Shoulder Injuries

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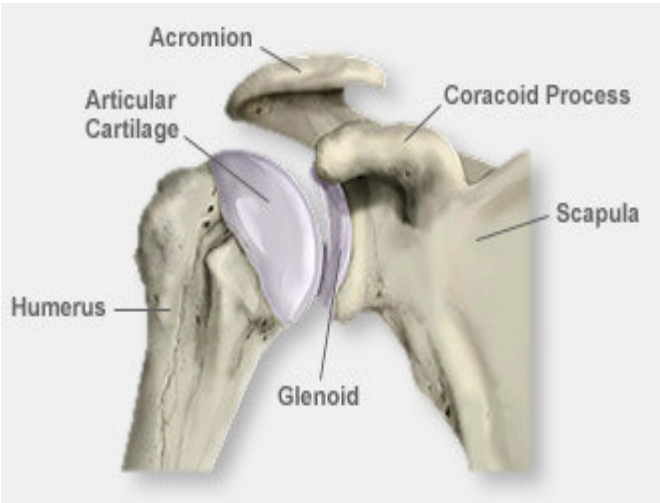
The Shoulder

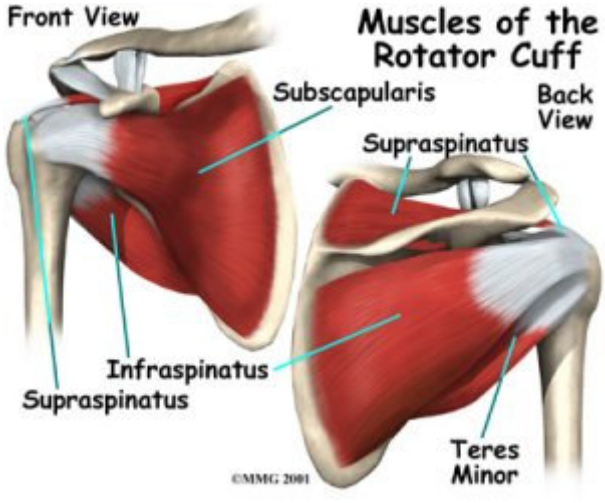
The shoulder is a very complex joint susceptible to many types of injuries. It has the greatest range of motion of any joint in the body. Our shoulders allow us to put our hands where they need to be for work, play, and all of our daily activities. To manage this, the shoulder has to have the right balance of strength, flexibility, and stability. Loss of this balance can lead to pain and injury. Maintaining this balance through exercises aimed at stretching and strengthening can help avoid shoulder problems.

The bones of the shoulder consist of the humerus, the scapula (shoulder blade) and the clavicle. The joint cavity is cushioned by articular cartilage covering the head of the humerus and the interior surface of the glenoid. The scapula extends up and around the shoulder joint at the rear to form a roof called the acromion, and around the shoulder joint at the front to form the coracoid process. The end of the scapula, called the glenoid, meets the head of the humerus to form a glenohumeral cavity that acts as a flexible ball-and-socket joint.

The joint is stabilized by a ring of fibrous cartilage surrounding the glenoid called the labrum. Ligaments connect the bones of the shoulder, and tendons join the bones to surrounding muscles. The biceps tendon attaches the biceps muscle to the shoulder and helps to stabilize the joint. Four muscles (pictured below) originate on the scapula and pass around the shoulder where their tendons fuse together to form the rotator cuff. The rotator cuff consist of the supraspinatus, infraspinatus, subscapularis, teres minor. Many other muscles are involved and assist in shoulder motion and stability.

All of these components of your shoulder, along with the muscles of your upper body, work together to manage the stress your shoulder receives as you extend, flex, lift and throw.





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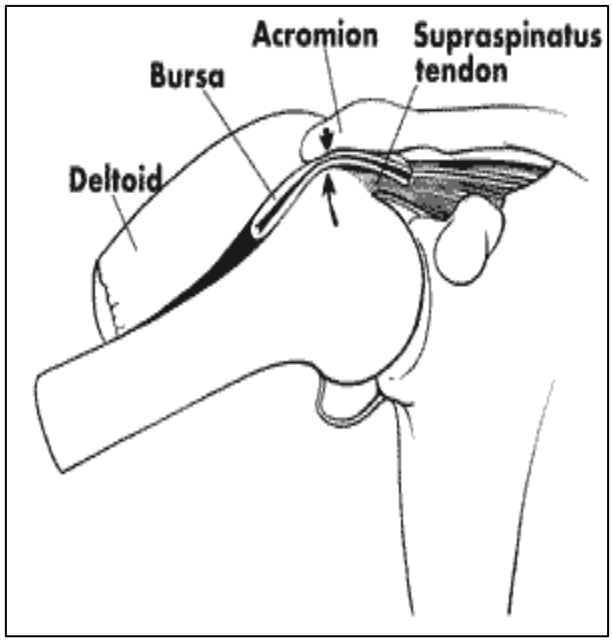
Rotator Cuff Injuries The shoulder joint is surrounded by four muscles and their tendons. These are collectively referred to as the rotator cuff. The rotator cuff is surrounded by an empty sac, or bursa, which helps the tendons slide. The rotator cuff is susceptible to many problems which can cause weakness, tenderness and pain. These problems include overuse tendinitis, which can be caused by certain activities.



