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

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Abstract

Rheumatoid arthritis (RA) is a chronic autoimmune disease characterized by pain, joint destruction, and impaired function, for which pharmacologic therapy is foundational but often insufficient to address long term disability and quality of life concerns. Traditional Chinese mind-body practices such as Tai Chi and Qigong have been proposed as low impact complementary therapies, yet the evidence specific to RA remains limited and scattered across heterogeneous studies. This paper uses an artificial intelligence-assisted approach to identify and summarize PubMed indexed studies of Tai Chi and related mind-body exercise in RA, including systematic reviews, Cochrane analyses, observational cohorts, mixed methods studies, and narrative reviews.

The AI generated summaries highlight modest improvements in pain, physical function, mood, and vascular parameters in some trials, alongside consistent signals of safety but overall low or very low certainty of evidence because of small sample sizes, risk of bias, and methodological limitations. Taken together, the findings suggest that Tai Chi is a feasible and generally safe adjunct to standard RA care, with potential benefits for selected patient reported and physiological outcomes, but they also underscore the need for larger, rigorously designed randomized controlled trials and more standardized intervention protocols. The study further illustrates how artificial intelligence can efficiently synthesize emerging literature on Traditional Chinese Medicine modalities and support clinicians and researchers in appraising complementary therapies for chronic rheumatologic disease.

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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. Several bibliometric studies have been conducted on the health benefits of these forms of traditional Chinese medicine. In recent years artificial intelligence has been used as both a research and administrative tool in Western medicine. The present study utilizes artificial intelligence to summarize studies where tai chi and qigong have been used to treat rheumatoid arthritis [1-30].

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: Systematic review of RCTs and CCTs on Tai Chi for RA, searching multiple databases to January 2007.
Participant Details: Not specified.
Intervention Protocols: Tai Chi interventions; no type, duration, frequency details.
Key Findings with Statistical Data: Positive for disability, quality of life, mood in 2 RCTs; no pain reduction (no SMD, p-values, CI); heterogeneity prevented meta-analysis.
Potential Mechanisms for Medical Professionals **Psychological:** Reduces depression via mindfulness; **physiological:** Improves function.
Benefits for Tai Chi/Qigong Enthusiasts: Enhances Qi flow for emotional equilibrium.
Strengths: Broad search, no language limits.
Limitations: Low quality studies; few trials.
Clinical Recommendations: Unproven value; more research needed.

Study 2 Summary [32]

Study Design: Updated Cochrane systematic review/ meta-analysis of RCTs/CCTs on Tai Chi for RA, searches to September 2018.
Participant Details: 345 participants (83% women, 16-80 years) across 7 trials; RA per ACR, varied duration/ severity (e.g., functional class II-III).
Intervention Protocols: Tai Chi (e.g., Yang/Sun styles); 8-12 weeks, 1-2x weekly, 50-60 min; vs. no/alternate therapy.
Key Findings with Statistical Data: Pain MD -2.15 (95% CI -3.19 to -1.11); DAS-28 MD -0.40 (95% CI -1.10 to 0.30); HAQ MD -0.33 (95% CI -0.79 to 0.12); withdrawals RR 0.40 (95% CI 0.19-0.86); low/very low evidence.
Potential Mechanisms for Medical Professionals: Physiological: Improves circulation, reduces stiffness via isometric movements; psychological: Relaxation lowers stress.
Benefits for Tai Chi/Qigong Enthusiasts: Promotes Qi circulation, enhancing vitality and resilience.
Strengths: Rigorous methods; safety confirmed.
Limitations: Bias risks; small samples; no radiographic data.
Clinical Recommendations: Safe adjunct for modest pain/function benefits; integrate cautiously.

Study 3 Summary [33]

Study Design: Commentary on Cochrane review (Mudano 2019) for Tai Chi in RA.
Participant Details: Not specified; references general RA patients.
Intervention Protocols: Tai Chi programs; no details.
Key Findings with Statistical Data: Limited; echoes inconclusive benefits (no stats).
Potential Mechanisms for Medical Professionals: Potential anti-inflammatory, stress reduction.
Benefits for Tai Chi/Qigong Enthusiasts: Qi enhancement for well-being.

Strengths: Builds on Cochrane evidence.
Limitations: Commentary only; no new data.
Clinical Recommendations: Explore as complementary; evidence weak.

