

Manipulation Under Anesthesia, Lysis of Adhesions, and Capsular Release 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 while achieving maximum range-of-motion measures are the guiding principles in all stages of rehabilitation.***

SYMBOLS AND ABBREVIATIONS

AAFE, active-assistive forward elevation	POD, postoperative day
AAROM, active-assistive range of motion	POM, postoperative month
AASEP, assistive-to-active shoulder elevation progression	POW, postoperative week
AFE, active forward elevation	PRN, as needed
AROM, active range of motion	PROM, passive range of motion
ER, external rotation	ROM, range of motion
FE, forward elevation	T-Band, Thera-Band (The Hygenic Corporation, Akron, OH)
IR, internal rotation	WNL, within normal limits
PER, passive external rotation	
PFE, passive forward elevation	

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.

PHASE 1: POD 0 TO POW 6

Goals

- °Establish a tolerance to a comprehensive stretching program that achieves normal PROM measures into FE and ER and progressively stretches into all planes of motion
- °Control reactivity by minimizing pain and the inflammatory response
- °Educate the patient about modified activity, controlling the inflammatory response, and cryotherapy

Exercises

- °**Note: If the patient is seen on the day of the procedure with his or her nerve block intact, we recommend following this initial evaluation and treatment.**
- °Therapist PROM with the patient seated into ER near the side, ER at 90° of abduction, and FE (Figures 1-3)
 - °3 to 5 repetitions
 - °**Diligent attempt should be made to achieve normal ranges while the patient is awake and the arm is flaccid**
- °Patient and family members are instructed to perform these 3 assisted motions every 4 waking hours until the nerve block has resolved
- °**Begin performing home exercises as listed below after all sensory and motor control have returned to the arm**



Figure 1. Passive external rotation at the side.

- °Pendulum exercises
 - °Perform for 1-2 minutes 6-12 times per day
 - °Lean over a table a comfortable amount with the arm hanging down relaxed
 - °Keep the body still and move the arm in comfortable circles only
- °Upright PER in slight abduction until moderate stretch.
 - °7 to 12 repetitions 3 to 4 times per day
- °Preferred exercises
 - °Sit with family member or therapist rotating the arm (Figure 1)
 - °PER walk-around (stand with the arm supported on a table and rotate the body) (Figure 4)
- °PFE until moderate stretch and discomfort
 - °7 to 12 repetitions 3 to 4 times per day
- °Preferred exercises
 - °Sit with family member or therapist lifting the arm (Figure 3)
 - °Table step-back exercise (Figure 5)
 - °Kinex KS2 CPM 10-20 minutes 2-4 times per day (Figure 6)
 - °After achieving more than 130° of PFE, can include self-assisted AAFE (Figure 7) in the supine position or pulley PFE, elbow straight, thumb up, as comfortable
- °Therapist-assisted PROM seated and supine with the goal of achieving nearly normal ROM
 - °Performed 4-5 days per week for the first 2-3 weeks after the procedure then decreased to 3 days per week only after the patient can fairly easily achieve normal ranges with his or her self-stretching
 - °Goal to achieve and maintain ROM gained during the procedure
 - °Planes of therapist assisted PROM seated and/or supine
 - °PFE (seated and supine)
 - °ER at 20°, 45°, and 90° of abduction
 - °IR in progressive abduction up to 90°
 - °Horizontal adduction
 - °Diagonal elevation from 90° of FE to 140° of abduction
 - °Forward elevation progressing to flexion
- °Patient education
 - °Education of the pathogenesis and recovery process
 - °Importance of frequent use of ice and prescribed medicine for pain reduction
 - °Use of the arm for light waist-level activities as comfortable
 - °Ensure that the level of pain is not increasing because of excessive use of the arm for ADL or work



Figure 2. Passive external rotation in 90° abduction.



Figure 3. Passive forward elevation. Assistant typically stands diagonally in front of patient)

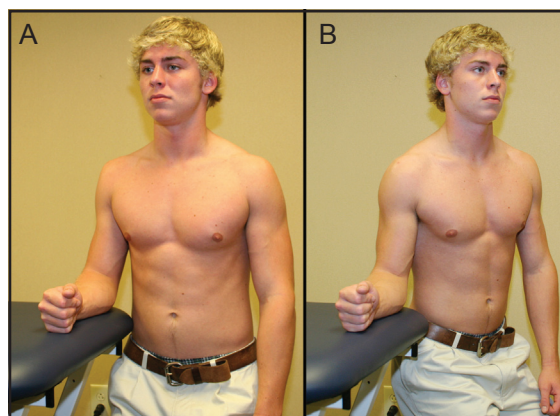


Figure 4 A and B. Passive external rotation walk-around exercise.

