ORTHOPEDICS & SPORTS MEDICINE
BAYCARE CLINIC

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Rotator Cuff Repair Rehabilitation Protocol

The following document is an evidence-based protocol for arthroscopic rotator cuff repair rehabilitation. The protocol is both chronologically and criterion based for advancement through four post-operative phases:

- Phase 1 – Maximum Protection
- Phase 2 – Active Range of Motion
- Phase 3 – Strength
- Phase 4 – Return-to-Activity

There are numerous principles of rotator cuff repair rehabilitation including:

- Initial post-operative immobilization period
- Emphasis on early shoulder PROM and joint mobility
- Gradual advancement of shoulder PROM, AAROM, and AROM
- Restoration of the stability of the shoulder
- Safe, progressive loading of the rotator cuff through shoulder, scapular, and total arm strengthening

There are multiple factors which affect rotator cuff repair rehabilitation including:

- Size, location, and type of tear
- Multiple tendon involvement
- Tissue quality
- Mechanism of injury
- Timing of surgery
- Surgical technique
- Concomitant repairs
- Individual patient characteristics

The physician will designate the rate of progression based on the rotator cuff repair protocol type:

- Type 1 – Faster rate of progression
  - Small tears (< 1 cm), good to excellent tissue quality, etc.
- Type 1A – Fastest rate of progression
  - Tenotomy, Distal Clavicle Resection, Subacromial Decompression
  - Sling worn until nerve block wears off, activities at waist height until 1st post-op visit, therapy begins after 1st post-op visit (~10 days), may progress as tolerated based at that time
- Type 1AA – Early focus on motion
  - Capsule release and/or manipulation under anesthesia
  - Start day after surgery and see 5 times per week for at least 2 weeks – frequency reviewed at 1st post-op visit
- Type 2 – Standard rate of progression
  - Medium tears (1-3 cm), fair to good tissue quality, etc.
- Type 3 – Slower rate of progression
  - Large (3-5 cm) to massive tears (> 5 cm), poor tissue quality, etc.

The physician may provide modifications to the rehabilitation program for significant concomitant repairs:

- Subscapularis repair
  - Limit shoulder external rotation PROM to 30° for 6 weeks post-operatively
  - No shoulder internal rotation strengthening for 12 weeks post-operatively
- Posterior rotator cuff repair – infraspinatus and teres minor
  - Limit shoulder internal rotation PROM to 30° for 6 weeks post-operatively
  - No shoulder external rotation strengthening for 12 weeks post-operatively
- Biceps Tenodesis and/or SLAP Repair
  - No active biceps for 6 weeks post-operatively

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Phase 1 – Maximum Protection

Type 1: Post-Operative Weeks 0-4
Type 2: Post-Operative Weeks 0-6
Type 3: Post-Operative Weeks 0-8

Goals for Phase 1

- Minimize pain and inflammation
- Protect integrity of the repair
- Initiate shoulder PROM
- Prevent muscular inhibition

Criteria for Progression to Phase 2

- Minimal pain with Phase 1 exercises
- Passive shoulder flexion ≥120°
- Passive shoulder abduction ≥90°
- Passive shoulder internal and external rotation at 45° abduction in scapular plane ≥45° each

Immobilization

- Immobilization in ABD sling for 4 weeks (Type 1), 6 weeks (Type 2 & 3), or per physician, therapist to transition patient out of sling

Initial Post-Op Exercises

- Elbow, forearm, wrist, hand (grip) AROM exercises; pendulum (Codman's) exercise; scapular squeezes; upper trapezius stretching; postural correction
- Remove ABD sling 3x/day for performance of HEP
- Cryotherapy to minimize pain and inflammation

Post-Op Physical Therapy

- 1st physical therapy visit to occur 4 weeks
  - Ensure appropriate fit in ABD sling and reinforce on proper use
  - Review initial post-operative exercises and reinforce on proper performance
  - PROM check performed
    - Goal 90° FLEX, 90° ABD, 30° IR and ER at 45° ABD
    - Limit 120° FLEX, 90° ABD, 45° IR and ER at 45° ABD
  - If **PASS** PROM check, begin follow-up in physical therapy at 6 weeks
  - If **NOT** pass PROM check, begin follow-up in physical therapy immediately
    - Emphasis on early shoulder PROM and glenohumeral joint mobility

