

SHOULDER ROTATOR CUFF REPAIR POST-OPERATIVE GUIDELINES

The following post-operative rotator cuff repair guidelines were developed by HSS Rehabilitation and are categorized into five phases with the ultimate goal for returning the patient back to their desired activities. They can be used for patients undergoing rotator cuff repair with attention given to exact location and size of repair as well as any concomitant procedures. It is important that full range of motion (ROM) is restored while respecting soft tissue healing. Classification and progression are both criteria-based and time based due to healing constraints of the human body.

The first phase is focused on soft tissue healing and maintenance of pain-free ROM. Phases two and three are focused on building foundational strength and stability, allowing the patient to progress to phase four which included advanced strengthening. With the completion of phase four the patient will be able to start the final phase which includes return to previous recreational activities.

Cardiovascular endurance, hip and core strengthening should be addressed through the rehabilitation process. The clinician should use their skilled judgement and decision making as progressions may not be linear.

Follow physician modifications as prescribed.

SHOULDER ROTATOR CUFF REPAIR POST-OPERATIVE GUIDELINES

Phase 1: Recovery (Weeks 0-3)

PRECAUTIONS

- Avoid weight bearing on operative upper extremity
- No shoulder active range of motion (AROM)
- Avoid pain during ROM exercises
- No shoulder external rotation (ER) past 0°-30° depending on surgeon preference
- Avoid lying on operative side
- Use sling at all times except when bathing, dressing, icing or performing HEP
- Use pillows to support operative arm when sitting or sleeping
- If combined with biceps tenodesis, no biceps strengthening for 6-8 weeks

SPECIAL CONSIDERATIONS

- **Biceps tenodesis:** AROM with neutral wrist, no resisted biceps activity for 8 weeks
- **Massive cuff tear:** delay protocol by 2 weeks unless otherwise directed by surgeon
- **Subscapularis repair:** no flexion beyond 90° and no ER beyond 30° for 6 weeks

ASSESSMENT

- Quick Disabilities of Arm, Shoulder and Hand (Quick DASH)
- American Shoulder and Elbow Surgeons (ASES)
- Numeric Pain Rating Scale (NPRS)
- Mental status
- Pain
- Wound status
- Passive range of motion (PROM)
- Static scapular assessment (Kibler grading)
- Cervical mobility
- Swelling
- Post-anesthesia neurovascular screening
- Functional status – ADLs and mobility

TREATMENT RECOMMENDATIONS

- Transfer training in and out of bed and sit to stand, and stair training while maintaining non-weight bearing on operative upper extremity
- Pain-free distal AROM: note that MD may specify passive vs. active elbow flexion if biceps tenodesis was performed

- Shoulder PROM exercises according to surgeon's preferences, e.g., Codman's, passive ER to neutral
- Instruct in semi-reclined sleeping position, avoid lying on operative side
- Education on donning/doffing and proper positioning in sling
- ADL training
- Cryotherapy and elevation of upper extremity to prevent swelling
- Initiate and emphasize importance of HEP to be continued until initiation of outpatient PT or OT
 - Elbow and wrist AROM

CRITERIA FOR ADVANCEMENT

- Safely transfers unassisted
- Independent with sling management, or caregivers independent in assisting
- Independent with ADLs
- Independent with home exercise program (HEP)

EMPHASIZE

- Pain and edema control
- Proper sling positioning and compliance
- Protection or repair
- Independent transfers, ambulation and stair negotiation

SHOULDER ROTATOR CUFF REPAIR POST-OPERATIVE GUIDELINES

Phase 2: Intermediate (Weeks 4-6)

PRECAUTIONS

- Follow precautions until cleared by MD
- Sling to be worn at all times except when exercising, icing, dressing and showering
- Limit shoulder PROM based on pain and MD guidelines, with emphasis on limiting ER to protect subscapularis repair
- No shoulder AROM until cleared by MD
- Avoid severe pain with therapeutic exercise and functional activities
- Avoid holding items greater than 1lb.
- Avoid prolonged sling use once discharged by surgeon

