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Arthroscopic Rotator Cuff Repair

Postoperative Rehabilitation Protocol

Evidence-informed, criterion-based clinical guide for physiotherapists | Revised Sept 2026

Clinical priority. Surgeon-specific restrictions supersede this document. Protect the tendon-to-bone repair while progressively restoring motion, neuromuscular control, capacity, and function. Progression is based on tissue-healing time, repair risk, symptoms, movement quality, and objective criteria—not the calendar alone.

How to use this protocol

This protocol applies to primary arthroscopic repair of a repairable rotator cuff tear. It is a framework rather than a substitute for clinical reasoning. Before the first treatment, document the repaired tendon(s), tear dimensions and pattern, tissue quality, repair tension and construct, concomitant procedures, and the surgeon-assigned protection pathway.

Pathway	Typical features	Default implications
Standard protection	Small-to-medium tear; 1 tendon; good tissue; low-tension primary repair; reliable patient; no major biologic risk.	PROM begins early within limits; sling usually 5-6 weeks; AAROM/AROM commonly begins around 5-6 weeks; resisted cuff loading around 10-12 weeks when criteria are met.
Enhanced protection	Large/massive or ≥2-tendon tear; poor tissue; retraction/atrophy; high-tension repair; revision; augmentation; significant subscapularis repair; surgeon concern; major healing-risk factors.	Sling commonly 6 weeks (sometimes longer); slower PROM; AAROM around 6-8 weeks; AROM often 8-10 weeks; cuff strengthening usually 12-16 weeks or later.

Procedure-specific modifications

Procedure/repair	Additional protection and therapist implications
Subscapularis repair	Limit ER according to tear extent and repair tension—commonly neutral to 20-30° initially; avoid forceful ER and extension. Avoid active/resisted IR and behind-back reach until authorized (often no resisted IR for 8-12 weeks). Larger/inferior subscapularis repairs require more restriction.
Biceps tenodesis	Avoid resisted elbow flexion and forearm supination and avoid heavy carrying for approximately 6 weeks or as directed. Shoulder protection remains governed by the cuff repair. Tenotomy generally needs no tendon-protection restriction beyond comfort.

Procedure/repair	Additional protection and therapist implications
Massive/multi-tendon or high-tension repair	Use enhanced-protection pathway. Slower PROM, delayed AROM and strengthening, conservative overhead progression, and lower threshold for surgeon communication.
Revision or patch/augmentation	Follow operative instructions. Revision biology and fixation may warrant delayed loading; augmentation does not automatically justify accelerated rehabilitation.
Capsular release performed with cuff repair	Balance stiffness prevention with repair protection. Surgeon must define the priority and ROM limits; do not assume an unrestricted capsular-release protocol.
Distal clavicle excision/acromioplasty	Usually does not slow cuff-repair milestones. Avoid cross-body adduction if AC-joint symptoms are irritable. Routine acromioplasty is not required for every repair.

Pre-treatment surgical and patient checklist

- Repair: tendon(s), partial- versus full-thickness, tear pattern, tendon retraction, tissue quality, fatty infiltration/atrophy, repair tension, patch/bioinductive augmentation, and revision status. The more anchors used tends to indicate a larger tear.
- Concomitant procedures: subscapularis repair, biceps tenodesis/tenotomy, distal clavicle excision, capsular release, labral repair, cartilage procedure, or fracture fixation.
- Patient modifiers: age, diabetes and glycemic control, smoking/vaping nicotine, inflammatory disease, osteoporosis, obesity, prior stiffness, cervical/neurologic disorder, pain sensitivity, medication use, work/sport demands, health literacy, and adherence/support.
- Baseline measures: pain (rest/night/activity), analgesic use, sleep, wound, distal neurovascular status, cervical screen as indicated, PROM within permitted limits, scapular position/control, elbow/wrist/hand ROM, and a validated patient-reported outcome (ASES, QuickDASH, or WORC).

