

INPLASY

Effects of Early Exercise and Immobilization after Arthroscopic Rotator Cuff Repair Surgery: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

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ADMINISTRATIVE INFORMATION

Support - N/A.

Review Stage at time of this submission - Completed but not published.

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 13 December 2024 and was last updated on 13 December 2024.

INTRODUCTION

Review question / Objective To investigate the effect of early exercise and brace fixation on postoperative recovery after arthroscopic rotator cuff repair by systematic review, thereby providing evidence-based evidence for clinical practice.

Condition being studied Early exercise is a physical adjuvant therapy that begins on day 1 postoperatively. It prevents postoperative stiffness, fatty infiltration, and muscle atrophy such as forward flexion, abduction, internal rotation, external rotation et al. Usually, use of a brace fixation that immobilizes the shoulder in 30° of abduction during the postoperative rehabilitation period reduces tension on the repaired tendon, which improves tendon-bone healing.

METHODS

Participant or population Patients undergoing arthroscopic rotator cuff repair surgery.

Intervention Early exercise and brace fixation.

Comparator No specific comparator; the study directly compares the effect of early exercise and brace fixation on postoperative recovery after arthroscopic rotator cuff repair.

Study designs to be included Randomized controlled studies.

Eligibility criteria Inclusion Criteria: (1) Articles published in a peer-reviewed journal in English and Chinese; (2) arthroscopic rotator cuff repair surgery in subjects aged ≥18; (3) rehabilitation intervention with early exercise had no restrictions on the

pattern, length, intensity, and frequency of exercise; (4) control group underwent brace fixation alone or with brace fixation and delayed rehabilitation training; (5) study outcomes were pain, function, range of motion, strength, and repair integrity; (6) randomized controlled trials.

Exclusion Criteria (1) non-population studies; (2) studies such as conference articles, case reports, and systematic reviews; (3) studies in which outcome information was insufficient and the data analysis could not be performed; (4) duplicate reports of literature research; and (5) studies for which complete articles could not be obtained.

Information sources Three English databases including PubMed, Web of Science, and Cochrane Library, as well as three Chinese databases including China National Knowledge Infrastructure (CNKI), Wanfang database, and VIP database were systematically searched. The retrieval period was from database establishment to November 15, 2024, and the retrieval strategies for English databases were as follows: ("Shoulder" OR "Shoulder Injuries" OR "Shoulder Joint" OR "Shoulder Pain" OR "Rotator Cuff") AND ("Physical and Rehabilitation" OR "Physical Therapy Modalities" OR "Exercise"). The Chinese databases were retrieved using the same search terms. Additionally, target articles were obtained by reviewing references from included studies.

Main outcome(s) Shoulder function, range of motion and complications.

Additional outcome(s) Pain.

Quality assessment / Risk of bias analysis The Cochrane Collaboration risk assessment tool was used to evaluate the quality of the literature in terms of randomization method, allocation scheme concealment, blinding, outcome data integrity, selective reporting of study results, and other sources of bias.

Strategy of data synthesis Two researchers Hao BR and A L review the quality of literature, and when the results of an audit are inconsistent, a third researcher LI HQ is introduced to discuss and vote. The Grade (The Grading of Recommendations Assessment, Development and Evaluation) grading system is used to check the certainty of the evidence and evaluate the evidence grade of each result.

Distribution of responsibilities: Study identification: Hao BR and A L; Data extraction: Hao BR and LI HQ; Critical appraisal: Hao BR, LI HQ and A L; Analysis and Article writing: Hao BR and A L.

Subgroup analysis Statistical analysis was performed using the Stata16.0 software. The effect size of count data was expressed as relative risk (RR), with measurement data expressed as standard mean difference (SMD) or weighted mean difference (WMD), and a 95% confidence interval (CI) was used to estimate the interval range of effect size. Meanwhile, the heterogeneity was determined by heterogeneity tests using statistics and Q tests; 0.1 indicated obvious homogeneity among the included studies, so the analysis was conducted with a fixed effect model; $> 50\%$ or $P \leq 0.1$ indicated a poor homogeneity among the included studies, so a random effect model was used for analysis. For measurements at different follow-up times, subgroup analyses were combined. Unless otherwise specified, the test level was set at 0.05.

Sensitivity analysis None.

Country(ies) involved China.

Keywords Rotator Cuff Repair Surgery; Arthroscopic; Early Exercise; Fixation.

Contributions of each author

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