

Arthroscopic Rotator Cuff Repair (Good, Fair, or Poor Tissue Quality) With or Without Subacromial Decompression and/or Excision of the Distal Clavicle Rehabilitation Guideline

St. Francis Orthopaedic Institute and St. Francis Rehabilitation Center

All information contained in this protocol is to be used as a general guideline only. Specific variations might be appropriate for each patient and might be specified by the physician. In all cases, it is acceptable to advance the program more slowly than stated. If the patient experiences excessive pain, discontinue exercise until the physician is contacted. Achieving and maintaining a low level of pain and inflammation and protecting the surgical repair are the guiding principles in all stages of rehabilitation, even if less passive and active range of motion are accomplished.

SYMBOLS AND ABBREVIATIONS

AAFE, active-assistive forward elevation	PER, passive external rotation
AAROM, active-assistive range of motion	PFE, passive forward elevation
AASEP, assistive-to-active shoulder elevation progression	PNF, proprioceptive neuromuscular facilitation
ADLs, activities of daily living	POD, postoperative day
AFE, active forward elevation	POM, postoperative month
AROM, active range of motion	POW, postoperative week
EMG, electromyography	PRN, as needed
ER, external rotation	PROM, passive range of motion
FE, forward elevation	ROM, range of motion
IR, internal rotation	T-Band, Thera-Band (The Hygenic Corporation, Akron, OH)
MMT, manual muscle testing	WNL, within normal limits
NA, not applicable	

Forward elevation, either active or passive, is the plane of motion in which an individual naturally lifts his or her arm that is anterior to the plane of the scapula and lateral to flexion.

STAGED GOALS FOR RANGE OF MOTION

These are approximate targets for range of motion. Specific limits might be specified by the physician, especially if a subscapularis repair was performed.

Time	PFE	PER at 20° of Abduction	PER at 90° of Abduction	AFE
POD 1	60°	0°–20°	NA	NA
POW 1	80°–100°	10°–30°	NA	NA
POW 3	115°–140°	30°–45°	NA	NA
POW 6	130°–155°	45°–60°	45°–60°	45°–120°
POW 9	140°–165°	WNL	60°–80°	75°–145°
POW 12+	145°–WNL	WNL	WNL	115°–155°+

PHASE 1

Goals

- °Minimize pain and inflammatory response
- °Maximally protect the surgical repair
- °Achieve staged ROM goals
- °Educate the patient about postoperative precautions
- °Establish a stable scapula

POD 1 to POW 6

- °Elbow, wrist, and hand AROM with no weight
- °Scapular elevations and retractions (no weight) in or out of sling
- °Pendulum exercises
 - °Lean over the table a comfortable amount
 - °Let the arm hang down relaxed
 - °Keep the body still
 - °As able, move the arm in small comfortable circles only
- °Upright PER in slight abduction until mild stretch and discomfort
 - °7 to 12 repetitions 2 times per day
- °Preferred exercises
 - °Sit with family member or therapist rotating the arm
 - °PER walk-around (stand with the arm supported on a table and rotate the body) (Figure 1)
- °PFE until mild stretch and discomfort
 - °7 to 12 repetitions 2-4 times per day
- °Preferred exercises
 - °Sit with family member/therapist lifting the arm (Figure 2)
 - °Kinex KS2 (Kinex Medical Company, LLC, Waukesha, WI) continuous passive motion machine 10 to 20 minutes 2 to 4 times per day (Figure 3)
 - °Table step-back exercise (Figure 4)
 - °After achieving more than 110° of PFE, progress to self-assisted AAFE in the supine position, as tolerated (Figure 5)

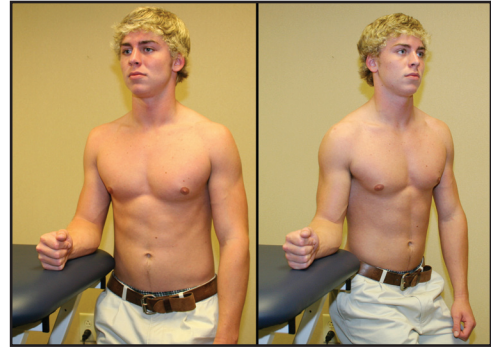


Figure 1. Passive external rotation walk-around exercise.