Adjunctive Exercises

Progressively can add to the home program if the patient responds favorably to these planes of manual therapist stretching

- °Horizontal adduction

- °Sitting with the uninvolved hand assisting the elbow across the body

- °Sleeper stretch (Figure 8)

- °Supine hand-behind-head stretch (Figure 9) progressing to supine ER stretching at 90° of abduction with a T-stick (Figure 10)

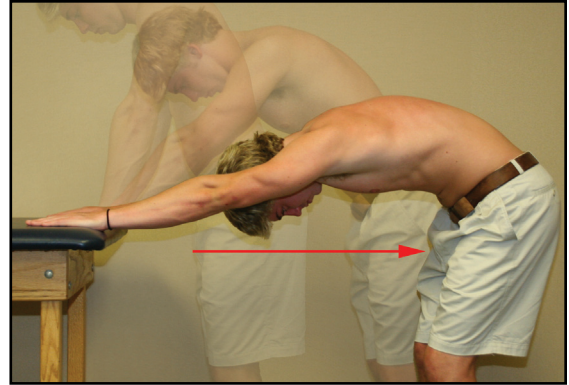


Figure 5. Table step-back exercise for passive forward elevation.



Figure 6. Passive forward elevation with the continuous passive motion machine.

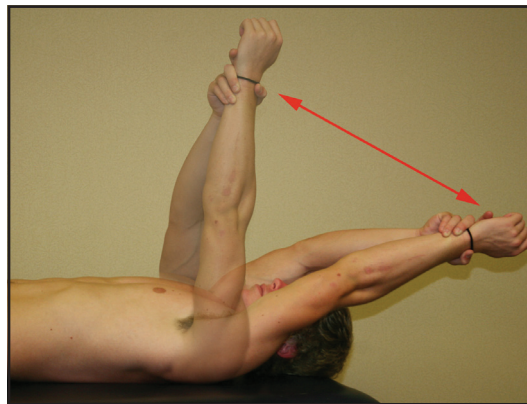


Figure 7. Self-assisted supine active-assisted forward elevation. The hand-assisted exercise is preferred.



Figure 8. Sleeper stretch.



Figure 9. Supine hand-behind-head stretch to increase abduction and external rotation.



Figure 10. Supine T-stick PER to 90°.

°Functional IR AAROM (Figure 11)

°The uninvolved hand assists the involved arm directly

°Aquatic therapy for gentle pain-free AAROM and AROM
(no swimming strokes)

Interventions to Avoid

- °Exercises that result in severe immediate or delayed pain
- °Exercises that result in excessive guarding or splinting of muscles
- °Home exercises into straight-plane abduction
- °Strengthening exercises
- °Repetitive daily activity with the affected arm above chest level

PHASE 2: POW 6 TO POW 12

Criteria to Begin

- °Physician approval
- °Improving ease and amount of ROM
- °Low pain at rest and with active forward reaching at chest level
- °Low reactivity (stretch sensation before pain and no significant delayed pain) when assessing tolerance to PROM in different planes

Goals

- °Further reduce shoulder pain
- °Continue a comprehensive PROM and stretching program for the clinic
- °Fully implement a comprehensive terminal stretching program for the home program
- °Achieve normal PROM into FE and ER at the side and nearly normal PROM in all planes
- °Improve AROM
- °Increase functional activities

Exercises

Comprehensive home stretching program: Assess each of the motions below to determine if stretching is needed. Stretching should be performed if (1) motion is limited more than 10° to 15° and (2) the level of pain is less than or equal to the sensation of stretch. If a particular ROM is limited due to only pain, then inflammation rather than stiffness is limiting the ROM; therefore, home stretching is NOT appropriate in this particular plane of motion at this time **BUT** should be performed by the therapist in the clinic.

- °PFE stretching
 - °Preferred exercises
 - °Rope-and-pulley exercise (elbows straight thumbs up)
 - °Patient-assisted supine AAFE exercise
(use the unaffected arm for assistance) (Figure 7)
 - °Wall terminal-elevation stretch (Figure 12)
- °PER stretching



Figure 11. Functional internal rotation active-assistive range of motion.

