KEVIN M. ROTH, MD
ORTHOPAEDIC SPORTS MEDICINE

PHYSICAL THERAPY PROTOCOL

Rotator Cuff Repair — Small to Medium Tear

Arthroscopic Supraspinatus / Infraspinatus Repair (≤ 3 cm)

FOR THE PHYSICAL THERAPIST

Overview and Goals

This protocol governs rehabilitation following arthroscopic repair of small-to-medium rotator cuff tears (≤ 3 cm of tendon involvement, typically isolated supraspinatus, isolated infraspinatus, or supraspinatus-infraspinatus complex without significant subscapularis involvement). It is driven by tendon-to-bone healing biology at the rotator cuff footprint, which requires controlled early loading to support biological integration while preserving early range of motion. The framework is consistent with the 2016 ASSET consensus statement[2] and the 2025 AAOS Clinical Practice Guideline on Rotator Cuff Injuries,[1] which together represent the strongest current evidence base. It reflects updated evidence supporting earlier mobilization than was historically practiced — passive ROM beginning POD 1, sling discontinuation at 4 weeks, and active ROM beginning at 6 weeks; a meta-analysis of 20 RCTs (n=1,841) showed early mobilization improves early ROM recovery without increasing re-tear risk (OR 1.05, 95% CI 0.64–1.75).[5]

Two principles guide rehabilitation. First, protect the tendon-to-bone repair in the early phases through sling protection, deferred resistance training, and avoidance of active loading that stresses the repair construct. The repair is most vulnerable in the first 6–12 weeks; resistance training is deferred until 12 weeks regardless of how strong the patient feels.[3,4] Second, permit early passive motion to prevent stiffness and accelerate functional recovery — strict immobilization beyond 4 weeks is no longer supported and may increase pain and stiffness without improving healing.

Progression between phases is criterion-based. Time ranges represent typical windows, not gates. Patients who do not meet criteria should remain in the current phase regardless of elapsed time.

READ BEFORE STARTING — CONCOMITANT PROCEDURE MODIFICATIONS

This protocol applies to isolated supraspinatus and/or infraspinatus repairs. Two concomitant procedures require modifications applied in addition to the standard protocol:

- If **subscapularis repair** was performed, see the Subscapularis Repair Modification section.
- If **biceps tenodesis** was performed, see the Biceps Tenodesis Modification section.
- If the tear was **large or massive** (> 3 cm, multiple tendons including subscapularis with significant retraction), use Dr. Roth's dedicated Rotator Cuff Repair — Large to Massive Tear protocol instead.

Rehabilitation Phases

PHASE	SLING	RESTRICTIONS	ROM GOALS	EXERCISES	CRITERIA TO ADVANCE
PHASE 1 Weeks 0–4 *Repair protection & passive motion*	• Sling with abduction pillow at all times, including at night. • Remove only for prescribed PT,	• No active shoulder elevation, abduction, or rotation. • No lifting, pushing, pulling, or reaching with the operative	• Passive ROM begins POD 1 within pain-free limits:[1,5,6] **Forward elevation:** • Progress 0–120° over Weeks 0–4 **ER at 0° abduction:** • Progress 0–30°	**Pain & edema control:** • Cryotherapy, NSAIDs per Dr. Roth's instructions, gentle scar mobilization once incisions healed **Passive ROM (PT-led and home):** • Pendulum (Codman) — gentle, gravity-assisted • Supine PROM forward elevation with therapist or contralateral-arm	• Pain controlled at rest and with prescribed PROM • No effusion or inflammation around incisions • PROM forward elevation ≥ 120° • PROM ER ≥ 30°