Figure 2. Assisted passive forward elevation (assistant typically stands diagonally in front of patient).



Figure 3. Passive forward elevation performed by the Kinex KS2 (Kinex Medical Company, LLC, Waukesha, WI) shoulder continuous passive motion machine.

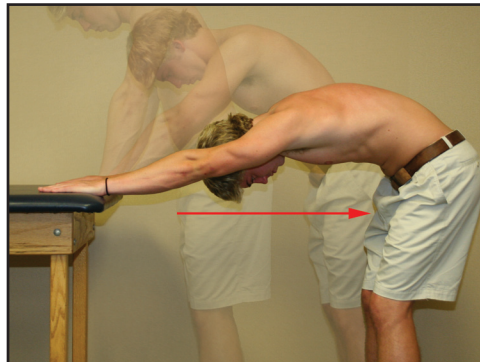


Figure 4. Table step-back exercise for passive forward elevation.

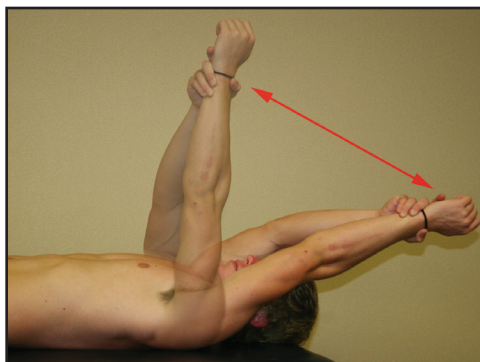


Figure 5 Self-assisted supine active-assisted forward elevation (hand-assisted exercise preferred).

- °Ice for pain reduction
- °Fit sling properly
 - °Ensure sling provides slight lift to the shoulder girdle and supports the wrist
- °Patient education
 - °Primary focus of phase 1: encourage initial healing of the surgical repair and improve easy PROM
 - °Use of sling as instructed by physician; typically, full time in community and when up for more than 5 to 10 minutes at home
 - °Minimal use of the arm for light waist-level activities, as comfortable
 - °Ensure level of pain is not increasing because of excessive use of the arm for ADLs or work
 - °Sleep in a recliner
 - °3 weeks (required)
 - °6 weeks (preferred)

Adjunctive Exercises

- °Therapist-assisted supine PROM within comfortable ROM to
 - °Decrease muscle guarding
 - °Gain patient confidence
 - °Achieve staged PROM goals (no mobilizations)
- °Cervical spine AROM
- °Pain-control agents PRN
- °Aquatic therapy for gentle pain-free AAROM (no swimming strokes) after the incision has healed completely

Interventions to Avoid

- °Home exercise glenohumeral PROM in planes other than PFE and PER
- °Exercises that result in moderate or severe pain
- °Exercises that result in excessive guarding or splinting of muscles
- °Weighted exercises
- °Cross-body adduction, reaching behind the back, and active elevation of the arm above waist level
- °Repetitive activity with the affected extremity

PHASE 2

Goals

- °Achieve staged ROM goals
- °Minimize shoulder pain
- °Begin to increase AROM, strength, and endurance
- °Increase functional activities

POW 6 to 9

- °Achieve staged ROM goals in FE
 - °Preferred exercises
 - °Rope-and-pulley exercise PROM in scaption (elbows remain straight and thumbs up)
 - °Patient-assisted supine AAFE exercise (use the unaffected arm for assistance) (Figure 5)
- °Achieve staged ROM goals in ER at 20° of abduction using upright exercises

°Initiate horizontal adduction or sleeper stretch (Figure 6), or both, only if significant ROM limitations are present.

°Initiate supine hand-behind-head stretch PRN (Figure 7)

°Progress to gentle ER stretching in 70° to 90° of abduction

°Therapist-assisted PROM to achieve staged ROM goals with mobilizations PRN

°Initiate base strengthening progression

°Includes standard rotator cuff, deltoid, and scapular strengthening program

°2 times per day, at most, with light resistance and increasing repetitions

°Yellow T-Band for ER and IR

°5- to 6-foot band length and light or no pretension in a 3 to 6 inch arc of motion initially.

