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YOUR GUIDE TO PHYSICAL THERAPY

VOLUME 2

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“Little League Elbow”

What is Little League Elbow?

Little league elbow is a growth plate injury on the medial, or inner aspect of the elbow. The growth plate, also called the medial epicondylar apophysis, is the attachment site for the group of muscles that flex the wrist and rotate the forearm palm down. Another name for this sports injury is medial epicondylar apophysitis. It occurs in children and teens involved in sports that require repetitive throwing motions. Generally it's pre-high school players, anywhere from ages 10 to 15, with the peak incidence in the 12- to 14-year-old age group. Pitchers' elbows at that age, as are most of their joints, are immature, so they have open growth plates and a tenuous blood supply to those growth plates.



What causes Little League Elbow?

Little league elbow is caused by repetitive throwing. More specifically, there are two phases of the throwing motion that stress the growth plate. The first is the early acceleration phase. During this phase of throwing there is a pulling, or traction force applied to the growth plate on the inner elbow. The second phase of the throwing motion that stresses the elbow is when the ball is released. During this phase, there is a powerful inward and downward snap of the wrist. The growth plate in the elbow is vulnerable to injury because it is made up growth cartilage, a relatively soft substance that is not as strong as bone, muscle or tendons. With repetitive throwing, and not enough rest between throwing activities, the growth cartilage weakens, begins to develop very small cracks and may actually pull apart from the arm bone, like a screw pulling out of a plaster wall.

"I'll tell ya, there's a lot of this going on," says pitching guru Dick Schoonover. "It's bad. Many parents -- and coaches -- don't understand how many pitches a kid should throw. They think, they're young, they're healthy, they can't get hurt." But they can and they do.

What are the symptoms of Little League Elbow?

The most striking symptom little league elbow is pain at the inner elbow. The pain may be severe and occur abruptly after one hard throw, or it may occur gradually over the course of a season. There may also be swelling, redness and warmth over the inner elbow. Pain may be associated with catching or locking.

The elbow will obviously feel better after being rested. In cases of osteochondritis dissecans and associated loose bodies in the elbow, the player may have some locking, catching, persistent swelling and/or loss of movement in the elbow.

How is Little League Elbow treated?

Treatment for little league elbow depends on the extent of the growth plate injury. Usually, if caught early, there is minimal separation of the growth plate and it can be treated with rest, ice and compression wraps. The period of non-throwing may take 4 to 6 weeks to allow proper healing. Sometimes, if this sports injury is minor and caught early, an athlete will be allowed to bat or play an infield position such as first base. If the injury to the growth plate is more severe, or there is significant separation of the growth plate from the bone, casting may be necessary. On rare occasions, the injury is severe enough that surgical pinning is necessary to re-attach the growth plate fragment.



Once healing is complete, there will be a gradual return to throwing. This consists of a functional progression--starting with very light throws from short--distances and progressing to 50 pitches from the mound. This is best directed by a physical therapist. The patient generally starts on a strengthening program as soon as two weeks after the injury has been diagnosed, not only to benefit the elbow but also the shoulder, forearm and hand. Many times the exercises can be done at home after a couple of explanations, but most of the time the patient will benefit from going to a physical therapist a few times, maybe more if he has complicated problems such as loss of movement or ligament stiffness.

Another cause of inner elbow pain is damage to the inner elbow ligament, known as the medial collateral ligament, or MCL. Excessive stress can be placed on the ligament with repetitive hard throwing, particularly when there is poor shoulder strength. Without proper muscle strength of the shoulder, particularly the rotator cuff muscles, there can be a "snap" at the elbow upon release of the throw. Over time this can lead to a tear of the MCL. At Total Rehab, shoulder strength is carefully evaluated along with the elbow in an effort to restore optimal throwing mechanics and prevent future elbow injuries.

Does Little League Elbow cause permanent damage?

Usually not. If caught early and treated properly, little league elbow will heal completely, and there will be no long-term effects to the growth plate. On rare occasions, the cartilage will degenerate, become fragmented and break off inside the elbow joint, causing

loose pieces that need to be surgically removed. This is more common on the lateral, or outside, of the elbow.

Can Little League Elbow be prevented?

There is no way to 100 percent guarantee that a young thrower will not develop little league elbow, but here are some ways to minimize the risk:

1. Always warm up before throwing.
2. Have a coach or parent count pitches. This is a much better and more accurate way to monitor stress on the elbow than counting innings.
3. Remember to avoid hard throws when not pitching (playing infield, throwing at home, pitching lessons, PE class, etc).
4. No curve balls or other breaking pitches until age 14 (or when the pitcher is shaving). Young pitchers should master control of the fastball and change-up before attempting to throw curve balls. The proper curve ball requires a large enough hand for finger placement across the top of the ball, so ball release does not put any stress on the wrist or elbow. Young pitcher's hands are too small for proper finger placement, and they must twist or torque the wrist and elbow to get the ball to rotate. This increases stress on the inner elbow growth plate.
5. At the first sign of elbow pain, stop throwing, and see your doctor for an evaluation.

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Sever's Disease

What's Is Sever's Disease?

Sever's disease, also referred to as calcaneal apophysitis (inflammation of the growth center in the heel bone), is an overuse injury that causes pain, inflammation and tenderness in the heel area of active athletes. This condition is commonly seen in active, growing boys and girls who participate in running and jumping activities.

Two large muscles in the calf, the gastrocnemius and soleus, join together and become the Achilles tendon (heel cord). The Achilles tendon inserts into the growth area of the heel bone. These powerful muscles pull on the heel to push the foot down and propel the body forward during running and jumping exercises. The repetitive pulling of the Achilles tendon can overwork the growth center of the heel bone and lead to this overuse condition.

