St. Francis Rehabilitation Center

Recurrent Shoulder Instability (Anterior, Posterior, Multidirectional)

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. ***Patients do not have to begin with phase 1 rehabilitation.*** *They can begin at whatever level of rehabilitation matches their current signs and symptoms, but most patients begin with phase 1 rehabilitation.* ***Achieving and maintaining a low level of pain, inflammation and preventing instability signs and symptoms are the guiding principles in all stages of rehabilitation****.*

SYMBOLS AND ABBREVIATIONS

AAFE, active-assistive forward elevation
AAROM, active-assistive range of motion
AASEP, assistive-to-active shoulder elevation progression
AFE, active forward elevation
ADL, activity of daily living
ER, external rotation
FE, forward elevation
IR, internal rotation
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 & lateral to flexion.
MMT, manual muscle testing
PFE, passive forward elevation
PNF, proprioceptive neuromuscular facilitation
PRN, as needed
PROM, passive range of motion
ROM, range of motion
T-Band, Thera-Band (The Hygenic Corporation, Akron, OH)

PHASE 1

Goals

°Improve neuromuscular control in the modified neutral position, small arc ER/IR, and forward reaching
°Initiate a therapeutic level of rotator cuff, deltoid, and scapula strengthening that is comfortable and does not result in instability signs and symptoms
°Educate the patient about modifying activity, controlling the inflammatory response, and using cryotherapy
°Identify and address secondary factors contributing to current symptoms as long as they do not place the shoulder in provocative positions
°Use of the shoulder for pain-free ADLs in positions of stability

Exercises

Progression of the current level of exercise resistance and volume or advancement to challenging exercises should be done very slowly and cautiously. Often, several weeks of the same program is prudent before advancements are made.

- **°Initiate base strengthening program as soon as the patient can perform it comfortably**
  - °Includes rotator cuff, deltoid, and scapular strengthening performed at or below chest level
  - °2 times per day at most with light resistance and typically 30-50 repetitions
  - °Yellow T-Band (initially) for ER (Figure 1) and IR
    - °Initially, 4- to 6-foot band length and light pretension in a 3-6 inch arc of motion **in the mid-part of the motion to assure glenohumeral stability**

Figure 1.
ER with an elastic band.

- °Can use side-lying ER instead of T-Band ER to begin
- °Yellow T-Band forward reach
  - °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 (Figure 2)
- °Scapular strengthening emphasizing scapular retractions and scapular upward rotators

°If elastic band strengthening is poorly tolerated use submaximal pain-free isometrics instead
- °Perform with the elbow flexed and instruct the patient to press with 1 to 2 pounds of force only
- °**PAINFREE** Flexion, Abduction, ER, IR are considered

°**No prone FE, abduction, or ER strengthening**

°**Assess scapula for altered static positioning and dynamic scapula dyskinesia and treat as necessary. Scapula dyskinesia is common in this patient population.**
- °For incorrect static positioning consider pec minor stretching, closed chain activities and the posterior scapula tilt (Figure 3) as part of treatment.
- °For dyskinesia emphasize neuromuscular control drills, rhythmic stabilization, and the AASEP described below

°Initiate progressive overhead strengthening to improve AFE ***ONLY when a tolerance to base strengthening is established and when the AASEP described below is comfortable with no instability signs/symptoms***
- °It is 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
- °**Start with whatever level of exercise is challenging but not painful - some patients start with AFE**
- °If scapular dyskinesia is present, choose an easier exercise in the progression
- °Only the exercises that are most often used for these patients are listed below
- °**Full motion AFE without weight is the goal of phase 1 for the AASEP**
- °Exercises are divided into 3 levels of difficulty
  1. Gravity-minimized exercises
     - °T-Band supine FE
       - °Must start the involved arm at 90° of elevation
       - °Pull the arm into FE
     - °Jackins supine reaching progression
       - °Begin at 0º with the elbow bent and end at 90º of elevation with the elbow extended

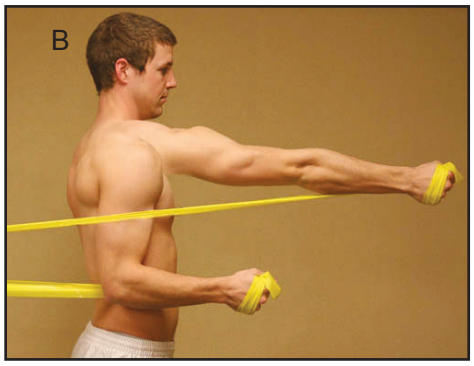

Figure 2. Forward reaching with an elastic band at waist level, A, and at chest level, B, which is more difficult.

