

Rehabilitation Guidelines for Shoulder Arthroscopy

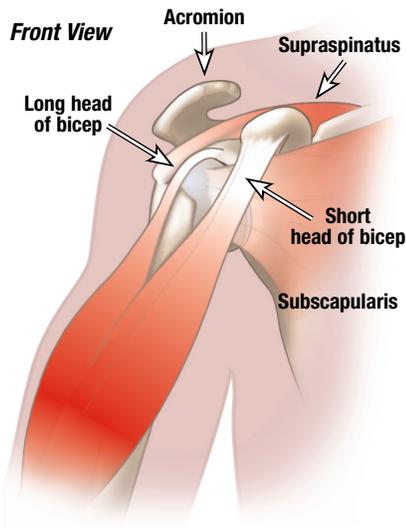


Figure 1 Shoulder anatomy

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The shoulder is made up of three bones: the scapula (shoulder blade), the humerus (upper arm bone), and the clavicle (collarbone). One part of the scapula, called the glenoid fossa, is coupled with the humerus to make up the socket of the shoulder (Figure 1). The glenoid is very shallow and flat. The glenoid labrum is a rim of soft tissue that turns the flat surface of the glenoid into a deeper socket that molds to fit the head of the humerus. Another part of the scapula, called the acromion, articulates with the clavicle (collarbone) to make the acromioclavicular (AC) joint.

The acromion (Figure 2) itself can be classified as flat (type I), curved (type II), or hooked (type III).

The rotator cuff connects the humerus to the scapula. The rotator cuff is formed by the tendons of four muscles: the supraspinatus, infraspinatus, teres minor, and subscapularis (Figure 3).

The stability and movement of the shoulder is controlled primarily by the rotator cuff muscles, with assistance from the ligaments, glenoid labrum and capsule of the shoulder.

Labral tears and rotator cuff tears are often caused by a direct injury to the shoulder, such as falling on an outstretched hand. However, the labrum and rotator cuff also can become torn from gradual wear and tear of the shoulder. These tissues can get caught between the glenoid and the humerus or the humerus and the acromion which can cause pain and catching with shoulder movement. Shoulder arthroscopy may be performed using instruments (about the size of a pencil which include a camera and other surgical instruments) inserted through small incisions in the shoulder, to debride massive, irreparable tears of the labrum and/or rotator cuff.^{1,2}

Subacromial impingement occurs when the rotator cuff tendons and/or bursa become trapped between the acromion and the humerus with overhead motion of the shoulder.³ This is more likely to occur if the acromion is curved or hooked (Type III) and often leads

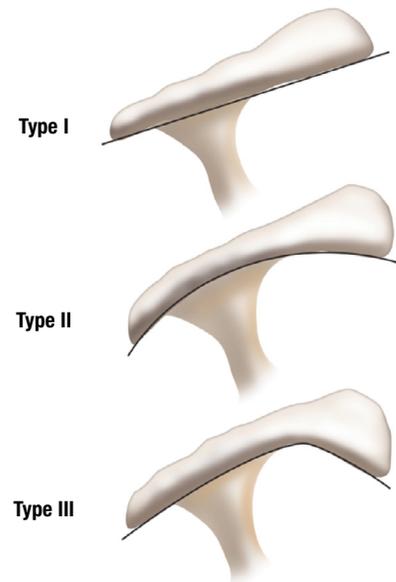


Figure 2 Acromion classifications

to pain and limitation of movement at the shoulder.³ A subacromial decompression is an arthroscopic procedure performed when an instrument is used to remove some bone on the undersurface of the acromion to create more space for the rotator cuff tendons (Figures 4 and 5). Often there is a bone spur in this region that can pinch against the rotator cuff or bursa (fluid filled sac) causing the pinching or impingement.

Acromioclavicular (AC) joint symptoms are another common shoulder problem, resulting from both direct injury to the AC joint and rotator cuff impingement. A Mumford arthroscopic procedure resects the distal clavicle in cases of

posttraumatic degenerative disease of the AC joint and shoulder impingement syndrome.⁴

Chronic impingement and/or inflammation of the long head of the biceps (Figure 1) can also be a pain generator in the shoulder. The tendon can often become frayed or partially torn. In some cases the surgeon may “release” or cut the long head of the bicep near its attachment site to relieve stress and

tension, thus eliminating the pain. This is called a biceps tenotomy and can also be done arthroscopically.

