Return to Throwing Following an Injury

Craig Duchesne, ATC

Causes of Throwing Injuries

Throwing injuries in pitchers can occur at the elbow or shoulder and are usually the result of overuse and repetitive high stresses. Rate of injury is highly related to the number of pitches thrown per game, the number of innings pitched per season, and the number of months spent pitching each year. Specific risk factors include:

- Shoulder Range of Motion Deficits
- Strength Deficits
- Improper Biomechanics
- Inadequate Rest and Recovery
- Inadequate Training & Overuse
- Growth related risk factors

Physical Therapy Evaluation

The physical therapy evaluation begins with a comprehensive history including but not limited to: sport history, circumstances around the development of pain, and growth history. Next, a thorough physical assessment will be performed. Information gathered during the evaluation will enable the physical therapist to develop a patient specific plan of care.

Physical Therapy Sessions

The individualized plan of care developed during the initial evaluation will direct the physical therapy treatment program. Activities will be geared towards physical impairments and risk factors with the goal of restoring pain free motion and improving strength.

Throwing injuries are unique in each case, and this requires an individualized program. Due to individual variation, there is no specific timeframe for completion of this program. Completion is based on performance improvement criteria and goals. It is only appropriate to progress to sport-specific throwing activities when goals set forth in the initial evaluation are achieved and pain free motion is restored. When the physical therapist or athletic trainer determines that injury risk factors have been addressed, it is strongly recommended that the athlete transition to an interval training program carried out under close supervision. This is based on thorough research implicating a serious risk of injury for

high school aged throwers, 19.7% for shoulder/arm injuries for male baseball players and 16.3% for female softball players.[1] A more comprehensive study (1988-2004) on collegiate players reported 23.4% and 16% shoulder injury rates in baseball, for games and practice respectively.[2] The data suggests that preventative strategies and exercise programs may need to be further developed to prevent these types of upper extremity injuries.

Access Acceleration "Throwing Athlete Strength and Conditioning Program"

The "Throwing Athlete Strength and Conditioning Program" is designed to prepare throwing athletes for the rigors of their sport. Activities are geared towards minimizing the risk of injury or re-injury and to give throwers the physical tools they need to maximize performance. The program starts with a functional based assessment called the Functional Movement Screen (FMS), to address the fact that overhead throwing involves the entire "kinetic chain." Meaning, the physics of throwing includes a transfer of kinetic energy from the feet through the legs, pelvis, trunk, and out the shoulder through the elbow and hand. The FMS screening process helps to identify whole body imbalances which will help to direct corrective exercises.

The goals of the program are to:

- Improve the functional strength and conditioning of each component of the kinetic chain
- Assist in the developing a smooth transfer of energy through the chain
- Increase endurance of the shoulder, core
- Educated the athlete on proper warm-up
- Enable athlete to return to pain free throwing by gradually increasing stress to the throwing arm
- Help athlete to meet performance potential

In summary, research and experience has identified essential elements to prevent injury and to facilitate safe return to throwing following injury. Specific exercises that augment muscular activity of targeted muscles may be used in rehab and performance enhancement programs to prevent injury. A multi-phase rehabilitation and post rehab transition program is highly recommended. Strengthening shoulder and elbow muscles that resist distraction as well as improve trunk strength and flexibility to maximize throwing velocity will make a significant difference in prevention of injury. [3]

[1]Powell JW, Barber-Foss KD. Injury patterns in selected high school sports: a review of the 1995–1997 seasons. J Athl Train. 1999; 34(3): 277–284.

[2]Dick R, Sauers EL, Agel J, Marshall SW, McCarty K, McFarland E. Descriptive epidemiology of collegiate men's baseball injuries: National Collegiate Surveillance System, 1988–1989 through 2003–2004. J Athl Train. 2007; 42(2): 183–93.

[3]Stodden DF, Fleisig GS, McLean SP, Andrews JR. Relationship of biomechanical factors to baseball pitching velocity: within pitcher variation. J Appl Biomech. 2005; 21 (1): 44–56.