PHASE	SLING	RESTRICTIONS	ROM GOALS	EXERCISES	CRITERIA TO ADVANCE
	hygiene, and elbow/wrist/hand exercises.[2,7]	arm. • No support of body weight through the operative arm.	over Weeks 0–4 (limit ER to ≤ 30° to protect the supraspinatus footprint) **Internal rotation:** • Hand to belt-line as tolerated • No PROM behind the back. No cross-body adduction beyond hand-to-opposite-shoulder. **Elbow / wrist / hand:** • Full active ROM as tolerated	assistance • Supine PROM external rotation with wand at 0° abduction • Table slides (gentle, gravity-eliminated) **Scapular sets / isometrics:** • Scapular retraction and depression isometrics (no shoulder motion) • Postural awareness training **Distal extremity:** • Elbow, wrist, hand AROM; ball squeezes for grip preservation **Avoid:** • Active shoulder motion of any kind • Resisted exercises • End-range PROM beyond phase limits • Sling-off ambulation in public spaces (fall risk; reflex arm-out reaction strains repair)	at 0° abduction • Tolerates sling weaning • Minimum 4 weeks elapsed
PHASE 2 Weeks 4–6 *Sling weaning & PROM completion*	• Wean sling over Weeks 4–5; discontinue entirely by end of Week 5 except for comfort during long days or crowded environments.[1,7]	• No AROM against gravity. • No resisted exercises. • No lifting > coffee-cup weight.	• Progressive PROM toward full range:[2] **Forward elevation:** • 120° → 160° **ER at 0° abduction:** • 30° → 45° **ER at 90° abduction:** • Introduce gradually, target 45° **Internal rotation:** • Hand to lumbar spine **Cross-body adduction:** • Progress slowly **AAROM introduced:** • Pulley, table slides, wand-assisted forward elevation — smooth, scapular-controlled motion without compensation	**PROM and AAROM:** • Continue all Phase 1 PROM with progressive range • Pulley exercises for forward elevation and abduction • Wand-assisted ER and IR **Scapular strengthening (low-load):** • Scapular retraction with light resistance band • Shoulder shrugs (low load) • Postural strengthening **Manual therapy:** • Gentle joint mobilization (Grade I–II) and soft-tissue mobilization to scapular / periscapular musculature. Avoid aggressive glenohumeral mobilization at end-range. **Aquatic therapy:** • Once incisions fully healed (~Week 4–5), pool-based PROM and AAROM offload the repair while supporting motion recovery	• Sling discontinued without arm guarding • Full or near-full pain-free PROM • Pain ≤ 2/10 with all prescribed exercises • Tolerates AAROM without compensatory scapular elevation • Minimum 6 weeks elapsed
PHASE 3 Weeks 6–12 *Active motion & scapular control*	• None.	• No resisted rotator cuff exercises until Week 12.[3,4] • No lifting > 2–3 lbs with the operative arm. • No overhead lifting or push/pull through resistance.	Full active ROM in all planes. Goal: full, symmetric, pain-free AROM by Week 12.	**AROM progression (gravity-eliminated → against gravity):** • Side-lying supported active elevation[2,3] • Supine washcloth press-up, supine press-up • Reclined wedge press-up — progress incline • Standing AROM forward elevation — initially no weight, progress to short lever (elbow bent) • Wall walks / wall slides • Towel slide on counter / horizontal dusting • Supine elastic-band forward elevation (very light, no rotator cuff resistance) • Aquatic AROM at slow speeds	• Full or near-full pain-free AROM • No scapular hike with active forward elevation • Smooth scapulohumeral rhythm • Pain ≤ 1/10 with prescribed AROM • Minimum 12 weeks elapsed