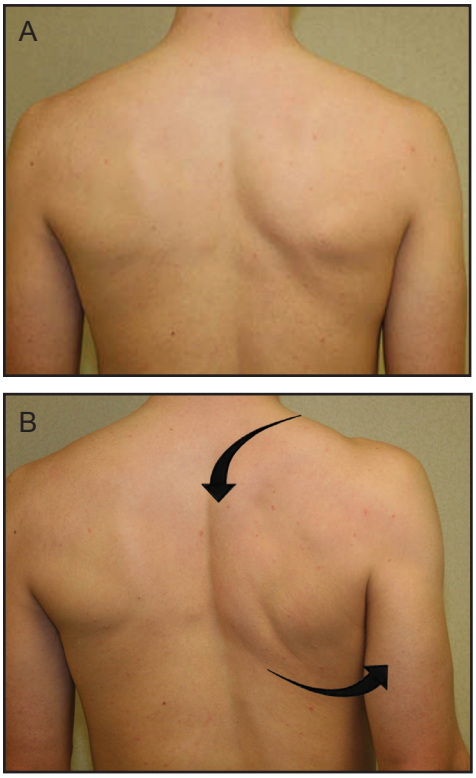

Figure 3. The starting, A and ending, B positions of the **posterior scapular tilt** exercise. The patient starts in his normal resting position and is instructed to tilt the scapula posteriorly with a small amount of scapular elevation.

°Start with the assistance of a cane or wand
°Progress to active motion (Figure 4)
°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 (elbow straight, thumb up)
°Incline dusting (Figure 5)
°Wall-slide AAFE

3. Unsupported elevation exercises
°AFE (Figure 6)

°Begin weight-bearng exercises focused on scapula and glenohumeral neuromuscular control including quadraped, triped, and biped positioning (Figure 7)

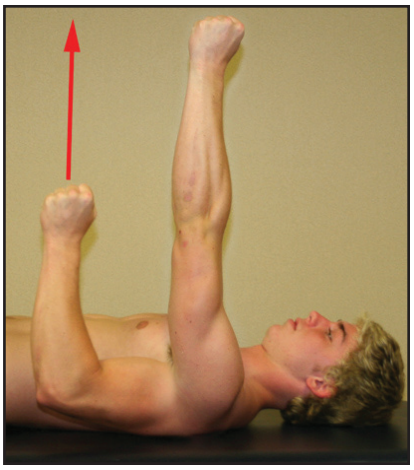

Figure 4. Supine active reaching from 0° to 90°.

Figure 5. Incline dusting.

Figure 6. Active forward elevation.

