

Rehabilitation Protocol for Non-Operative Massive Rotator Cuff Tear(s)

This protocol is intended to guide clinicians through the non-operative course of massive rotator cuff tear injury for individuals that are not appropriate for surgical intervention. Massive rotator cuff tears refer to extensive tears involving multiple tendons of the rotator cuff in the shoulder. Various factors, such as chronicity, poor tissue quality and individual patient factors may deem that patient not suitable for surgery. The goals of rehabilitation include pain reduction, improved range of motion, improved strength and stability, improved function and adaptation/compensation.

It's important to note that the outcomes of non-operative management may vary between individuals and patients will likely not achieve the same level of recovery as compared to surgical intervention. It's crucial to monitor the patient's progress, modify the program as needed, and ensure appropriate pain management. Collaborating with a multidisciplinary team is highly recommended to optimize patient outcomes.

PHASE I: PROTECTION AND PAIN MANAGEMENT (0-4 WEEKS AFTER INJURY)

Rehabilitation Goals	<ul style="list-style-type: none"> • Protect the healing tissue • Manage pain and inflammation • Maintain range of motion (ROM)
Precautions/Sling	<ul style="list-style-type: none"> • Avoid heavy lifting, overhead activities and activities that cause pain • Use a sling for support if recommended by the healthcare professional
Interventions	<p><i>Range of Motion</i></p> <ul style="list-style-type: none"> • Passive ROM exercises for the shoulder within a pain-free range, seated GH flexion table slide, horizontal table slide <ul style="list-style-type: none"> ○ Avoid excessive force or stretching • Active assisted ROM: Active assistive shoulder flexion, shoulder flexion with cane, cane external rotation stretch, washcloth press, sidelying elevation to 90 degrees <p><i>Pain Management</i></p> <ul style="list-style-type: none"> • Ice application for pain and swelling • Non-Steroidal anti-inflammatory drugs (NSAIDs) as prescribed • Steroid injection if indicated by specialist <p><i>Manual Therapy</i></p> <ul style="list-style-type: none"> • Gentle soft tissue mobilization and joint mobilization techniques as indicated within pain tolerance
Criteria to Progress	<ul style="list-style-type: none"> • Pain control and reduced inflammation • Improved PROM/AAROM • Basic shoulder movements without pain

PHASE II: RESTORING RANGE OF MOTION (4-8 WEEKS AFTER INJURY)

Rehabilitation Goals	<ul style="list-style-type: none"> • Gradually improve shoulder ROM
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	<ul style="list-style-type: none"> ● Maintain pain control ● Enhance scapular stabilization
Additional Interventions <i>*Continue with Phase I interventions</i>	<p><i>Range of Motion</i></p> <ul style="list-style-type: none"> ● Passive and active-assisted ROM exercises for shoulder within a pain-free range, seated shoulder elevation with cane, seated incline table slides, ball roll on wall, supine flexion, salutes, supine punch, wall climbs ● Gentle stretching exercises for the shoulder and surrounding muscles, External rotation (90 degrees abduction), Hands behind head, IR behind back with towel, sidelying horizontal ADD, sleeper stretch, triceps and lats, doorjam series <p><i>Strengthening</i></p> <ul style="list-style-type: none"> ● Anterior Deltoid Strengthening: Begin isometric exercises progressing to isotonic exercises using resistance bands or light dumbbells ● Scapular Stabilization: Initiate scapular stabilization exercises, scap retraction, prone scapular retraction, standing scapular setting, supported scapular setting, inferior glide, low row ● Proprioception and neuromuscular control: Include exercises that challenge balance, coordination and muscle control to enhance joint stability, internal and external rotation in scaption and Flex 90-125 (rhythmic stabilization), IR/ER and Flex 90-125 (rhythmic stabilization), quadruped alternating isometrics and ball stabilization on wall <p><i>Manual Therapy</i></p> <ul style="list-style-type: none"> ● Soft tissue mobilization, joint mobilization and myofascial release techniques as indicated
Criteria to Progress	<ul style="list-style-type: none"> ● Minimal pain during AROM exercise ● Gradual improvement in A/PROM ● No restrictions in daily activities

PHASE III: PROGRESSIVE STRENGTHENING (8-12 WEEKS AFTER INJURY)

Rehabilitation Goals	<ul style="list-style-type: none"> ● Improve shoulder strength and stability ● Enhance dynamic scapular control ● Gradually return to functional activities
Additional Interventions <i>*Continue with Phase I-II Interventions</i>	<p><i>Strengthening</i></p> <ul style="list-style-type: none"> ● Anterior Deltoid Strengthening: Progress isotonic exercises using resistance bands or light dumbbells ● Rotator Cuff Strengthening: Progressive resistance exercises for the remaining rotator cuff muscles using resistance bands or light dumbbells, internal external rotation isometrics, side-lying external rotation, standing external rotation w/ resistance band, standing internal rotation w/ resistance band, internal rotation, external rotation, sidelying ABD → standing ABD ● Scapular Stabilization: Progress exercises with resistance using resistance bands or light dumbbells, Row on physioball, shoulder extension on physioball, Resistance band shoulder extension, resistance band seated rows, rowing, lawn mowers, robbery, serratus punches ● Core and Lower Extremity Strengthening: Exercises to maintain overall body strength and stability <p><i>Neuromuscular control</i></p> <ul style="list-style-type: none"> ● Incorporate closed-chain exercises that emphasize functional movements. Begin exercises that challenge dynamic stability and control with progression to addition of perturbation and proprioceptive training, Push-up plus on knees, prone shoulder extension Is, resistance band forward punch, forward punch, tripod, pointer <p><i>Functional Training</i></p> <ul style="list-style-type: none"> ● Gradual progression of functional activities, such as reaching, lifting and carrying objects with proper body mechanics