SPECIAL CONSIDERATIONS

- **Biceps tenodesis:** AROM with neutral wrist, no resisted biceps activity for 8 weeks
- **Massive cuff tear:** delay protocol by 2 weeks unless otherwise directed by surgeon
- **Subscapularis repair:** no flexion beyond 90° for 6 weeks, no ER beyond 30° for 6 weeks

ASSESSMENT

- Quick DASH
- ASES
- NPRS
- Cervical mobility
- Neurovascular screen
- Shoulder PROM
- Static scapular assessment (Kibler grading)
- Distal AROM (PROM vs. AROM of elbow if specified by MD due to biceps tenodesis)

TREATMENT RECOMMENDATIONS

- PROM shoulder elevation in scapular plane
- AAROM shoulder ER with wand in scapular plane within prescribed limits
- Scapular mobility and stability exercises progression to manual resistance
 - Manual scapular clocks
- Codman's pendulum exercises
- Distal AROM exercises (unless PROM specified by MD for elbow)
- Core strengthening
- Deltoid isometrics

- ROM Goals (DO NOT FORCE BUT ASSESS FOR STIFFNESS)
 - Week 4:
 - Elevation in scapular plane: 90°
 - ER in scapular plane: 5°-15°
 - Internal rotation (IR) in scapular plane: to chest
 - Week 6:
 - Elevation in scapular plane: 120°
 - ER in scapular plane: 30°-45°
 - IR in scapular plane: to chest
 - 0-6 weeks
 - Abduction 0°-90° (gentle motion)
- Week 6: Rotator cuff (RC) isometrics
 - Submaximal rhythmic stabilizations ER/IR with PT
 - Submaximal ER/IR isometrics

CRITERIA FOR ADVANCEMENT

- Swelling and pain controlled
- Passive shoulder ER to 45° in scapular plane
- Passive shoulder elevation to 120° in scapular plane
- Tolerance of scapular and RC exercises without discomfort
- Independent with HEP

EMPHASIZE

- Control swelling
- Proper donning/doffing of sling and use per MD instruction
- Protect surgical repair
- Importance of patient compliance with HEP and protection during ADLs

SHOULDER ROTATOR CUFF REPAIR POST-OPERATIVE GUIDELINES

Phase 3: Intermediate (Weeks 7-11)

PRECAUTIONS

- Avoid pain with ADLs and therapeutic exercise
- No combined shoulder abduction and ER (pitch motion)
- No lifting greater than 5 lbs.
- Avoid supporting full body weight on operative upper extremity

SPECIAL CONSIDERATIONS

- **Biceps tenodesis:** AROM with neutral wrist, no resisted biceps activity for 8 weeks
- **Massive cuff tear:** delay protocol by 2 weeks unless otherwise directed by surgeon

ASSESSMENT

- Quick DASH
- ASES
- NPRS
- Cervical mobility
- Shoulder PROM
- Static scapular assessment (Kibler grading)
- Grip strength

TREATMENT RECOMMENDATIONS

- D/C sling if still in use
- Shoulder ROM exercises
 - AA/PROM using wand: forward flexion and ER, abduction, extension
 - Initiate AROM in all planes
 - Posterior capsule stretch
- Stabilization exercises
 - Humeral head control exercises
 - Closed kinetic chain exercises, e.g., ball stabilization begin week 10
 - Scapular stabilization
- Strengthening exercises
 - Sub-maximal shoulder isometrics, e.g., flexion, extension, external and internal rotation
 - Multi-planar deltoid strengthening
 - General upper extremity strengthening
 - Prone rows, extension
 - Core strengthening

- Cervical AROM and upper trapezius stretching
- Upper body ergometry if motion allows
- Reeducation of movement patterns
- Manual therapy as needed, e.g., scapular mobilization, soft tissue mobilization
- Functional mobility training
- Modalities for pain edema
- Pool therapy if available
- Progression of HEP

CRITERIA FOR ADVANCEMENT

- Pain controlled
- Shoulder AROM in plane of scapula; elevation to 150°, ER to 45°
- Independent with HEP
- Restore forward flexion in scapular plane to full
- ER in scapular plane to 70°-90°

EMPHASIZE

- Gradually restore shoulder AROM
- Restore scapular and rotator cuff muscle balance and endurance
- Reduce compensatory movements, e.g., overuse of upper trapezius