Global rules and precautions

- Patients are provided a sling post operatively at the hospital. More advanced slings with or without abduction pillows can be purchased if patients wish.
- No lifting, carrying, pushing, pulling, sudden reaching, supporting body weight, or using the operated arm to rise from a chair during the protection phase.
- No active shoulder elevation or active external rotation before authorized. Avoid a 'small active lift' to position the arm; the contralateral arm or therapist supports the limb.
- Motion must be gentle and non-provocative. Do not force end range, use high-grade glenohumeral mobilization, or pursue rapid symmetry in the first 8 weeks.
- Use symptom response over the following 24 hours to dose treatment. Exercise-related discomfort should remain mild and settle to baseline by the next morning; persistent pain, swelling, sleep deterioration, or loss of motion indicates excessive dose.
- Avoid long-lever resistance early. Progress in this order: supported to unsupported; short lever to long lever; low elevation to high elevation; isometric to isotonic; stable to unstable; slow to faster; low load to higher load; isolated to functional.
- Do not perform routine resisted manual muscle testing of the repaired cuff in the early healing phase. Use observation, AROM quality, lag signs only when appropriate, and later objective dynamometry.
- Communicate promptly with the surgeon if the course is atypical or if safe progression is unclear.

Expected symptom and safety monitoring

Expected/monitor	Modify treatment and reassess	Urgent medical/surgical review
Mild-to-moderate postoperative ache; bruising; disturbed sleep; transient soreness after exercise that resolves by next day.	Increasing night pain; repeated post-exercise flare >24 h; progressive stiffness; inability to relax during PROM; new AROM regression; persistent paresthesia; wound irritation.	Fever or systemic illness; spreading erythema/drainage; chest pain or dyspnea; new marked arm swelling; acute neurologic deficit; traumatic event with a pop followed by sudden pain/weakness or loss of previously achieved function.

Range-of-motion guidance

Do not chase maximum ROM early. For most repairs, a gradual, comfortable restoration of motion is preferred. Early controlled motion may improve short-term ROM after small-to-medium repairs without a clear long-term functional advantage; aggressive or high-dose stretching may impose unnecessary cyclic load. Large/massive, high-tension, revision, and poor-quality repairs warrant slower progression.

Measure	Standard protection guide	Enhanced protection guide
Forward elevation	Weeks 0-2: often 90-120° as tolerated; weeks 3-6: gradually 120-140°; after 6 weeks progress toward full.	Weeks 0-4: often 90-100°; weeks 5-8: gradual progression; full motion is not an early target.
External rotation at side	Often 20-30° initially by week 6 if not restricted. After 6 weeks gradually 30-45°	Often neutral to 20° initially, progress only per operative instructions for subscapularis repair
Internal rotation	No active behind-back reach early; gentle PROM only in protected plane. Avoid forceful extension/adduction/internal rotation.	Delay behind-back motion and forceful IR; follow repaired tendon-specific restrictions.
Abduction	Supported PROM in scapular plane; avoid long-lever or unsupported abduction before active phase.	Limit according to repair pattern and surgeon direction; commonly ≤90° early.

These ranges are guides, not mandatory milestones. Surgeon limits prevail. Record whether motion is true glenohumeral motion or compensated by scapular elevation, trunk extension, or humeral translation.

Phase I — Maximum protection | Postoperative day 0 to week 2

Primary goals. Protect the repair; control pain and swelling; support wound healing; maintain distal mobility; establish safe sling, sleep, and home-exercise habits.

Precautions and loading limits

- Sling worn continuously except hygiene and prescribed exercises. Support the arm during transfers and dressing. No active shoulder motion.

- No lifting or weight bearing through the operated arm. No driving.
- PROM only within surgeon limits. Pendulums must be small and trunk-driven, not active shoulder circumduction.
- Avoid shoulder extension beyond neutral and combined extension/adduction/internal rotation.