Study 4 Summary [34]

Study Design: Prospective observational study with 3-month Tai Chi intervention vs. control.
Participant Details: 43 elderly women (mean age 64 Tai Chi, 61 control); RA per ACR, low activity, duration 10-15 years.
Intervention Protocols: Twelve Movement Tai Chi for Arthritis; 60 min weekly for 3 months.
Key Findings with Statistical Data: FMD increase Δ1.90% (p=0.002); baPWV decrease Δ-93.6 cm/s (p=0.016); cholesterol decrease (p=0.027); no RA symptom changes.
Potential Mechanisms for Medical Professionals: Physiological: Improves endothelial function, reduces stiffness via exercise; psychological: Stress reduction.
Benefits for Tai Chi/Qigong Enthusiasts: Cultivates Qi, improving vascular health and energy.
Strengths: Matched groups; objective vascular measures.
Limitations: Non-randomized; small sample; no RA symptom impact.
Clinical Recommendations: Beneficial for cardiovascular health in elderly RA women.

Study 5 Summary [35]

Study Design: Exploratory single-group quantitative/qualitative study on Tai Chi for RA.
Participant Details: 13 completers (11 women, 2 men; median age 57, duration 6 years); RA per ACR.
Intervention Protocols: Twelve Movement Tai Chi; twice weekly, 60 min for 12 weeks.
Key Findings with Statistical Data: Swollen joints reduction (p=0.01); Timed-Stands improvement (p=0.01); DAS28 improvement (p=0.04); qualitative: less pain, better balance.
Potential Mechanisms for Medical Professionals: Physiological: Strengthens limbs; psychological: Increases awareness, reduces stress.
Benefits for Tai Chi/Qigong Enthusiasts: Enhances Qi awareness, promoting relaxation.
Strengths: Mixed methods; high compliance.
Limitations: No control; small sample.
Clinical Recommendations: Feasible adjunct for function and well-being.

Study 6 Summary [36]

Study Design: Review on Tai Chi/yoga as complementary therapies for rheumatologic conditions including RA.
Participant Details: Not specified.
Intervention Protocols: Tai Chi/yoga; no details.
Key Findings with Statistical Data: Potential benefits; no stats.
Potential Mechanisms for Medical Professionals: Mind-body integration reduces symptoms.
Benefits for Tai Chi/Qigong Enthusiasts: Qi cultivation for harmony.
Strengths: Complementary focus.
Limitations: Limited RA data.
Clinical Recommendations: Consider as adjunct.

Concluding Comments

The body of literature examined in this AI-assisted review indicates that Tai Chi can be integrated into the management of rheumatoid arthritis as a complementary, rather than substitutive, modality. Across systematic reviews, observational work, and mixed-methods studies, Tai Chi was consistently well tolerated, with no major safety concerns and preliminary signals of benefit for pain, physical function, vascular health, and psychosocial well-being in selected cohorts. At the same time, the certainty of these findings remains constrained by small sample sizes, heterogeneous protocols, limited follow-up, and a frequent absence of robust control groups or radiographic outcomes.

From a clinical perspective, it is reasonable for practitioners to consider offering Tai Chi to motivated RA patients as an adjunct to guideline-directed pharmacotherapy and standard rehabilitation, particularly for individuals seeking low-impact exercise that may support balance, mood, and self-efficacy. Shared decision-making should emphasize that current evidence suggests possible but not definitive improvements in pain and function, and that Tai Chi should not be viewed as a replacement for disease-modifying antirheumatic drugs or other established therapies. For Tai Chi and Qigong practitioners, these findings provide a cautious rationale for collaborating with rheumatologists and physical therapists to design programs tailored to joint protection and fatigue management in RA.

Methodologically, this project shows how contemporary artificial intelligence tools can streamline evidence discovery and structured summarization in areas

where the literature is sparse, interdisciplinary, and rapidly evolving. AI-generated summaries allowed efficient extraction of key elements such as study design, participant characteristics, intervention parameters, outcomes, and limitations, which can then be critically appraised by human researchers with relevant clinical and methodological expertise. However, reliance on AI also introduces potential biases related to database coverage, prompt design, and the risk of over-interpreting weak or indirect evidence, underscoring the need for transparent workflows and human oversight at every stage.

Future research on Tai Chi and Qigong for RA would benefit from adequately powered randomized controlled trials with standardized forms, clearly described frequency and duration, longer follow-up, and inclusion of both clinical (e.g., DAS28, HAQ) and mechanistic (e.g., inflammatory biomarkers, imaging) endpoints. Comparative studies that situate Tai Chi alongside other low-impact exercise or mind-body practices, as well as implementation research in real-world clinical settings, would further clarify where these TCM modalities fit within comprehensive RA care. Parallel work on the use of artificial intelligence in complementary and integrative medicine-covering literature surveillance, automated data extraction, and decision-support tools-may help build a more coherent and accessible evidence base for clinicians, patients, and TCM practitioners alike.

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