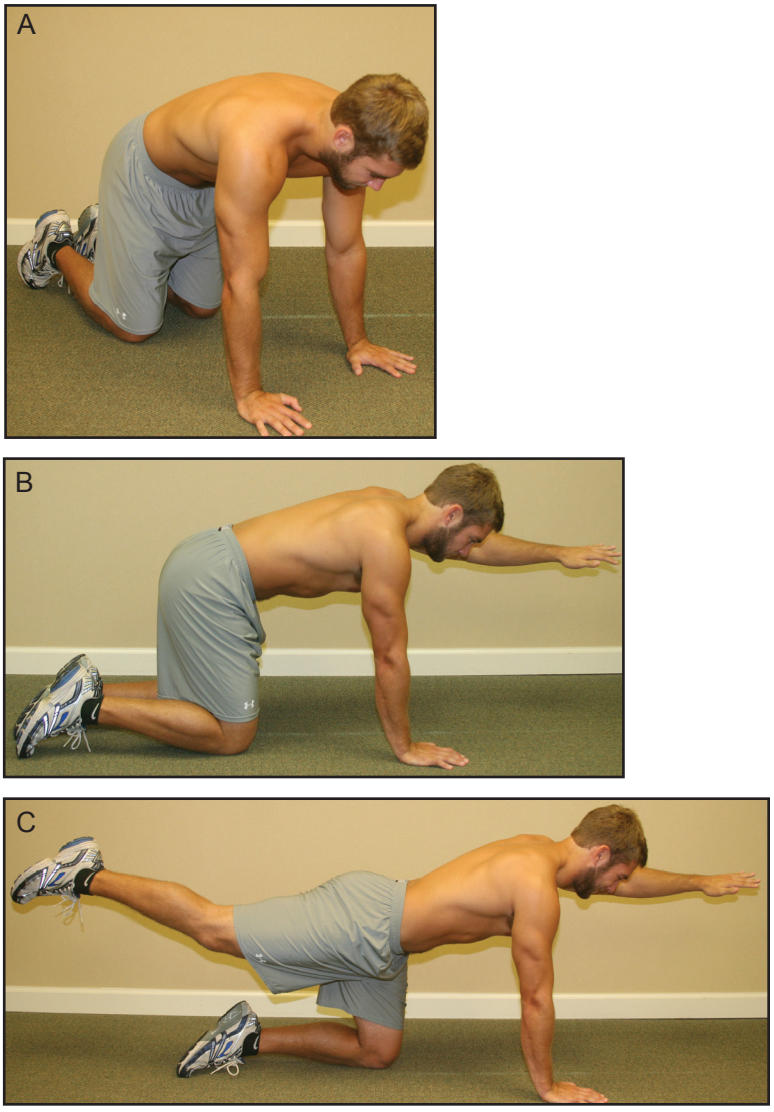

Figure 7. The quadruped, A, triped, B, and biped, C, positions facilitate scapular and glenohumeral neuromuscular control.

- Identify and address secondary factors contributing to current symptoms as long as they do not place the shoulder in proactive positions. These might include, but are not limited to, assessing for and treating
  - Scapular dyskinesia (common)
  - Pectoralis minor tightness
  - Posterior shoulder tightness
  - Spinal facet dysfunction or other cervical spine disorders
- Patient education
  - Pathogenesis and rehabilitation process
  - Importance of frequent use of ice
  - Minimal use of the arm in provocative positions or recreational activities
    - Ensure the level of pain or instability symptoms are not increasing because of excessive use of the arm for ADLs, work, or recreation

Adjunctive Exercises

- Proprioceptive exercises
- Modalities as needed
- Trunk stabilization and strengthening

Interventions to Avoid

- Exercises that result in instability signs or symptoms
- Exercises that result in severe immediate or delayed pain
- Home or clinic exercises into straight-plane abduction or exercises that place the shoulder in provocative positions
- Repetitive daily activity with affected extremity that provokes symptoms

PHASE 2

Criteria to Begin

- No pain with the arm at rest and symptoms limited to activities near or at the extremes of ROM or activities requiring repetitive use, powerful movements or heavy weight.
- Pain-free tolerance to base strengthening program and AFE without pain

Goals

- Improve neuromuscular control in more challenging positions
- Progressively advance rotator cuff and scapular strength/endurance with a comprehensive program specific to the patient's evaluated deficits
- Address core and lower extremity deficits
- Allow pain-free return to occupational ADLs along with recreational sports that do not require heavy lifting or powerful overhead use of the arm
- Discharge when functional goals are met

Exercises

- Progress the base strengthening program established in phase 1
  - Increase strength and endurance by increasing repetitions and resistance while still using the philosophy of relatively low resistance during rotator cuff strengthening
  - Increase the size of ROM

°Perform 2 times per day to perceived level of fatigue

°Progress to AFE with light resistance (typically 1 to 3 pounds)

°When AFE with light weight and base strengthening are easy, may advance to exercises in other planes of overhead motion and to exercises that gradually require increasing abduction with ER if patient's functional goals require these positions

°Examples include elastic band ER in progressive abduction with and without support, prone horizontal abduction, and prone ER (Figure 8A & B)

°Rehabilitation activities may also be progressive in terms of speed when patient demonstrates proficiency at slower speeds

°Intermediate to advanced weight-bearing exercises focusing on scapula & glenohumeral neuromuscular control including the BOSU ball, upper extremity step-ups, and ball taps (Figures 9, 10 and 11))

°Carefully moniter to ensure glenohumeral and scapula stability is maintained

Figure 8A. Patient performs external rotation strengthening at 80° of abduction with an elastic band.

