

INPLASY PROTOCOL

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Support: Found of china.

Review Stage at time of this submission: The review has not yet started.

Conflicts of interest:
None declared.

The Effects of Balance Training on Chronic Ankle Instability Rehabilitation: A Systematic Review and Meta-analysis

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Review question / Objective: To explore the effect of balance training for patients with chronic ankle instability.

Condition being studied: Lateral ankle sprains (LAS) have been reported as one of the most common musculoskeletal injuries observed in sports and in individuals who are recreationally active. Approximately 40% of individuals who sustain a LAS develop a condition known as chronic ankle instability (CAI). Over 2 million ankle sprains are treatment in emergency departments in the US and UK each year, resulting in about \$2 billion of healthcare costs. Chronic ankle instability describes a combination of mechanical and functional instability with residual ankle-sprain symptoms : pain, swelling, weakness, instability, and repeated episodes of “giving way”. For the patients suffering from persistent symptoms, surgery is usually suggested, but some of them still add up poorly and impede young patients' physical activity, which can negatively affect their overall health and quality of life. One possible can be the sensorimotor deficits, which might be enhanced by balance training.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 04 April 2021 and was last updated on 04 April 2021 (registration number INPLASY202140017).

INTRODUCTION

Review question / Objective: To explore the effect of balance training for patients with chronic ankle instability.

Rationale: The result of studies on the effect of balance training influence patients with chronic ankle instability were in conflict.

Condition being studied: Lateral ankle sprains (LAS) have been reported as one of

the most common musculoskeletal injuries observed in sports and in individuals who are recreationally active. Approximately 40% of individuals who sustain a LAS develop a condition known as chronic ankle instability (CAI). Over 2 million ankle sprains are treatment in emergency departments in the US and UK each year, resulting in about \$2 billion of healthcare costs. Chronic ankle instability describes a combination of mechanical and functional instability with residual ankle-sprain symptoms : pain, swelling, weakness, instability, and repeated episodes of “giving way”. For the patients suffering from persistent symptoms, surgery is usually suggested, but some of them still edd up poorly and impede young patients' physical activity, which can negatively affect their overall health and quality of life. One possible can be the sensorimotor deficits, which might be enhanced by balance training.

METHODS

Search strategy: Search strategies for pubmed: #1 Balance [Mesh Terms] #2 Balance*[Title/Abstract] #3 #1 OR #2 #4 Proprioceptive*[Title/Abstract] or Position Sense* [Title/Abstract] or Sense, Position [Title/Abstract] or Senses, Position[Title/Abstract] or Sense of Position [Title/Abstract] #5 #3 OR #4 #6 Training [Title/Abstract] #7 Chronic ankle instability [Mesh Terms] #8 Chronic ankle instability [Title/Abstract] OR instabili* [Title/Abstract] OR Ankle Injury [Title/Abstract] OR Injury, Ankle [Title/Abstract] OR Ankle Sprain* [Title/Abstract] #9 #7 OR #8 #10 Randomized Controlled Trial[Publication Type] #11 Randomized Controlled Trials [Title/Abstract] OR Clinical Trials, Randomized [Title/Abstract] OR Trials, Randomized Clinical [Title/Abstract] OR Randomized [Title/Abstract] #12 #10 OR #11 #13 #5 AND #6 AND #9 AND #12.

Participant or population: Participants with chronic ankle instability.

Intervention: Simple balance training and combined training with conventional rehabilitation.

Comparator: no balance training, sham group or conventional rehabilitation including bicycle workout, traditional single-limb balance training, usual strength-training, joint exercises, etc.

Study designs to be included: RCT studies.

Eligibility criteria: The case reports, animal mechanism studies, self-pre and post-control, expert experience, duplicated publications, or non-RCTs will be excluded.

Information sources: The related databases including PubMed, EMBASE, the Cochrane Library, Ovid, EBMSCO-host, ScienceDirect, Springer, China National Knowledge Infrastructure (CNKI), Technology Periodical Database (VIP), WanFang Data and China Biology Medicine (CBM) will be searched. All RCTs published in electronic databases from inception to October 1st, 2021 with language restricted in English and Chinese will be included.

Main outcome(s): 1.The ability of balance: Cumberland Ankle Instability Tool; Time-to-boundary (TTB); Star Excursion Balance Test (SEBT) 2.The normal ability of the ankle: Foot and Ankle Ability Measure; Foot and Ankle Disability Index.

Additional outcome(s): 1.The extent of perceived pain: Visual Analog Scale; Numeric Rating Scale; 2.Range of motion: Dorsiflexion and Plantarflexion of the Ankle; 3.General quality of life: SF-36 Questionnaire.

Data management: The data extraction form will include basic information (article title, first author, publication year, country, mean age of the population, number of males and females), study design (RCT design, blind method, randomization, sample size), interventions (including the methods, frequency and duration of interventions), outcome measures, adverse effects, duration of follow-up, conclusions. The completed data extraction forms were cross-checked by the two reviewers(JW and DZ). Any diversity will be resolved by a third reviewer (SJ).

Quality assessment / Risk of bias analysis:

Two reviewers (JW and JM) will assess the risk of bias of included trials by the Cochrane Collaboration's risk of bias assessment method. We assessed the risk of bias (low, high and unclear risk) in six areas including performance bias (blinding of participants and personnel), selection bias (random sequence generation, allocation concealment), detection bias (blinding of outcome assessment), attrition bias (incomplete outcome data), reporting bias (selective reporting), and other biases. For duplicate publications, we only select the original. The final decisions will be made by the third reviewer (JS) if inconsistent results appear.

Strategy of data synthesis: Meta-analysis is planned if studies show sufficient clinical and statistical heterogeneity. We will use the Review Manager (V.5.3) for data analysis if there are two or more studies of sufficient homogeneity across the outcome measures to ensure pooling. Heterogeneity was analyzed using the I² statistic. The RR and MD will be calculated by a fixed-effects model, if I² <50%. A random-effects model will be used to synthesize the data, if I² ≥50%. We will use subgroup analysis or sensitivity analysis to explore the causes of heterogeneity such as clinical or methodological reasons. When the quantitative evaluation is not available, we will provide a qualitative description of the results of the individual study.

Subgroup analysis: Subgroup analysis according to the control intervention and different results.

Sensitivity analysis: Sensitivity analysis will be conducted according to several nodes such as methodological weaknesses, sample size, missing data, and statistical models.

Language: English and Chinese.

Country(ies) involved: China.

Other relevant information: None.

Keywords: Training; Balance; Ankle instability.

Dissemination plans: Published in SCI journals.

Contributions of each author:

Author 1 - Ju Wang - Study design; literature search and selection; data collection; quality rating; statistical analysis; writing of the manuscript.
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