Overhead sports such as throwing, swimming, or tennis, can lead to tendinitis. If the space between the rotator cuff and the bone above it is narrowed, the rotator cuff tendons and the overlying bursa can get squeezed. This will lead to bursitis and tendinitis. This is called impingement. Occasionally a calcium deposit may form in the rotator cuff and cause acute inflammation of the tendon and bursa. We call this calcific tendinitis. The rotator cuff tendons are also susceptible to the process of aging. As we get older, the rotator cuff tendons degenerate and weaken. A rotator cuff tear can occur due to this degeneration alone, or when the weakened tendons are stressed during activities or accidents. Most rotator cuff problems can be treated with rest, manipulation, massage and gentle exercises.

The shoulder is at risk for injury in many sports. The rotator cuff can be injured through overuse or through trauma. Rotator cuff tendinitis is common in overhead sports such as baseball, tennis, volleyball, and swimming. Rotator cuff tears can occur if the tendons are overloaded in weight lifting or football. There are ligaments which hold the shoulder bone in its socket. The shoulder has a very large range of motion, and needs some flexibility of the ligaments to allow for that range. But if the ligaments become stretched or torn, this can lead to instability. A mild amount of instability will allow the shoulder to slip part way out of socket, called a subluxation. When the shoulder comes completely out of its socket this is called a dislocation. Subluxation or dislocation can occur with nearly all sport activities.

The ligaments of the shoulder are attached to the socket at the labrum. Tearing of the labrum sometimes occurs with instability. Another part of the shoulder commonly injured is the acromioclavicular or AC joint. The clavicle or collarbone meets the shoulder at the acromion where a small joint is found. This joint can be injured to varying degrees in a fall onto the outside part of the shoulder. Injury to the AC joint is called an AC separation. AC separations occur in contact sports and are frequently seen in skiing and biking falls. Clavicle fractures are common injuries seen frequently in sports where speed or contact are involved.

Acute Rotator Cuff Tear This tends to happen as a result of a sudden, powerful movement. This might include falling over onto an outstretched hand at speed, making a sudden thrust with the paddle in kayaking, or following a powerful pitch/throw. The symptoms will usually include:

- Sudden, tearing feeling in the shoulder, followed by severe pain through the arm
- Limited movement of the shoulder due to pain or muscle spasm
- Severe pain for a few days (due to bleeding and muscle spasm) which usually resolves quickly
- Specific tenderness ("x marks the spot") over the point of rupture/tear
- If there is a severe tear, you will not be able to abduct your arm (raise it out to the side) without assistance

Chronic Tear

- Usually found on the dominant side
- More often an affliction of the 40+ age group
- Pain is worse at night, and can affect sleeping
- Gradual worsening of pain, eventually some weakness
- Unable to lift arm out to the side without assistance or do any activities with the arm above the head
- Some limitations of other movements depending on the tendon affected

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Shoulder Exercises

Before you start

The exercises described below can help you strengthen the muscles in your shoulder (especially the muscles of the rotator cuff--the part that helps circular motion). These exercises should not cause you significant pain. If you feel some mild pain that should be ok, if pain is severe, stop exercising. Start again with a lighter weight.

Look at the pictures with each exercise so you can use the correct position. Warm up before adding weights. To warm up, stretch your arms and shoulders, and do pendulum exercises. To do pendulum exercises, bend from the waist, letting your arms hang down. Keep your arm and shoulder muscles relaxed, and move your arms slowly back and forth. Perform the exercises slowly: Lift your arm to a slow count of 3 and lower your arm to a slow count of 6.

Keep repeating each of the following exercises until your arm is tired. Use a light enough weight that you don't get tired until you've done the exercise about 20 to 30 times. Increase the weight a little each week (but never so much that the weight causes severe pain).

What can I do to help relieve the pain?

