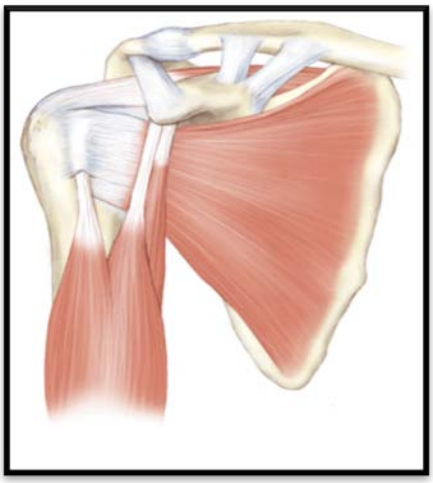
South Shore Hospital

Orthopedic, Spine and Sports Therapy

Rotator Cuff Impingement/Tendinopathy

Anatomy and Biomechanics

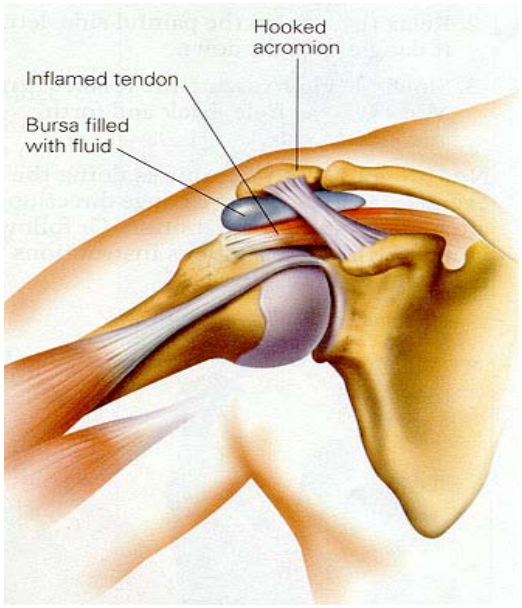


The shoulder is a wonderfully complex joint that is made up of the ball and socket connection between the humerus (ball) and the glenoid portion of the scapula (socket). The socket portion of the joint is not naturally deep. For this reason the shoulder is the most mobile joint in the body. Due to the lack of boney coverage the shoulder's proper function and stability is largely dependent on the soft tissues that surround it.

The rotator cuff is a group of four tendons that attach to the ball of the shoulder joint. They surround the ball much like the cuff of a sleeve fits snuggly around the wrist. When the arm is moved away from the body or over the head the tendons act to hold the ball in the socket correctly so that smooth fluid motion can be achieved. Sometimes these tendons as well as the subacromial bursa (fluid filled cushion on top of the tendon) can get irritated and inflamed causing a condition known as shoulder tendinopathy.

This inflammation can come about for one several reasons. It can be the result of simple overuse of the arm, especially with overhead activity. Tendinopathy can also develop if the shoulder is moving incorrectly. When the shoulder blade is allowed to sit in a rounded position and the rotator cuff is weak and can't stabilize the ball in the socket then the humerus and the acromian process come too close together during shoulder movement. This creates a pinching of the soft tissue between the two pieces of bone. This pinching is known as shoulder impingement and can be very painful and debilitating.

Treatment Options



Effective treatment of tendinopathy and impingement syndrome begins with a thorough orthopedic examination to determine the root cause of the dysfunction. Once the exam and diagnostic process is complete your physician will work with you to determine the most appropriate course of action for treatment. In most cases tendinopathy or impingement is first treated conservatively. This may include rest, anti-inflammatory medication, and activity modification. Your doctor may refer you to Physical Therapy to work on reducing the inflammation in your shoulder and correcting any deficits in strength or range of motion that are present. If the inflammation in your shoulder does not resolve with these conservative measures your doctor may elect to inject an anti-inflammatory medication (cortisone) directly into the subacromial space. This can be a very effective treatment for reducing inflammation enough to allow Physical Therapy exercise to work effectively. In rare occasions shoulder impingement and tendinopathy are resistant to all forms of conservative treatment. In these rare cases you and your doctor may elect have arthroscopic surgery performed to fix the source of the inflammation. This may include removal of a bone spur or debridement of an inflamed bursa.

Rehabilitation

****The following is an outlined progression for rehab. Time tables are approximate. Advancement from phase to phase, as well as specific exercises performed, should be based on each individual patient's case and sound clinical judgment on the part of the rehab professional. ****

Phase 1 Acute Phase

Goals

Reduce Pain and Inflammation
Protect Injured Tissue
Improve ROM Without Aggravating Injury

Precautions

Avoid any activities that create increased pain
Limit use of arm for lifting, pushing, pulling and carrying activities

Recommended Exercises

Pendulums
Standing Scapular Mobility (no resistance)
Supine or Standing Passive External Rotation
Supine, Seated or Standing Passive Shoulder Flexion (elevation)
Passive Internal Rotation
*Perform ROM exercises gently with the goal of reducing muscle guarding and pain

Guidelines For Progression

Before progressing to the subacute phase the shoulder should be less painful at rest and with movement. Increased pain with passive ROM should be seen more at "end range" and less with initiation of movement.