Physiotherapy interventions

- Education: tendon protection, sling fit, skin checks, dressing, bathing, supported sleep (recliner or pillows), safe transfers, fall prevention, and adherence.
- Pain/swelling: cryotherapy with skin protection, relative rest, supported positioning, breathing/relaxation, and medication guidance from the prescriber.
- AROM: hand opening/closing, wrist flexion-extension, forearm pronation-supination. Elbow flexion-extension unless restricted by biceps procedure.
- Gentle cervical ROM and postural movement. Scapular setting/clock in protected positions without forceful depression or retraction.
- PROM/AAROM performed only as authorized: therapist-supported elevation in the scapular plane, ER at 0-20° abduction, and gentle table-supported motion. Low repetitions with complete relaxation.
- Home program commonly 3-5 brief sessions/day: distal ROM, supported pendulum, and prescribed PROM. Prioritize quality over volume.

Criteria to progress

- Incisions clean/dry and no concerning systemic or neurovascular signs.
- Patient demonstrates independent sling use, protection rules, and home program.
- Pain and swelling are stable or improving; PROM can be completed without guarding or a next-day flare.

Phase II — Protected passive mobility | Weeks 2 to 6

Primary goals. Maintain repair protection; gradually restore comfortable PROM; minimize stiffness without excessive cyclic loading; normalize distal and scapular mobility.

Precautions and loading limits

- Continue sling according to pathway and surgeon instruction—typically through 6 weeks. Weaning begins only when authorized. Small single tendon tears can wean at 5 weeks.
- No unsupported AROM, lifting, carrying, pushing, pulling, or body-weight support.
- Avoid aggressive stretching, painful end-range holds, and high-grade joint mobilization.
- Do not substitute scapular hiking or trunk movement for glenohumeral motion.

Physiotherapy interventions

- Reassess pain, wound, sleep, PROM quality, scapular mechanics, and home-program technique each visit.
- PROM: elevation/scaption, ER in protected abduction positions, and gentle IR as permitted. Use short-duration, low-load techniques.
- AAROM may be introduced near the end of this phase for selected standard-protection repairs if explicitly authorized: supported table slides, supine dowel elevation, contralateral-assisted elevation, and pulley only if it produces relaxed mechanics.
- Scapulothoracic mobility and low-load motor control: supported protraction/retraction, clocks, thoracic extension/rotation, and postural endurance without loading the repair.
- Distal conditioning and lower-body/aerobic activity that does not jar the shoulder or risk a fall. Keep the operated arm supported.

Criteria to progress

- Surgeon authorizes sling wean and transition to active-assisted/active motion.
- Rest pain generally $\leq 2-3/10$, symptoms stable, and no significant next-day response.
- PROM is progressing without force; suggested minimums for standard pathway: elevation about 120° , ER at side about 30° (unless restricted).
- Patient can perform AAROM without active shoulder shrug, sudden lowering, or pain escalation.

Phase III — Active-assisted to active motion | Approximately weeks 6 to 12

Primary goals. Restore non-compensated AAROM/AROM; regain scapulohumeral rhythm; develop low-load endurance; establish functional use below shoulder level while preserving the repair.

Precautions and loading limits

- Standard protection: AAROM/AROM commonly begins around week 6. Enhanced protection: often delay AROM until weeks 8-10 or surgeon clearance.
- No heavy lifting, repetitive overhead use, sudden reaching, or long-lever cuff loading.
- Avoid strengthening through a painful arc or with visible shrug/winging. Do not add load simply because the calendar permits it.
- If the patient cannot actively elevate with acceptable mechanics, regress to gravity-minimized and supported tasks.

