

Throwing Injuries of the Shoulder

Throwing places high repetitive forces across the shoulder resulting in common patterns of injury. The most common site of injury in throwers is the upper extremity. Baseball pitchers are at the greatest risk for sustaining a throwing injury to the shoulder. Traditional rehabilitation exercises for the shoulder are designed to increase the strength and endurance of the dynamic (muscular) stabilizers of the shoulder in an effort to protect the passive restraints (bone, ligaments, and joint capsule) from the high forces seen during throwing. Unfortunately, these exercises are unable to reproduce the extreme forces and torques seen at the shoulder and elbow during the act of throwing. Therefore, one must actually throw in order to train in the preseason, maintain during the off- and in-season, and return to play after an injury. Improper training, poor mechanics, or an acute event can all cause injury to the shoulder.

Common Shoulder Injuries in Throwers

- Subacromial Impingement and rotator cuff tendonitis
- Posterior Capsular tightness with glenohumeral (shoulder) internal rotation deficit (GIRD)
- Imbalance in internal versus external rotational strength
- Proximal humeral physeal stress fracture/epiphysitis (Little league shoulder)
- Internal Impingement
- Micro-instability
- Superior Labral tears
- Partial Thickness Rotator Cuff Tears
- Scapular dyskinesis (abnormal movement)

Frequent Signs and Symptoms

- Gradual onset of pain with throwing
- Pain with a single hard throw
- Weakness or inability to use the injured extremity in athletic activities
- Pain with throwing
- Loss of velocity and accuracy of throwing

Etiology (Causes)

- Repetitive overhead use
- Throwing beyond recommended pitch counts
- Training errors
- Insufficient recovery time or rest
- Poor mechanics



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Photos of x-ray and MRI of Little League Shoulder

X-ray showing widening of the growth plate

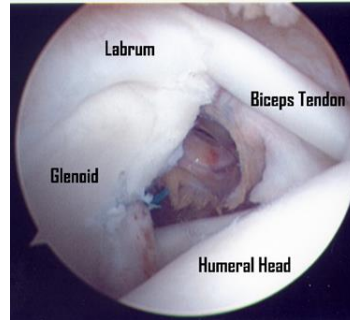


MRI showing swelling and injury of the proximal humeral epiphysis (growth plate)

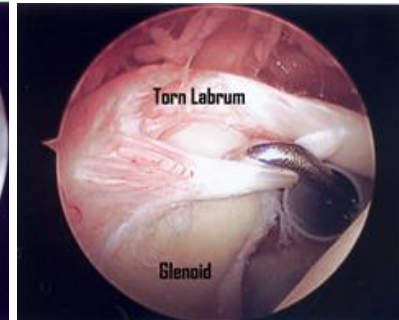


Arthroscopic photo of a labral tear

Normal superior labrum



Torn superior labrum



Risk Factors

- Repetitive overhead motion sports
- Prolonged sports seasons without adequate rest or down time
- Poor throwing mechanics
- Multiple showcase events
- Poor physical conditioning (strength and flexibility)
- Rapid skeletal growth

Preventive Measures

- Promote multi-sport participation that avoids repetitive stress on the same parts of the body
- Exercise moderately, avoiding extremes
- Rest appropriately after vigorous exercise
- Appropriately warm up and stretch before practice or competition.
- Maintain appropriate conditioning:
 - Cardiovascular fitness
 - Muscle strength



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- Flexibility and endurance
- Use proper technique and mechanics
- Use throwing interval programs in the preseason to prepare the arm for the season

Outcomes

For most throwing injuries, conservative treatment consisting of rest, physical therapy, and modalities can help reduce the symptoms and return the athlete to their sport. Some cases that fail conservative treatment may require surgical intervention which can usually be done arthroscopically.

Potential Complications

- Untreated conditions can progress to more complicated issue
- Prolonged healing time if not appropriately treated or not given adequate time to heal
- Recurrence of symptoms or increasing symptoms if not given adequate time to heal or if sports are resumed too soon; appropriately treating the problem the first time reduces the likelihood of recurrence

Treatment Considerations

Whenever throwing or overhead athletes present with shoulder pain, they should be rested from throwing until proper diagnosis and treatment is successful in correcting the problem. For most conditions including impingement, rotator cuff tendonitis, posterior capsular tightness, strength imbalances, early internal impingement, and scapular dyskinesis, conservative treatment including physical therapy and correction of throwing mechanics is often successful. For stress injuries to the growth plate as occurs with little leaguer's shoulder, three to six weeks and sometimes up to 3 months of rest from throwing is required followed by physical therapy and a gradual return to throwing. For structural injury to the labrum or rotator cuff, arthroscopic surgery is often needed to repair the pathology, followed by physical therapy. After treatment of all shoulder throwing injuries, a gradual resumption of throwing activities with a strict interval throwing program is required to allow a safe and injury-free return.

Possible Medications

Avoid nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (DO NOT take within seven days before surgery) as they inhibit early inflammatory events in the healing cascade. Or other minor pain relievers, such as acetaminophen, are reasonable to try. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.



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Modalities (Heat and Cold)

- Cold is used to relieve pain and reduce inflammation. Cold should be applied for 15 to 20 minutes every two to three hours for inflammation and pain and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage with a cloth between the ice and your skin to prevent burning /freezing your skin.
- Heat may be used before performing stretching and strengthening activities prescribed by your physician, physical therapist, or athletic trainer. Use a heat pack or a warm soak.

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