°Can use side-lying ER instead of T-Band

°Yellow T-Band forward reach (Figure 8)

°Initially, 5- to 6-foot band length and light or no pretension

°Start with the elbow bent and by the side and the band tied behind the patient

°Reach **forward** with the hand at waist level, progressing to reaching **forward** at chest level

°**Do not initiate until forward reach at waist level without resistance is pain-free**

°If forward reach is painful or difficult, replace with a “gravity-minimized” exercise from the AASEP (described below) until the forward reach can be done comfortably

°Scapular strengthening emphasizing scapular retractions and scapular upward rotators

°Low-level closed chain strengthening

° **No prone FE, abduction, or ER**

°Initiate the AASEP as comfortable

°A stepwise progression in difficulty of strengthening exercises from PFE to AFE against gravity

°The goal of the progression is to achieve pain-free, full AFE

°EMG demonstrates progressive activation of the cuff and deltoid during the progression

°If scapular or glenohumeral substitutions or pain are present, choose an easier exercise in the progression

°The order of the exercise sequence has some variability

°Usually not all exercises need to be performed

°Progression might not be completed until after POW 12

°**Do not perform the base strengthening program or overhead strengthening progression until the overall level of pain is low. Ensure that these exercises do not increase signs and symptoms.**

°Exercises are divided into 3 levels of difficulty

1. Gravity-minimized exercises

°Horizontal dusting (Figure 9)

°Perform straight ahead and perform at 20° angles medially and laterally if comfortable

°T-Band supine FE (Figure 10)



Figure 6. “Sleeper” stretch.



Figure 7. Supine hand-behind-head stretch to increase abduction and external rotation.



Figure 8. Forward reaching with an elastic band.

- °Must start involved arm at 90° of elevation
- °Pull the arm into FE
- °Side-lying, gravity-eliminated AFE (Figure 11)
 - °Lie on the uninvolved side
 - °Place the involved arm on an ironing board
 - °Slide the hand on the board
- °Jackins supine reaching progression
 - °Begin at 0° with the elbow bent and end at 90° of elevation with the elbow extended
 - °Start with the assistance of a cane or wand (Figure 12)
 - °Progress to active motion
 - °Can progress to using 1 to 2 pounds of weight
 - °Can progress to inclined position, continuing to reach to the ceiling (Figure 13)

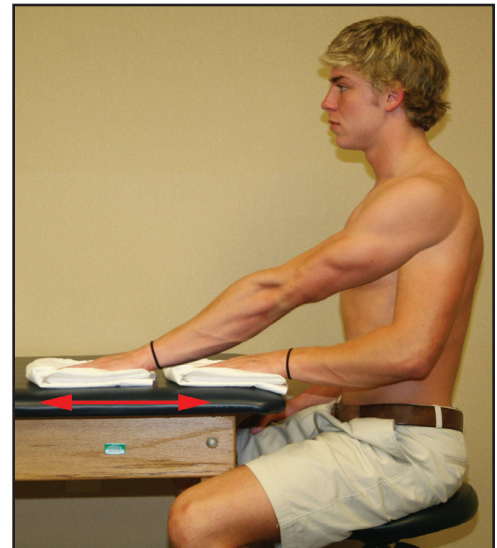


Figure 9. Horizontal dusting.



Figure 10. Supine forward elevation with an elastic band.



Figure 11. Side-lying, gravity-eliminated active forward elevation.

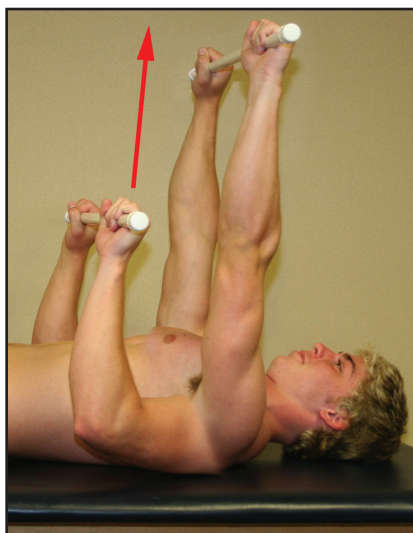


Figure 12A. Jackins supine assistive reach.

