

The Physical Root

Rotator Cuff Repair Rehabilitation Protocol

Criteria-based guidance after arthroscopic or open rotator cuff repair

Purpose

A clinician-facing framework after rotator cuff repair. Progression must reflect tear size and pattern, partial- versus full-thickness involvement, tendon and muscle quality, fixation security, concomitant procedures, patient factors, and the operating surgeon's instructions.

Protocol at a glance

Phase	Typical timing	Primary priorities
0. Surgical stratification	Before / immediately after	Review operative findings, repair quality, tissue quality and precautions
1. Protection	Day 0 to weeks 2-6	Protect tendon-to-bone healing, sling, distal motion and safe ADLs
2. Protected mobility	Weeks 2-8	Progress permitted PROM, then AAROM based on repair risk
3. Active control	Weeks 6-12+	Restore AROM; begin low-load activation when cleared
4. Strength / return	Months 3-6+	Progress resistance, endurance and task readiness

Design principles

- Review the surgical report whenever possible. The operative findings are more useful than the diagnostic label alone.
- Discuss repair quality and repaired-tissue quality directly with the surgeon when the report is incomplete or progression is uncertain.
- Use a slower pathway for larger or multi-tendon tears, retraction, poor tissue quality, revision, fatty infiltration, tenuous fixation, or high-tension repair.
- Pain reduction does not indicate biological readiness for active loading.
- Progress by healing risk, movement quality, symptom response, function, and surgeon criteria rather than time alone.

1. Scope, red flags, and clinical decision rules

Applies to: adults after primary repair when operative findings and surgeon restrictions are available. This protocol does not supersede the operative report, surgeon communication, or facility policy.

Adapt or obtain explicit clearance for: revision; massive or irreparable tear; tendon transfer; superior capsular reconstruction; graft augmentation; fracture; open repair; poor bone quality; neurological deficit; infection; or substantial medical comorbidity.

Urgent and emergent escalation

Finding	Recommended action
Chest pain, severe dyspnea, syncope, new confusion, or stroke signs	Activate emergency response / call emergency services.
Drainage, dehiscence, spreading redness, purulence, fever, chills, or abrupt pain increase	Contact the surgeon promptly; same-day assessment when concerning.
Traumatic event, sudden pop with marked pain, new bruising/deformity, or abrupt functional loss	Stop loading, support the arm, and contact the surgeon promptly.
Disproportionate arm swelling, color change, cool hand, or loss of distal pulse	Urgent medical or emergency evaluation.
New/progressive motor or sensory loss, severe unremitting pain, or suspected CRPS	Prompt medical/surgical evaluation; urgency based on severity.

Medication and wound boundaries

Reinforce, but do not independently alter, instructions for analgesics, antibiotics, sling use, dressings, bathing, or driving. Avoid soaking, topical agents, or direct scar work until the incision is closed and cleared.

Key monitoring variables

- Pain behavior, night symptoms, rest pain, medication effects, and 24-hour response.
- Incision, edema, bruising, distal circulation/sensation, hand function, and cervical contribution.
- Sling fit, sleep positioning, precaution adherence, and essential ADL safety.
- Permitted PROM/AAROM, guarding, scapular mechanics, and active control when cleared.
- Any mismatch between symptoms/function and known repair characteristics.

2. Surgical report and repair-risk stratification

Information to obtain from the operative report

Operative detail	Why it matters
Tendon(s) and tear pattern	A supraspinatus-only repair differs from multi-tendon posterosuperior or subscapularis repair. Pattern and retraction influence strain.
Partial- vs full-thickness	A repaired partial tear may retain continuity; a full-thickness tear restores tendon-to-bone continuity. Technique and quality still govern loading.
Tear size / retraction	Small, medium, large, and massive categories are common, but definitions vary. Larger and retracted tears generally need slower loading.
Tendon quality / mobility	Friable, thin, delaminated, degenerative, or poorly mobile tissue may tolerate less strain even with satisfactory fixation.
Muscle quality	Atrophy and fatty infiltration reduce force capacity and may affect healing and prognosis.
Fixation / repair quality	Anchor configuration, footprint coverage, tension, bone quality, and surgeon assessment of security guide protection.
Concomitant procedures	Subscapularis repair, biceps procedure, labral repair, capsular release, or reconstruction may add precautions.