Rehabilitation is vital to regaining motion, strength and function of the shoulder after arthroscopic surgery. Initially patients may use a sling for comfort. During this time, range of motion exercises are started to prevent the shoulder from getting stiff and losing mobility. The rehabilitation program will

gradually progress to more strengthening and control type exercises. General time frames are given for reference to the average, but individual patients will progress at different rates depending on their age, associated injuries, pre-injury health status, rehabilitation compliance and injury severity. Restrictions or precautions may also be given to protect healing.

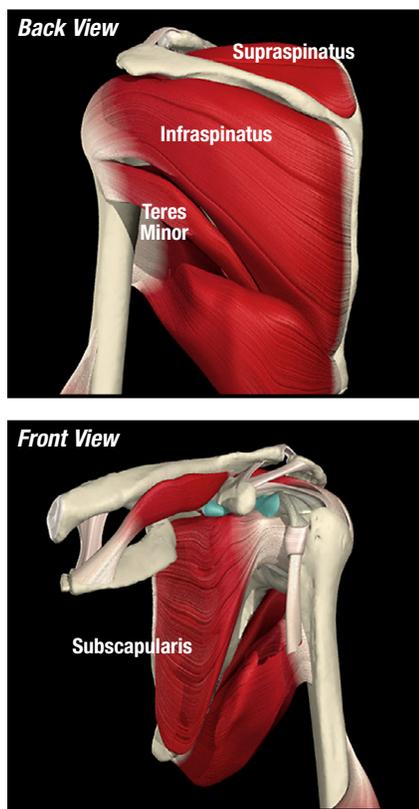


Figure 3 Rotator cuff anatomy

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Figure 4 Pre-operative radiograph of a patient with shoulder impingement. The arrow indicates the area of the Type III acromion.



Figure 5 Post-operative radiograph of the same patient in Figure 3. Notice how the Type III acromion (hook) has been shaved off during the subacromial decompression.

PHASE I (usually surgery to 3 weeks after surgery)

Appointments	<ul style="list-style-type: none"> • Rehabilitation appointments begin 7 days after surgery
Rehabilitation Goals	<ul style="list-style-type: none"> • Reduce pain and swelling in the post-surgical shoulder • Regain full passive range of motion (PROM) and active assistive range of motion (AAROM) • Activation of the stabilizing muscles of the gleno-humeral and scapulo-thoracic joints
Precautions	<ul style="list-style-type: none"> • Avoid activities that may impinge on the denuded bone of the acromion • Use sling as needed for comfort • Relative rest to reduce inflammation
Suggested Therapeutic Exercise	<ul style="list-style-type: none"> • Begin 7 days after surgery, sub-maximal shoulder isometrics for internal rotation/external rotation, flexion/extension and abduction/adduction • Shoulder AAROM/PROM: Codman's, pulleys, cane exercises in all planes of motion except horizontal adduction (these should stay relatively pain free) • Gentle shoulder mobilizations as needed • Hand gripping • Elbow, forearm, and wrist active range of motion (AROM) • Cervical spine and scapular AROM • Postural exercises
Cardiovascular Fitness	<ul style="list-style-type: none"> • Walking, stationary bike • Avoid running and jumping due to the forces that can occur at landing
Progression Criteria	<ul style="list-style-type: none"> • The patient can progress to Phase II when they have achieved full PROM and normal (5/5) strength for internal rotation/external rotation with arm at side

PHASE II (begin after meeting Phase I criteria, usually 4-5 weeks after surgery)

