Orthopaedic Observations

A Matter of Medicine…

TM Pending

Prevention of Throwing Injuries in Athletes

By Jennifer Bogardus, MPT

It's that time of year again. The sun is glistening off the newly polished bases. The grass has been freshly cut, and the foul lines, white as newly pressed shirt. America's favorite pastime is in full swing (no pun intended), and we begin to see an influx of baseball and softball injuries come through the door. The most common of which, involves the shoulder.

The shoulder is the most mobile joint in the body, with the ability to achieve well over 1000 positions. This also makes this joint the most unstable. The shoulder joint is made up of the upper arm bone, the humerus, which fits into the glenoid fossa of the scapula. It is secured by both static and dynamic structures. The static structures are primarily the ligaments and labrum. Dynamically, the shoulder is stabilized by the muscles of the rotator cuff, which are the supraspinatus, the infraspinatus, the subscapularis, and the teres minor. Strengthening of these muscles, using proper form, and warming up appropriately can all help to reduce the risk of injury to the shoulder.

Overhand throwing is broken down into four phases, which are, wind up, cocking and deceleration phases. The most frequently seen injuries are tendonitis (chronic, overuse injury), labral tears, and rotator cuff tears (which are usually more acute in nature). Symptoms commonly seen with tendonitis are painful overhead activities, tenderness to the touch, and a pinch and release sensation with reaching overhead. Tendonitis occurs when a repetitive motion causes a tendon to become inflamed and irritated. This problem is usually treated conservatively with rest and ice or heat in conjunction with an oral anti-inflammatory medication. For more severe cases, the doctor may recommend a course of physical therapy or injection of steroids. The most effective way to target this problem is to remove the activity that is causing the problem, and allow the tendon to rest and recover.

The labrum is a piece of cartilage that helps to deepen the socket of the joint, and becomes injured during the second, cocking phase of throwing. Labral tears also commonly occur with an acute dislocation of the shoulder. Symptoms commonly seen with this injury are again, pain with overhead activities, a clicking, and loss of range of motion. This injury requires the care of a doctor, and in most cases, surgical intervention to fix the torn cartilage.

The rotator cuff, as stated before, is a group of four muscles that function to provide mobility to the shoulder, and also to act to stabilize the otherwise, unstable joint. A rotator cuff tear generally presents with pain, loss of strength and loss of motion. Very small tears can be treated conservatively with oral medications and physical therapy. Medium and large tears are often treated surgically, where they are sutured back together. There is a fairly significant rehab process for this kind of surgery, and athletes may not be allowed to return to full sports activity for 6 months or longer depending on the sport and the severity of the repair.

The most important thing that athletes and their coaches can do is to decrease the risk of these kinds of injuries through strengthening, practicing and teaching appropriate body mechanics, warming up and stretching appropriately, and allowing rest for the body's muscles and joints. Strengthening of the rotator cuff should be part of every athlete's work out routine. These kinds of exercises include resisted internal and external rotation, flexion and abduction exercises and scapular strengthening. Strengthening of the core muscles of the body (the abdominals and back) are also essential in decreasing strain placed on the shoulder with throwing activities. If you think of your arm as the whip and your trunk and legs as the anchor, you see how the core needs to be strong and stable to help provide momentum to the arm. Likewise, the arm (the whip) needs to assist in slowing down the momentum through the deceleration phase of throwing, making those rotator cuff muscles very important. A great way to work on all of these movements is through

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functional training. This uses resistance in the same motion produced during throwing, both in its' forward and opposite motion to strengthen. This kind of strengthening is so effective because it allows the muscles to work in conjection with one another in all of the directions they are being used . This can be done using resistance bands and wrist weights.

Appropriate warm up and stretching is also very important. When the muscles are "off duty" they are at their resting length. They become overstretched during athletic activity, so it is important to help lengthen them prior to high level activities. The arm should be gently stretched in all major directions for approximately 5 slow, sustained stretches prior to the warm up.

Practicing appropriate technique is also extremely important in the prevention of injury. Coaches should pay careful attention to their athletes during throwing activities, (especially to their pitchers), to ensure that they are using proper mechanics at all times. It is also important to pay attention to fatigue, as stronger muscles will over compensate during an activity when fatigue occurs, pulling the motion into an abnormal plane. Pitchers should also be taught more basic plane pitches first (fast ball and change up) and move to breaking balls last. This same progression should be followed when warming up as well.

Prevention is the key to any injury. Young athletes need to be very aware of their bodies and how much stress they are placing on them. For those athletes who go on to great successes in their sport, it is important to preserve their joints for future play. And, for the many of us who go on to things like the workforce and parenthood, well playing catch with our kids means just as much.

Jen graduated from Quinnipiac University with a Bachelors of Health Science in 2001, and then with her Masters in Physical Therapy in 2002. She has been a therapist for 5 years, where she has gained extensive experience in the areas of trauma and wound care at Yale New Haven Hospital, and has 4 years of homecare experience prior to joining the team at TOG. Jen played Division 1 Softball, and now enjoys applying her athletic experience to her patients in the outpatient setting. Jen has spoken at the CPTA conference, and she recently taught as an assistant instructor in Quinnipiac's graduate physical therapy program.