Required communication

Ask the surgeon how the repair looked and felt intraoperatively: tissue quality, mobility to the footprint, tension, fixation security, bone quality, and whether the patient should follow a small/medium or large/massive pathway. Review the operative report before the first outpatient visit whenever possible.

Practical risk pathways

Pathway	Typical features	Implication
Lower risk	Small or limited tear; single tendon; minimal retraction; good tissue/bone; secure low-tension repair	May use earlier end of surgeon-approved ranges.
Moderate risk	Medium tear; degenerative tissue; more retraction; relevant comorbidity	Standard staged protection with careful monitoring.
Higher risk	Large/massive; multi-tendon or subscapularis; poor quality; revision; fatty infiltration; high tension	Longer immobilization, slower motion, delayed AROM and strengthening.

3. Phase 0 - readiness

- Explain the biologically constrained recovery and why symptom relief can precede tendon healing.
- Record baseline motion, cervical/distal status, dominant side, work/recreation demands, support, and patient-reported function.
- Teach sling, supported sleep, dressing/bathing, distal motion, and transfer protection.
- Identify nicotine exposure, diabetes control, fall risk, medication issues, and other healing modifiers.

Suggested baseline measures

QuickDASH, ASES, SPADI, or PROMIS Upper Extremity; preoperative active/passive motion as tolerated; functional reach; cervical screen; elbow/wrist/hand motion; and grip when appropriate.

4. Phase 1 - protection and symptom control

Typical timing: day 0 through weeks 2 to 6. Immobilization and motion timing depend on repair risk and surgeon preference.

Goals

- Protect tendon-to-bone healing and concomitant procedures.
- Control symptoms and maintain distal mobility.
- Use the sling and complete essential ADLs and transfers safely.
- Maintain permitted passive mobility without stressing the repair.

Interventions

Domain	Examples
Education	Sling and sleep positioning; avoid active elevation, lifting, carrying, sudden reaching, pushing, pulling, or arm weight bearing.
Distal mobility	Hand, wrist, forearm, and elbow motion according to any biceps restriction; cervical and postural mobility.
Shoulder mobility	Surgeon-permitted pendulum and low-force PROM. ER limits may be stricter with subscapularis repair.
Scapular activity	Gentle setting and supported thoracic mobility without active cuff loading.
Dose	Several brief sessions daily; adjust for pain, guarding, wound response, and next-day recovery.

Avoid

- Active shoulder elevation or unsupported use before clearance.
- Lifting, traction, pushing, pulling, or arm weight bearing.
- Forceful PROM or stretching to a universal numeric target.
- Premature cuff isometrics, band work, or active rotation.

Phase 1 progression criteria

Progress when most are present	Hold, regress, or communicate when
Incision stable; symptoms controlled; sling and precautions understood; distal motion maintained; permitted PROM tolerated without guarding or next-day flare; surgeon timeline supports progression.	Worsening wound; systemic symptoms; trauma; sudden functional loss; progressive neurological findings; severe/increasing pain; uncertainty about repair integrity.

Early motion decision

Early passive motion may reduce stiffness but can increase strain at a vulnerable repair. Delayed or slower motion is commonly selected for large/massive tears, poor tissue quality, high-tension repairs, subscapularis repairs, revisions, or complex concomitant procedures.

5. Phase 2 - protected mobility

Typical timing: approximately weeks 2 to 8. AAROM may begin later for higher-risk repairs.

Goals

- Progress comfortable PROM within surgeon limits.
- Transition to AAROM only when healing risk, movement quality, and surgeon timing permit.
- Maintain a quiet scapular base and minimize guarding and trunk compensation.
- Continue safe ADLs without active lifting beyond clearance.