The application of heat or cold can relieve pain. Each time you finish doing these exercises, put an ice pack on your shoulder for 20 minutes. You can make your own ice pack, use a plastic bag with ice cubes. If you do all 4 exercises 3 to 5 times a week, your rotator cuff muscles will become stronger, and you'll get back normal strength in your shoulder. Cold numbs pain and reduces inflammation. Applying ice is especially effective after an activity that has triggered pain. Apply an ice pack for 20 minutes at a time. Do not apply ice for over 20 minutes at a time to avoid frostbite. Do not apply ice directly to skin (cover with cloth).

Heat increases blood flow to the muscles and relaxes tense muscles. Do not apply heat for over 20 minutes at a time to avoid overheating the tissue. Wait at least an hour between heat applications. Heat may be in the form of a MOIST heating pad or hot water bottle or shower or hot tub. A warm bath or shower before stretching exercises makes them easier to do. *Do not apply heat to an inflamed area. Do not apply heat or cold if you have a circulatory problem or nerve damage unless recommended by your physician.*

Treatment should help relieve the pain and help you restore your shoulder to normal function. Pain relief strategies include active rest (you can and should move your shoulder, but you shouldn't do strenuous activities like lifting heavy objects or playing tennis). Application of ice, taking nonsteroidal anti-inflammatory medicine and, occasionally, an injection of anti-inflammatory steroids may help short term for severe pain, but these has side effects which not only affect the liver and kidneys, but interfere with healing of the injured connective tissues. I recommend a natural pain reliever called PainX and natural muscle nutrition called Muscle Aid. These can be ordered on my website.

The first step of rehabilitation therapy is simple range-of-motion exercises. By bending over and moving (rotating) your shoulder in large circles, you will help to avoid the serious complication of rotator cuff injury, called a frozen shoulder. These range-of-motion exercises are followed by resistance exercises using rubber tubing or light dumbbells. These exercises are aimed at strengthening the rotator cuff. Increasing cuff strength can decrease symptoms and effects of instability, impingement and tendinitis, as well as prevent some injuries. Use Theraband tubing for easy home resistance therapy. The final step is resistance training with weight machines or free weights.

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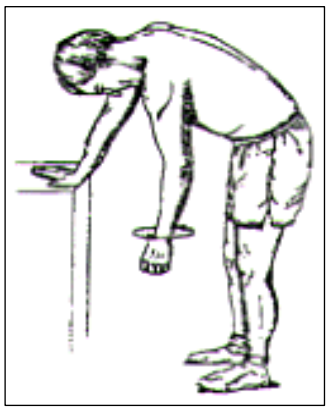
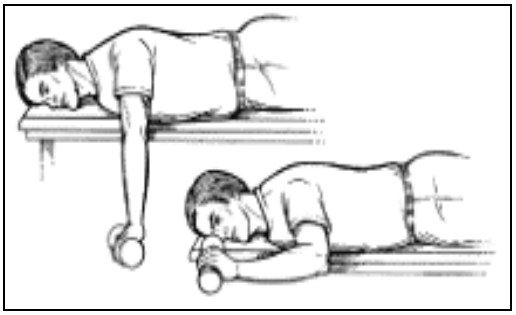
9 Rotator Cuff Exercises

Exercise 1 Stand up and lean over so you're facing the floor. Let your sore arm dangle straight down. Draw small circles in the air with your sore arm. Start with small circles, and then draw bigger ones. Repeat these exercises 5 to 10 times during the day. If you have pain, stop. You can try again later. Over time as the pain decreases, add some light weight by holding the weight you hand while making the small circles.

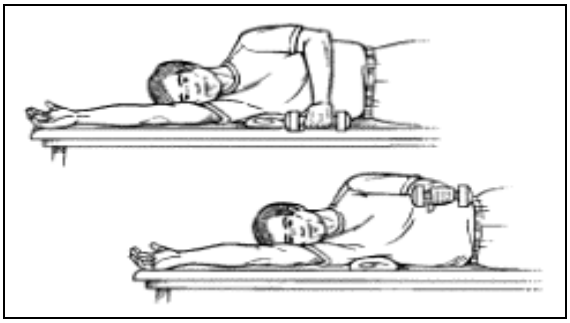


Exercise 1

Exercise 2 Start by lying on your stomach on a table or a bed. Put your left arm out at shoulder level with your elbow bent to 90° and your hand down. Keep your elbow bent, and slowly raise your left hand. Stop when your hand is level with your shoulder. Lower your hand slowly. Repeat the exercise until your arm is tired. Then do the exercise with your right arm.



