized crossover studies on Tai Chi and yoga for RA and spondyloarthropathies, sourced from PubMed/MEDLINE, Scopus, and Web of Science up to September 2017.

Participant Details: Aggregate from included studies not specified in detail; focused on RA patients without breakdown by number, age, sex, or disease specifics like duration or severity.

Intervention Protocols: Tai Chi interventions varied across studies, but specifics on style (e.g., Yang or Sun), duration, or frequency were not detailed; generally positioned as low-impact mind-body exercises.

Key Findings with Statistical Data: Efficacy of Tai Chi in RA remains debatable due to limited studies; no specific SMD, p-values, or CI reported, with emphasis on insufficient evidence for significant improvements in symptoms or function.

Potential Mechanisms for Medical Professionals: May involve anti-inflammatory effects via reduced stress hormones and improved joint mobility, though not substantiated; psychological pathways could include enhanced mood through mindfulness.

Benefits for Tai Chi/Qigong Enthusiasts: Promotes Qi flow and energy balance, potentially aiding in holistic well-being and internal harmony for those with chronic conditions like RA.

Strengths: Broad database search and inclusion of diverse study designs for an overview.

Limitations: Limited number of Tai Chi-specific RA studies; lack of long-term, large-scale trials; no quantitative synthesis.

Clinical Recommendations: Tai Chi may serve as a safe adjunct therapy for RA, but requires more robust research before routine recommendation.

Study 2 Summary [32]

Study Design: Systematic Cochrane review of RCTs and

controlled clinical trials evaluating Tai Chi for RA treatment.

Participant Details: Total 206 participants across 4 trials; no specifics on age, sex, or RA details like duration or severity provided.

Intervention Protocols: Tai Chi-based programs incorporating philosophy and exercises; no details on specific style, duration, or frequency.

Key Findings with Statistical Data: No clinically important effects on disease activity, ADL, or joints; significant improvement in ankle plantar flexion ROM (no SMD, p-value, or CI given); higher enjoyment in Tai Chi vs. ROM exercises.

Potential Mechanisms for Medical Professionals: Likely enhances joint flexibility via gentle movements; psychological benefits from relaxation reducing perceived pain.

Benefits for Tai Chi/Qigong Enthusiasts: Cultivates Qi through mindful movement, fostering inner peace and sustained practice enjoyment.

Strengths: Rigorous Cochrane methodology; no detrimental effects noted.

Limitations: Small sample; incomplete outcome assessments (e.g., no pain data); heterogeneity prevented meta-analysis.

Clinical Recommendations: Tai Chi is safe and may improve lower extremity ROM; consider as adjunct for RA without exacerbating symptoms.

Study 3 Summary [33]

Study Design: Overview of systematic reviews (Cochrane and non-Cochrane) including RCTs and quasi-RCTs on Tai Chi for RA, with no date/language restrictions.

Participant Details: Varied; e.g., Mudano (2019): 345 participants (83% women, ages 16-80); Lee (2007): 5 studies, unspecified numbers; Macfarlane (2012): 1 Tai Chi study with ~20 in control. RA per ACR criteria, higher prevalence in women 30-50 years.

Intervention Protocols: Tai Chi (e.g., 60min, twice weekly for 12weeks) vs. education/stretching; styles not specified.

Key Findings with Statistical Data: Pain: MD -2.15 (95% CI -3.19 to -1.11); HAQ: MD -0.33 (95% CI -0.79 to 0.12); ACR20: RR 11.0 (95% CI 0.69-175.86); improvements in disability (p=0.01), quality of life (p=0.01); low-quality evidence.

Potential Mechanisms for Medical Professionals: Physiological: Improves balance, strength, flexibility; psychological: Reduces stress, anxiety, depression via mindfulness.

Benefits for Tai Chi/Qigong Enthusiasts: Enhances Qi cultivation, promoting vitality and emotional balance for sustained practice.

Strengths: Comprehensive search; AMSTAR 2 quality assessment; inclusive criteria.

Limitations: Only 3 reviews; low-quality evidence due to bias, small samples; inconclusive results.

Clinical Recommendations: Tai Chi may offer modest benefits for pain and function; integrate as complementary therapy with caution due to evidence quality.

Study 4 Summary [34]

Study Design: Review on RA management, including integrative therapies like Tai Chi.

Participant Details: Not specified; general RA patients.

Intervention Protocols: Tai Chi as mind-body exercise; no details on type, duration, or frequency.

Key Findings with Statistical Data: Limited evidence for Tai Chi in RA; no specific SMD, p-values, or CI.

Potential Mechanisms for Medical Professionals: May reduce inflammation via stress modulation; psychological support through mindfulness.

Benefits for Tai Chi/Qigong Enthusiasts: Supports Qi harmony, aiding in coping with chronic pain.

Strengths: Covers broad RA management.

Limitations: Insufficient Tai Chi-specific data; no detailed outcomes.

Clinical Recommendations: Consider Tai Chi as adjunct with limited evidence; prioritize pharmacologic therapies.

Study 5 Summary [35]

Study Design: Comparative study (two separate trials) evaluating Tai Chi safety and use for RA.

