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OPTM SPORTS & PHYSICAL THERAPY, INC
LOS GATOS SARATOGA

KEEPING FIT WITH OPTM

ELBOW INJURIES IN YOUNG THROWERS

Here's the wind-up and the pitch, ouch! Chronic overuse injuries are occurring more frequently in youth sports. Conditioning and training errors, year round training in one sport, longer competitive seasons combined with rapidly changing physical characteristics are contributing factors. 20-40% of the over 3,000,000 youth baseball players, ages 9-12, annually suffer from elbow pain.

Little League elbow is a valgus overload and distraction force on the medial elbow, which occur during the cocking and acceleration phases of throwing. Lateral side injuries result from valgus overloads seen in the late cocking and early acceleration phases resulting in compressive forces to the radius and capitellum. Overuse syndromes are a direct result of excessive and unnatural stresses on bones and the supporting soft tissue structures. Continued repetitive microtrauma coupled with inadequate recovery time intervals between episodes of stress will damage the elbow. When these pathologic forces

occur in a young thrower's elbow, the result is a specific, age-dependent injury.

An understanding of normal skeletal development, proper throwing mechanics and reasonable workload limits are essential for successful management of an elbow injury. There are 6 ossification centers in the elbow, which appear about every 2 years between ages 2-12. These are usually completely ossified by the mid-teens. In skeletally mature throwers, the anterior bundle of ulnar collateral ligament, UCL, serves as the primary stabilizer and absorbs most of the valgus stress. Cadaveric studies have shown the UCL fails at 32 Nm; pitching 80 mph generates 64 Nm of force, half of which is transmitted through the UCL.

Additionally, a study by C.D. Morgan, found that a deficiency of greater than 20 degrees of shoulder internal rotation at 90 degrees of abduction contributed to medial elbow stress due to the decrease of elbow extension angular velocity over an increased period of time and an increase in the length of time the elbow is in

a valgus loaded position.

Management of elbow pain initially should consist of rest from pitching for 4-6 weeks. Restoration of strength and range of motion to the elbow. Training proper throwing mechanics and core conditioning training should occur during this phase. A progressive return to throwing program can begin over the next 6-8 weeks. The average time to return to competitive pitching is 12 weeks. It is appropriate to have 2 days rest following a series of competitive pitches. Competitive pitching should be limited to 9 months per year. Throwing at a velocity greater than 80 mph should be discouraged in skeletally immature throwers.

OPTM specializes in sports related injuries and considers the maturity level of each competitor, young or old. We apply evidence-based practice and our sports experience to each individual. Our continued pursuit of clinical excellence should make us the physical therapy practice of choice in the Los Gatos – Saratoga area.

MAXIMUM PITCH COUNTS IN GAME SITUATIONS

Age (yrs)	OK to Start Throwing	Pitches per Game	Pitches per Week	Pitches per Season	Pitches per Year
8-10	Fastball	50	75	1000	2000
11-12	Change-up	75	100	1000	3000
13-14	Curve	75	100	1000	3000
15-16	Slider	90	----	----	3000
	Forkball				
	Splitter				
	Knuckleball				
17-18	Screwball	105	----	----	----

Benjamin,HJ, Briner,WV. Little League Elbow. Clin J Sports Med. 2005;15:37-40.