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 snugly 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
Rhythmic 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.
<table>
<thead>
<tr>
<th>Phase</th>
<th>Focus</th>
<th>Range of Motion</th>
<th>Recommended Exercises</th>
<th>Precautions</th>
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</thead>
</table>
| 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 Rhythm  
*Initiate gentle peri-scapular and rotator cuff strengthening | *Continue pain-free assisted ROM in all planes  
*Carefully progress active elevation with particular attention to scapulo-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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><em>Continue</em></td>
<td>to acquire normal ROM if still deficient</td>
</tr>
<tr>
<td><em>Progressively</em></td>
<td>strengthen rotator cuff and peri-scapular muscle groups</td>
</tr>
<tr>
<td><em>Restore</em></td>
<td>functional use of arm</td>
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</table>

**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

### Sport Specific

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<th>Activity</th>
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<tr>
<td>Gradual Return to Sports and Physical Activity</td>
<td>Maintain Full Passive/Active ROM</td>
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**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

*Reviewed by Michael Geary, MD*