Aquatics

- Utilize aquatics for patients who are significantly painful, stiff, or guarded
  - Initiate when surgical incisions have healed
  - Initiate buoyancy assisted ROM exercises within limitations
  - Consider alternating land- and aquatic-based physical therapy visits

Manual Therapy

- Initiate pain dominant glenohumeral joint mobilization (grade 1-2)
- Initiate scar mobilization, soft tissue mobilization, lymph edema massage
- Initiate other shoulder, scapular, and cervicothoracic manual therapy techniques as needed

PROM

- Initiate manual shoulder PROM in all planes of motion within limitations
  - Limit 120° FLEX, 90° ABD, 45° IR and ER at 45° ABD
  - Avoid sustained end range stretching

AAROM

- Initiate shoulder ER AAROM with wand at 45° ABD
- Initiate shoulder FLEX and ABD AAROM
  - Table slides, U.E. Ranger, physio-ball, wand, etc.
  - Avoid pulleys

Modalities

- Utilize cryotherapy, thermotherapy, and electrical modalities as needed

Phase 2 – Active Range of Motion

Type 1: Post-Operative Weeks 4-10
Type 2: Post-Operative Weeks 6-12
Type 3: Post-Operative Weeks 8-14

Goals for Phase 2

- Minimize pain and inflammation
- Restore full shoulder PROM
- Restore full shoulder AROM
- Initiate sub-maximal rotator cuff activation and neurodynamic stabilization exercises
  - No shoulder shrug sign with elevation AROM

Criteria for Progression to Phase 3

- Minimal pain with Phase 2 exercises
- Full shoulder PROM with minimal pain
- Full shoulder AROM with minimal pain
- Demonstrate neurodynamic stabilization of the shoulder
  - No evidence of shoulder shrug with elevation AROM

Aquatics

- Continue aquatics for patients who are significantly painful, stiff, or guarded

Stretching

- Initiate shoulder stretching exercises in all planes of motion as tolerated

Manual Therapy

- Continue pain dominant glenohumeral joint mobilization (grade 1-2) as needed
- Initiate stiffness dominant glenohumeral joint mobilization (grade 3-4) as needed
  - Utilize stiffness dominant glenohumeral joint mobilization (grade 3-4) to facilitate specific AROM and PROM deficits
- Continue scar mobilization, soft tissue mobilization, lymph edema massage as needed
- Continue other shoulder, scapular, and cervicothoracic manual therapy techniques as needed

PROM

- Continue manual shoulder PROM in all planes of motion as tolerated
  - Initiate sustained end range stretching

AAROM

- Continue shoulder ER AAROM with wand at 45° ABD
  - Progress from 45° to 60° to 90° ABD
- Continue shoulder FLEX and ABD AAROM
  - Table slides, wall slides, U.E. Ranger, physioball, wand, pulleys, etc.

AROM

- Initiate shoulder AROM in all planes of motion as tolerated
  - Gradually progress from gravity reduced to full gravity positions
  - Gradually progress from below shoulder height to above shoulder height
  - Consider single-planar and multi-planar movement patterns
- Do **NOT** exercise through shoulder shrug sign

Strengthening

- Initiate sub-maximal shoulder isometrics for FLEX, ABD, EXT, IR, and ER
- Initiate light isotonic scapular strengthening
  - Supine press, serratus press outs, prone row, etc.
- Initiate light isotonic biceps and triceps strengthening
- Initiate sub-body weight closed-chain strengthening exercises
  - Wall press outs, countertop press outs, etc.
- Avoid sub-body weight suspension training exercises
  - TRX, GTS, assisted chin or dip machine, etc.
- Do **NOT** exercise through shoulder shrug sign

Neuromuscular Control

- Initiate sub-maximal rhythmic stabilization drills
  - Gradually progress shoulder FLEX from 100° to 90° to 60° to 30°
  - Gradually progress shoulder IR and ER from 30° to 60° to 90° ABD

NMES

- Utilize NMES to facilitate rotator cuff and scapular activation and strengthening

Modalities

- Utilize cryotherapy, thermotherapy, and electrical modalities as needed

Phase 3 – Strength

Type 1: Post-Operative Weeks 10-18
Type 2: Post-Operative Weeks 12-20
Type 3: Post-Operative Weeks 14-22