Interventions

Domain	Progression options
PROM	Supine elevation in scapular plane, supported ER, therapist-guided motion, and gentle table-supported motion.
AAROM	Supine assisted elevation, cane, table slide, controlled pulley, and reclined progression; assistance supplies most force initially.
Scapular / thoracic	Low-load scapular control and thoracic mobility without shrugging or cuff overload.
Function	Waist-level hand use only as permitted; sling weaning according to surgeon direction and repair risk.
Conditioning	Walking, recumbent cycling, and lower-extremity exercise without falls, traction, or arm weight bearing.

Progression criteria

- Immobilization period complete; incision healed; no red flags.
- PROM improves without force or sustained flare.
- Assisted elevation occurs without active shrugging or sudden arm drop.
- Patient protects the arm during mobility, sleep, and ADLs.

6. Phase 3 - active motion and neuromuscular control

Typical timing: approximately weeks 6 to 12 or later. Higher-risk repairs progress more slowly.

Goals

- Transition from assisted to active elevation with minimal substitution.
- Restore functional reach without overloading the repair.
- Develop low-load cuff, deltoid, and periscapular activation after clearance.
- Maintain comfortable mobility and avoid reactive stiffness.

Progressive loading menu

Capacity	Exercise examples	Progression signal
Active elevation	Supine to reclined to upright; short lever before long; supported wall slide	Smooth motion without shrug, painful arc, arm drop, or next-day flare.
Cuff activation	Submaximal isometrics; side-lying ER unloaded; protected IR/ER when cleared	Pain-free activation and preserved movement quality.
Scapular control	Low row, extension to neutral, serratus activation, supported scapular tasks	Stable scapula without excessive upper-trapezius dominance.
Deltoid / elbow	Light scaption; biceps after procedure-specific clearance; triceps and grip	Function improves without substitution or increased night pain.
Mobility	Low-load PROM/AAROM targeted to examination findings	Gradual gains without guarding or loss of active control.

Loading framework

Begin with very low loads and controlled repetitions. Progress one variable at a time: gravity position, lever arm, range, repetitions, sets, external load, or task complexity. Symptom response informs loading, but tissue-healing time and repair risk remain decisive even when pain is low.

Common barriers and responses

Barrier	Clinical response
Shoulder hiking	Regress gravity or lever arm; improve supported AAROM and scapular control; reassess stiffness, pain, and activation.
High-irritability stiffness	Reduce dose/end-range force; address sleep and guarding; communicate if progressive.
Good PROM, limited AROM	Assess activation, pain inhibition, repair risk, mechanics, and structural concern if function regresses.
Persistent night pain	Review dose, sleep support, daily use, medical signs, and medication plan; communicate if worsening.
Fear / low confidence	Use graded exposure, supported positions, clear precautions, and task-specific practice.

7. Phase 4 - strength and return to participation

Typical timing: month 3 through month 6 and beyond. Heavy work and overhead sport may require 6 to 12 months and surgeon clearance.

Goals

- Build cuff, deltoid, periscapular, elbow, wrist, and hand capacity for individualized demands.
- Restore endurance and mechanics for reach, lift, carry, push, and pull.
- Use objective testing and task simulation to guide readiness.
- Set expectations based on tear chronicity, tissue quality, muscle status, and repair integrity.

Participation guidance

Activity	Decision guidance
Driving	Requires surgeon clearance, no impairing medication, sling discontinuation, and adequate steering/emergency control.
Work	Grade lifting, carrying, pushing/pulling, overhead reach, repetition, vibration, fall risk, and shift length.
Recreation	Walking, cycling, lower-extremity training, golf progression, swimming, and fitness may progress after clearance.
Overhead sport / labor	Requires healing time, task-appropriate strength/endurance, controlled mechanics, interval exposure, and surgeon clearance.
Long-term loading	Avoid abrupt volume spikes and modify repetitive high-load overhead activity when tissues or residual deficits warrant.

