

Using Artificial Intelligence to Conduct Research on Traditional Chinese Medicine: Six Case Studies of Tai Chi, Qigong and Rheumatoid Arthritis

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ABSTRACT

Rheumatoid arthritis (RA) is a chronic autoimmune disease associated with persistent pain, functional limitation, and substantial psychosocial burden, despite advances in pharmacologic management. Traditional Chinese mind-body practices such as Tai Chi and Qigong are increasingly promoted as gentle, low impact options that may complement standard RA care, yet the supporting literature is dispersed and methodologically variable. This study uses an artificial intelligence-assisted approach to locate and synthesize PubMed indexed research on Tai Chi and related mind-body exercise in RA, including qualitative work, pilot randomized controlled trials, broader overviews of rheumatic diseases, and narrative reviews. Across the six case studies summarized, Tai Chi was generally well tolerated and associated with improvements in mood, self efficacy, pain, vitality, and functional status in selected cohorts, with additional suggestions of benefit for social support and stress reduction. However, most studies were small, of short duration, and at risk of bias, limiting the confidence with which these effects can be generalized. The findings support the view that Tai Chi can be considered a safe adjunctive strategy for RA aimed at enhancing psychosocial and functional outcomes, while underscoring the need for rigorously designed, adequately powered trials and clearer reporting of intervention protocols and clinical endpoints. More broadly, this project illustrates how artificial intelligence can expedite evidence mapping and structured summarization in Traditional Chinese Medicine research, providing a practical tool for clinicians and investigators who wish to appraise complementary therapies for chronic rheumatologic disease.

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 Studies

The studies are summarized below.

Study 1 Summary [31]:

- **Study Design:** Qualitative follow-up on psychosocial effects of Tai Chi in RA.
- **Participant Details:** 19 RA patients; no age, sex, specifics.
- **Intervention Protocols:** Modified Tai Chi; twice weekly for 12 weeks.
- **Key Findings with Statistical Data:** Reduced anxiety/depression, improved self-efficacy, social support; no quantitative stats.
- **Potential Mechanisms for Medical Professionals:** Psychological: Enhances mind-body links, reduces mood disorders.
- **Benefits for Tai Chi/Qigong Enthusiasts:** Builds Qi, fostering esteem and motivation.
- **Strengths:** In-depth experiences.
- **Limitations:** Small, qualitative only.
- **Clinical Recommendations:** Promote for psychological health.

Study 2 Summary [32]:

- **Study Design:** Overview synthesizing RCTs, non-RCTs, pilots on Tai Chi for rheumatic diseases including RA.
- **Participant Details:** 20-61 per study; adults (40-70 years); mostly women; RA class I-II, duration ~14 years.
- **Intervention Protocols:** Yang/Sun styles; 6-12 weeks, twice weekly 50-60 min.
- **Key Findings with Statistical Data:** ACR20 50% vs. 0% (p=0.03); disability (p=0.01); vitality (p=0.01); depression (p=0.003); pain/fatigue reductions.
- **Potential Mechanisms for Medical Professionals:** Physiological: Boosts strength, cardio; psychological: Reduces stress/anxiety.
- **Benefits for Tai Chi/Qigong Enthusiasts:** Qi modulation for joint protection.
- **Strengths:** Broad evidence; safety.
- **Limitations:** Inconsistent results; small studies.
- **Clinical Recommendations:** Safe complementary for pain/function.

Study 3 Summary [33]:

- **Study Design:** Pilot single-blinded RCT on Tai Chi for RA.
- **Participant Details:** 20 patients; functional class I-II; no age/sex.
- **Intervention Protocols:** Tai Chi; twice weekly for 12 weeks.
- **Key Findings with Statistical Data:** ACR20 50% vs. 0% (p=0.03); disability (p=0.01); vitality (p=0.01); depression (p=0.003).
- **Potential Mechanisms for Medical Professionals:** Muscle strength; mind-body interactions.
- **Benefits for Tai Chi/Qigong Enthusiasts:** Qi for pain management.
- **Strengths:** RCT; no adverse events.
- **Limitations:** Small pilot.
- **Clinical Recommendations:** Promising adjunct; further study.

Study 4 Summary [34]:

- **Study Design:** RCT on Tai Chi effects in RA adults.
- **Participant Details:** Not specified.
- **Intervention Protocols:** Tai Chi; details unavailable.
- **Key Findings with Statistical Data:** Potential improvements; no stats.
- **Potential Mechanisms for Medical Professionals:** Joint mobility enhancement.
- **Benefits for Tai Chi/Qigong Enthusiasts:** Qi balance.
- **Strengths:** RCT design.
- **Limitations:** No abstract/details.
- **Clinical Recommendations:** Explore further.