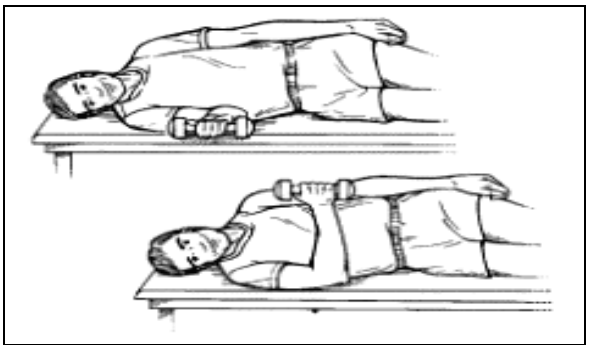
Exercise 2



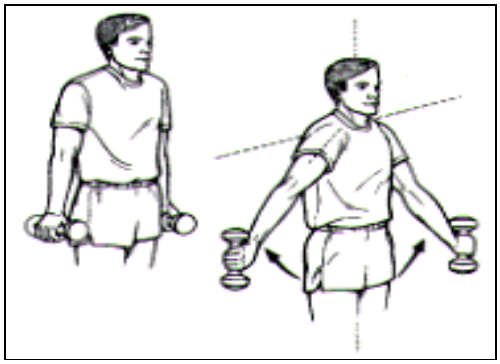
Exercise 3

Exercise 3 Lie on your right side with a rolled-up towel under your right armpit. Stretch your right arm above your head. Keep your left arm at your side with your elbow bent to 90° and the forearm resting against your chest, palm down. Roll your left shoulder out, raising the left forearm until it's level with your shoulder. (Hint: This is like the backhand swing in tennis.) Lower the arm slowly. Repeat the exercise until your arm is tired. Then do the exercise with your right arm.

Exercise 4 Lie on your right side. Keep your left arm along the upper side of your body. Bend your right elbow to 90°. Keep the right forearm resting on the table. Now roll your right shoulder in, raising your right forearm up to your chest. (Hint: This is like the forehand swing in tennis.) Lower the forearm slowly. Repeat the exercise until your arm is tired. Then do the exercise with your left arm.



Exercise 4



Exercise 5

Exercise 5 In a standing position, start with your right arm halfway between the front and side of your body, thumb down. (You may need to raise your left arm for balance.) Raise your right arm until almost level (about a 45° angle). (Hint: This is like emptying a can.) Don't lift beyond the point of pain. Slowly lower your arm. Repeat the exercise until your arm is tired. Then do the exercise with your left arm.

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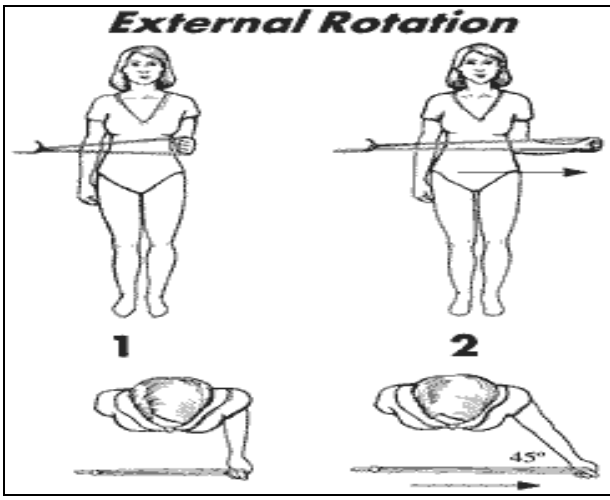
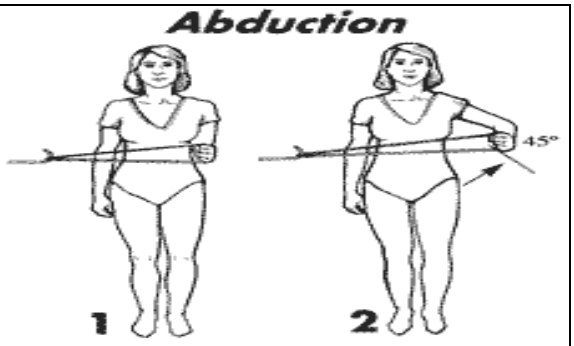
These exercises are performed using elastic rubber tubing, one particular brand is Theraband.

