

# Center for Athletic Medicine

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## Elbow injuries in young pitchers

The immature elbow can easily be injured from the repetitive stress of throwing. In children, ligaments and muscles are much stronger than the adjacent growth centers to which the ligaments and muscles are attached. These growth centers, called apophyses, are areas of cartilage where new mature bone formation takes place. Apophyses are responsible for the growth of a particular portion of the bone, and are also points of attachment for muscle groups. Because apophyses are weaker than muscles, ligaments or mature bone, they are more prone to injury. The repetitive valgus stress placed on the elbow during pitching causes traction/stretching on the medial (inner) side of the elbow and compression on the lateral (outer) side. In an immature elbow, this traction on the medial side can cause inflammation of the medial epicondyle apophysis, and small tears in the flexor tendons which attach to this apophysis. This is the condition called Little League elbow. The main symptom is pain on the medial side of the elbow. In the older adolescent, whose muscles are stronger, a single forceful contraction of the flexor muscles can pull on the apophysis causing it to separate from the bone. This is called an avulsion fracture. Symptoms are pain and swelling on the medial side of the elbow. Treatment of these conditions requires a period of complete rest from pitching in order for adequate healing to take place.

Osteochondritis dissecans (OCD) is another condition that can affect young pitchers. OCD occurs when the portion of the humerus called the capitellum loses its blood supply, loosens, and becomes a loose body in the joint. This is caused in part by the compression forces that occur on the lateral (outer) side of the elbow during throwing. The symptoms are pain and swelling, sometimes associated with catching and locking. Surgery is often needed to correct this problem.

The best way to prevent elbow injuries in young pitchers is to encourage proper pitching technique and to limit the number of pitches. Certain pitch types should not be taught until an older age. The following table gives some guidelines for young pitchers. A simple rule to follow is 10 pitches per child's age per 7 day period. So a 12 year old pitcher should be limited to 120 maximum effort pitches per week.

	Maximum pitches	Maximum games
Age	per game	per week
8-10	37-67	1.5-2.5
11-12	50-86	1.5-2.5
13-14	60-92	1.5-2.5
15-16	75-107	1.5-2.5
17-18	90-122	1.5-2.5

## Minimum age for learning pitches

Age	Pitch
6-10	fastball
7-13	change-up
12-16	curveball
12-18	knuckleball
14-18	slider
14-18	forkball
15-19	screwball

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