Physiotherapy interventions

- AAROM progression: supine assisted elevation $\rightarrow$ supine active elevation $\rightarrow$ reclined 'lawn-chair' progression $\rightarrow$ upright short-lever elevation $\rightarrow$ full-lever scaption as control improves.
- ER/IR AROM with towel roll at side; supported side-lying ER only when allowed and mechanically sound.
- Scapular control: low row, serratus punch in supported positions, wall-assisted reach, and controlled protraction/upward rotation. Avoid forceful depression cues.
- Neuromuscular work: gentle rhythmic stabilization and perturbations in supported mid-range positions, beginning with low amplitude and short lever.
- Closed-chain introduction when authorized: hand supported on wall or table, gentle weight shifts and ball-on-wall control; no floor planks or push-ups.
- Mobility: continue PROM/AAROM only for meaningful deficits. Address thoracic and posterior shoulder mobility without stressing the repair.
- General conditioning and task-specific education; gradual return to light waist-level ADLs.
- If struggling to gain full FE passive dead hangs encouraged.

Criteria to progress

- Near-full, comfortable PROM appropriate to the contralateral side and functional needs; no forceful end-range requirement.
- AROM elevation generally $\geq 120-140^\circ$ with minimal shrug and smooth eccentric lowering.
- External-rotation lag absent or improving; pain generally $\leq 2/10$ with exercise and no next-day flare.
- Surgeon permits resisted cuff loading and patient demonstrates reliable movement quality.

Phase IV — Initial strengthening | Approximately weeks 10/12 to 16

Primary goals. Build rotator cuff and scapular capacity with low-load, high-quality exercise; restore functional ROM; develop endurance and proprioception.

Precautions and loading limits

- Begin resisted cuff exercise no earlier than surgeon authorization. Standard repairs commonly start around 10-12 weeks; enhanced-protection repairs commonly 12-16 weeks or later.
- Avoid maximal effort, heavy eccentric loading, high-speed movement, dips, floor push-ups, pull-ups, heavy pressing, and repetitive overhead loading.
- Maintain symptom response within the 24-hour rule. Strength gains must not come at the expense of motion or movement quality.

Physiotherapy interventions

- Start with submaximal multi-angle isometrics in neutral, then light isotonic ER/IR at side. Use low resistance and controlled tempo.
- Progress scapular exercises: rows, extension to neutral, serratus wall slide/punch, prone or standing horizontal abduction below provocative range, and lower-trapezius patterns as tolerated.
- Elevation: short lever → long lever; scapular plane before frontal plane; below shoulder height before overhead.
- Closed chain: wall push-up plus → inclined counter push-up plus → quadruped only when sufficient load tolerance and surgeon clearance.
- Dose initially for endurance: commonly 1-3 sets of 10-20 technically excellent repetitions, 2-4 days/week, with 48 hours between harder cuff sessions. Adjust to irritability and fatigue response.
- Introduce light functional carrying close to the body and below shoulder height; progress load and distance separately.

Criteria to progress

- Full or functionally sufficient non-painful AROM with good scapulohumeral rhythm.
- Tolerates foundational cuff and scapular exercises without compensation or a >24-hour flare.
- External and internal rotation can be resisted submaximally through the permitted range without pain or lag.
- Independent, accurate home program and graded workload plan.

Phase V — Progressive strength and function | Approximately months 4 to 6

Primary goals. Restore strength, endurance, power foundations, work capacity, and confidence; prepare for higher-demand activity.

Precautions and loading limits

- Avoid abrupt workload spikes. The tendon continues to remodel for many months even when pain and ROM have normalized.
- Overhead strengthening and higher-load tasks require full motion, good mechanics, adequate baseline strength, and surgeon approval.
- Do not use time alone to clear heavy work, contact, throwing, or high-load overhead sport.

Physiotherapy interventions

- Progress resistance using reps-in-reserve and symptom response. Increase only one variable at a time: load, lever arm, range, volume, speed, or frequency.
- Strength in neutral and increasing elevation: ER/IR, scaption, rows, presses in protected planes, serratus/lower trapezius, and kinetic-chain integration.

