

# INPLASY

## The Efficacy and safety of Baduanjin Exercise as Complementary Therapy for Pain Reduction and Functional Improvement in Knee Osteoarthritis: A Meta-Analysis of Randomized Controlled Trials

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### ADMINISTRATIVE INFORMATION

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**Review Stage at time of this submission** - Preliminary searches.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202410091

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 21 January 2024 and was last updated on 21 January 2024.

### INTRODUCTION

**Review question / Objective** This meta-analysis proposes to comprehensively investigate the effects and safety of Baduanjin exercise on pain, stiffness, physical function, quality of life in people with knee osteoarthritis systematically.

The Population, Intervention, Comparison, Outcome and Study type (PICOS) framework was used for this review:

P: Patients with Knee Osteoarthritis

I: Baduanjin exercise or Baduanjin exercise combined with other treatments

C: Health education or physical therapy or drug therapy or no intervention

O: Western Ontario and McMaster Universities Osteoarthritis Index(WOMAC): pain score, Stiffness

score, Physical function score. Incidence of adverse events. SF-36. VAS.

S: Randomized Controlled Trials(RCT).

**Condition being studied** Knee osteoarthritis (KOA) is a degenerative disease caused by multiple factors. It is the leading cause of disability among older adults. In China, research has shown that 85% of people over 65 years have osteoarthritis of the knee. It has a serious impact on the quality of patients' life and the morbidity has continuously increased due to aging of the population. Baduanjin exercise is a therapeutic method in traditional Chinese medicine that involves performing actions under the guidance of meridian theory Many literatures show that Baduanjin exercise as complementary therapy has a great effect on KOA. But, it may also increase the risk of

knee osteoarthritis symptoms. So, The objective of our study is to assess the effects and safety of Baduanjin exercise on pain, stiffness, physical function, quality of life in people with knee osteoarthritis systematically.

## METHODS

**Participant or population** Participants were diagnosed with Knee Osteoarthritis by validated criteria, such as those of the American College of Rheumatology (ACR), the American Rheumatism Association (ARA), the Kellgren Lawrence classification (KL), radio-graphic evidence or physician-confirmed diagnosis, all subjects included in the study had been diagnosed with unilateral or bilateral knee osteoarthritis. Age, sex, disease duration, and severity were unrestricted. Subjects with knee trauma or surgery, or history of rheumatoid arthritis were excluded. Subjects with cognitive impairment were also excluded.

**Intervention** The traditional Chinese exercise: Baduanjin exercise. It consists of eight separate movements, each bringing certain benefits to different physical parts of the body or particular organs.

**Comparator** Control or comparison group: health education or physical therapy or drug therapy or no intervention.

**Study designs to be included** Randomized Controlled Trials (RCT).

**Eligibility criteria** Inclusion criteria: 1) Design: randomized controlled trials (RCT). 2) Population: all subjects included in the study had been diagnosed with unilateral or bilateral knee osteoarthritis. Age, sex, disease duration and severity were unrestricted. 3) Intervention: comparison of Baduanjin exercise with health education or physical or drug therapy or no intervention which were eligible. 4) Outcomes: pain intensity, physical function, joint stiffness and adverse events. Exclusion criteria: 1) The research types are non-randomized controlled trials and animal experiments. 2) Duplicate document. 3) Trails which did not report on specific outcomes.

**Information sources** Two researchers searched six databases: PubMed, the Cochrane Library, EBSCO, Web of Science, and the Chinese Medical Databases (CNKI, WANFANG) were searched by computer until January, 2024 without language or publication status restrictions.

**Main outcome(s)** Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC): pain score, Stiffness score, Physical function score. Incidence of adverse events.

**Quality assessment / Risk of bias analysis** Two independent reviewers will separately assess methodological quality utilizing the Cochrane risk of bias tool, which include the following options: sequence generation; allocation concealment; blinding of participants; blinding of outcome assessment; incomplete outcome data; selective outcome reporting; and other issues. According to these areas, the results for each domain will be divided into 3 levels: low risk of bias, high risk of bias, and unclear risk of bias.

**Strategy of data synthesis** Data analysis using RevMan 5.4 software. Continuous outcomes were pooled to find weighted mean differences (WMD) and were accompanied by 95% confidence intervals (CI). Categorical outcomes were pooled to find relative risks (RR) and were accompanied by 95% CI.  $I^2$  statistics were used to measure heterogeneity. The fixed effects model is appropriate when there is statistical heterogeneity ( $I^2 < 50%$ ) is used and publication bias is explored through funnel plot analysis.

**Subgroup analysis** If the included trial has significant heterogeneity, we will perform a subgroup analysis based on the intervention timing, frequency and location.

**Sensitivity analysis** When there are sufficient studies, we will carry out sensitivity analysis to test the robustness of studies according to the quality of method, the sample size and the selection of missing data. And the fluctuation of results will be observed.

**Country(ies) involved** China.

**Keywords** Baduanjin, Knee Osteoarthritis, Meta-Analysis.

### Contributions of each author

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