Study 5 Summary [35]:

- **Study Design:** Review on Tai Chi role in rheumatologic diseases.
- **Participant Details:** Not specified.
- **Intervention Protocols:** Multi-component Tai Chi; no details.
- **Key Findings with Statistical Data:** Improves function, reduces stress; no stats.
- **Potential Mechanisms for Medical Professionals:** Enhances fitness, balance; psychological well-being.
- **Benefits for Tai Chi/Qigong Enthusiasts:** Qi for overall health.

- **Strengths:** Complementary approach.
- **Limitations:** Limited evidence.
- **Clinical Recommendations:** Recommend for RA well-being.

Study 6 Summary [36]:

- **Study Design:** Review on exercise/behavioral therapies for rheumatic pain/stress.
- **Participant Details:** General rheumatic patients; no specifics.
- **Intervention Protocols:** Tai Chi/meditation; no details.
- **Key Findings with Statistical Data:** Beneficial for arthritis; no stats.
- **Potential Mechanisms for Medical Professionals:** Reduces pain via behavior mod.
- **Benefits for Tai Chi/Qigong Enthusiasts:** Qi cultivation for stress relief.
- **Strengths:** Alternative focus.
- **Limitations:** General; no RA depth.
- **Clinical Recommendations:** Use as alternative for pain.

Concluding Comments

Taken together, the six AI summarized case studies suggest that Tai Chi has meaningful potential as a complementary strategy for people living with rheumatoid arthritis, particularly in the domains of psychological well being, perceived control over illness, and everyday functioning. Participants in qualitative and quantitative studies frequently reported reductions in anxiety and depression, greater self efficacy, and a sense of social connection, while pilot randomized trials and overviews noted improvements in disability scores, vitality, and pain in at least a subset of individuals. Importantly, Tai Chi was consistently described as safe and feasible for adults with class I-II RA, with no major adverse events reported in the summarized trials.

At the same time, the current evidence base is far from definitive. Most available studies are small, short term, and heterogeneous in terms of Tai Chi style, session frequency, instructor expertise, and outcome selection, which complicates efforts to derive precise effect estimates or formulate standardized clinical recommendations. Several reports lack detailed intervention descriptions or robust control conditions, and few include objective inflammatory or structural outcomes, such as biomarkers or imaging, that might clarify mechanisms or long term joint effects. These limitations mean that Tai Chi should be presented to patients as a promising but still incompletely validated adjunct, not as a replacement for disease modifying antirheumatic drugs or other evidence based therapies.

From a practical standpoint, clinicians may reasonably recommend Tai Chi to interested RA patients who are medically stable and

seeking low impact movement that integrates physical activity with relaxation and mindfulness. Clear communication about expectations is essential: goals may include better mood, improved confidence in managing RA, enhanced balance and mobility, and richer social engagement, rather than dramatic changes in disease activity scores. Collaboration between rheumatology teams, physical therapists, and experienced Tai Chi instructors can help adapt forms and pacing to accommodate joint limitations, fatigue, and comorbidities. For Tai Chi and Qigong practitioners, awareness of RA specific concerns—such as avoiding excessive joint loading or prolonged weight bearing in painful positions—can make programs safer and more acceptable to this population. Methodologically, this project highlights both the strengths and the boundaries of using artificial intelligence in Traditional Chinese Medicine research. AI tools facilitated rapid identification of relevant literature and production of structured summaries that captured study design, sample characteristics, intervention features, key outcomes, and stated limitations across multiple heterogeneous sources. These capabilities can significantly reduce the time and effort required for preliminary evidence scans, especially in emerging or interdisciplinary fields where conventional systematic reviews are resource intensive.

Nonetheless, AI generated outputs must be interpreted through the lens of human expertise, as algorithms may miss subtle methodological issues, overstate weak findings, or reflect biases inherent in the underlying databases and prompts. Future work should prioritize larger, rigorously conducted randomized controlled trials of clearly defined Tai Chi interventions in RA, with adequate follow up and inclusion of both patient reported and objective clinical outcomes. Comparative studies that situate Tai Chi alongside other non pharmacologic interventions (such as aquatic therapy or yoga) could clarify its relative benefits and inform individualized treatment planning. In parallel, refinement of AI assisted review methods—through transparent workflows, reproducible prompts, and integration with traditional systematic review techniques—may yield more reliable and scalable approaches to evaluating Traditional Chinese Medicine and other complementary modalities in chronic rheumatic disease..

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