- Eccentric capacity: controlled lowering in elevation, ER deceleration, and graded lowering/carrying tasks after concentric tolerance.
- Proprioception/closed chain: wall and incline perturbations, quadruped shifts, modified plank progressions, and task-specific stability.
- Functional conditioning: progressive carries, shelf lifts, push/pull, tool handling, and job/sport simulations. Use interval formats before continuous high-volume work.
- Swimming: can begin gentle swimming technique
- Measure strength with handheld dynamometry when feasible; compare with contralateral side and task requirements while considering bilateral disease.

Criteria to progress

- ROM adequate for the intended task and no painful compensatory strategy.
- ER and IR strength generally ≥ 70 -80% of the uninvolved side before initiating demanding overhead or plyometric progression.
- No reactive pain or functional loss after progressive loading.
- Surgeon clearance for advanced work/sport phase when appropriate.

Phase VI — Return to heavy work and sport | Usually month 6 onward; often 9-12+ months for demanding overhead sport

Primary goals. Restore task-specific strength, endurance, rate of force development, workload tolerance, and safe unrestricted participation.

Precautions and loading limits

- Return is a continuum: participation $\rightarrow$ modified performance $\rightarrow$ full performance. Clearance should be shared among surgeon, physiotherapist, patient, and where relevant employer/coach.
- Large/massive tears, revisions, high-demand overhead sports, and heavy manual work commonly require longer timelines.
- Persistent pain, weakness, lag, poor mechanics, or inability to tolerate progressive workload requires reassessment rather than repeated testing.

Physiotherapy interventions

- Advanced strength: multiplanar cuff/scapular work, overhead endurance, heavy-slow resistance as appropriate, and kinetic-chain power.
- Plyometric progression when indicated: two-hand below shoulder $\rightarrow$ two-hand overhead $\rightarrow$ one-hand below shoulder $\rightarrow$ one-hand overhead; low intensity/volume before speed or load.
- Throwing/racquet/swimming: interval program with strict workload tracking; progress distance/effort before volume and volume before frequency.
- Work hardening: reproduce force, duration, repetition, height, tool, and environmental demands. Document tolerances and restrictions.
- Re-test patient-reported outcome, ROM, dynamometry, endurance, functional tests, and next-day response.

Criteria to progress

- Pain-free or acceptable stable symptoms; no night-pain escalation or post-activity flare.
- Functional ROM and high-quality mechanics under fatigue.

- Strength commonly ≥ 85 -90% limb symmetry for return to demanding activity; for dominant overhead athletes, interpret symmetry alongside sport-specific normative and preinjury demands.
- Passes relevant endurance/functional tests and completes a graded practice/work exposure without adverse response.
- Patient reports confidence and understands independent workload management; surgeon agrees with clearance.

Exercise selection and dosage principles for physiotherapists

- Select exercises that create the desired adaptation at the lowest repair load. Early phases emphasize supported motion and motor control; later phases progressively increase moment arm, elevation angle, resistance, speed, and repetitions.
- Watch for scapular elevation, anterior humeral translation, trunk lean/extension, elbow flexion substitution, loss of ER, painful arc, and uncontrolled eccentric lowering.
- Use a pain-monitoring model: mild discomfort can be acceptable during later loading if mechanics remain sound and symptoms settle promptly. Sharp pain, escalating pain, or next-day loss of function is not acceptable.
- Dose by total exposure, not only band colour. Record exercise, position, lever arm, resistance, sets, repetitions, tempo, frequency, and response.
- Avoid routine passive modalities as the core treatment. Skilled PT value lies in assessment, education, individualized progression, movement retraining, manual therapy when indicated, and adjustment of the home program.
- Manual therapy: early treatment is gentle and remote from the repair. Later, use graded glenohumeral/scapulothoracic/thoracic techniques for a defined impairment; avoid forceful mobilization during biologic protection.