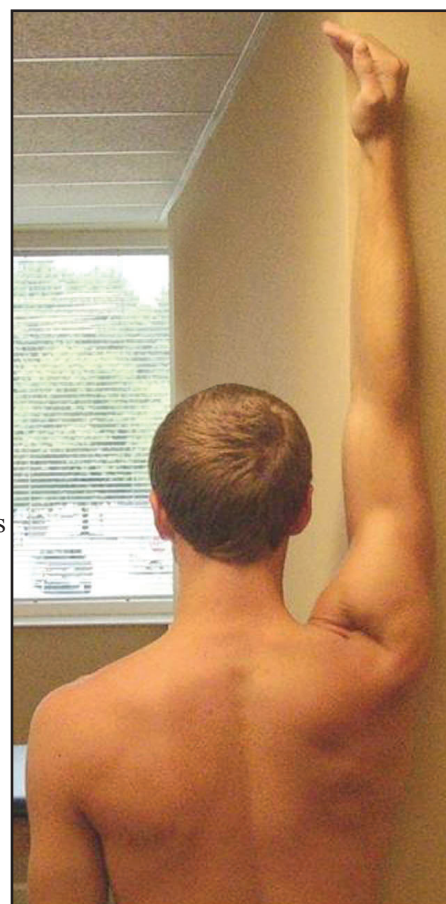


Figure 12. Wall terminal-elevation stretch.

- °Preferred exercises
 - °PER sitting with the wand and the hand in neutral
 - °PER walk-around (stand with the arm supported on a table and rotate the body) (Figure 4)
 - °PER corner walk-around (stand with the hand propped on a doorway)
- °Horizontal adduction or sleeper stretch (Figure 8), or both
- °ER stretching in abduction
 - °Supine hand-behind-head stretch (Figure 9)
 - °Supine ER stretching at 90° of abduction (Figure 10)
 - °ER stretching at 90° of abduction against a wall (Figure 13)
- °Functional IR AAROM hand, towel, or pulley
- °Therapist-assisted supine PROM into all planes described in Phase 2 targeting a stretch greater than pain-limited end feel until end range PROM is easily achieved
- °Initiate base strengthening program if PROM is steadily advancing and if pain and inflammation are well controlled
 - °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
 - °Initially, 4- to 6-foot band length and light pretension in a 3- to 6-inch arc of motion
 - °Can use side-lying ER instead of T-Band to begin
 - °Yellow T-Band forward reach (Figure 14)
 - °Initially, 4- to 6-foot band length and light 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
 - °Scapular strengthening emphasizing scapular retractions and scapular upward rotators
 - °**No prone FE, abduction, or ER strengthening**
- °Initiate the AASEP as comfortable
 - °A stepwise progression in difficulty of strengthening exercises from PFE to AFE against gravity
 - °Goal of the progression is to achieve pain-free full AFE
 - °Start with a level of exercise that is challenging but not painful
 - °If scapular or glenohumeral substitution or pain is present, choose an exercise that is a step easier in the progression
 - °Usually not all exercises need to be performed
 - °Exercises are divided into 3 levels of difficulty
 1. Gravity-minimized exercises
 - °T-Band supine FE (Figure 15)
 - °Must start the involved arm at 90° of elevation



Figure 13. ER at 90°.



Figure 14. Yellow T-band forward reach.

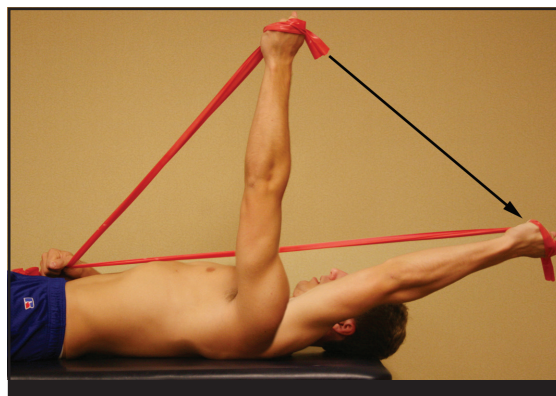


Figure 15. Supine forward elevation with an elastic band.

