

## **Knee and Heel Pain in Children**

**Patellofemoral pain syndrome (PFPS)** is a very common cause of knee pain and affects athletes who run and jump. It is sometimes also called chondromalacia patellae.

The exact cause of patellofemoral pain is unknown. Most people with patellofemoral pain did not have a specific injury. Symptoms often occur after participation in sports and may start suddenly or gradually. Pain gets worse with squatting, running, prolonged sitting, or going up or down steps. The location is under or around the patella or “knee cap” and may be achy or sharp. Some people describe a catching sensation in the knee but locking of the knee should not occur with patellofemoral pain.

X-rays are not necessary to make the diagnosis.

Treatment is aimed at controlling pain, improving alignment, and returning to full function as quickly as possible.

During rehabilitation, activities that cause pain should be avoided. Most runners need to reduce their running and those with severe symptoms like limping should stop running altogether. Patients with less severe symptoms may need to stop only more intense running, such as hill running and running up steps. Athletes can maintain aerobic fitness by using a stationary bicycle, an upper body cycle, or by swimming, water running, or similar activities, provided they do not cause pain.

Short-term use of medications like ibuprofen may be helpful, but long-term use does not have benefit.

Exercises focused upon improving the strength and flexibility of the leg and core muscles, including the hip abductors and quadriceps, are generally effective in the treatment of patellofemoral pain. The exercises are continued until all activities can be performed without pain. Then a gradual return to a full sports schedule can occur. Sometimes physical therapy is recommended. Orthotics in the shoes or patellar bracing may help.

Return to sport for the patient with PFPS follows basic guidelines for all overuse injuries. Motion should be equal on both sides and strength should be nearly normal. There should be no nighttime pain or pain with activities of daily living. In general, mild pain that diminishes with activity is not concerning. If pain increases, the activity should stop and the plan should be reassessed.

Surgery is rarely necessary and is considered only in severe cases that do not respond to rest and exercises.

**Osgood Schlatter Disease** is an overuse injury caused by repetitive strain on a growth plate at the tibial tubercle, a bony prominence at the lower part of the knee.

It most frequently occurs in participants of sports that involve running, cutting, and jumping who have recently undergone a rapid growth spurt. The typical age group is 9-14 years, and 25-50% of cases are bilateral (affect both knees). The pain is worsened by direct pressure, kneeling, running, jumping, squatting, climbing stairs or walking uphill. It is relieved by rest.

The diagnosis is made by the history and physical examination, which shows localized tenderness or swelling over the tibial tubercle. X-rays are not required but are sometimes ordered when the complaints are atypical, such as pain at night or pain unrelated to activity.

Osgood-Schlatter disease usually is a benign and self-limited condition. Symptoms generally resolve once growth is complete.

Conservative measures are the mainstay of therapy:

- Application of ice to the involved area after participating in sporting activities.
- Tylenol or ibuprofen as needed for pain.
- Continued sports participation, provided that the pain can be tolerated and resolves within 24 hours.
- Physical therapy to strengthen the quadriceps and stretch the quadriceps and hamstring
- “Infrapatellar strap” such as CHO-PAT brand is sometimes helpful

Surgery is very rarely recommended. Complications of Osgood-Schlatter disease may include persistent prominence of the tibial tubercle or persistent pain.

**Sever’s Disease**, also known as calcaneal apophysitis, is an overuse injury caused by repetitive strain on a growth plate on the heel. It is one of the most common causes of heel pain in young athletes, particularly those who play soccer and basketball or participate in gymnastics or track/running. The typical age of presentation is 8 to 12 years; boys are affected three times more often than are girls; the condition is bilateral (affects both heels) in about 60% of cases.

The pain in Sever’s Disease is the result of inflammation that can be caused by several factors:

- Rapid growth at the growth plate
- Footwear that lacks cushioning or footwear with heel cleats
- Overuse in sports with jumping and running

The diagnosis is made by history and physical examination. The heel pain is gradual in onset and related to activity. Calf muscles may have decreased flexibility, and the heel is tender to compression. X-rays are not required but may be recommended if the symptoms are atypical, such as sudden onset, inability to bear weight, or signs of sickness in other areas of the body.

Treatment is aimed at decreasing inflammation and stress on the heel. Decreasing the amount and intensity of activity will help to decrease the pain. Stretching the calf muscles, using a heel cup or ¼-inch heel lift, and using proper footwear will help to decrease the traction force on the growth plate. Daily icing for twenty minutes after activity, even when symptoms are improved, is helpful. Pain medications like Tylenol or ibuprofen may help but should not be used to mask pain in order to allow for increased activity. Physical therapy and a slow gradual return to activity are important.

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