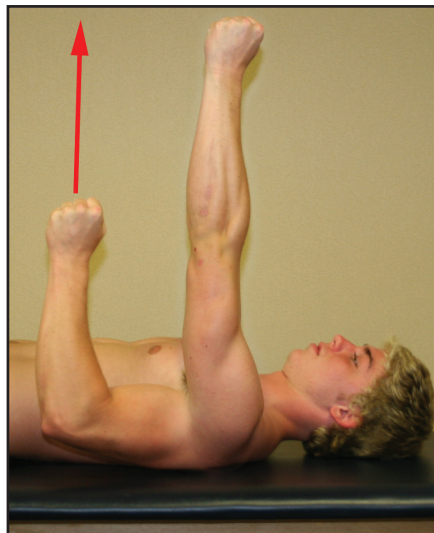


Figure 12B. Jackins supine active reach.

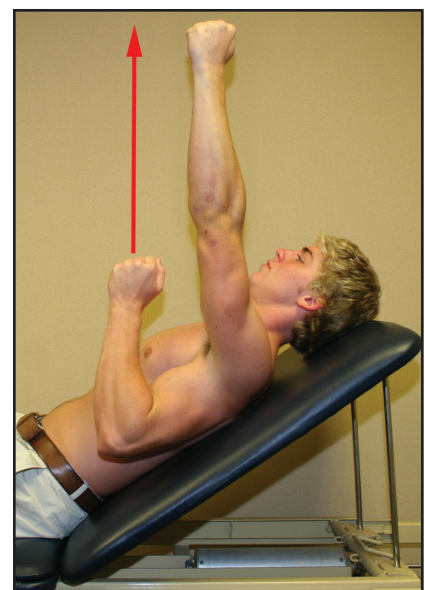


Figure 13. Jackins incline reach.

2. Assistive elevation exercises
 - °Rope-and-pulley AAFE
 - °Incline dusting (Figure 14)
 - °Standing AAFE (assistive elevation and descent via T-bar or unaffected arm)
 - °Standing assistive elevation and active independent eccentric lowering
 - °Wall slide AAFE
 - °Ensure that the patient is in FE and is not in flexion
 - °Must be pain-free and natural when performing
3. Unsupported elevation exercises
 - °Overhead wall taps
 - °AFE (Figure 15)

Adjunctive Exercises

- °Moist heat or ice
- °Modalities PRN
- °Aquatic exercises
 - °AAROM
 - °AROM
 - °Light strengthening
- °Spine therapy assessment and mobilization if
 - °Nonneurogenic cervical or scapular pain or
 - °Limitation in end-range shoulder FE
- °Trunk stabilization and strengthening

POW 9 to POM 3

- °Continue the previously described exercises, including completion of the AASEP progression, as comfortable
- °Initiate functional IR AAROM and stretching if significant ROM limitations are present
- °Initiate AFE (Figure 15) when the AASEP is complete
 - °Only perform if full or nearly full AROM is possible and comfortable
 - °Eventually progress to 1 to 3 pounds for resistance, depending on body size

Adjunctive Exercises

- °Light PNF of the cuff, deltoid, and scapula (rhythmic stabilization or slow reversal hold)
- °Open chain kinesthetic awareness drills (eg, ROM replication)
- °Golf chipping and putting
- °Aquatic therapy, adding light breast stroke

Interventions to Avoid

- °Initiating base strengthening program or overhead strengthening progression before overall level of pain is low
- °Exercises that greatly increase signs and symptoms



Figure 14. Incline dusting.

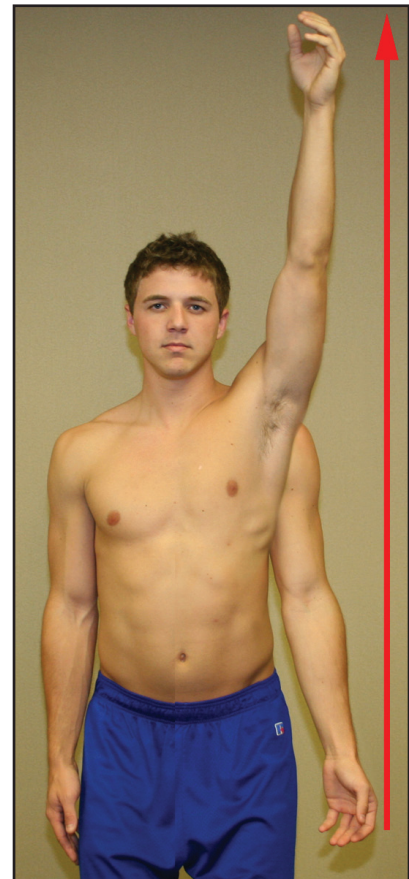


Figure 15. Active forward elevation.

