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Effectiveness of acupuncture combined with exercise therapy in patients with sarcopenias: a meta-analysis of randomized controlled trials

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ADMINISTRATIVE INFORMATION

Support - Review has no funding and no agreed support from an academic institution and is done in authors' own.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 26 November 2025 and was last updated on 26 November 2025.

INTRODUCTION

Review question / Objective To determine whether combined acupuncture and exercise therapy is superior to exercise therapy alone in improving outcomes for patients with sarcopenia.

Rationale The treatment methods for sarcopenia primarily consist of exercise therapy and nutritional therapy, while there are relatively few studies on acupuncture therapy. It is expected that by integrating the relevant research on acupuncture combined with exercise therapy, evidence can be provided for the treatment of sarcopenia with acupuncture combined with exercise therapy.

Condition being studied Previous studies have separately shown that exercise therapy can effectively increase muscle mass and enhance muscle strength; acupuncture can improve the state of low inflammation, and regulate hormone levels to achieve the effect of treating or preventing sarcopenia. While acupuncture combined with exercise therapy is gaining traction as a treatment for sarcopenia, there is currently insufficient evidence supporting its efficacy specifically for sarcopenia. Therefore, this meta-analysis aims to evaluate the effectiveness of acupuncture combined with exercise therapy for sarcopenia.

METHODS

Search strategy A comprehensive search strategy will be developed for each electronic database, combining MeSH and free-text keywords. Core search terms will include “sarcopenia”, “muscle weakness”, “acupuncture”, “acupuncture therapy”, “exercise”, “randomized controlled trial”, etc. The search will be conducted across databases (PubMed, Embase, Cochrane Library, Web of Science, China National Knowledge Infrastructure, China Biology Medicine disc, China Science and Technology Journal Database and Wanfang Database) from their inception until December 31, 2025. Additionally, clinical trial registries and other

relevant sources will be searched. All randomised controlled trials (RCTs) related to acupuncture combined with exercise therapy for sarcopenia will be included.

Participant or population Adults diagnosed with sarcopenia (ICD-11 code: 8C30).

Intervention The experimental group received acupuncture combined with exercise therapy.

Comparator The control group of sarcopenia patients only received exercise therapy.

Study designs to be included Randomized controlled trials (RCTs).

Eligibility criteria 1. Randomized controlled trials (RCTs) comparing acupuncture plus exercise therapy with control interventions in patients with sarcopenia. 2.Publications in English were preferred, and non-English articles were also considered if they met the inclusion criteria.

Information sources The main databases to be searched are PubMed, Embase, Cochrane Library, Web of Science, China National Knowledge Infrastructure, China Biology Medicine disc, China Science and Technology Journal Database and Wanfang Database.

Main outcome(s) 6-minute walking distance test, balance function measurement, limb muscle index.

Quality assessment / Risk of bias analysis Data will be assessed independently by at least two authors (or person/machine combination) with a process to resolve differences. Additional information will be sought from study investigators if required information is unclear or unavailable in the study publications/reports.

Strategy of data synthesis Statistical analyses were performed with Review Manager 5.4 (Cochrane Collaboration,Oxford,UK) and STATA 15.0(StataCorp LP,College Station,Texas). RR with 95% confidence interval (CI) were used to compare binary variables. The weighted mean difference (WMD)and 95%CI were calculated for continuous outcomes. Based on the method described by Wan et al (2014),the medians and interquartile ranges of continuous data were converted to means and standard deviations. For meta-analyses, the CochraneQp value and 12 statistic were applied to check heterogeneity.When p value < 0.05 or|2> 50%,there was a significant heterogeneity,a random-effect model was used to merge the results. Otherwise, a fixedleffect model was used. Ap value less than 0.05 was considered statistically significant. We performed legger's test to assess publication bias(only for outcomes including ten or more studies).

Subgroup analysis If there is heterogeneity in this study, subgroup analysis will be conducted on intervention form, intervention time, intervention cycle, and intervention frequency.

Sensitivity analysis To assess the robustness of the pooled results, we will perform the following sensitivity analyses: a) leave-one-out analysis (sequentially omitting one RCT at a time); b) exclusion of studies judged to be at high risk of bias in the overall RoB assessment; c) comparison between fixed-effect and random-effects models; d) exclusion of unpublished data if they are finally included. A statistically significant change (p25 %) will be considered as indicating instability of the primary outcome.

Language restriction Publications in English were preferred, and non-English articles were also considered if they met the inclusion criteria.

Country(ies) involved China.

Keywords Acupuncture; Exercise therapy; Sarcopenia.

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