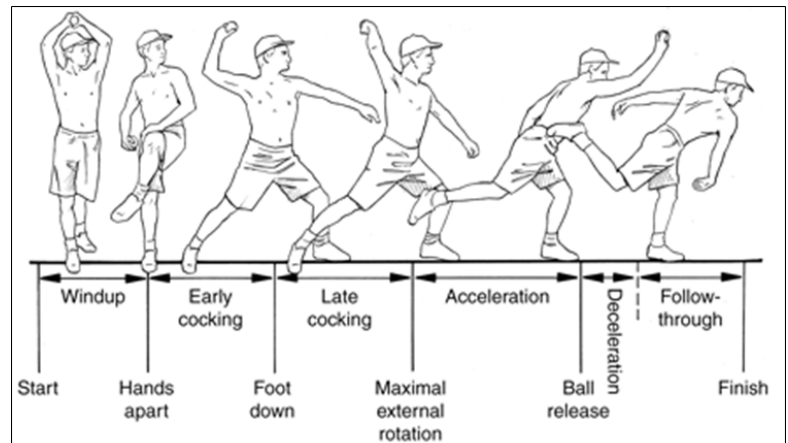


Poor rotation mechanics, overuse result in rotator cuff injuries

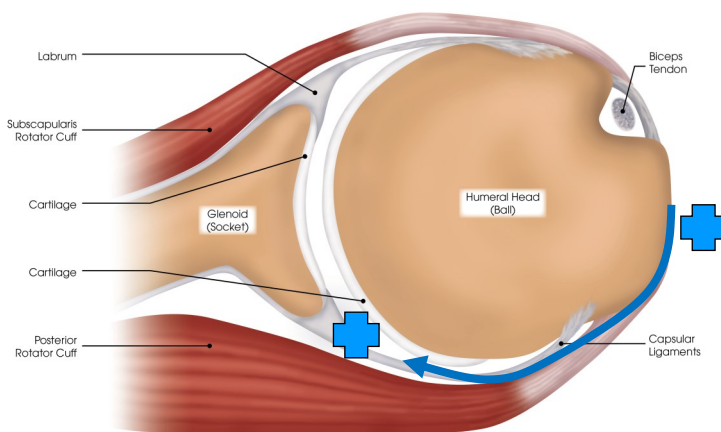
Anyone who has observed the throwing motion of a pitcher knows how unnatural it is from the early cocking phase when the hand and arm are behind the pitcher's head, through the late cocking phase when the arm is actively moving forward and in maximum external rotation through acceleration, deceleration and follow-through. In less than two seconds, this kinetic chain requires a sequence of body segment motions involving the legs, trunk, shoulder and arm. When this motion is performed repetitively, the wear and tear from the extreme throwing forces challenge the physiologic limits of the shoulder and surrounding tissue.



← 2 seconds →

One injury that results from overuse and poor throwing mechanics is internal impingement that affects the rotator cuff muscles. This occurs when the arm is cocked backward to throw and the humerus (upper arm bone) rotates until there is contact between the labrum (thick tissue) on the glenoid (socket) and the undersurface of the rotator cuff muscles on the humeral head (ball). This repetitive contact results in a tearing of the labral and rotator cuff tissues. In addition, repetitive throwing can cause the anterior (front) ligamentous stabilizers of the shoulder to also stretch out and allow the humerus to shift

forward, thus increasing the severity of internal impingement. The condition most often is characterized by pain around the shoulder, especially in the late cocking phase of pitching or overhead hitting in volleyball or tennis and a decrease in velocity and accuracy.



The blue crosses indicate the contact points for internal impingement. As the shoulder rotates (depicted by the blue line) the contact points come together and cause pain for the thrower.

Internal impingement and resulting shoulder injuries are preventable with an appropriate warm up and stretching before practice or competition. Also, resting between appropriate conditioning and proper throwing practice, as well as competition.

Continued on next page

Continued from page 2

technique and mechanics to avoid overextension of the shoulder especially during the late cocking phase.

Painful internal impingement without tears of the labrum or rotator cuff may improve with conservative treatment consisting of:

- Avoidance of aggravating activities
- Medication and ice to relieve pain
- Rehabilitation stretching and strengthening exercises
- Correction of throwing mechanics
- Gradual return to overhead activities

Treatment is geared toward the rotator cuff and shoulder blade muscles to help stabilize the shoulder, as well as normalizing the shoulder range of motion to alleviate the contact in the back of the shoulder. An injection of cortisone to the area around the tendon (within the bursa) is rarely recommended. It is important to correct throwing mechanics and participate in an interval throwing program in order to safely return to activity.



If conservative treatment fails to improve symptoms, or if internal impingement resulted in a labral and/or rotator cuff tear, arthroscopic surgery often is recommended to repair or debride the torn labrum and rotator cuff tissues and sometimes to tighten a stretched anteroinferior capsule (soft tissue surrounding the joint). Return to activity is usually possible after six weeks in a protective sling, four to six months of physical therapy and two to three months of an interval throwing program. In other words, an athlete easily can miss out on a year of playing time or even longer making injury prevention paramount.

Because proper conditioning is so important to help prevent rotator cuff injuries for throwers, Dr. Chudik and his health performance team developed a research-based, in-season stretching and conditioning program to maintain pre-season conditioning levels during the time of highest injury risk and around competition. To download a free copy of this program, or any of the other sport-specific performance programs from OTRF, enter this URL in your browser <http://tinyurl.com/OTRF-baseball/>, or visit otrfund.org and click on the sports performance tab at the top of the home page.