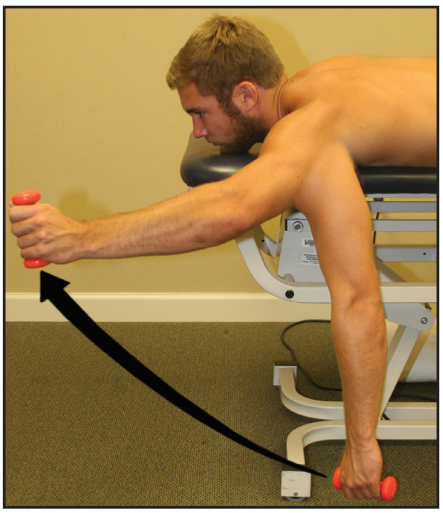

Figure 8B. Prone horizonatal abduction at 100° of elevation.

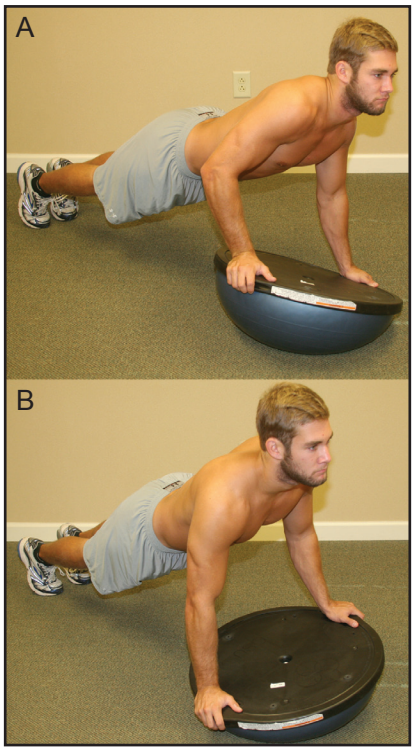

Figure 9A and B. BOSU (BOSU, Canton, OH) ball rocking.

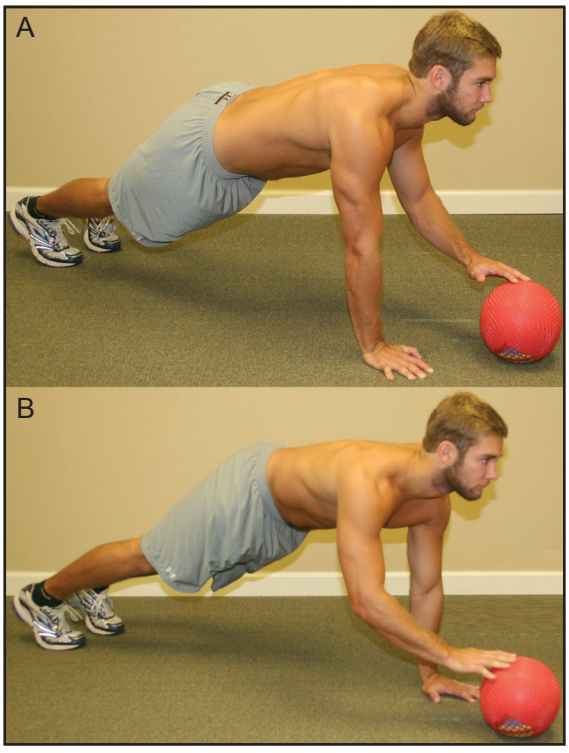

Figure 10 A and B. Ball taps.

- °Implement a home-based stretching program to normalize PROM and flexibility deficits that are limited due to stiffness into all planes of motion
  - °Assess each plane of the motions to determine if stretching is needed. Stretching should be performed ONLY if (1) motion is limited more than the contralateral side and (2) the level of pain is minimal or none.
  - °Especially evaluate the posterior shoulder and pectoralis minor
  - °Preferred posterior shoulder stretches include
    - °Horizontal adduction or cross-body stretching
    - °Sleeper stretch