Goals for Phase 3

- Minimize pain and inflammation
- Maintain full shoulder PROM and AROM
- Improve shoulder, scapular, and total arm strength
- Improve neurodynamic stabilization of the shoulder
- No shoulder shrug sign with strengthening exercises

Criteria for Progression to Phase 4

- Minimal pain with Phase 3 exercises
- Full, pain free shoulder PROM and AROM
- Shoulder, scapular, and total arm strength ≥80% of the uninvolved side (4/5)

OR

- Shoulder internal and external rotation isokinetic strength ≥80% of the uninvolved side
  - 30°/30°/30° position if NOT overhead athlete or physical laborer
  - 90°/90° position if overhead athlete of physical laborer
- Demonstrate neurodynamic stabilization of the shoulder
  - No shoulder shrug sign with strengthening exercises

Stretching

- Continue shoulder stretching exercises as needed

Manual Therapy

- Continue stiffness dominant glenohumeral joint mobilization (grade 3-4) as needed
- Continue other shoulder, scapular, and cervicothoracic manual therapy techniques as needed

PROM

- Continue manual shoulder PROM as needed

Strengthening

- Initiate gradual progression of isotonic rotator cuff strengthening exercises
  - Gradually progress from gravity reduced to full gravity positions
  - Gradually progress from below shoulder height to above shoulder height
  - Gradually progress internal and external rotation from 30° to 60° to 90° abduction and from supported to unsupported conditions
  - Consider single-planar and multi-planar movement patterns
- Progress isotonic scapular strengthening exercises
  - Progress from isolated to functional movement patterns
- Progress isotonic biceps and triceps strengthening exercises
  - Progress from isolated to functional movement patterns
- Progress closed-chain strengthening exercises
  - Gradually progress from sub-body weight to full body weight positions
  - Gradually progress from stable to unstable surfaces
- Initiate gradual progression of sub-body weight suspension training exercises
  - TRX, GTS, assisted chin or dip machine, etc.
- Do **NOT** exercise through shoulder shrug sign

Neuromuscular Control

- Progress rhythmic stabilization exercises to more functional positions and dynamic movement patterns
  - Gradually progress from mid-range to end range positions
  - Gradually progress from open-chain to closed-chain positions
- Initiate gradual progression of other neuromuscular control exercises
  - Body blade, wall dribbles, ball flips, plyoback, etc.

Core Stabilization

- Incorporate core integrated exercises with strengthening and neuromuscular control progression

NMES

- Utilize NMES to facilitate rotator cuff and scapular activation and strengthening

Modalities

- Utilize cryotherapy, thermotherapy, and electrical modalities as needed

Phase 4 – Return to Activity

Type 1: Post-Operative Weeks 18+
Type 2: Post-Operative Weeks 20+
Type 3: Post-Operative Weeks 22+

Goals for Phase 4

- Minimize pain and inflammation
- Maintain full shoulder PROM and AROM
- Restore shoulder, scapular, and total arm strength, power, and endurance
- Restore neurodynamic stabilization of the shoulder
- Safe and effective return to previous level of function for occupational, sport, or desired activities

Criteria for Return to Activity

- Minimal pain with Phase 4 exercises
- Full, pain free hip PROM and AROM
- Shoulder, scapular, and total arm strength ≥90% of the uninvolved side (4+/5)

OR

- Shoulder internal and external rotation isokinetic strength ≥90% of the uninvolved side
- 30°/30°/30° position if NOT overhead athlete or physical laborer
- 90°/90° position if overhead
- athlete or physical laborer
- Demonstrate neurodynamic stabilization of the shoulder
- Successful completion of return- to-sport testing if athlete
- Successful completion of functional capacity evaluation if physical laborer
- Disability Arm Shoulder Hand Index score ≤15% disability

Stretching

- Continue shoulder stretching exercises as needed

Manual Therapy

- Continue stiffness dominant glenohumeral joint mobilization (grade 3-4) as needed
- Continue other shoulder, scapular, and cervicothoracic manual therapy techniques as needed

PROM

- Continue manual shoulder PROM as needed

Strengthening

- Continue Phase 3 strengthening exercises
- Consider specific demands of occupational, sport, or desired activities

Neuromuscular Control

- Continue Phase 3 neuromuscular control exercises
- Consider specific demands of occupational, sport, or desired activities

Core Stabilization

- Continue incorporate core integrated exercises with strengthening and neuromuscular control progression

Sport-Specific Training Program

- Initiate interval sport programs
  - Baseball, softball, football, swimming, volleyball, tennis, golf, etc.
- Transition to Performance Sports Training program if competitive or recreational athlete with specific goals for return-to-sport

Weight Lifting

- Initiate traditional weight lifting exercises
  - Educate patient to strengthen prime movers **AND** secondary stabilizers
  - Educate patient to balance anterior **AND** posterior musculature

Work Specialty Rehabilitation Program

- Transition to work re-conditioning if physical laborer
- Transition to work re-conditioning if specific occupational demands
  - Lifting requirements, overhead tasks, repetitive tasks, tool or machine work, etc.