Discharge or transition criteria

- Goals met or safe independent plan established.
- No unresolved red flags or unexplained regression.
- Functional active motion stable and adequate.
- Strength, endurance, and task testing sufficient for intended demands.
- Patient can self-monitor loading and knows when to seek reassessment.

Recommended reassessment battery

Options include active/passive elevation and rotation; hand-to-head and behind-the-back reach; dynamometry for rotation, scaption/elevation, and grip; task-specific endurance; and QuickDASH, ASES, SPADI, or PROMIS Upper Extremity.

Return-to-activity rule

Clearance integrates healing time, repair risk, motion, strength, endurance, movement quality, task exposure, confidence, and surgeon guidance. A calendar date or absence of pain alone is not clearance.

8. Clinician documentation and communication checklist

At evaluation

- Procedure date, side, tendon(s), partial/full-thickness involvement, tear dimensions/pattern, retraction, tissue and muscle quality, fixation/repair quality, concomitant procedures, sling, ROM/loading limits, and follow-up date.
- Medical and healing-risk factors, medications, dominant side, prior function, support, work/recreation, and goals.
- Incision/limb screen, pain/edema, cervical and distal neurovascular findings, ADLs, fall risk, and precaution adherence.
- Baseline outcome measures and repeat-testing plan.

Questions for the surgeon when details are unclear

- Which tendons and layers were repaired, and was the tear partial- or full-thickness?
- How large and retracted was the tear? Was it mobile to the footprint without excessive tension?
- How would the surgeon characterize tendon, muscle, bone, fixation, and overall repair quality?
- Were the subscapularis, biceps, labrum, capsule, or other structures treated?
- Should rehabilitation follow a small/medium or large/massive pathway, and what are the specific dates or criteria for sling, ROM, AROM, and loading?

Suggested communication triggers

Trigger	Examples
Immediate / emergency	Cardiopulmonary emergency, loss of distal perfusion, severe neurological change.
Same day	Significant wound drainage/dehiscence, systemic infection, acute traumatic loss of function, uncontrolled pain.
Prompt non-emergent	Pop or regression, unexpected bruising, progressive weakness, disproportionate stiffness/pain, unclear restrictions, repeated protection violations.
Routine	Clarify operative findings, tissue/repair quality, sling, ROM, AROM, biceps/subscapularis precautions, work and recreation.

Quality marker

A high-quality protocol starts with the actual repair, not merely the label “rotator cuff repair.” Tear pattern, tissue quality, fixation, healing risk, patient goals, and response to loading determine the pathway.

9. Evidence and protocol synthesis

This original clinical synthesis reflects recurring elements in major academic pathways and contemporary tendon-healing literature: repair-risk stratification, protection, staged PROM/AAROM/AROM, delayed progressive cuff loading, complication surveillance, objective testing, and criteria-based return.

Primary protocol models consulted

Source family	Contributions reflected
University of Delaware / Delaware Physical Therapy Clinic rotator cuff rehabilitation principles	Criterion-based progression, objective assessment, scapular/cuff performance, and task-based rehabilitation.
Massachusetts General Hospital protocols for small/medium and large/massive tears	Tear-size pathways, protection, staged mobility, strengthening, and return-to-function.
The Ohio State University Wexner Medical Center rotator cuff repair clinical practice guidance	Repair-specific precautions, staged motion/loading, red flags, and objective progression criteria.
American Society of Shoulder and Elbow Therapists and contemporary peer-reviewed literature	Tendon healing, immobilization/motion variability, tissue-quality considerations, loading, outcomes.
AAOS clinical practice guidance and contemporary shoulder-surgery principles	Shared decisions, prognosis, risk factors, complication awareness, return counseling.

Important interpretation note

Protocols differ in tear-size definitions, sling duration, PROM limits, initiation of active motion, strengthening, and return language. The same dimensions can have different implications depending on tissue quality, retraction, fatty infiltration, repair tension, fixation, bone quality, and concomitant procedures. The operative report and direct surgeon instructions take precedence.

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