Participant Details: Study 1: 20 RA patients vs. 11 controls; Study 2: 15 vs. 9; no age, sex, or RA specifics.

Intervention Protocols: Tai Chi Chuan; 1-hour sessions; Study 1: weekly for 10 weeks; Study 2: twice weekly for 10 weeks.

Key Findings with Statistical Data: No joint symptom exacerbation; improved parameters like tenderness, swelling, walk time, grip (no SMD, p-values, CI).

Potential Mechanisms for Medical Professionals: Physiological: Stimulates bone growth, strengthens connective tissue; psychological: Enhances well-being.

Benefits for Tai Chi/Qigong Enthusiasts: Builds Qi through weight-bearing flows, improving energy and stability.

Strengths: Demonstrates safety; evaluates weight-bearing aspect.

Limitations: Short duration; small samples; no stats details.

Clinical Recommendations: Safe alternative exercise; incorporate in RA rehabilitation.

Study 6 Summary [36]

Study Design: Pragmatic non-randomized before/after evaluation comparing Tai Chi with/without auricular acupressure.

Participant Details: 21 RA patients; no age, sex, or RA specifics.

Intervention Protocols: Tai Chi program; twice weekly for 12 weeks; one group with acupressure.

Key Findings with Statistical Data: Improvements in balance, strength, walk time, pain, joints, self-efficacy ($p < 0.05$ for all); no acupressure enhancement (no SMD, CI).

Potential Mechanisms for Medical Professionals: Physiological: Strengthens muscles, reduces inflammation; psychological: Boosts self-efficacy, mental health.

Benefits for Tai Chi/Qigong Enthusiasts: Cultivates Qi, providing mental-physical harmony.

Strengths: Real-world design; high acceptability.

Limitations: Small, non-randomized; no detailed stats.

Clinical Recommendations: Encourage Tai Chi for physical/psychological benefits in RA.

Concluding Comments

The six studies reviewed in this compilation consistently indicate that tai chi and qigong are safe and well-tolerated forms of mind-body exercise for individuals with rheumatoid arthritis. Across narrative reviews, Cochrane analyses, overviews of systematic reviews, and pragmatic evaluations, there was no evidence that participation in tai chi or qigong exacerbated RA symptoms or caused joint injury. This is a clinically meaningful finding given that many RA patients have concerns about engaging in physical activity that involves weight-bearing or range-of-motion demands.

Beyond safety, the studies reported a range of beneficial outcomes, including improvements in ankle plantar flexion range of motion [32], reductions in pain scores [33], enhanced balance and walking speed [36], and improvements in self-efficacy and psychological well-being [36]. The overview of systematic reviews by *Imoto, et al.*, [33] found a statistically significant reduction in pain (MD -2.15; 95% CI -3.19 to -1.11) and improvements in disability ($p = 0.01$) and quality of life ($p = 0.01$), though the authors cautioned that the overall quality of evidence remains low. The Cochrane review by *Han, et al.*, [32] similarly found no detrimental effects and reported higher enjoyment among tai chi participants compared to those performing standard range-of-motion exercises a finding with practical implications for long-term adherence.

From a mechanistic standpoint, the reviewed studies suggest that tai chi and qigong may exert their benefits through both physiological and psychological pathways. Physiologically, these practices promote gentle joint mobilization, improved muscular strength and balance, and potentially anti-inflammatory effects through stress hormone modulation. Psychologically, the mindfulness and meditative dimensions of tai chi and qigong may reduce anxiety, depression, and pain perception all of which are frequently elevated in RA patients. These dual pathways align with traditional Chinese medicine's concept of cultivating and harmonizing Qi, the vital energy that flows through the body and underlies physical and mental health.

Despite these encouraging findings, several limitations constrain the strength of conclusions that can be drawn. Most studies involved small samples, lacked rigorous randomization, and varied considerably in intervention design including style of tai chi, session length, frequency, and duration of follow-up. Heterogeneity across studies prevented meta-analytic pooling in several reviews, and placebo-controlled designs are inherently difficult to implement for mind-body interventions. These methodological gaps underscore the need for well-powered, long-term randomized controlled trials that standardize tai chi and qigong protocols and employ comprehensive outcome assessments, including biological markers of inflammation.

The use of artificial intelligence to assist in summarizing these studies represents a methodological innovation consistent with the broader trend of AI integration in medical research and clinical practice [23-30]. AI-assisted synthesis offers efficiency and scalability, enabling researchers to process and organize large volumes of published literature in a systematic and reproducible manner. As with all AI-assisted research tools, however, the summaries generated require careful expert review and editing, as the present study reflects, to ensure accuracy and contextual appropriateness.

In summary, the available evidence supports the integration of tai chi and qigong as safe and potentially beneficial complementary therapies for rheumatoid arthritis. Clinicians may reasonably recommend these practices as adjuncts to conventional pharmacotherapy, particularly for patients who seek low-impact physical activity, wish to address the psychosocial dimensions of their condition, or are interested in mind-body approaches rooted in traditional Chinese medicine. Future research should prioritize rigorous trial design and longer follow-up periods to more definitively characterize the scope and durability of these benefits.

Conflict of Interest

None.

Acknowledgment

None.

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