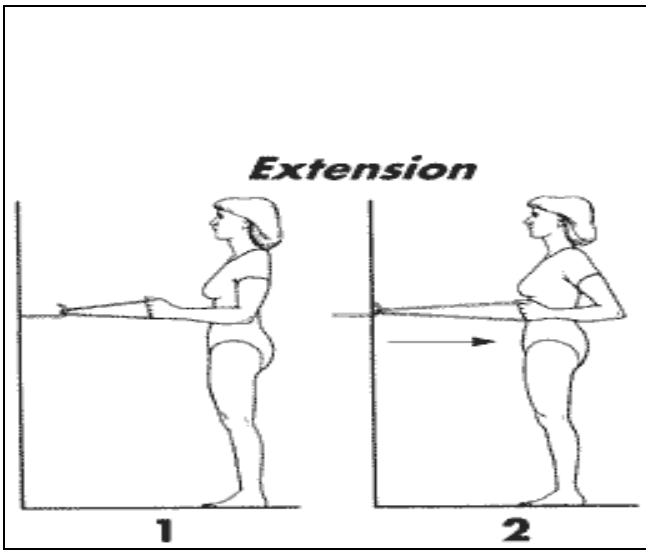
Exercise 6



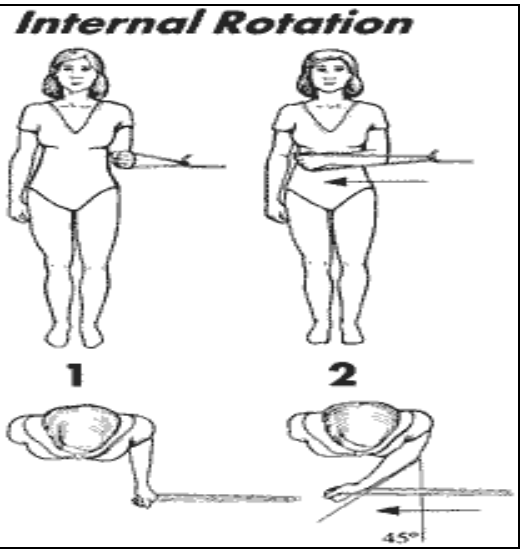
Exercise 7



Exercise 8



Exercise 9



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What else can I do?

Some people stop playing sports and avoid things that might hurt their shoulder again. If you don't want to give up sports or other activities, ask if you can do resistance and weight-lifting exercises to help your shoulder muscles grow stronger.

Prolonged Raised Position of Shoulders Holding any muscle in one position too long can cause muscle strain. For example, if a typist's keyboard is too high, the shoulders must be kept in a raised position. The muscles over the shoulder (that shrug the shoulder) become fatigued and strained. The keyboard should be low enough to allow the shoulders to be down and to be relaxed while typing.

While driving, if the steering wheel is too high or far away, the shoulders may be placed in an awkward position. This can cause muscle strain, especially when driving for long periods of time.

When carrying a backpack (or purse) over one shoulder, or carrying a child, the shoulder is often raised to keep the backpack, purse or child from falling off. Just keeping the shoulder in a raised position for a long period of time can strain the muscles involved in lifting the shoulder. If the backpack is heavy, the risk of muscle strain is much greater.

Posture / Slouching Muscles in the upper back (between the shoulder blades) may become strained as a result of slouching for long periods of time. Slouching/ or forward posture also causes the head to be placed forward and the neck muscles must work harder to support the weight of the head. This slouching also narrows the space that the rotator cuff tendons pass through in the shoulder joint and may cause injury over time. The rib cage rotates forward due to slouching and weakened muscles. This forward rotating rib cage reduces vital lung capacity which directly correlates to life expectancy. Therefore corrections of posture is vital to any shoulder assessment and rehab.

Stress and Shoulder Pain Stress raises stress hormones, which cause muscles to contract, especially muscles in the shoulders and the back of the neck. Neck and shoulder stiffness may occur from stress or straining a muscle and may be a combination of both. Massage therapy can be helpful to relax tight, stressed muscles. For long-term chronic stress, nutritional & hormonal supplements may be required.

Chiropractic treatment of the cervical and thoracic spine is extremely important in the management of shoulder disorders, as these spinal nerves control motor and sensory input to the shoulder tissues. Any loss of the proper cervical spinal curve creates increased stress and tension on both the cervical muscles and the shoulder muscles. Any abnormal spinal scoliosis or lateral curvature will also place increase stress and tension on the upper back and shoulder muscles. Chiropractic manipulation of the spine and the shoulder joint will improve joint mechanics and function, reduce muscle tension, and allow for improved range of motion and greater flexibility. Regular chiropractic can also be preventative to arthritic changes commonly associated with the aging spine.

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