

## *The Rotator Cuff - An Overview*

The rotator cuff is a combination of four muscles (supraspinatus, infraspinatus, teres minor, and subscapularis; commonly known as the “SITS” muscles) that work to stabilize the head of the humerus during all shoulder movements (essentially most upper body movements). It keeps the humerus stable and centered in the shoulder joint to allow other muscles to function properly. Think of them as guy wires pulling on a tent pole: the supraspinatus pulls the head of the humerus into the glenoid fossa from above. The infraspinatus pulls it in from the rear. The teres minor pulls it in from bottom/rear. And the subscapularis pulls it in from the bottom/front. Some sources define the cuff as the tendons of these four muscles, but as massage therapists we use a broader definition that includes the muscles.

A healthy rotator cuff stabilizes the shoulder joint so we can swim, dance, play tennis, throw a ball, play golf etc. An injured cuff compromises the function of all the muscles surrounding the joint.

In addition to serving this stabilizing function, the rotator cuff also counteracts the upward pull of the deltoid during abduction and flexion by pulling down and in on the head of the humerus. If it did not exert this downward/inward force, the head of the humerus would have an unpleasant collision with the acromion process of the scapula (the roof of the shoulder). It's quite a graceful duet if everything is working properly.

Another way the rotator cuff works is as a decelerator. If you throw a ball or swing a tennis racket, first you externally rotate your shoulder as a wind up, then forcefully internally rotate as you throw or hit the ball. What keeps your arm from flying off your body? The rotator cuff, specifically the infraspinatus and teres minor. These two small powerhouses are the only external rotators of the shoulder joint. They have to work very hard to counterbalance the powerful internal rotators which outnumber them. (There are five internal rotators of the shoulder joint: pectoralis major, anterior deltoid, subscapularis, latissimus dorsi and teres major.)

In addition to the stabilizing and deceleration functions, the rotator cuff also performs movements:

- Subscapularis: internal rotation
- Infraspinatus and teres minor: external rotation of the humerus
- Supraspinatus: abduction of the humerus

In summary, the rotator cuff:

- Stabilizes the head of the humerus during all shoulder joint movements.
- Counteracts the upward pull of the deltoid during abduction and flexion of the humerus by exerting a downward pull on the head of the humerus.
- Decelerates the arm when you throw something or swing a golf club, etc.
- Provides movement: internal/external rotation and abduction of the humerus.

These are busy muscles that are constantly multitasking!

Of course the shoulder complex has quite a few ligaments supporting it also:

1. Acromioclavicular: acromion process to clavicle
2. Coracoacromial: coracoid process to acromion process
3. Coracoclavicular: coracoid process to clavicle
4. Coracohumeral: coracoid process to humerus
5. Glenohumeral: glenoid to humeral head

The rotator cuff is quite powerful in that it generates a force of 9.6 times the weight of the limb and generates maximum force at 60 degrees of abduction.

Take a moment today to appreciate your wonderful rotator cuff that works hard all the day long!

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