



General Rehabilitation Guidelines

Thrower's Shoulder

Protocol for Nonoperative Treatment of Shoulder Pain in the Overhead Throwing Athlete

Samir Patel, MD

Considerations

1. GIRD: Glenohumeral Internal Rotation Deficit
 - a. Most throwers have an increased total arc of motion but diminished internal rotation due a tight posterior superior capsule
 - b. This results in a posterosuperior shift in the centering point of the humerus on the glenoid increasing the torque on the biceps root and increasing susceptibility to SLAP lesions
2. Relative Muscle Weakness
 - a. In many throwers the ratio of IR to ER strength is increased resulting in imbalance of the transverse force couple and problems with dynamic stabilization
 - b. Relative ER weakness along with loss of internal rotation leads to high shear forces during deceleration which must occur over a shorter arc
3. Acquired Capsular Laxity
 - a. Many throwers develop anterior capsular laxity for repetitive microtrauma
 - b. This may allow for increased external rotation which predisposed to internal impingement of the posterior rotator cuff
4. Scapular Dyskinesia
 - a. The scapula is the foundation through which core body strength is transmitted from the trunk to the thorax
 - b. Many throws develop scapular dyskinesia from a tight posterior capsule and from abnormal strength ratios in the scapular stabilizers

Throwing Rehabilitation Principles

1. never overstress healing tissue
2. prevent negative effects of immobilization
3. emphasize external rotation muscular strength
4. establish muscular balance
5. emphasize scapular muscle strength
6. improve posterior shoulder flexibility (internal rotation range of motion)
7. enhance proprioception and neuromuscular control
8. establish biomechanically efficient throwing
9. gradually return to throwing activities
10. use established criteria to progress

General Rehabilitation Guidelines

Thrower's Shoulder

Protocol for Nonoperative Treatment of Shoulder Pain in the Overhead Throwing Athletes

Phase I: Acute Phase

Modalities

- Cryotherapy, ultrasound, electrical stimulation
-

Flexibility Program

- Improve internal rotation, horizontal adduction and scapular posture



A: Sleeper Stretch

- Lie on your side with the shoulder blade supported against a wall
- Flex your shoulder so it is perpendicular to your chest and parallel to the bed
- Flex your elbow 90° as shown
- Apply a downward pressure on your forearm using your uninjured arm
- Count to 10 and repeat 5 times



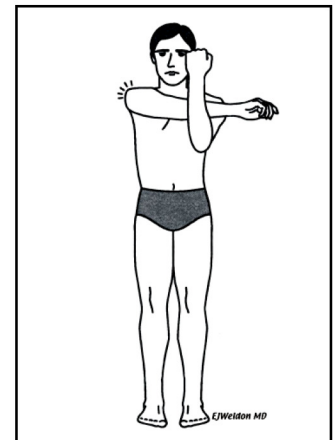
B: Roll-over Sleeper Stretch

- Same as above but shoulder is flexed only 60° from chest instead of perpendicular
- Roll forward 30° onto affected side
- Apply downward pressure on forearm of affected side
- Count to 10 and repeat 5 times



C: Cross-body Stretch

- Pull the arm of your affected shoulder across your chest
- Perform this stretch at three different levels
 - Slightly below shoulder height
 - At shoulder height
 - Slightly above shoulder height



- Count to 10 and repeat 5 times

- **Note:** shown in picture to left – if you keep the elbow of the affect arm straight and the thumb pointed down, the stretch will be more effective



D: Doorway Stretch

- Bring your shoulder into a horizontal position out to your side (abduction) and flex your elbow 90°
- Place your elbow against the edge of a doorway
- Lead forward and downwards with your body
- Count to 10 and repeat 5 times



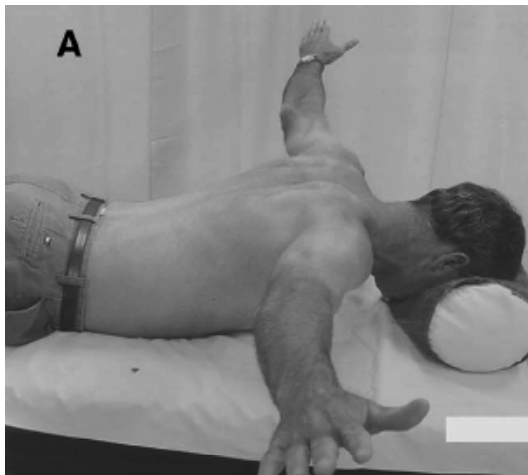
E: Towel Stretch for Pectoralis Minor

- Place a rolled towel between the shoulder blades while lying supine
- Have assistant or therapist apply downward pressure on the anterior shoulder pushing the scapula toward the table
- Count to 10 and repeat 5 times

