INPLASY

The Effects of Plyometric Training on Athletic Jump Performance: A Systematic Review and Meta-Analysis

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ADMINISTRATIVE INFORMATION

INTRODUCTION

Review question / Objective This systematic review and meta-analysis aim to evaluate the effects of plyometric training on athletic jump performance, specifically focusing on vertical jump (VJ), countermovement jump (CMJ), squat jump (SJ), and standing vertical jump (SVJ). The review will analyze the impact of different intervention durations, frequencies, and participant demographics to determine the most effective training protocols for enhancing jump performance in athletes.

Condition being studied The condition being studied is the effect of plyometric training on the jump performance of athletes. This includes assessing improvements in various types of jumps such as vertical jump (VJ), countermovement jump (CMJ), squat jump (SJ), and standing vertical jump (SVJ). The goal is to understand how plyometric training can enhance these performance metrics and identify the most effective training protocols based on intervention duration, frequency, and participant characteristics.

METHODS

Participant or population Healthy athlete.

Intervention Plyometric Training.

Comparator Plyometric Training and Routine Training.

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

Eligibility criteria Inclusion Criteria
A PICOS framework was utilized to evaluate the eligibility of the studies27, with specific criteria detailed in Table 1.

Table 1 Inclusion criteria according to the PICOS conditions

Items Detailed inclusion criteria
Population Healthy athlete
Intervention plyometric training
Comparison Two or more groups
Outcome Jump Performance in athletes
Study designs RCT
Exclusion Criteria

The exclusion criteria were as follows: (1) Studies that were not fully accessible; (2) studies not published in English; (3) Studies not focused on athletes' jump performance; (4) Reviews, book reviews, cross-sectional studies, etc.; (5) studies that did not report numerical results.

Information sources PubMed, ERIC, Google Scholar, Web of Science, EBSCOhost, and Scopus.

Main outcome(s) Vertical jump (VJ), countermovement jump (CMJ), squat jump (SJ) and vertical jump (SVJ).

Quality assessment / Risk of bias analysis The quality and risk of bias of the included studies will be assessed using the Cochrane Risk of Bias Tool, focusing on randomization, blinding, allocation concealment, and reporting bias. Each study will be rated to ensure reliability and validity of the review findings.

Strategy of data synthesis Data from the included studies will be synthesized using a meta-analysis approach. Effect sizes will be calculated for each study and pooled using random-effects models to account for variability among studies. Subgroup analyses will be conducted based on intervention duration, frequency, and participant characteristics. Sensitivity analyses will be performed to assess the robustness of the results. Statistical heterogeneity will be evaluated using the I^2 statistic.

Subgroup analysis Participant Gender: Male vs female athletes.

Sensitivity analysis This study analysis include PICO and Sensitivity analysis.

Language restriction English.

Country(ies) involved China.

Keywords Plyometric Training ; Athletic Jump Performance; Meta-Analysis.

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