Physical therapy may be ordered by the physician to instruct the athlete in proper calf and Achilles tendon stretching and strengthening exercises.

The following information details the multiple causes of heel pain in children, including but not limited to Sever's disease.

What is Pediatric Heel Pain?

Heel pain is a symptom, not a disease. In other words, heel pain is a warning sign that a child has a condition that deserves attention.

Heel pain problems in children are often associated with these signs and symptoms:

- Pain in the back or bottom of the heel
- Limping
- Walking on toes
- Difficulty participating in usual activities or sports



The most common cause of pediatric heel pain is a disorder called calcaneal apophysitis (see below), which usually affects 8- to 14-year olds. However, pediatric heel pain may be the sign of many other problems, and can occur at younger or older ages.

What is the Difference Between Pediatric and Adult Heel Pain?

Pediatric heel pain differs from the most common form of heel pain experienced by adults (plantar fasciitis) in the way pain occurs. Plantar fascia pain is intense when getting out of bed in the morning or after sitting for long periods, and then it subsides after walking around a bit. Pediatric heel pain usually doesn't improve in this manner. In fact, walking around typically makes the pain worse.

Heel pain is so common in children because of the very nature of their growing feet. In children, the heel bone (the calcaneus) is not yet fully developed until age 14 or older. Until then, new bone is forming at the growth plate (the apophysis), a weak area located at the back of the heel. Too much stress on the growth plate is the most common cause of pediatric heel pain.

Causes of Pediatric Heel Pain

There are a number of possible causes for a child's heel pain. Because diagnosis can be challenging, a foot and ankle surgeon is best qualified to determine the underlying cause of the pain and develop an effective treatment plan.

Conditions that cause pediatric heel pain include:

- **Calcaneal apophysitis.** Also known as Sever's disease, this is the most common cause of heel pain in children. Although not a true "disease," it is an inflammation of the heel's growth plate due to muscle strain and repetitive stress, especially in those who are active or obese. This condition usually causes pain and tenderness in the back



and bottom of the heel when walking, and the heel is painful when touched. It can occur in one or both feet.

- **Tendo-Achilles bursitis.** This condition is an inflammation of the fluid-filled sac (bursa) located between the Achilles tendon (heel cord) and the heel bone. Tendo-Achilles bursitis can result from injuries to the heel, certain diseases (such as juvenile rheumatoid arthritis), or wearing poorly cushioned shoes.
- **Overuse syndromes.** Because the heel's growth plate is sensitive to repeated running and pounding on hard surfaces, pediatric heel pain often reflects overuse. Children and adolescents involved in soccer, track, or basketball are especially vulnerable. One common overuse syndrome is Achilles tendonitis. This inflammation of the tendon usually occurs in children over the age of 14. Another overuse syndrome is plantar fasciitis, which is an inflammation of the band of tissue (the plantar fascia) that runs along the bottom of the foot from the heel to the toes.

Fractures. Sometimes heel pain is caused by a break in the bone. Stress fractures—hairline breaks resulting from repeated stress on the bone—often occur in adolescents engaged in athletics, especially when the intensity of training suddenly changes. In children under age of 10, another type of break—acute fractures—can result from simply jumping 2 or 3 feet from a couch or stairway.

Diagnosis of Pediatric Heel Pain

To diagnose the underlying cause of your child's heel pain, the foot and ankle surgeon will first obtain a thorough medical history and ask questions about recent activities. The surgeon will also examine the child's foot and leg. X-rays are often used to evaluate the condition, and in some cases the surgeon will order a bone scan, a magnetic resonance imaging (MRI) study, or a computerized tomography (CT or CAT) scan. Laboratory testing may also be ordered to help diagnose other less prevalent causes of pediatric heel pain.

Treatment Options

The treatment selected depends upon the diagnosis and the severity of the pain.

For mild heel pain, treatment options include:

- **Reduce activity.** The child needs to reduce or stop any activity that causes pain.
- **Cushion the heel.** Temporary shoe inserts are useful in softening the impact on the heel when walking, running, and standing.

For moderate heel pain, in addition to reducing activity and cushioning the heel, the foot and ankle surgeon may use one or more of these treatment options:

- **Medications.** Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen, help reduce pain and inflammation.
- **Physical therapy.** Stretching or physical therapy modalities are sometimes used to promote healing of the inflamed tissue.
- **Orthotic devices.** Custom orthotic devices prescribed by the foot and ankle surgeon help support the foot properly.

For severe heel pain, more aggressive treatment options may be necessary, including:

- **Immobilization.** Some patients need to use crutches to avoid all weight-bearing on the affected foot for a while. In some severe cases of pediatric heel pain, the child may be placed in a cast to promote healing while keeping the foot and ankle totally immobile.
- **Follow-up measures.** After immobilization or casting, follow-up care often includes use of custom orthotic devices, physical therapy, or strapping.

Surgery. There are some instances when surgery may be required to lengthen the tendon or correct other problems.

Total Rehab's Approach.

At Total Rehab, treatment of Sever's disease typically consists of stretching, strengthening evaluation of footwear and exercise/training techniques, soft tissue mobilization of the Achilles tendon, and ice. Symptoms often resolve in just a few weeks.

Can Pediatric Heel Pain be Prevented?

The chances of a child developing heel pain can be reduced by following these recommendations:

- Avoid obesity
- Choose well-constructed, supportive shoes that are appropriate for the child's activity
- Avoid, or limit, wearing cleated athletic shoes

Avoid activity beyond a child's ability

If Symptoms Return

Often heel pain in children returns after it has been treated because the heel bone is still growing. Recurrence of heel pain may be a sign of the initially diagnosed condition, or it may indicate a different problem. If your child has a repeat bout of heel pain, be sure to make an appointment with your foot and ankle surgeon.

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