Modalities

- Utilize cryotherapy, thermotherapy, and electrical modalities as needed

HEP

- Establish HEP for long-term self-management

This protocol was reviewed and updated by Harold Schock III, MD, Dan Reznichek, PT, DPT, LAT, MS and Rebecca Donnay, PT, DPT on September 25, 2025.

References

1. Ellenbecker TS & Davies GJ. The application of isokinetics in testing and rehabilitation of the shoulder complex. *J Athl Training. 2000; 35(3): 338-350.*
2. Escamilla RF et al. Shoulder muscle activity and function in common shoulder rehabilitation exercises. *Sports Med. 2009; 39(8): 663-685.*
3. Ghodadra NS et al. Open, mini-open, and all-arthroscopic rotator cuff repair surgery: indications and implications for rehabilitation. *J Orthop Sports Phys Ther. 2009; 39(2): 81-89.*
4. Kelly BT et al. Shoulder muscle activation during aquatic and dry land exercises in non-injured subjects. *J Orthop Sports Phys Ther. 2000; 30(4): 204-210.*
5. Millett PJ et al. Rehabilitation of the rotator cuff: an evaluation-based approach. *J Am Acad Orthop Surg. 2006; 14(11): 599-609.*
6. Moseley JB et al. EMG analysis of the scapular muscles during a shoulder rehabilitation program. *Am J Sports Med. 1992; 20(2): 128-134.*
7. Negrete RJ et al. Reliability, minimal detectable change, and normative values for tests of upper extremity function and power. *J Strength Cond Res. 2010; 24(12): 3318-3325.*
8. Parsons BO et al. Does slower rehabilitation after arthroscopic rotator cuff repair lead to long-term stiffness? *J Shoulder Elbow Surg. 2010; 19(7): 1034-1039.*
9. Reinold MM et al. Electromyographic analysis of the rotator cuff and deltoid musculature during common shoulder external rotation exercises. *J Orthop Sports Phys Ther. 2004; 34(7): 385-394.*
10. Reinold MM et al. The effect of neuromuscular electrical stimulation of the infraspinatus on shoulder external rotation force production after rotator cuff repair surgery. *Am J Sports Med. 2008; 36(12): 2317- 2321.*
11. Reinold MM. Current concepts in the scientific and clinical rationale behind exercises for glenohumeral and scapulothoracic musculature. *J Orthop Sports Phys Ther. 2009; 39(2): 105-117.*
12. Reinold MM & Gill TJ. Current concepts in the evaluation and treatment of the shoulder in overhand throwing athletes, part 1: physical characteristics and clinical examination. *Sports Health. 2010; 2(1): 39-50.*
13. Reinold MM et al. Current concepts in the evaluation and treatment of the shoulder in overhead throwing athletes, part 2: injury prevention and treatment. *Sports Health. 2010; 2(2): 101-115*.
14. Roush JR. Reference values for the closed kinetic chain upper extremity stability test for collegiate baseball players. *N Am J Sports Phys Ther. 2007; 2(3): 159-163.*
15. Thein JM & Thein-Brady L. Aquatic-based rehabilitation and training for the shoulder. *J Athl Training. 2000; 35(3): 382-389.*
16. Townsend H et al. Electromyographic analysis of the glenohumeral muscles during a baseball rehabilitation program. *Am J Sports Med. 1991; 19(3): 264-272.*
17. Westrick RB et al. Exploration of the Y-Balance test for assessment of upper quarter closed kinetic chain performance. *Int J Sports Phys Ther. 2012; 7(2): 139-147.*
18. Wilk KE et al. Rehabilitation after rotator cuff surgery. *Tech Shoulder Elbow Surg. 2000; 1(2): 128-144.*