Suggested outcome-measure schedule

Time	Recommended measures
Initial PT assessment	Pain/rest/night/activity; wound and neurovascular screen; PROM within restrictions; scapular control; ASES, QuickDASH, or WORC; work/sport demands and psychosocial barriers.
6 weeks	Pain/sleep; PROM; sling independence/weaning; AAROM quality; adherence and adverse events.
12 weeks	PROM/AROM; movement quality; lag/functional elevation; patient-reported outcome; readiness for resisted loading.
4-6 months	ROM; handheld dynamometry ER/IR and elevation/scaption when safe; endurance; task-specific tests; patient-reported outcome.
Return decision	Symptoms; ROM; strength symmetry and task norms; endurance/functional testing; workload trial; confidence/readiness; surgeon clearance.

Return-to-driving, work, and sport guidance

- Driving: no driving while using opioid medication, while in the sling, or until the patient can safely control the vehicle and perform emergency manoeuvres. Surgeon and insurer requirements apply.

- Desk work: may resume when pain, medication effects, transport, and ergonomics permit, often with the arm supported and no active reaching.
- Light duty: requires explicit limits for lift/carry, reach height, repetition, push/pull, and shift duration—not simply ‘as tolerated.’
- Heavy manual/overhead work: commonly 6 months or later and requires objective capacity plus graded work simulation.
- Recreational sport: lower-risk, non-contact activities may begin earlier if the arm is protected. Heavy resistance, contact, fall-risk, and overhead sports require later criterion-based clearance.
- Overhead/throwing sport: typically no unrestricted return before 6 months; many athletes need 9-12 months or longer to regain workload capacity and performance.

Discharge criteria

- Goals jointly established by patient, surgeon, and physiotherapist are met, or the patient has reached a safe independent management level.
- Pain is minimal/stable and does not limit sleep or essential function.
- ROM is sufficient for home, work, and sport demands; commonly elevation $\geq 160^\circ$, glenohumeral abduction $\geq 90^\circ$, and ER at 90° abduction $\geq 60^\circ$, interpreted against the opposite shoulder and pre-existing limitations.
- Good scapulohumeral rhythm and controlled concentric/eccentric elevation without significant shrug or lag.
- Strength is sufficient for the intended task: at least grade 4 for routine function, with objective dynamometry and ≥ 85 -90% symmetry preferred for high-demand return.
- Patient tolerates relevant push, pull, carry, lift, endurance, and overhead tasks without an adverse 24-hour response.
- Patient independently demonstrates the maintenance program, workload progression, symptom-monitoring rules, and indications for reassessment.

Important evidence updates incorporated

- For small-to-medium full-thickness repairs, high-quality evidence indicates similar longer-term clinical outcomes with early versus delayed mobilization; early controlled motion may improve short-term ROM. This does not justify aggressive loading or extrapolation to high-risk repairs.
- Selected patients after small repairs may achieve similar outcomes with a well-instructed home program compared with visits that only supervise the same exercises. Larger tears, complex repairs, stiffness, poor motor control, comorbidity, low confidence, or atypical recovery warrant skilled multimodal physiotherapy.
- Sling duration should be individualized. Trials of early sling weaning largely involve selected small/medium superior cuff repairs and should not be generalized to massive, subscapularis, revision, or high-tension repairs.
- Return decisions in the literature remain overly time-based. This protocol adds symptoms, ROM, movement quality, strength, endurance, functional exposure, confidence, and surgeon clearance.
- The earlier statement that tendon-bone strength is exactly ‘50% at 6 weeks and 80% at 12 weeks’ has been removed. Healing is continuous and variable; animal and histologic evidence supports prolonged biologic protection but does not validate precise human percentage milestones.

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Protocol governance

This protocol should be reviewed periodically as evidence, surgical techniques, and local practice evolve. It is not intended to prescribe treatment for an individual patient or replace the operative report, surgeon direction, or physiotherapist's assessment. Any unexpected deterioration, traumatic event, or concern for complication should prompt surgical review.

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