PHASE	SLING	RESTRICTIONS	ROM GOALS	EXERCISES	CRITERIA TO ADVANCE
				Scapular strengthening: • Progressive scapular retraction / protraction with band • Rows (low load) • Prone Y, T, W (gravity only initially) • Wall push-up plus **Periscapular & trunk:** • Postural strengthening • Core stabilization • Continue PROM at full range to maintain motion gains	
PHASE 4 Weeks 12–24+ *Strengthening & return to function*	• None.	• Resistance progresses gradually. Avoid aggressive overhead loading or sport-specific demands until appropriate criteria are met.	• Full pain-free AROM.	**Rotator cuff isometric → isotonic progression:** • Submaximal isometrics in neutral (ER, IR, abduction, flexion) — Weeks 12–14[3,4] • Light theraband ER and IR at 0° abduction (yellow → red → green) • Side-lying dumbbell ER (start 1–2 lbs, progress) • Standing dumbbell ER in scapular plane • Elastic-band forward punch and forward elevation **Scapular & periscapular strengthening:** • Progressive rows (high, middle, low) • Prone Y, T, W with light dumbbells • Reverse flys, scapular pull-downs • Push-up plus progressions **Compound movements (later Phase 4):** • Seated military press (light load, late phase) • Lat pull-downs (front, not behind neck) • Bicep / tricep strengthening • Deltoid strengthening **Functional:** • Sport- or job-specific training at progressive intensity • Functional progression for manual labor, recreational, or athletic demands • Establish home maintenance program	*See Return-to-Activity Criteria section below.* • Most patients return to weight training, golf, and recreation by ~6 months; throwing sports, tennis, and overhead athletics typically deferred to ~8–12 months.[1,4]

Procedure-Specific Considerations

Why This Protocol Now Permits Earlier Mobilization

Historically, RTC protocols delayed PROM for 2 weeks and used 6 weeks of sling immobilization. The current evidence base — the 2025 AAOS guideline (strong recommendation, high-quality evidence) and the Mazuquin 2021 meta-analysis of 20 RCTs (n=1,841) — shows early passive mobilization beginning POD 1 and sling weaning at 4 weeks do not increase re-tear risk (OR 1.05, 95% CI 0.64–1.75) and improve early ROM recovery.[1,5] The Tirefort 2019 RCT (Level I, n=80) showed no-sling protocols produced better early ROM (+8° ER, +14° elevation at 6 weeks) with no difference in repair integrity at 6 months.[7]

No Resisted Rotator Cuff Exercises Before Week 12

Tendon-to-bone healing at the supraspinatus footprint is biologically incomplete before 12 weeks. Resisted RTC strengthening before this window can compromise the repair and is one of the most common avoidable causes of repair failure.[3,4] This applies regardless of how strong the patient feels or how good their ROM is. Scapular and periscapular strengthening can begin earlier (Phase 2–3), but isolated rotator cuff resistance — internal rotation, external rotation, abduction with weight or band — is deferred to Week 12.

Scapular Mechanics Matter More Than Raw Strength

RTC repair patients commonly compensate with scapular hike (shoulder-shrug substitution) when active forward elevation is introduced. This pattern is not benign — it indicates poor periscapular control and predicts higher rates of persistent dysfunction. Smooth, scapular-controlled motion without elevation compensation is a better marker of readiness to advance than raw degrees of motion. Prioritize scapular awareness training and periscapular strengthening as foundational throughout Phases 2 and 3.[2,4]

SUPERVISED PT VS HOME EXERCISE PROGRAM

The 2025 AAOS guideline reports that, for isolated supraspinatus tears, a well-instructed home exercise program produces equivalent outcomes to supervised PT at 3 months and 1 year (no clinically meaningful differences in Constant score or subjective shoulder value).[1] Supervised PT is most valuable when:

- The patient cannot reliably perform PROM independently in the first 4 weeks
- Scapular compensation or arm guarding develops
- The patient has plateau or pain with home-program progression

Patients with strong body awareness and a clear home program may transition to less-frequent supervised visits earlier than has historically been practiced — the single biggest cost-effectiveness gain in modern RTC rehabilitation.

Subscapularis Repair Modification

If subscapularis repair was performed concomitantly, the modifications below apply **in addition to** the standard protocol. The subscapularis is the strongest rotator cuff tendon and the primary internal rotator; protecting its repair requires limiting passive external rotation that would stretch the repair beyond its post-operative tension.

SUBSCAPULARIS REPAIR — READ BEFORE STARTING

Sling: No change — 4 weeks per standard protocol.