Program for Rotator Cuff and Scapular Stabilization Strengthening

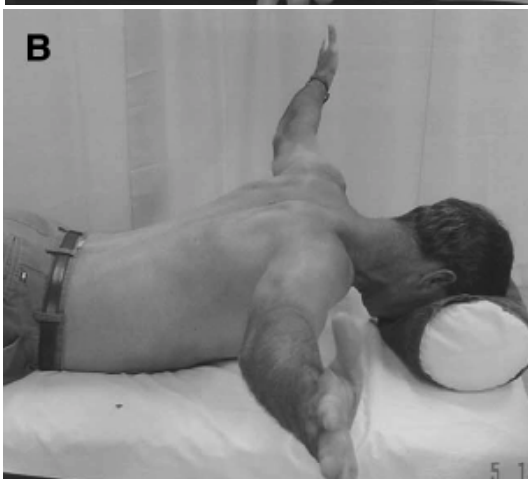
- **Blackburn Exercises: 6 Positions**

- Perform 3 sets of 20 repetitions of each exercise 3 times per day
- As strength and endurance increase, can add small 1.2 lb weights to hands



A: Prone Horizontal Abduction (Neutral)

- Lie on the table, face down, with arms hanging straight down to the floor and palms facing down
- Raise arms out to the side, parallel to the floor
- Hold for 2 seconds and lower slowly



B: Prone Horizontal Abduction (Full ER)

- Lie on the table, face down, with arms hanging straight to the floor, and thumbs rotated up (hitch-hiker position)
- Raise arms out to the side with slightly in front of shoulder, parallel to the floor
- Hold for 2 seconds and lower slowly



C: Prone Horizontal Scaption (Neutral)

- Lie on the table, face down, with arms hanging straight down to the floor and palms facing down
- Raise your arms to the side but slightly forward by about 30° compared to horizontal abduction
- Hold for 2 seconds and lower slowly



D: Prone Horizontal Scaption (Full ER)

- Lie on the table, face down, with arms hanging straight to the floor, and thumbs rotated up (hitch-hiker position)
- Raise your arms to the side but slightly forward by about 30° compared to horizontal abduction
- Hold for 2 seconds and lower slowly



E: Prone Horizontal External Rotation

- Lie on the table, face down, with arms abducted horizontal to side and elbows bent 90° pointing down
- Rotate arms externally so that forearms come parallel to ground point forward
- Hold for 2 seconds and lower slowly



F: Prone Horizontal Extension

- Lie on the table, face down, with arms hanging straight down to the floor and palms facing forward
- Raise your arms to the horizontal parallel the thorax
- Hold for 2 seconds and lower slowly

Phase II: Intermediate Phase

Goals

- Progress strengthening exercises
- Restore muscular balance
- Enhance dynamic stability
- Control flexibility and stretches

Exercises and Modalities

- Continue stretching and flexibility (as above)
- Progress isotonic strengthening
 - Target external rotation, scapular retractors and depressors
 - Thrower's Ten Program
- Rhythmic stabilization drills
- Initiate core strengthening program for abdomen and lower back
- Initiate leg program
 - Running program including jogging and sprint timing

Phase III: Advanced Strengthening Phase

Goals

- Aggressive strengthening
- Progress neuromuscular control
- Improve strength, power and endurance
- Initiate light throwing activities

Exercises and Modalities: Goal to enhance power and endurance

- Flexibility and stretching
- Rhythmic stabilization drills
 - Push-ups on plyoball – hold position in midrange
- Thrower's Ten Program
 - Goal to restore following ratios
 - ER/IR: 65-70%
 - Posterior Cuff/Deltoid: 65-70%
 - Scapular retractor/protractor: 100%
- Initiate plyometric program
 - Start with two-handed chest pass, overhead soccer and side throw with an 8lb plyoball
 - For the side-throw use legs and hips to produce trunk and shoulder rotation
 - Progress to one-handed drills using a 2lb plyoball
 - standing one-handed throws in a functional throwing position, wall dribbling and plyometric step and throws
- Initiate endurance drills
 - Wall dribbling with plyoball, wall arm circles, UBE, isotonic cuff strengthening with lower weights and higher reps
- Initiate short-distance throwing program
 - Phase I of Interval Throwing Program at 45' progressing to 60'

Phase IV: Return to Activity Phase

Goals

- Progress to throwing program
- Return to competitive throwing
- Continue strengthening and flexibility drills

Exercises

- Stretching and flexibility drills
- Thrower's Ten Program
- Plyometric Program
- Progress through Interval Throwing Program to competitive throwing
 - Progress long-toss program to 120 or 145'
 - Then progress to 60' throw from wind-up on level ground
 - Then progress to Phase II throwing from the mound

THROWER'S TEN EXERCISE PROGRAM



Diagonal Pattern D2 Extension

Involving hand will grip tubing handle overhead and out to the side. Pull tubing down and across your body to the opposite side of leg. During the motion, lead with your thumb.