SHOULDER ROTATOR CUFF REPAIR POST-OPERATIVE GUIDELINES

Phase 4: Weeks 12-15

PRECAUTIONS

- Avoid scapular compensations with AROM
- No painful activities

SPECIAL CONSIDERATIONS

- **Massive cuff tear:** delay protocol by 2 weeks unless otherwise directed by surgeon

ASSESSMENT

- Quick DASH
- ASES
- NPRS
- Shoulder AROM and PROM
- Static/dynamic scapular assessment (Kibler grading)
- Cervical and thoracic spine mobility
- Clavicular mobility
- UE and periscapular strength - MMT
- Grip strength

TREATMENT RECOMMENDATIONS

- Progress shoulder ROM and flexibility to WNL
- Manual therapy to restore shoulder girdle ROM
- Address flexibility of thoracic spine
- PNF patterning
- Progressive resistive exercises for UE, shoulder girdle and core
 - Latissimus pull downs, serratus strengthening, slide lying ER
- Initiate banded ER/IR
- Initiate closed chain upper body exercises with gradual loading (avoid full body weight)
- Progress humeral head rhythmic stabilization exercises, e.g., closed chain, upright position, overhead
- Upper body ergometry and general conditioning
- Functional training to address patient's goals
- Progress to more advanced long term HEP

CRITERIA FOR DISCHARGE (OR ADVANCEMENT TO PHASE 5 IF RETURNING TO SPORT)

- Normal/near normal shoulder motion and flexibility over 90°
- UE and periscapular muscle strength 4+/5 for control with functional movements
- Fully independent with ADLs with minimal pain
- Tolerance to all exercises without discomfort

EMPHASIZE

- Restore normal ROM and flexibility
- Restore strength
- Posterior capsule mobility
- Reduce compensatory patterning

SHOULDER ROTATOR CUFF REPAIR POST-OPERATIVE GUIDELINES

Phase 5: Return to Activity (Weeks 16+)

PRECAUTIONS

- Avoid high impact, e.g., contact sports
- Avoid too much too soon – monitor exercise dosing
- Note that expert opinion varies widely on allowable sports – consult with MD

ASSESSMENT

- Quick DASH
- ASES
- NPRS
- Shoulder AROM and PROM
- Static/dynamic scapular assessment (Kibler grading)
- Cervical and thoracic spine mobility
- Clavicular mobility
- UE and periscapular strength - MMT
- Grip strength

TREATMENT RECOMMENDATIONS

- Progress humeral head control exercises in a variety of overhead positions
- Progress isotonic exercises to higher loads as indicated
- Sustained single arm holds with perturbations
- Closed kinetic chain progression exercises
- Progress cardiovascular conditioning
- Sport-specific multidirectional core retraining
- Dynamic balance activities
- Neuromuscular shoulder reeducation for control with dynamic sports-specific exercises
- Progress total body multidirectional motor control exercises to meet sport-specific demands at 6 months if appropriate
- Collaboration with trainer, coach or performance specialist

CRITERIA FOR RETURN TO SPORT

- Independent in long-term sport-specific exercise program
- Movement patterns, strength, flexibility, motion, power and accuracy to meet demands of sport symptom free

EMPHASIZE

- Monitor load progression and volume of exercise
- Monitor for loss of strength and flexibility
- Improve muscle strength and flexibility
- Neuromuscular patterning
- Collaboration with appropriate Sports Performance expert