Phase 2 Subacute Phase

Goals

Continued protection of injured/healing tissue
Continue to improve passive and active ROM
Initiate Active ROM with Proper Scapulohumeral Rythm
Initiate gentle peri-scapular and rotator cuff strengthening

Precautions

No repetitive use of arm especially overhead
Avoid putting arm in positions that create increased pain/"pinching"
Avoid heavy loads with strengthening exercises

Recommended Exercises

Range of Motion

- Continue Active Assisted ROM
- Supine Active Assisted Flexion
- Standing or Supine Active Assisted ER (neutral, scapular plane, 90 deg of abduction)
- Active Assisted IR and Horizontal Adduction

Strengthening

- *Stress gentle strengthening with low resistance and high repetition*
- Resistance Band
  - Scapular Retraction
  - Internal Rotation
  - External Rotation
- Bodyweight/Dumbbell
  - Standing Scaption ("open can") with progression to prone
  - Prone Extension
  - Prone Horizontal Abduction

Guidelines for Progression

Before advancing to the progressive strengthening phase the shoulder should be able to actively move in all planes of motion without experiencing increased pain or "pinching."

Phase 3 Progressive Strengthening Phase

Goals

Continue to acquire normal ROM if still deficient
Progressively strengthen rotator cuff and peri-scapular muscle groups
Restore functional use of arm

Limitations

Caution with repetitive overhead activity and lifting in frontal plane (abduction)
Avoid activity if it causes pain in shoulder

Recommended Exercises

ROM

- Continue Active Assisted ROM if necessary
- Add side-lying IR stretch ("sleeper") stretch and cross body stretch if necessary

Strengthening (Resistance Band or Dumbbell)

- *Begin to progressively increase resistance and reduce frequency of strengthening exercises*
- Scapular Retraction
- Prone Extension
- Prone Horizontal Abduction
- Standing/Prone Scaption
- Internal Rotation with progression to 90 deg of abduction
- External Rotation with progression to 90 deg of abduction
- Progress to Diagonal Patterns

Dynamic Strengthening

- Manual Resistance Patterns
- Rythmic Stabilization
- Proprioceptive Drills
- Push Up Progression

Guidelines for Progression

Before progressing to the sports specific phase the shoulder should be pain free in all planes of motion and strength should be excellent.

Phase 4 Sport Specific Phase

Goals

Maintain normal ROM and strength
Continue to encourage progressive use of arm for functional activity and return to sport

Precautions

Encourage slow progression back to sport and high level activity
Work with orthopedic doctor or physical therapist regarding specific plan for return to sport/activity

Recommended Exercises

ROM and Stretching

Continue as directed by physical therapist

Strengthening

Continue strengthening 2-3 times a week.

Work with physical therapist to determine which exercises should be continued

Guidelines for Return to Activity

Work with physician or physical therapist for specific plan for return to sport and activity. Step by step progressions should allow for gradual return to high level activities.

Phase	Focus	Range of Motion	Recommended Exercises	Precautions
Acute	*Reduce Pain and Inflammation *Protect Injured Tissue *Improve ROM Without Aggravating Injury	*Gentle ROM progression *Focus on Passive and Active Assisted ROM in pain free range	**ROM** ▪Pendulums ▪Scapular Mobility ▪Passive/Assisted External Rotation ▪Passive/Assisted Flexion ▪Passive/Assisted Internal Rotation	*Do not perform any activity or exercise that causes sharp pain in shoulder *Avoid lifting arm away from body or overhead
Subacute	*Continue protection of injured/healing tissue Continue to improve passive and assisted ROM *Initiate Active ROM with Proper Scapulohumeral Rythm *Initiate gentle peri-scapular and rotator cuff strengthening	*Continue pain-free assisted ROM in all planes *Carefully progress active elevation with particular attention to scapula-humeral rhythm	**ROM** ▪Supine Active Assisted Flexion ▪Standing or Supine Active Assisted ER (neutral, scapular plane, 90 deg of abduction) ▪Active Assisted IR and Horizontal Adduction **Strengthening** ▪T-band Scapular Retraction Internal Rotation External Rotation ▪Bodyweight/Dumbbell Side-lying External Rotation Standing Scaption (“open can”) with progression to prone Prone Extension Prone Horizontal Abduction	*Stress Proper Scapulo-humeral Rhythm with Active ROM *Avoid Repetitive Abduction Motion in Coronal Plane or Overhead Motion *Stress Low Resistance and High Repetition with Strengthening Exercises

Rehab	*Continue to acquire normal ROM if still deficient *Progressively strengthen rotator cuff and peri-scapular muscle groups *Restore functional use of arm	Maintain Full Passive/Active ROM	**ROM** ▪Continue Active Assisted ROM if necessary ▪Side-lying IR stretch and cross body stretch as needed **Strengthening** ▪Scapular Retraction ▪Prone Extension ▪Prone Horizontal Abduction ▪Standing/Prone Scaption ▪Internal Rotation with progression to 90 deg of abduction ▪External Rotation with progression to 90 deg of abduction ▪Progress to Diagonal **Dynamic Progressions** ▪Manual Resistance Patterns ▪Rythmic Stabilization ▪Proprioceptive Drills ▪Push Up Progression	*No Heavy or Repetitive Overhead Lifting/Reaching *Limited Return to Gym Lifting Under Supervision *Begin to Increase Load and Decrease Volume/Frequency of Strengthening Exercises
Sport Specific	Gradual Return to Sports and Physical Activity	Maintain Full Passive/Active ROM	**ROM** ▪Continue as Needed **Strengthening** ▪Continue T-band and Peri-scapular Progressions 3 x Week as Needed **Dynamic Progressions** ▪Continue Proprioceptive Drills During Return to Sport 2-3 x Week	*Return to Sports and Physical Activity per Surgeon/Physical Therapist Evaluation *Achieve Full Pain Free ROM and Excellent Strength Before Progression Back to Sport

***Reviewed by Michael Geary, MD**