Diagonal Pattern D2 Flexion

Gripping tubing handle in hand of involved arm, begin with arm out from side 45 degrees and palm facing backward. After turning palm forward, proceed to flex elbow and bring arm up and over the uninvolved shoulder. Turn palm down and reverse to take arm back to starting position. This exercise should be done in a controlled manner.



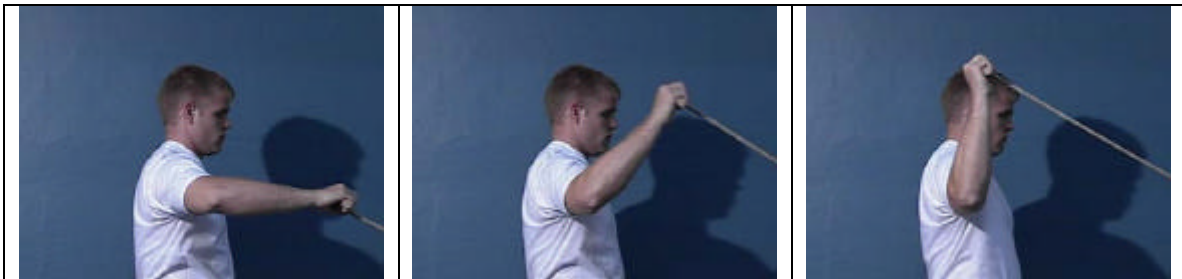
External Rotation at 0 degrees Abduction

Stand with involved elbow fixed at side, elbow at 90 degrees and involved arm across front of body. Grip tubing handle while the other end of the tubing is fixed to a stationary object. Pull out with arm, keeping elbow at side. Return tubing slowly and in a controlled manner.



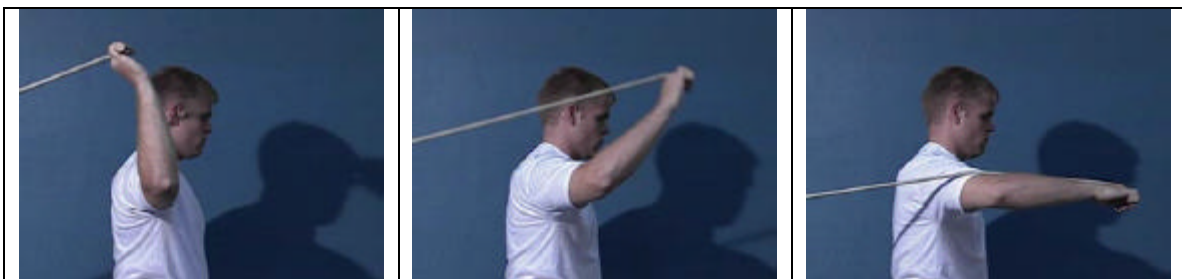
Internal Rotation at 0 degrees Abduction

Standing with elbow at side, fixed at 90 degrees and should rotated out. Grip tubing handle while other end of tubing is fixed to a stationary object. Pull arm across body, keeping elbow at side. Return tubing slowly and controlled.



External Rotation at 90 degrees Abduction

Stand with shoulder abducted 90 degrees and elbow flexed 90 flexed. Grip tubing handle while the other end is fixed straight ahead, slightly lower than the shoulder. Keeping shoulder abducted, rotate the shoulder back, keeping elbow at 90 degrees. Return tubing and hand to start position.



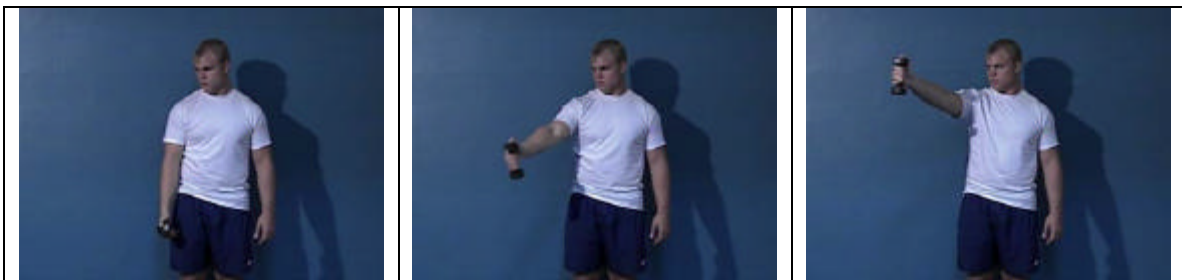
Internal Rotation at 90 degrees Abduction

Stand with shoulder abducted to 90 degrees, externally rotated 90 degrees and elbow bent 90 degrees. Keeping shoulder abducted, rotate shoulder forward, keeping elbow bent at 90 degrees. Return tubing and hand to start position.