- °Pull the arm into FE
- °Side-lying, gravity-eliminated AFE
 - °Lie on the uninvolved side
- °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
 - °Progress to active motion
 - °Can progress to using 1 to 2 pounds of weight
 - °Can progress to the inclined position, continuing to reach to the ceiling

2. Assistive elevation exercises

- °Rope-and-pulley AAFE
- °Incline dusting (Figure 16)
- °Standing AAFE (assistive elevation and descent via a T-bar or the 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

- °AFE (Figure 17), without weight progressing to a maximum of 1-3 lbs
- °AFE without weight progressing to a maximum of 1 to 3 pounds

Adjunctive Exercises

If the patient has convenient access to a pool or is having difficulty managing a comfortable strength progression on land or seeking additional means of strengthening beyond the T-Band program, use aquatic strengthening exercises

Interventions to Avoid

- °Advanced strengthening except as described above
- °Exercises that greatly increase signs and symptoms
- °Highly repetitive rehabilitation activities with the elbow at or above chest level, including upper extremity ergometer
- °Stretching into straight-plane abduction during home exercise
- °Prone strengthening exercises into FE, Abd, or ER

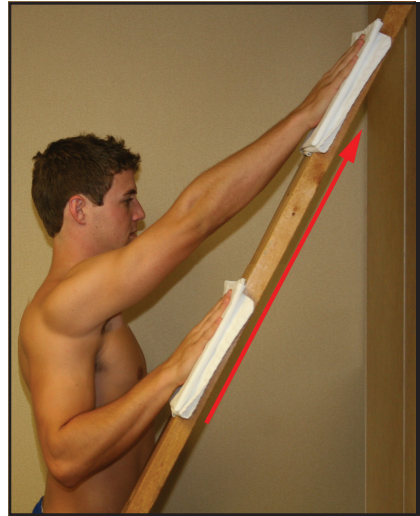


Figure 16. Incline dusting.

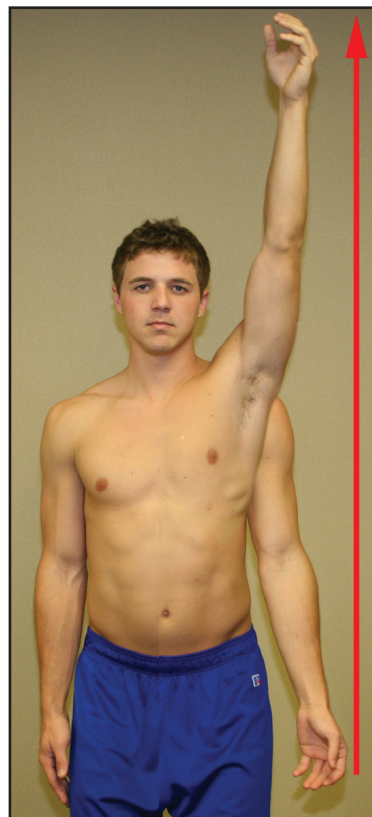


Figure 17. AFE

PHASE 3: POW 12 TO POM 5

Criteria to Begin

°Physician approval

- °Low reactivity: low pain with passive stretching and no delayed pain after stretching
- °Nearly normal PROM in all planes of motion

Goals

- °Discharge when functional goals are met. Full AROM and PROM are goals, but if not all planes are WNL while the patient is in therapy, it does not preclude discharge as long as function is not impaired
- °Transition to maintenance home exercise program
- °Normal to near normal PROM
- °Normal to nearly normal strength and endurance
- °Return to full activities of daily living, work, and recreation

Exercises

- °Continue home-based PROM and stretching as detailed in phase 2 selectively for planes of motion that are limited due to stiffness
- °Continue base strengthening progression as detailed in Phase 2
- °Initiate or continue the AASEP as needed or AFE with or without weight
- °Initiate progressive replication of moderate-intensity activities of daily living and work
- °Initiate advanced strengthening progression PRN and ensure comfort
 - °Only participate in advanced strengthening exercises, including heavier dumbbell strengthening, higher speed exercises, and powerful activities **in circumstances where these functional demands are regularly required**

Interventions to Avoid

- °Any rehabilitation activity that is substantially more demanding than daily or expected activities
- °Any exercise that substantially increases signs and symptoms
- °Typically no prone FE, abduction, or ER
- °No strengthening in straight-plane abduction