

# Clinical Effects of Rehabilitation after Arthroscopic Rotator Cuff Repair

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## Abstract

**Introduction:** A well-planned rehabilitation program is just as important as the size and location of the tear, the surgical method, and the fixation methods for patients undergoing rotator cuff repair to complete tendon healing and achieve the best possible shoulder functional outcome (RCR). It is still up for debate which stages of rehabilitation should take precedence.

**Purpose:** The purpose of this meta-objective analysis is to contrast the outcomes of conventional rehabilitation with post-operative aggressive treatment. **Methods:** We searched PubMed, Ovid MEDLINE, CINAHL, the Cochrane Library, and CEPS databases. In the end, six publications that met our selection criteria were included.

**Results:** Although the intensive postoperative rehabilitation approach has a higher risk of the rotator cuff tendon failing to repair or rupturing once more, it achieves greater improvements in ROM and shoulder function than the conventional protocol.

**Conclusion:** There is a need for additional research on the factors that influence the risk of tendon unhealing or re-tearing, despite the fact that RCR patients benefit from the rigorous postoperative rehabilitation regimen. When developing a post-operative program for RCR patients, it is necessary to take these aspects into consideration.

**Keywords:** Rotator cuff repair • Rehabilitation • Aggressive • Range of motion • Function

## Introduction

Rotator cuff tears are a common cause of shoulder pain and dysfunction, with a prevalence of 13% in adults over 50 and 50% in people over 80. Non-operative treatment may be offered to patients who have minor incomplete rips. When nonsurgical treatments have failed, rotator cuff surgery is recommended. The fact that different tendon-to-bone healing capacities exist is a drawback of the surgical procedure. The rate of subsequent tears following repair in young participants with non-retracted tears ranged from 16% to 94 percent. The rapid development of surgical techniques like open repair, mini-open repair, and arthroscopic repair has increased the importance and difficulty of providing the best rehabilitation possible following rotator cuff surgery. Optimal tendon healing and a positive functional outcome for the shoulder depend on the size and location of the rupture, the surgical approach and fixation methods, and a well-planned rehabilitation routine [1,2].

When it comes to postoperative rehabilitation programs, the length of immobilization, active versus passive motion, and vigorous postoperative treatment are still up for debate. Accelerated or intensive rehabilitation protocols, integrated pre-operative rehabilitation, early use of passive or active range-of-motion exercises, and higher doses of a rehabilitation

protocol are all examples of aggressive rehabilitation protocols. It is suggested that you move passively as soon as possible after surgery to avoid stiffness afterward. Raab et al. found that a faster recovery in range of motion (ROM) and relief from pain was achieved with early continuous passive motion following repair. in 1996. However, other authors claim that immobilization for four to six weeks following rotator cuff repair may aid tendon healing. A higher rate of unhealed injuries and even rotator cuff retreading occurred as a result of early motion following repair. However, a recent study found that early vigorous motion in the fourth postoperative week had no negative effects. Due to advancements in surgical techniques, the likelihood of an early or aggressive post-operative treatment strategy has increased recently [2-4].

## Literature Review

Two physical therapists independently conducted the initial evaluation. A variety of databases, such as PubMed, Ovid MEDLINE, CINAHL, the Cochrane Library, and the Chinese electronic periodical service (CEPS), were searched. In addition, the references to the publications were manually searched. When searching PubMed at first, the term "rotator cuff repair" was used. With that statement, the terms "intervention," "physical therapy," "rehabilitation," "exercise," or "motion," all of which relate to the meaning of the word "aggressive," and "aggressive," "early," "progressive," or "accelerated" were used. After that, the other databases went through the same process. Human research was the only subject of all searches [3,5].

Included were studies that met the following criteria and were published between the years 2000 and December 2012: 1) In randomised controlled trials, they compared the outcomes of a conventional and aggressive post-operative rehabilitation program. 2) The subjects of the study had their rotator cuffs fixed. 3) At least one of the following outcome measures was utilized in the studies: pain, shoulder range of motion, shoulder function, or the condition of the rotator cuff tendon's anatomical structure. 4) The studies

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**Received:** 03 January, 2023, Manuscript No. ijn-23-88499; **Editor assigned:** 04 January, 2023, PreQC No. P-88499; **Reviewed:** 16 January, 2023, QC No. Q-88499; **Revised:** 21 January, 2023, Manuscript No. R-88499; **Published:** 30 January, 2023, DOI: 10.37421/2376-0281.2023.10.503

were published with the entire text in English. Studies were disregarded if the participants had at least one of the following conditions: autoimmune disease, cervical radiculopathy, or metastatic disease; or if any of these conditions were not met by the studies' mean, standard deviation, or 95 percent confidence interval [6-8].

## Methodological quality evaluation

Using the Physiotherapy Evidence Database (PEDro) scale, two physical therapists evaluated each article in the study. With sufficient reliability and validity, the PEDro is frequently utilized to evaluate the efficacy of intervention-type randomized controlled trials. It has 11 questions, each of which earns one point with a yes or no response. The first question, which is meant to evaluate internal validity, is not included in the final score, so the maximum score is ten points. Evaluators respond positively only when the information is explicitly presented in the studies. The following ranges were used to classify the methodological quality: Scores of 9-10 indicated excellent research, 6-8 indicated good research, 4-5 indicated fair research, and fewer than 4 indicated poor research [9].

## Discussion

This meta-analysis included six RCTs that compared the outcomes of aggressive rehabilitation programs with conventional rehabilitation protocols in patients who had their rotator cuff restored. The results of generally speaking ROM at a half year and 1 year after fix uncovered that the forceful restoration approach was first better than the traditional treatment, and that it likewise brought about a bigger recuperation in shoulder capability. Postoperative shoulder stiffness, the most common side effect of arthroscopic rotator cuff repair, has been linked to decreased quality of life, increased discomfort, and impaired shoulder function in previous studies. Adhesive capsulitis, deltoid pseudotenodesis, and complex regional pain syndrome are also associated with the onset of soft tissue rigidity, tightness, and adhesion. Early motion following surgery can assist in preventing stiffness brought on by immobilization.

Despite the many advantages of intensive rehabilitation following surgery, this strategy may pose higher risks of rotator cuff unhealing and retear rate than the conventional approach. In our analysis, there were significant differences between the two approaches. Numerous animal model studies indicate that immobilization improves tendon-to-bone repair and reduces tendon load-to-failure/stiffness. Overactivity can increase scar tissue formation and cause inflammation when biomechanical stresses are lower. As a result, a number of studies suggested that protecting repaired tendons by delaying early motion would be beneficial. Our analysis is constrained in a few ways. First, there were so few articles with different outcome measures and follow-up times that only four studies could be combined to examine each outcome. Second, the data did not conform to normal distributions, so the software was unable to calculate some research findings. Thirdly, the methodology of each article was only of average quality. This may compromise our analysis's accuracy [8-10].

## Conclusion

The rigorous postoperative rehabilitation regimen outperforms the

conventional protocol in terms of improvements in range of motion (ROM) and shoulder function, according to this meta-analysis. However, it also carries a higher risk of the rotator cuff tendon failing to repair itself or rupturing once more. When designing a post-operative program for patients who have had rotator cuff repairs, it is essential to carefully consider the various factors that influence the rehabilitation plan.

## Acknowledgement

None.

## Conflict of Interest

None.

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**How to cite this article:** Chandler, Zachary. "Clinical Effects of Rehabilitation after Arthroscopic Rotator Cuff Repair." *Int J Neurorehabilitation Eng* 10 (2023): 503.