	<p><i>Manual Therapy</i></p> <ul style="list-style-type: none"> On-going soft tissue mobilization, joint mobilization and myofascial release techniques as indicated
Criteria to Progress	<ul style="list-style-type: none"> Sustained pain-free AROM Increased strength and endurance Achieved specific strength and functional goals Demonstrated stability and control during dynamic movements

PHASE IV: RETURN TO FUNCTION (12+ WEEKS AFTER INJURY)

Rehabilitation Goals	<ul style="list-style-type: none"> Maximize shoulder function Improve strength and endurance Return to desired activities
Additional Interventions <i>*Continue with Phase I-III interventions</i>	<p><i>Strengthening</i></p> <ul style="list-style-type: none"> Continued progression of anterior deltoid, rotator cuff, scapular stabilization and neuromuscular control exercises, T and Y, “T” exercise, push-up plus knees extended, wall push up, “W” exercise, resistance band Ws, dynamic hug, resistance band dynamic hug, External rotation at 90 degrees, internal rotation at 90 degrees, resistance band standing external rotation at 90 degrees, resistance band standing internal rotation at 90 degrees, PNF – D1 diagonal lifts, PNF – D2 diagonal lifts, Field goals, Resistance band PNF pattern, PNF – D1 diagonal lifts w/ resistance, diagonal-up, diagonal-down, wall slides w/ resistance band Incorporation of activity-specific exercises
Criteria to Progress	<ul style="list-style-type: none"> Maximal pain-free ROM and strength Improved motor control during functional movements Able to perform specific activities without limitations Demonstrates ability to handle increased load and demands on the shoulder Last stage-no additional criteria

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Contact	Please email MGHSportsPhysicalTherapy@partners.org with questions specific to this protocol
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References:

- Ainsworth R. Physiotherapy rehabilitation in patients with massive, irreparable rotator cuff tears. *Musculoskeletal Care*. 2006 Sep;4(3):140-51. doi: 10.1002/msc.85. PMID: 17042025.
- Boland K, Smith C, Bond H, Briggs S, Walton J. Current concepts in the rehabilitation of rotator cuff related disorders. *J Clin Orthop Trauma*. 2021 Apr 18;18:13-19. doi: 10.1016/j.jcot.2021.04.007. PMID: 33987078; PMCID: PMC8082254.
- Christensen BH, Andersen KS, Rasmussen S, Andreassen EL, Nielsen LM, Jensen SL. Enhanced function and quality of life following 5 months of exercise therapy for patients with irreparable rotator cuff tears - an intervention study. *BMC Musculoskelet Disord*. 2016 Jun 8;17:252. doi: 10.1186/s12891-016-1116-6. PMID: 27278468; PMCID: PMC4898474.
- Collin PG, Gain S, Nguyen Huu F, Lädermann A. Is rehabilitation effective in massive rotator cuff tears? *Orthop Traumatol Surg Res*. 2015 Jun;101(4 Suppl):S203-5. doi: 10.1016/j.otsr.2015.03.001. Epub 2015 Apr 15. PMID: 25890809.
- Green A. Chronic massive rotator cuff tears: evaluation and management. *J Am Acad Orthop Surg*. 2003 Sep-Oct;11(5):321-31. doi: 10.5435/00124635-200309000-00005. PMID: 14565754.
- Greenspoon JA, Petri M, Warth RJ, Millett PJ. Massive rotator cuff tears: pathomechanics, current treatment options, and clinical outcomes. *J Shoulder Elbow Surg*. 2015 Sep;24(9):1493-505. doi: 10.1016/j.jse.2015.04.005. Epub 2015 Jun 28. PMID: 26129871.
- Gutiérrez-Espinoza H, Arriagada-Núñez V, Araya-Quintanilla F, Zavala-González J, Rubio-Oyarzún D, Sfeir-Castro R, Gana-Hervias G. Physical therapy in patients over 60 years of age with a massive and irreparable rotator cuff tear: a case series. *J Phys Ther Sci*. 2018 Aug;30(8):1126-1130. doi: 10.1589/jpts.30.1126. Epub 2018 Aug 7. PMID: 30154614; PMCID: PMC6110227.
- Levy O, Mullett H, Roberts S, Copeland S. The role of anterior deltoid reeducation in patients with massive irreparable degenerative rotator cuff tears. *J Shoulder Elbow Surg*. 2008 Nov-Dec;17(6):863-70. doi: 10.1016/j.jse.2008.04.005. Epub 2008 Aug 20. PMID: 18718765.
- Shepet KH, Liechti DJ, Kuhn JE. Nonoperative treatment of chronic, massive irreparable rotator cuff tears: a systematic review with synthesis of a standardized rehabilitation protocol. *J Shoulder Elbow Surg*. 2021 Jun;30(6):1431-1444. doi: 10.1016/j.jse.2020.11.002. Epub 2020 Dec 1. PMID: 33276163.

10. Yian EH, Sosl JF, Dionysian E, Schneeberger AG. Anterior deltoid reeducation for irreparable rotator cuff tears revisited. *J Shoulder Elbow Surg.* 2017 Sep;26(9):1562-1565. doi: 10.1016/j.jse.2017.03.007. Epub 2017 May 5. PMID: 28483431.
11. Yoon TH, Kim SJ, Choi CH, Yoon SP, Chun YM. An intact subscapularis tendon and compensatory teres minor hypertrophy yield lower failure rates for non-operative treatment of irreparable, massive rotator cuff tears. *Knee Surg Sports Traumatol Arthrosc.* 2019 Oct;27(10):3240-3245. doi: 10.1007/s00167-019-05403-8. Epub 2019 Feb 15. PMID: 30770957.