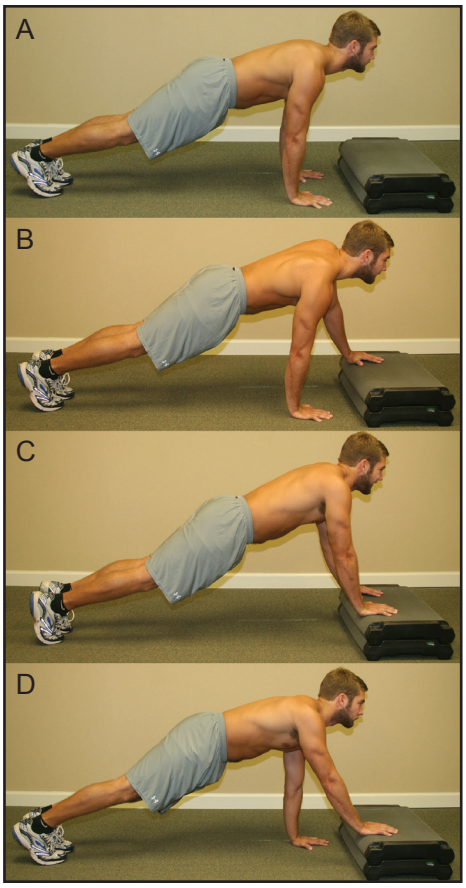

Figure 11 A–D. Upper extremity step-ups.

Adjunctive Exercises

- °Kinethetic awareness drills
- °Lower extremity and core training if deficits are present and thought to contribute to the patient's signs and symptoms
- °Modified weight-training program PRN (when approved by physician)
  - °Use high repetitions (15–25 repetitions) for at least 1 month and relatively light weight
  - °Initially no chest training or deltoid training
  - °Depending on the level of symptoms, can progress to chest and shoulder training exercises that do not place the shoulder in pro vocative positions; for example, do not perform dips, behind-the-head-shoulder press, and heavy full-range dumbbell chest presses

Interventions to Avoid

- °Unrestricted return to overhead sports or heavy weight training
- °Exercises that greatly increase signs and symptoms
- °Highly repetitive rehabilitation activities with the arm in provocative positions

Note: Most patients will be discharged at the completion of phase 2 into an independent home exercise program. This program will focus on progressive or maintenance shoulder girdle strengthening. ***Only patients who require return to frequent participation in vigorous sports or moderate to heavy occupational demands should progress to phase 3.***

PHASE 3

Criteria to Begin

- °Goals of returning to sports, heavy labor, or repetitive or heavy overhead work
- °No pain with the arm at rest and symptoms limited to specific and predictable high-level activities, such as competitive sports or high-demand occupations
- °Pain-free tolerance to progressive base and overhead strengthening program with 5/5 MMT of the rotator cuff and scapular muscles
- °Physician approval

Goals

- °Normalize dynamic strength, neuromuscular control and endurance of the shoulder girdle in all positions
- °Full return to recreational or high-demand occupational ADLs
- °Discharge when functional goals are met
- °Transition to maintenance home exercise program

Exercises

- °Advance base strengthening progression and AFE
  - °Increase elastic resistance and repetitions as appropriate
  - °Larger, more functional full arc of motion
  - °AFE up to 5 pounds depending on body size and functional demands
- °Initiate the advanced strengthening progression **PRN**
  - °**Exercise principles**
    - °Decrease the amount of external stabilization provided to the shoulder girdle
    - °Integrate functional patterns, including abduction and ER
    - °Increase speed of movements
    - °Integrate kinesthetic awareness drills into strengthening activities
    - °Include the entire kinetic chain
    - °Decrease rest time to improve endurance
    - °Train larger upper extremity muscles wisely
  - °**Sample exercises**
    - °T-Band standing PNF-type patterns (Figure 8)
    - °T-Band 90°/90° ER and IR with or without arm support
    - °T-Band simulation of batting, golf, or tennis forehand and backhand
    - °Advanced weight bearing exercises
- °Initiate progressive replication of demanding ADLs & work
- °Can begin interval throwing program or return to tennis program (**when approved by physician**)
- °Initiate modified return to heavy weight-training program (**when approved by physician**)

Adjunctive Exercises

- °Initiate plyometric program (**PRN for overhead athletes and if approved by physician**)
  - °Can begin after 2-3 weeks of advanced strengthening
  - °Use only 2 to 3 times per week
- °Progressions
  - °2-handed tosses
    - °Waist level
    - °Overhead
    - °Diagonally
  - °1-handed drop-and-catch drills
  - °1-handed tosses, varying the amount of
    - °Abduction
    - °Arm support

Interventions to Avoid

- **°Any rehab activity that is significantly more demanding than daily or expected recreational activities**
- °Any exercise that significantly increases signs and symptoms