

Teaching Throwing Mechanics to Youth Players

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According to the American Academy of Pediatrics, 4.8 million children between the ages of 5-14 years of age will participate this year in organized and recreational baseball and softball.¹ In 1995, 162,000 children were seen in emergency room departments for injuries related to playing ball. The number of injuries increased generally with age with the peak age of 12 years.² 50% of all of injuries requiring medical attention are directly related to overuse.³ The American Sports Medicine Institute compared data researched between 1995-1999 and again from 2000-2004 and noticed twice as many ulnar collateral ligament (UCL) reconstructions known as the "Tommy John" surgery in professional level pitchers, four times more UCL reconstructions in collegiate pitchers, and six times more UCL reconstructions in high school pitchers.³

The purpose of this article is to assist coaches and parents of children who participate in children's baseball programs who to instruct in proper pitching mechanics to help prevent injuries. It is important to remember that improper biomechanics of throwing are only one of the major reasons for youth injuries in baseball and softball. Overuse accounts for most injuries and is easily preventable through limiting the number of pitches thrown. Most overuse injuries in adolescent and youth players are asymptomatic, and no matter how well thrown, will still stress the shoulder and elbow joint.⁴ Pitch count limits for youth baseball have been established by Little League Baseball in association with the American Sports Medicine Institute. Together they have developed a Little League Pitch Count Regulation Guide to assist parents and coaches in keeping the number of pitches thrown to a safe limit. You can find the pitch counts at www.Littleleague.org/media/pitch_count_publication.pdf.

The following information was presented by Bud Black at the annual Injury Prevention workshop presented by the National Athletic Training Association and Professional Baseball Athletic Trainers Society in partnership with Major League Baseball. Bud is currently the manager of the San Diego Padres Professional Baseball Club and was a Major League pitcher who won 121 games over 15 years as a left handed pitcher. The information presented was specifically for teaching children proper overhead throwing mechanics. Special "Thanks" go to Bud Black, and the San Diego Padres Baseball Club for hosting the pitching demonstration at Petco Park during the breakout session of the workshop.

There are 5 "absolutes" when throwing a ball: 1) how the ball is removed from the glove after catching, 2) how the ball is rotated when as it is removed from the glove and the arm is cocked back, 3) position of the elbow in relation to the shoulder, 4) position of the lead foot as it hits the ground, and 5) hand position at release of the throw.

Taking the ball out of the glove in the proper way in preparation for resultant throw is the first important task observed. As the player removes the ball from the glove hand, thumbs of both hands should be in the "down" position in preparation for cocking the arm back. An easy drill to

perform to work on this skill is for the player to place a ball in each hand, touch them together while moving in a circular motion away from each other while rotating upward and back to the starting position. This "two ball" drill is a basic skill to help players prepare for the overhead throw.

The second "absolute" involves removing the ball from the glove and bringing it back in the "cocking" position. The fingers should remain "on top" of the ball as long as possible as the arm is brought back and raised in the air. The shoulder should not be in extreme external rotation, and you want to make sure you maintain a straight line with your target.

The third "absolute" involves position of the elbow in relation to the shoulder. The elbow needs to remain high so it is slightly above the shoulder height at the time of release. The hand should always be positioned behind the ball in this phase of throwing the ball.

The back foot should remain in front of the rubber while the lead foot strikes the ground pointed directly at the target. The player should land on the ball of the foot, not on the heel. This will cause the foot to internally rotate and change the direction of the pitch. The lead foot should externally rotate at the release of the ball if thrown correctly. If the lead foot is rotated more than 6-8 inches off of a direct line with the target, it will affect the direction of the pitch.

Hand position at the release of the ball should remain behind the ball and causing an upward rotation of the ball as it leaves the hand. Medial or lateral spin of the ball as it leaves the hand will result in poor mechanics. Medial spin results in excess stress/strain to the elbow, while lateral spin effects the shoulder. Follow through should include bending of the trunk, resultant momentum towards the target, throwing hand moving towards the opposite hip, and back foot pointing outside the knee.⁵

Following these pitching mechanics will assist the coach in teaching the player successful and safer pitching motion. All pitchers will change the motion to their own "style", and even a "perfect pitch" thrown repetitively will cause eventual damage to the elbow and/or shoulder. It is extremely important to remove and treat a player from throwing if pain begins and especially if it worsens with increasing throws.

References:

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4. Orr Limpisvasti, MD "Preventing Injuries in Youth Baseball" presented at "Injury Prevention and Treatment Techniques Baseball Medicine Conference" sponsored by National Athletic Training Association, Professional Baseball Trainers Society, and San Diego Padres Baseball, San Diego, CA, January 5, 2007.

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