- °Strengthening if PROM is substantially below staged ROM
- °Heavy lifting with elbows away from the body
- °Any forceful jerking motions with the involved arm
- °Highly repetitive rehabilitation activities with the elbow at or above chest level, including upper extremity ergometer
- °Strengthening into straight-plane abduction

PHASE 3

Goals

- °Normalize AROM and PROM
- °Normalize strength, endurance, and power
- °Return to full ADLs, work, and recreation

POM 3 to 5

- °PROM, stretching as needed, and warm-up stretching
- °Continue base strengthening program
 - °Progress T-Band color very gradually
 - °Continue progressive AFE as previously described
- °**Discharge when functional goals are met**
 - °**Many patients, especially those who are elderly or have lower demands, do not progress to any of the rehabilitation described below**
- °Participate in dumbbell overhead shoulder press **PRN**
 - °Must meet the criteria to start the advanced strengthening progression (described below)
 - °Place hands in front of the shoulder with the elbows bent and naturally reach overhead
 - °Sets of 15 to 20 repetitions with 3 pounds or more 3 to 7 times per week
- °Initiate the advanced strengthening progression **PRN**
 - °**Strict criteria to start program**
 - °MMT at least 4+/5 of the shoulder girdle
 - °Pain-free with basic ADLs and all phase 2 strengthening activities
 - °Full AFE
 - °Goals of returning to sports, heavy labor, or repetitive or heavy overhead work
 - °**Approval of physician**
 - °Use of the following principles to develop exercises to gradually progress the patient from the current level of functioning to desired goals
 - °**Exercise principles**
 - °Decrease the amount of external stabilization provided to the shoulder girdle
 - °Integrate functional patterns
 - °Increase speed of movements
 - °Integrate kinesthetic awareness drills into strengthening activities
 - °Decrease rest time to improve endurance
 - °Initiate prone strengthening PRN
 - °Train larger upper extremity muscles wisely
 - °**Sample exercises**
 - °T-Band standing PNF-type patterns
 - °T-Band 90° of ER and 90° of IR with or without arm support

- °T-Band simulation of batting, golf, or tennis forehand and backhand
- °Weighted shoulder shrugs
- °Initiate progressive replication of moderate-intensity ADLs and work

Adjunctive Exercises

- °Return to golf progression (advanced strengthening progression not needed)
- °Modalities PRN
- °Therapist-assisted stretching and mobilizations PRN
- °Isokinetic strengthening
- °Trunk stabilization and strengthening

POM 5 to 8

- °Use the same exercises as described and add the following as appropriate
- °Transition to a maintenance strengthening program
- °Initiate plyometric program (**PRN and if approved by physician**)
 - °Can begin after 3 to 6 weeks of the advanced strengthening program
 - °Do not begin until 5/5 MMT for the rotator cuff and scapula
 - °Use only 2 to 3 times per week
 - °Begin with a beach ball or tennis ball and progress to weighted balls
 - °**Progressions**
 1. 2-handed tosses
 - °Waist level
 - °Overhead
 - °Diagonally
 2. 1-handed drop-and-catch drills
 3. 1-handed tosses, varying the amount of
 - °Abduction
 - °Arm support
 - °Protected ER
- °Can begin interval throwing program after 3 to 6 weeks of plyometrics (**when approved by physician**)
- °Initiate progressive replication of demanding ADLs and work
- °Initiate modified return to weight-training program (**when approved by physician**)

Interventions to Avoid

- °Any rehabilitation activity that is much more demanding than daily or expected activities
- °Any rehabilitation activity that is a moderate to large increase in demand compared with previous rehabilitation
- °Any rehabilitation activity that results in level of pain high enough for the patient to need modalities