INPLASY PROTOCOL

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None declared.

The effects of different exercises on pain and joint function in patients with knee osteoarthritis: A systematic review and meta-analysis

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Review question / Objective: Objectives: To systematically evaluate the effects of three different exercises (i.e. isokinetic training, resistance training and traditional fitness exercise) on pain and joint function in patients with knee osteoarthritis. Participants: Patients with knee osteoarthritis. Interventions: The experimental group was engaged in either isokinetic training, resistance training, or traditional fitness exercise (i.e. Tai Ji, Baduanjin, and Wuqinxi); The control group received only regular medical care or no intervention modality. Outcome: in order to discuss the effects of different exercise modalities on KOA patients, in this study, the Visual Analog Scale (VAS) as well as the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)were selected to evaluate knee pain in KOA patients, while 6MWT and knee extensor peak torque were used for knee function evaluation. Study design: Clinical random control trials.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 March 2022 and was last updated on 20 March 2022 (registration number INPLASY202230096).

INTRODUCTION

Review question / Objective: Objectives: To systematically evaluate the effects of three different exercises (i.e. isokinetic training, resistance training and traditional fitness exercise) on pain and joint function in patients with knee osteoarthritis.

Participants: Patients with knee osteoarthritis. Interventions: The experimental group was engaged in either isokinetic training, resistance training, or traditional fitness exercise (i.e. Tai Ji, Baduanjin, and Wuqinxi); The control group received only regular medical care or no intervention modality. Outcome: in order to

discuss the effects of different exercise modalities on KOA patients, in this study, the Visual Analog Scale (VAS) as well as the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) were selected to evaluate knee pain in KOA patients, while 6MWT and knee extensor peak torque were used for knee function evaluation. Study design: Clinical random control trials.

Condition being studied: knee osteoarthritis.

METHODS

Participant or population: Patients with knee osteoarthritis.

Intervention: The qualified measures for intervention are training/exercising, including isokinetic muscle strength training, resistance training, traditional fitness (Baduanjin, Tai Ji, Wuqinxi).

Comparator: The control group received only routine medical care or no intervention modality.

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

Eligibility criteria: Criteria for inclusion: 1) All included literatures were randomized controlled trials; 2) The study subjects were all patients with KOA; 3) The experimental group received exercise interventions only (i.e. isokinetic muscle strength training, resistance training, traditional fitness exercise.) and the control group received only regular medical care or no intervention modality; 4) at least one outcome measures below were included: ① visual analog scale (VAS); ② Osteoarthritis Index (WOMAC) score; ③ Knee extension knee relative peak torque; ④ 6min walking distance. The included literature contained one or more of them. Exclusion criteria: Non randomized controlled trials; Excluding all outcome measures above; Repeat published or reviewed literature.

Information sources: In this research, manual and computer aided search methods were adopted, the database includes CNKI, WANFANG, VIP, SinoMed, PubMed, Cochrane Library, Embase, and the content of the research is the effects of different exercises on pain and joint function in patients with knee osteoarthritis (RCTs), the search period is from the establishment of the database to August 31, 2021.

Main outcome(s): In terms of outcome indicators, patients' pain scores, including Visual Analog Scale, Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) pain score, 6-minute walk test, Knee extension knee relative peak torque.

Quality assessment / Risk of bias analysis: Two authors will assess the risk of bias of each study based on methods endorsed by The Cochrane Collaboration. The assessment will include the following domains: randomization, allocation concealment, blinding, selective reporting, publication bias, as well as any other detected sources of bias that may arise.

Strategy of data synthesis: The standardized mean difference (SMD) and 95% confidence interval (95% CI) were adopted as the effect size to carry out the pooled effect size. When P<0.05, there was a significant difference between the experimental and control groups that proved the results of the meta-analysis were statistically significant, and statistical heterogeneity was analyzed using the chi square test when $I^2 \leq 50\%$, indicating no heterogeneity across the included studies; When $I^2 > 50\%$, indicating heterogeneity across the included studies, meta regression was performed to explore the source of heterogeneity if heterogeneity existed. All analyses were conducted using stata15.0 and Revman5.3.

Subgroup analysis: Subgroup analysis will be conducted according to different exercise modalities.

Sensitivity analysis: Stata software will be used for sensitivity analysis, then the sensitivity of each article will be assessed by leave-one-out method.

Country(ies) involved: China.

Keywords: knee osteoarthritis, isokinetic muscle strength training, resistance training, traditional fitness.

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