

# The Shoulder Complex: Rotator Cuff

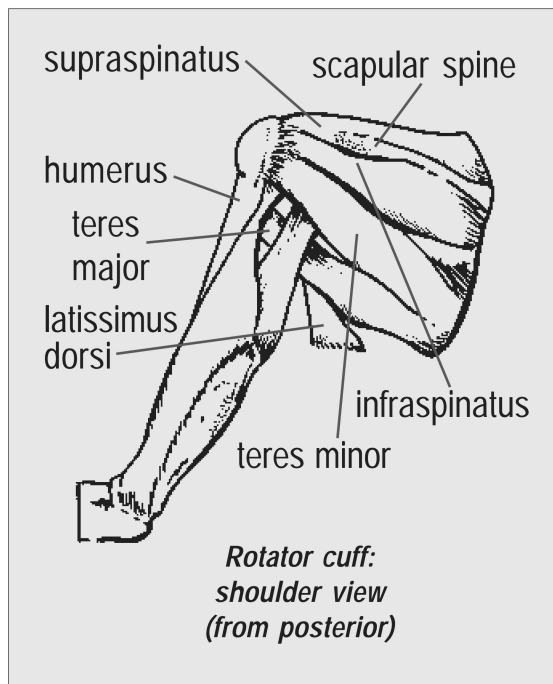
By Tracy Anderson

I am sure that most everyone has heard someone say “I think I hurt my rotator cuff”, or even you have said it yourself. How many actually know what the rotator cuff is, or its function? In this article, I will cover the anatomy of the rotator cuff, and list some common injuries and tests so you can gain a better understanding of the rotator cuff. Remember though, if you think you might have an injured rotator cuff, to consult your physician, don't try to treat it yourself, you could just make it worse. Rotator cuffs take a long time to heal, and your about to find out why.

First lets start off with some basic anatomy of the rotator cuff. Some of the terminology might be technical, I will try to explain things in easy terms. The rotator cuff is made up of several different tendons and covers the top, front and back of the shoulder (humeral head). These tendons come together and form a band from the tendon endings of four muscles. These four muscles are the *subscapularis*, *supraspinatus*, *infraspinatus*, and the *teres minor*. These muscles help keep the head of the *humerus* rotating against the *glenoid fossa*, of the scapula, during joint movement. In other words, the rotator cuff keeps your arm attached to your shoulder when you move. It's not as difficult as it sounds.

The *subscapularis* muscle begins (originates) from the *subscapular fossa* of the scapula, crosses the front of the shoulder joint, and ends

at the top of your arm (lesser tubercle of the *humerus*). A *fossa* is a slight depression in a bone where muscles attach. This *fossa* is on the front side of your scapula, between the scapula and rib cage. The function of the *subscapularis* is to internally, or medially, rotate your arm



(*humerus*) and reinforces the front part (anterior capsule) of the shoulder joint. The *subscapularis* lies between the scapula and the rib cage. Hold your arm straight out in front of you, with palm down and turn your thumb toward the floor. This motion is called medial rotation, and your *subscapularis* does this. If you feel pain during this motion, you may have injured this part of your rotator cuff.

Now imagine that you are looking at someone else's back. The *supraspinatus* starts from the *su-*

*praspinosus fossa* of the scapula. The *supraspinatus* is the depression on the top portion of your scapula. The *supraspinatus* passes underneath the *acromion* process (the little bone on the top of your shoulder), and lies directly on top your shoulder (humeral head), and ends (inserts) at the top of your arm (greater tuberosity of the *humerus*). The function of the *supraspinatus* is to abduct or raise the arm laterally from the side, like when doing side dumbbell raises for your delts. This tendon is vulnerable to degenerative changes because of its location and because it gets compressed during shoulder movement.

The *infraspinatus* starts at the bottom half of the scapula (*infraspinous fossa*), and inserts onto your upper arm (greater tubercle) just below the *supraspinatus*. The *infraspinatus* covers the back portion of your shoulder (humeral head) and functions

to rotate the arm laterally, like pronating the whole arm. Again, hold your arm straight out, but turn it counter-clockwise, if you feel pain here you might have injured your *infraspinatus*. It also helps in horizontal abduction, such as when working your rear delts. To feel this, hold your arms straight out in front of you, and while keeping them straight, bring them back. This movement is called horizontal abduction.

The last muscle involved in the rotator cuff is the *teres minor*. The



*teres minor* muscle is closely related to the *infraspinatus*, in both anatomical and functional means. The *teres minor* muscle starts on the back side of the of the scapula (axillary border) and ends at the same place as the *infraspinatus* (greater tubercle of the humerus). Like the *infraspinatus*, it covers the back of the shoulder (humeral head) and externally rotates the arm (*humerus*) and also assists in horizontal abduction.

Now you should have a basic understanding of the anatomy and function of the rotator cuff. Now comes the fun stuff, I will list some common maladies and tests for each muscle. Remember that this is for your personal information, and is not intended to treat or diagnose any problems you might have.