External rotation restriction (extended duration and tighter limit):

- PER at 0° abduction limited to 0° for the first 2 weeks (no ER past neutral)
- Progress PER 0° → 30° over Weeks 2–6 (vs. 30° by Week 4 in the standard protocol)
- No PER at 90° abduction until Week 6
- From Week 6: progress ER gradually, monitoring for anterior shoulder pain suggesting excessive subscapularis strain

Active internal rotation: Defer active IR strengthening until Week 12 (consistent with the standard RTC resistance window). Hand-to-belt-line PROM is permitted earlier.

IR strengthening: When introduced at Week 12, begin with isometric IR in neutral, progress to light theraband IR before adding load. Avoid aggressive belly-press or bear-hug positions until

Week 16.

RTS timeline: Standard timeline applies — no change to ~6 month recreational or ~8–12 month overhead-sport return.

Biceps Tenodesis Modification

If biceps tenodesis was performed concomitantly (subpectoral or proximal/suprapectoral), the modifications below apply **in addition to** the standard protocol. The tenodesis fixes the long head of the biceps to the humerus or pectoralis tendon, requiring protection from active elbow flexion and supination loading until the fixation integrates.

BICEPS TENODESIS — READ BEFORE STARTING

Sling: No change — 4 weeks per standard protocol.

Active elbow flexion restriction:

- No active elbow flexion for 3 weeks post-op; AAROM elbow flexion (gravity-eliminated, with assistance) is permitted
- From Week 3: gentle AROM elbow flexion against gravity, no resistance
- From Week 6: progress AROM elbow flexion through full range
- From Week 12: add resistance (light dumbbell curls, ≤ 2–3 lbs initially)

Forearm supination: Avoid resisted supination (screwdriver, opening jars) for the first 6 weeks.

Lifting and carrying: No lifting > coffee-cup weight in a supinated position for the first 6 weeks. After Week 6, neutral-grip lifting is permitted within the standard restrictions.

RTS timeline: Standard timeline applies. Heavy biceps loading (weighted curls, pull-ups, supinated-grip labor) typically deferred to Week 16+.

Regeneten Bioinductive Collagen Implant

REGENETEN BIOINDUCTIVE COLLAGEN IMPLANT — NO MODIFICATION

A small or partial-thickness rotator cuff repair augmented with the Regeneten Bioinductive Collagen Implant follows this protocol unchanged. The implant does not alter sling duration, ROM progression, or strengthening timelines — progression is governed by the underlying tear and repair, not by the implant. (For large or massive repairs augmented with the implant, use Dr. Roth's Rotator Cuff Repair — Large to Massive Tear protocol.)

Return-to-Activity Criteria

Return to activity is criterion-based, matched to the demands of the patient's target activity. The population spans recreational athletes, working-age laborers, and older adults seeking restoration of overhead function. Per the 2025 AAOS guideline and the 2016 ASSET consensus, full return to demanding activity typically occurs at ~6 months, with overhead athletic activity deferred further.[1,2]

Activity Tier	Criteria & Timing
Activities of daily living (ADLs)	Full pain-free PROM and symptom-free AROM. Typically by Week 12–16; lifting up to 5 lbs at this point.
Light recreational (walking,	Pain-free AROM, RTC isotonic strength approaching the contralateral

Activity Tier	Criteria & Timing
golf, cycling, non-overhead swim)	side, no scapular compensation. Typically ~5–6 months.
Weight training, manual labor, basketball, skiing	RTC strength symmetry approaching 90% on isokinetic or HHD testing, pain-free overhead motion, no apprehension. Typically ~6 months.
Throwing sports, tennis, volleyball, overhead swim	Full strength symmetry, pain-free overhead motion, sport-specific drill progression complete. Typically ~8–12 months; throwers at the longer end. Clearance by Dr. Roth required.
Strength & ROM benchmarks	RTC strength LSI ≥ 90% on isokinetic or HHD; full pain-free AROM matching the contralateral side; no apprehension or pain in overhead positions.

