

# Rotator Cuff Strength, Glenohumeral Joint Stability and an Active Warm-up for Throwing

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In order to perform the throwing motion in a safe and efficient manner, we must be pain-free, have good ROM, strong muscles and a stable glenohumeral joint. In this article, we will focus on an active warm-up for the shoulder along with rotator cuff strength and joint stability.

The stability of the glenohumeral joint depends on soft tissue integrity, including the rotator cuff muscles, the cartilaginous glenoid labrum and the joint capsule. The joint capsule contains the glenohumeral ligaments.<sup>1</sup> These ligaments, along with the rotator cuff muscles and the glenoid labrum, can be further divided into static and dynamic stabilizers of the glenohumeral joint.<sup>3</sup>

The dynamic stabilizers include the rotator cuff muscles, which consist of the supraspinatus, infraspinatus, teres minor and subscapularis. They also include the scapular muscles, which include the serratus anterior, pectoralis, latissimus dorsi and rhomboids. These larger muscles that surround the shoulder are responsible for controlling scapular stability and the glenoid position and for producing the forces necessary for glenohumeral movements.<sup>2</sup>

The glenoid labrum and the joint capsule serve as the static stabilizers by deepening the glenoid fossa and maintaining negative intra-articular pressure of the joint.<sup>1</sup> The superior, middle and inferior glenohumeral ligaments attach to the labrum, and their function is very important for glenohumeral static stability.<sup>1</sup>

The exercises used for strengthening and stabilization can be and are often used for an active warm-up prior to throwing. Many think that throwing light is an active warm-up. I assure you it is not. That being said, there are many ways to prepare and ready the shoulder and body to throw. The important thing to know about throwing is that we should warm up to throw, not throw to warm up.

## References

1. Friedman RJ, Blocker ER, Morrow DL. Glenohumeral instability. *J South Ortho Assoc.* 1995;4:182-99.
2. Glousman RE. Instability versus impingement syndrome in the throwing athlete. *Orthop Clin North Am.* 1993;24:89-99.
3. BRIAN L. MAHAFFEY, M.D., AND PATRICK A. SMITH, M.D. Shoulder Instability in Young Athletes. *Am Fam Physician.* 1999;59(10):2773-2782



**External Rotation** Attach the TheraBand at waist level to a doorknob or post. While standing sideways to the door and facing straight ahead, grasp one end of the band and pull all the way through until it is taut. The elbow is placed next to the side with the hand as close to your chest as possible. Taking the cord in the hand, 'set' the shoulder blade and move the hand away from the body as far as it feels comfortable. Return to the start position. Perform 2 sets of 20 repetitions.



**Internal Rotation** Attach the TheraBand at waist level to a doorknob or post. While standing sideways to the door and facing straight ahead, grasp one end of the band and pull all the way through until it is taut. The elbow is placed next to the side and is flexed to 90 degrees. Taking the band in the hand, 'set' the shoulder blade and move the hand toward the belly as far as it feels comfortable, or to where the endpoint of pain limits you. Return to the start position. Perform 2 sets of 20 repetitions.



**Lateral Raises** Stand with the arm at your side with the elbow straight and the hands rotated so that the thumbs face forward. Raise the arm straight out to the side, palm down, until the hands reach shoulder level. Do not raise the hands higher than the shoulder. Pause and slowly lower the arm. Perform 2 sets of 12 repetitions.



**Standing forward flexion ('full-can') exercise** Stand facing a mirror with the hands rotated so that the thumbs face forward. While keeping the shoulder blade 'set' and keeping the elbows straight, raise the arms forward and upward to shoulder level with a slight outward angle (30°). Pause for one second and slowly lower and repeat. Perform 2 sets of 12 repetitions.



**Sidelying external rotation** Lying on your side, bend your elbow to a 90-degree angle and keep the arm firmly against your side with your hand resting on your abdomen. By rotation at the shoulder, raise your hand upward, toward the ceiling through a comfortable range of motion. Hold this position for 1 to 2 seconds, and then slowly lower the hand. Perform 2 sets of 10 repetitions.



**Prone rowing exercise** The starting position for this exercise is to lie face down on your bed with the arm hanging freely off of the side. While keeping the shoulder blade 'set', raise the arm up toward the ceiling while bending at the elbow. The elbow should be drawn along the side of the body until the hands touch the lower ribs. Always return slowly to the start position. Perform 2 sets of 15 repetitions.



**Prone horizontal abduction ('T's')** The starting position for this exercise is to lie face down on your bed with the arm hanging freely off of the side. Rotate your hand so that the thumb faces forward. While keeping the shoulder blade 'set' and keeping the elbows straight, slowly raise your arm away from your body to shoulder height, through a pain-free range of motion. Hold that position for 1 to 2 seconds and slowly lower. Limit the height that you raise the arm to parallel to the floor. Perform 2 sets of 10 repetitions.



**Prone scaption ('Y's')** The starting position for this exercise is to lie face down on your bed with the arm hanging freely off the side. Keep the shoulder blade 'set' and keep the elbows straight. Slowly raise the arm away from your body and slightly forward through a pain-free range of motion (so that your hand now has the thumb facing up, and is aligned with your forehead). Hold that position for 1 to 2 seconds and slowly lower. Limit the height that you raise the arm to 90 degrees, or in other words, horizontal to the floor. Perform 2 sets of 10 repetitions.



**Prone external rotation at 90° abduction ('U's')** Lie face down on a table or bed with your arm hanging over the side. Raise the arm to shoulder height at a 90° angle to the body. While holding the arm in this position, rotate the hand upward, until the hand is even with the elbow. Hold one second and slowly let the hand rotate to the starting position and repeat. Perform 2 sets of 10 repetitions.