Shoulder Abduction to 90 degrees

Stand with arm at side, elbow straight, and palm against side. Raise arm to the side, palm down, until arm reaches 90 degrees (shoulder level). Hold 2 seconds and lower slowly.



Scaption, Internal Rotation

Stand with elbow straight and thumb up. Raise arm to shoulder level at 30 degree angle in front of body. Do not go above shoulder height. Hold two seconds and lower slowly.



Prone Horizontal Abduction (Neutral)

Lie on table, face down, with involved arm hanging straight to the floor, palm facing down. Raise arm out to side, parallel to floor. Hold 2 seconds and lower slowly.



Prone Horizontal Abduction (Full External Rotation, 100 degrees Abduction)

Lie on table, face down, with involved arm hanging straight to the floor, thumb rotated up (hitchhiker position). Raise arm out to the side slightly in front of shoulder, parallel to the floor. Hold 2 seconds and lower slowly.



Press-Ups

Seated on a chair or table, place both hands firmly on the sides of the chair or table, palm down and fingers pointed outward. Hands should be placed equal with shoulders. Slowly push downward through the hands to elevate your body. Hold the elevated position for 2 seconds and lower slowly.



Prone Rowing

Lying on your stomach, with your involved arm hanging over the side of the table, dumbbell in hand and elbow straight. Slowly raise arm, bending elbow and bring dumbbell as high as possible. Hold at the top for 2 seconds, then slowly lower.



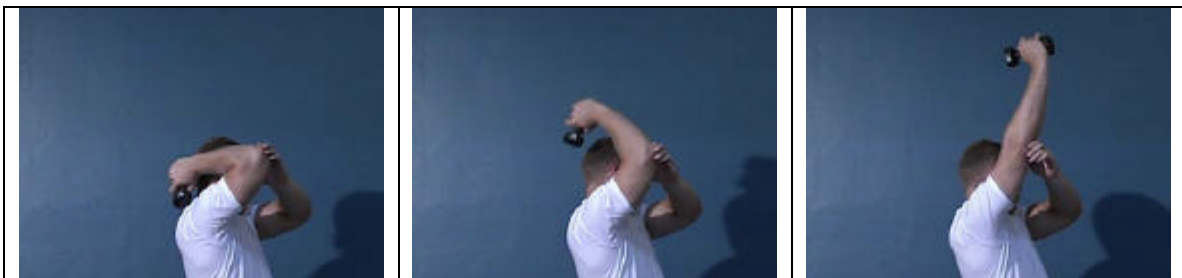
Push-Ups

Start in the down position. Place hands no more than shoulder width apart. Push up as high as possible, rolling shoulders forward after elbows are straight. Start with a push-up into wall, then gradually progress to tabletop and eventually to the floor as tolerable.



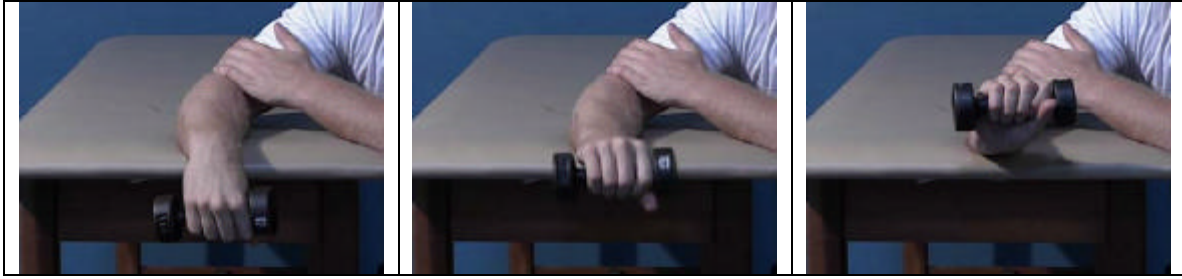
Elbow Flexion

Standing with arm against side and palm facing inward, bend elbow upward turning palm up as you progress. Hold 2 seconds and lower slowly.



Elbow Extension (Abduction)

Raise involved arm overhead. Provide support at elbow from uninvolved hand. Straighten arm overhead. Hold 2 seconds, then lower slowly.



Wrist Extension

Supporting the forearm and with palm facing downward, raise weight in hand as far as possible. Hold 2 seconds, then lower slowly.



Wrist Flexion

Supporting the forearm and with palm facing upward, lower a weight in hand as far as possible, then curl it up as high as possible. Hold for 2 seconds and lower slowly.



Wrist Supination

With forearm supported on table with wrist in neutral position, use a weight or hammer to roll wrist to the palm up position. Hold for 2 seconds and return to starting position.



Wrist Pronation

Forearm should be supported on a table with the wrist in neutral position. Using a weight or hammer, roll wrist to the palm down position. Hold 2 seconds and return to starting position.