

Orthopaedic experts examine overhead

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Baseball season is underway. With the pros, college and high school teams taking to the baseball diamonds and Little Leaguers soon to follow, orthopedic specialists at Rush University Medical Center are cautioning players to be aware of and take precautions against throwing injuries. An analysis of pitching injuries by researchers at Rush is published in the March/April issue of *Sports Health*.

"Throwing a [baseball](#) is one of the fastest and most violent maneuvers that any joint in the body is subjected to. The violent and rapid motion places numerous structures in the [shoulder](#) at risk for injury," said Dr. Shane Seroyer, lead author of the report and sports medicine fellow at Rush.

Prevention of injury is the key to a long career. Pitchers, especially youth pitchers, should limit the number and types of pitches thrown to minimize the risk of injury.

"For pitchers under 14 years old, we encourage fast ball and change-up pitches and discourage the use of a curveball to prevent injury," said Dr. Charles Bush-Joseph, sports medicine specialist at Rush and co-author of the report.

Bush-Joseph breaks down the number and type of pitches appropriate for various age groups.

- 9-10 years old: no more than 50 pitches/game and 75

pitches/week

- 11-12 years old: no more than 75 pitches/game and 100 pitches/week
- 13-14 years old: 75 pitches/game and 125 pitches/week
- 14 years old: begin throwing curveball pitch
- 17 years old: begin throwing slider pitch

According to Seroyer, if injury does occur, the early discovery of symptoms, followed by conservative management with rest and rehabilitation can help to decrease the need for surgery in the future.

Shoulder [pain](#) may occur during any of the six phases of throwing, which are wind-up, early cocking/stride, late cocking, acceleration, deceleration and follow-through. According to the sports medicine specialists at Rush, diagnosing pain from overhead throwing is one of their more difficult challenges, but shoulder pain most often emanates from one of the following five sources: damaged cartilage, rotator cuff injury, abnormal scapula movement, impingement, and neurovascular disorders.

Injury to cartilage (the labrum), which surrounds the shoulder joint, occurs with trauma to the shoulder joint. Labral tears are among the most common injuries for overhead throwers and generally result from the cocking and acceleration phases of overhead throwing. Cartilage also wears down with age and use.

Damage to the rotator cuff, a term given to the group of muscles and their tendons that act to stabilize the shoulder, can lead to tendonitis and muscle tears. Although one specific movement could cause injury to the rotator cuff, this type of injury is often the result of the "wear and tear"

from the overhead throwing motion.

The thrower will often complain of diffuse shoulder pain aggravated by overhead activity and will notice weakness and decreased velocity. Night pain down the arm to the elbow is also common. Conditioning and proper throwing techniques is critical in preventing rotator cuff injury as the results of rotator cuff repair surgery have been disappointing in elite throwers.

Scapular (shoulder blade) pain is the result of abnormal scapular movement, malposition and snapping of bursal tissue around the scapula. The scapula provides a stable base for muscles in the shoulder, thus abnormal positioning and movement can force the arm into strenuous positions and lead to decreased motion and rotation or "dead arm" syndrome. Muscle strengthening and conditioning are necessary to keep the scapula in place for an effective overhead throw. Initial treatment for scapular pain is rest, analgesia (pain relievers), and nonsteroidal anti-inflammatory drugs.

Impingement results from pressure on the rotator cuff from part of the shoulder blade as the arm is lifted. Pain during the late cocking and early acceleration phases of throwing is most common. Impingement can cause local swelling and tenderness in the front of the shoulder, and pain and stiffness may be felt when the arm is lifted or lowered from an elevated position.

Conservative treatment for impingement includes oral, nonsteroidal anti-inflammatory medication, stretching to improve range of motion, injections of local anesthetic and a cortisone preparation to the affected area and rest. Rotator cuff and shoulder blade strengthening and conditioning will help shorten recovery time. Difficult cases may require surgery to remove the impingement in order to create more space for the rotator cuff, allowing for freer movement to lift the arm without pain.

Neurovascular disorders occur when nerves or blood vessels are being compressed, blocked or pinched causing fatigue, loss of velocity, vague shoulder pain, a sense of heaviness, achiness or cramping in the arm. Numbness, tingling, weakness of grip and loss of manual dexterity may also be symptoms experienced after the onset of throwing. Although rare, neurovascular disorders cause significant damage and recovery may be difficult. Successful non-operative treatment methods include rest and thrombolytic and anticoagulation injections used to diffuse blood clots. However, thirty percent of throwers will not respond to conservative measures and will require surgical intervention.

"Maintaining conditioning and efficient throwing mechanics can alleviate potential sources of injury and pain. Core conditioning, scapular and rotator cuff muscle strengthening, and flexibility programs are essential off-season components to injury-free throwing," said Seroyer. "Early recognition of shoulder pain is essential, as early conservative intervention is often enough to prevent development of more serious conditions."

Source: Rush University Medical Center ([news](#) : [web](#))

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