Appointments	<ul style="list-style-type: none"> • Rehabilitation appointments are once every 1-2 weeks
Rehabilitation Goals	<ul style="list-style-type: none"> • Controlled restoration of AROM • Strengthen shoulder and scapular stabilizers in protected position (0° - 45° abduction) • Begin proprioceptive and dynamic neuromuscular control retraining • Correct postural dysfunctions
Precautions	<ul style="list-style-type: none"> • Avoid repetitive overhead activities • Post-rehabilitation soreness should alleviate within 12 hours of the activities
Suggested Therapeutic Exercise	<ul style="list-style-type: none"> • AROM in all cardinal planes--assessing scapular rhythm • Gentle shoulder mobilizations as needed • Rotator cuff strengthening in non-provocative positions (0° - 45° abduction) • Scapular strengthening and dynamic neuromuscular control • Cervical spine and scapular AROM • Postural exercises • Core strengthening
Cardiovascular Fitness	<ul style="list-style-type: none"> • Walking, stationary bike, Stairmaster • Avoid running and jumping until athlete has full rotator cuff strength in a neutral position due to forces that can occur at landing
Progression Criteria	<ul style="list-style-type: none"> • The patient can progress to Phase III when they have achieved full AROM (equal to uninvolved side) and normal (5/5) strength for internal rotation/external rotation with shoulder at 45° abduction

PHASE III (begin after meeting Phase II criteria, usually 7-8 weeks after surgery)

Appointments	<ul style="list-style-type: none"> • Rehabilitation appointments are once every 2-3 weeks
Rehabilitation Goals	<ul style="list-style-type: none"> • Normal (5/5) rotator cuff strength at 90° abduction and with supraspinatus testing • Full multi-planar AROM • Advance proprioceptive and dynamic neuromuscular control retraining • Correct postural dysfunctions with work and sport specific tasks
Precautions	<ul style="list-style-type: none"> • Post-rehabilitation soreness should alleviate within 12 hours of the activities
Suggested Therapeutic Exercise	<ul style="list-style-type: none"> • Multi-plane AROM with gradual increase in velocity of movement - assessing scapular rhythm • Gentle shoulder mobilizations as needed • Rotator cuff strengthening at 90° abduction, provocative positions and work/sport specific positions • Scapular strengthening and dynamic neuromuscular control in overhead positions and work/sport specific positions • Cervical spine and scapular AROM • Postural exercises • Core strengthening • Begin education in sport specific biomechanics with very initial program for throwing, swimming or overhead racquet sports
Cardiovascular Fitness	<ul style="list-style-type: none"> • Walking, stationary bike, Stairmaster, running • Avoid swimming until athlete has normal (5/5) rotator cuff strength at 90° abduction and negative impingement signs
Progression Criteria	<ul style="list-style-type: none"> • The patient can progress to phase IV when they have achieved full multi-plane AROM (equal to uninvolved side) and normal (5/5) strength for internal rotation/external rotation with the shoulder at 90° abduction and full supraspinatus strength

PHASE IV (begin after meeting phase III criteria, usually 10-12 weeks after surgery)

Appointments	<ul style="list-style-type: none"> • Rehabilitation appointments are once every 2-3 weeks
Rehabilitation Goals	<ul style="list-style-type: none"> • Normal rotator cuff strength at 90° abduction and with supraspinatus testing • Advance proprioceptive and dynamic neuromuscular control retraining • Correct postural dysfunctions with work and sport specific tasks • Develop strength and control for movements required for work or sport
Precautions	<ul style="list-style-type: none"> • Post-rehabilitation soreness should alleviate within 12 hours of the activities
Suggested Therapeutic Exercise	<ul style="list-style-type: none"> • Multi-plane AROM with gradual increase in velocity of movement - assessing scapular rhythm • Shoulder mobilizations as needed • Rotator cuff strengthening in at 90° abduction, provocative positions and work/sport specific positions - including eccentric strengthening, endurance and velocity specific exercises • Scapular strengthening and dynamic neuromuscular control in overhead positions and work/sport specific positions • Work and sport specific strengthening • Core and lower body strengthening • Throwing program, swimming program or overhead racquet program as needed
Cardiovascular Fitness	<ul style="list-style-type: none"> • Design to use work or sport specific energy systems
Progression Criteria	<ul style="list-style-type: none"> • The patient may return to sport after receiving clearance from the orthopedic surgeon and rehabilitation therapist. This will be based on meeting the goals of Phase III

These rehabilitation guidelines were developed collaboratively by Marc Sherry, PT, DPT, LAT, CSCS (msherry@uwhealth.org) and the UW Health Sports Medicine physician group.

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References

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4. Lesko, PD. Arthroscopic Mumford Procedure Variation of Technique. *Iowa Orthop J*. 1999; 19: 93-98.

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