REALISTIC EXPECTATIONS FOR STRENGTH RECOVERY

Even with successful repair and rehab, RTC strength frequently remains below pre-symptomatic levels at 6 months and continues to improve through 12–24 months. Counsel patients that ongoing strength gains beyond formal PT discharge are expected and that full functional recovery is a 12–18 month process. Persistent pain, weakness, or apprehension after 6 months should prompt re-evaluation by Dr. Roth.

References

1. Brown GA, Weber S, Chahal J, et al. Management of Rotator Cuff Injuries: Evidence-Based Clinical Practice Guideline. American Academy of Orthopaedic Surgeons. 2025.
2. Thigpen CA, Shaffer MA, Gaunt BW, et al. The American Society of Shoulder and Elbow Therapists' Consensus Statement on Rehabilitation Following Arthroscopic Rotator Cuff Repair. J Shoulder Elbow Surg. 2016;25(4):521–535.
3. Swansen T, Wright MA, Murthi AM. Postoperative Rehabilitation Following Rotator Cuff Repair. Phys Med Rehabil Clin N Am. 2023;34(2):357–364.
4. Sgroi TA, Cilenti M. Rotator Cuff Repair: Post-Operative Rehabilitation Concepts. Curr Rev Musculoskelet Med. 2018;11(1):86–91.
5. Mazuquin B, Moffatt M, Gill P, et al. Effectiveness of Early Versus Delayed Rehabilitation Following Rotator Cuff Repair: Systematic Review and Meta-Analyses. PLoS One. 2021;16(5):e0252137.
6. Tang H, Yang P, Wang X, Zhao B, Ling K. Assessment of the Efficacy of Early Versus Delayed Mobility Exercise After Arthroscopic Rotator Cuff Repair. Int Orthop. 2025;49(6):1411–1420.
7. Tirefort J, Schwitzguebel AJ, Collin P, et al. Postoperative Mobilization After Superior Rotator Cuff Repair: Sling Versus No Sling — A Randomized Prospective Study. J Bone Joint Surg Am. 2019;101(6):494–503.
8. Jeong HJ, Kim JY, Cho NS, et al. Rehabilitation Protocols After Arthroscopic Rotator Cuff Repair: A Survey of Active Members of the Korean Shoulder and Elbow Society. J Shoulder Elbow Surg. 2026.

Glossary

AAOS — American Academy of Orthopaedic Surgeons.
AAROM — Active-assisted range of motion; the patient initiates motion with assistance from gravity, pulley, wand, or therapist.
ADL — Activities of daily living.
AROM — Active range of motion; the patient moves the joint independently against gravity.
ASSET — American Society of Shoulder and Elbow Therapists; published the 2016 consensus on RTC repair rehabilitation.
ER — External rotation.
HHD — Hand-held dynamometer; a portable device for objective strength measurement.
IR — Internal rotation.
LSI — Limb Symmetry Index; the operative limb's strength as a percentage of the contralateral limb (operative ÷ contralateral × 100).

PER — Passive external rotation.
PFE — Passive forward elevation.
POD — Postoperative day.
PROM — Passive range of motion; the therapist or contralateral limb moves the joint while the patient stays relaxed.
RCT — Randomized controlled trial.
ROM — Range of motion.
RTC — Rotator cuff.

Kevin M. Roth, MD

Board-Certified Orthopaedic Surgeon · Subspecialty Certification in Sports Medicine

Dr. Roth completed his orthopaedic surgery residency at Harvard Medical School and his sports medicine fellowship at the Kerlan-Jobe Orthopaedic Clinic in Los Angeles. In practice since 2013, he specializes in advanced arthroscopic techniques and sports medicine procedures, and sees patients at Palo Alto Medical Foundation's Palo Alto and Dublin offices. He welcomes calls from physical therapists about his patients or this protocol.

Palo Alto Medical Foundation · Sutter Health · KevinRothMD.com