SHOULDER ROTATOR CUFF REPAIR POST-OPERATIVE GUIDELINES

References

- Altintas B, Bradley H, Logan C, Delvecchio B, Anderson N, Millett PJ. (2019). Rehabilitation following subscapularis tendon repair. *Int J Sports Phys Ther*, 14(2):318-332.
- Amoo-Achampong K, Krill MK, Acheampong D, Nwachukwu BU, McCormick F. (2019). Evaluating strategies and outcomes following rotator cuff tears. *Shoulder Elbow*, 11(1Suppl):6-18.
- Bakti N, Antonios T, Phadke A, Singh B. (2019). Early versus delayed mobilization following rotator cuff repair. *J Clin Orthop Trauma*, 10(2):257-260.
- Burkhart SS, Morgan CD. The Peel-Back Mechanism: Its Role in Producing and Extending Posterior Type II SLAP Lesions and Its Effect on SLAP Repair Rehabilitation. *Arthrosc J Arthrosc Relat Surg*. 1998;14(6):637-640.
- Burkhart SS, Morgan CD, Kibler W Ben. The disabled throwing shoulder: Spectrum of pathology part III: The SICK scapula, scapular dyskinesis, the kinetic chain, and rehabilitation. *Arthrosc - J Arthrosc Relat Surg*. 2003;19(6):641-661. doi:10.1016/S0749-8063(03)00389-X.
- Conway JE. Arthroscopic repair of partial thickness rotator cuff tears and SLAP lesions in professional baseball players. *Am J Sports Med*. 2001;32(3):443-456.
- Gilliam BD, Douglas L, Fleisig GS, et al. Return to Play and Outcomes in Baseball Players After Superior Labral Anterior-Posterior Repairs. *Am J Sports Med*. 2017;46(1):109-115. doi:10.1177/0363546517728256.
- Harris JD, Frank JM, Jordan MA, et al. Return to Sport Following Shoulder Surgery in the Elite Pitcher: A Systematic Review. *Sports Health*. 2013;5(4):367-376. doi:10.1177/1941738113482673.
- Kibler W Ben, Uhl TL, Maddux JWQ, Brooks P V., Zeller B, McMullen J. Qualitative clinical evaluation of scapular dysfunction: A reliability study. *J Shoulder Elb Surg*. 2002;11(6):550-556. doi:10.1067/mse.2002.126766.
- Knesek M, Skendzel JG, Dines JS, et al. Diagnosis and Management of Superior Labral Anterior Posterior Tears in Throwing Athletes. *Am J Sports Med*. 2012;41(2):444-460. doi:10.1177/0363546512466067.
- Kuhn JE, Bey MJ, Huston LJ, Blasier RB, Soslowsky LJ. Ligamentous Restraints to External Rotation of the Humerus in the Late-Cocking Phase of Throwing A Cadaveric Biomechanical Investigation. *Am J Sports Med*. 2000;28(2):200-205.
- Neri BR, Elattrache NS, Owsley KC, Mohr K, Yocum LA. Outcome of Type II Superior Labral Anterior Posterior Repairs in Elite Overhead Athletes Effect of Concomitant Partial-Thickness Rotator Cuff Tears. *Am J Sports Med*. 2011;39(1):114-120. doi:10.1177/0363546510379971.

Snyder SJ, Karzel RP, Pizzo W Del, Ferkel RD, Friedman MJ. SLAP Lesions of the Shoulder. *Arthrosc J Arthrosc Relat Surg*. 1990;6(4):274-279.

Wilk KE, Arrigo C a, Andrews JR. Current concepts: the stabilizing structures of the glenohumeral joint. *J Orthop Sports Phys Ther*. 1997;25(6):364-379. doi:10.2519/jospt.1997.25.6.364.

Wilk KE, Macrina LC, Arrigo C. Passive range of motion characteristics in the overhead baseball pitcher and their implications for rehabilitation. *Clin Orthop Relat Res*. 2012;470(6):1586-1594. doi:10.1007/s11999-012-2265-z.

Wilk KE, Macrina LC, Fleisig GS, et al. Deficits in Glenohumeral Passive Range of Motion Increase Risk of Shoulder Injury in Professional Baseball Pitchers A Prospective Study. *Am J Sports Med*. 2015;20(10):1-7. doi:10.1177/0363546515594380.

Wilk KE, Obama P, Simpson CD, Cain EL, Dugas JR, Andrews JR. Shoulder injuries in the overhead athlete. *J Orthop Sports Phys Ther*. 2009;39(2):38-54. doi:10.2519/jospt.2009.2929.

Wilk K, Yenchak AJ, Andrews JR. The Advanced Throwers Ten Exercise Program: A New Exercise Series for Enhanced Dynamic Shoulder Control in the Overhead Throwing Athlete. *Phys Sportsmed*. 2011;39(4):90-97. doi:10.3810/psm.2011.11.1943.

Created: 7/2019