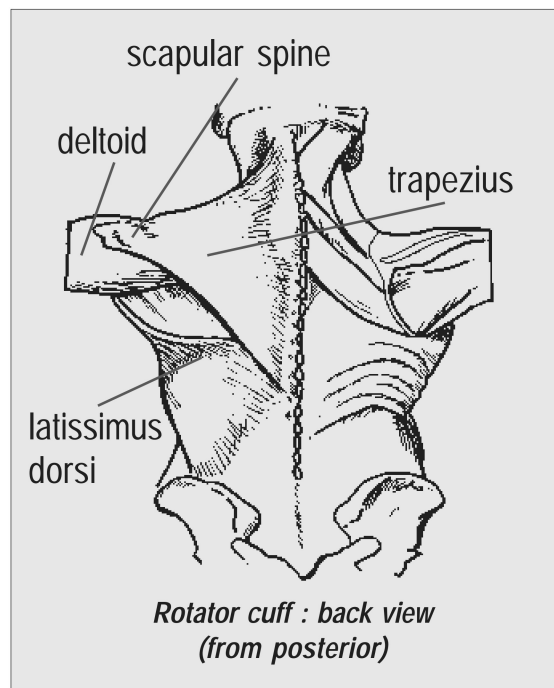
### Rotator Cuff Tendonitis

Simply by the name you should be able to figure this one out, it simply means inflammation of the rotator cuff. Pain will be felt in the deltoid region. You can feel the pain when using weight during movement and determine which muscle may be affected. By abducting your arm, you would test your *supraspinatus*. Remember abducting means that you are moving your arm away from your body, like during dumbbell lateral raises for your side delts. Hold your arm straight out to your side and turn your arm counter-clockwise (external rotation) this will result with pain in the *infraspinatus* and/or *teres minor* muscles. Your *subscapularis* will be affected by turning your arm clockwise (internal rotation).

Often when the pain is felt in the front of the shoulder, rotator cuff tendonitis is confused with bicipital

tendonitis. With bicipital tendonitis, pain can be felt while using resistance when flexing your elbow, like doing a curl, or supinating your forearm. A professional would have no problem distinguishing between the two, this is why you should not diagnose or treat yourself. Then when you start back, start with the same rules as above.

After you do these simple move-



ments, and you feel pain, some simple steps can be taken to minimize further injury. If the pain is slight, try stretching your shoulders before, during and after workouts. After workouts put some ice on your shoulder to help reduce the swelling, for about 20 minutes. Even though you can't see the swelling, it is probably swollen internally. If the pain continues after icing it, wait about another 20 minutes and then put some heat on it to increase blood flow to the area. You should use light weight with high reps for your workouts. This will pump blood into the area and help speed recovery.

If the pain is worse, but you can still move your arm, without making

funny faces, then do the same as above. But, leave out any compound movements during workouts, and still use super light weights. If during workouts you feel the pain growing, you should stop and ice it as soon as you can. When this happens, you have aggravated the area, and your body is telling you that is enough. It would be even better if you took a week off and let it start healing itself.

If the pain is bad, then you should consult your physician, or physical therapist. I know most of you don't want to miss your workouts, that is why I listed some common treatments. But, as soon as you feel pain, you really should see a therapist. If you ignore the pain, it will just keep getting worse, and will eventually halt your workouts completely. So which would you rather do, miss a week or a year?

### Impingement and Rotator Cuff Tests

By using the drop arm test you can get a decent idea of a rotator cuff injury. Raise your arm 90 degrees to your side and then ask someone to apply gentle pressure as you slowly lower your arm. Around 30 degrees you would no longer be able to gradually lower your arm, and your arm would fall to your side. This simple test will help you find out if it is really a rotator cuff injury or something else. If you fail this test, then your injury may be more serious than you think, and you need to consult your doctor.

### Test for Anterior Instability

This test is called the sudden jerk test. Raise your arm to 90 degrees to your side and rotate it clockwise. Have someone hold your scapula with one hand and apply gentle pres-

sure to your upper arm. As you move your arm backward behind your body, look for a sudden jerk as your arm (humeral head) slides out of your shoulder joint socket (*glenoid fossa*). Failing this test, is not good. This means that your shoulder has no stability in the front, and you defiantly need to go to the doctor.

How is this useful?

The next time you do any upperbody work, think to yourself, "how is my rotator cuff moving". Ask yourself if you are moving in the correct plane of motion. Every body has a natural plane of movement, and if you go outside this

plane, you place excess stress on your rotator cuff, and eventually it will wear down. Tendons, in general, have a very low blood supply, and take a lot longer to heal than muscles do. If you strain a tendon it may take 3-6 weeks to heal, a muscle may heal within a week. Of course all this depends on the severity of the strain. Using proper form during exercises will allow you to work out longer and harder. You won't have to stop when your joints start hurting.

Some basic exercises will help strengthen these rotator cuff muscles and help strengthen your shoulder joint. By doing the motions described within this article, with very low resistance and high reps, you will fa-

tigue the muscles, and pump a lot of blood into the area, which will increase the blood supply to the tendons that make up the rotator cuff. These muscles have little range of motion, when trying to isolate them, so it is imperative to stay with good form and light weight. Stretching during exercise will help keep your shoulders more relaxed and relieve tension. This will decrease the recovery time between sets.

Most every exercise you do for your upper body, involves the shoulders in some way. By taking care of them now, you will have less chance of injury as you age, as with any other system in the body. ■

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