

Center for Athletic Medicine

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What is Patellofemoral Pain Syndrome?

Patellofemoral Pain Syndrome is a common knee problem. People with this condition feel pain under and around the kneecap. The pain can get worse with certain activities and also with prolonged sitting. It can affect one or both knees. Other common names for this condition include patellofemoral dysfunction, anterior knee pain syndrome, chondromalacia patellae, and runner's knee.

What causes Patellofemoral Pain Syndrome?

Patellofemoral Pain Syndrome occurs when the kneecap (patella) fails to glide smoothly through its groove in the thigh bone (femur). There are several theories to explain how this happens:

Biomechanical: This theory suggests that abnormal body mechanics such as flat feet, high arches, knocked knees, and bowed legs can put too much stress on the kneecap as it glides through its groove.

Muscular: This theory suggests that hip and thigh muscle weakness and/or imbalance cause the kneecap to glide incorrectly.

Overuse: This theory states that repetitive bending of the knee under high loads, such as occurs with long distance running, causes increased pressure between the patella and the femur, causing pain.

For most athletes, patellofemoral pain is caused by a combination of these three factors.

What are the symptoms of Patellofemoral Pain Syndrome?

Patients with patellofemoral pain syndrome have pain in the front of the knee, usually under or around the kneecap. The pain typically occurs with activity and is usually worse with climbing or descending stairs or hills, and after prolonged sitting.

How is Patellofemoral Pain Syndrome treated?

Treatment focuses on correcting abnormal biomechanics, muscle imbalances, and overuse patterns. It may include the following:

- Physical therapy and exercise. The hip and thigh muscles interact to control the movement of your kneecap. A physical therapy program of stretching and strengthening these muscles often alleviates patellofemoral pain.
- Changing footwear. A walking shoe with excellent support is a good place to start. Your sports doctor can evaluate your foot biomechanics and may prescribe custom-fitted orthotics when indicated.
- Minimizing activities that put stress on the knee like running, volleyball or basketball and changing to lower impact exercises such as swimming or elliptical trainers until pain has resolved.
- Icing the knees for 10 to 20 minutes after activity can alleviate pain.
- A physician may also recommend a short course of anti-inflammatory medication to alleviate pain and allow for more rapid progression of physical therapy program..
- Knee sleeves that support the patella and knee taping can also be useful for some athletes with patellofemoral pain. Your physician or physical therapist can show you correct taping techniques.

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Surgery is usually not indicated for patellofemoral pain syndrome. If the cartilage under the kneecap has become fragmented and is causing mechanical symptoms such as locking and catching, arthroscopic surgery to remove the fragments may be helpful.

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What are Shin Splints?

“Shin splints” is a general term referring to pain along the inside of the shin. Shin splints can come from a stress fracture of one of the lower leg bones, or from irritation of the calf muscles where they attach to the bones.

Who gets shin splints?

Shin splints most commonly affect athletes in running and jumping sports.

What causes shin splints?

Overtraining (i.e. “too much, too soon”) is the most common reason athletes develop shin splints. Other contributing factors include biomechanical abnormalities (i.e. flat feet), poor flexibility and strength in the calf muscles, worn-out shoes, or abrupt change in training surface.

How are shin splints treated?

The first principle of treatment is rest. Start by reducing training by 50% for one week. Stretch calf muscles several times a day, especially before and after running. Apply ice for 20-30 minutes after running. If this eliminates the pain, gradually increase training again by 10% per week.

If pain is severe enough to interfere with walking or causes you to limp, complete rest from running will be required for a short period of time. Athletes with severe pain should see a sports medicine physician, who will evaluate for the presence of stress fracture by performing xrays, and determine the need for an anti-inflammatory, custom-fitted orthotics, and/or a formal rehabilitation program.

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What is a stinger?

A "stinger" is an injury to one or more nerves between your neck and shoulder in an area known as the “brachial plexus”. It is know by several other names including “burner,” “nerve pinch injury,” and brachial plexopathy. While it is an injury to the nerves that come off the spinal cord, it is not a true spinal cord injury. Prognosis is usually excellent.

What causes a stinger?

Any impact to the shoulder that damages or stretches the nerves can cause a stinger. It is most common in football but can happen with any contact sport. There are 3 common mechanisms:

- 1) Direct impact to the area between the neck and the collarbone, which bruises the nerves underneath.
- 2) The shoulder is pushed in a downward direction while the head is moved to the opposite side. This causes a stretch of the nerves.
- 3) The head is rapidly forced to one side, pinching the nerves.

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What are the symptoms of a stinger?

The injury gets its name from the main symptom of stinging, burning pain between the neck and shoulder. The sensation may also shoot down the arm on the affected side. Typically this lasts only for a few seconds, but may last as long as 15 minutes. There may be numbness and/or weakness of the affected shoulder and arm. The weakness may persist for several weeks.

If there is pain in the neck, limitation of neck motion, or the pain radiates to both arms, the injury is not a stinger. These symptoms may be a sign of a more significant neck injury.

How are stingers treated?

Time usually allows the damaged nerves to heal themselves. Contact sports should not be allowed until weakness resolves. Physical therapy can help to stretch and strengthen your muscles and prevent future injuries. However, it should be properly supervised by an athletic trainer or physical therapist. Beginning strengthening exercises too soon can cause damage to the newly forming nerve tissues.

Some stingers last only a few minutes but some can take days or even weeks to heal. If the symptoms of a stinger do not resolve within 15 minutes an evaluation by a physician is advised. Diagnostic studies such as Xrays or an MRI may be necessary to evaluate for a more significant neck injury. An electromyogram (EMG) may also be performed, especially if symptoms persist for longer than a 3 or 4 weeks. The EMG measures nerve function. It can confirm the presence of a stinger, identify which nerve root is affected, and grade the severity of the injury. This can help to provide a prognosis and time frame for recovery.

When can I return to sports after a stinger?

Before being cleared to return to sports, there must be no pain, numbness or tingling. Additionally, there must be full strength of the muscles and full range of motion in the neck.

How can stingers be prevented?

Stretching and strengthening the muscles of the neck may help to prevent stingers. In addition, for football players, special equipment is available which may help prevent stingers. A "lifter" can be placed under the shoulder pads to better cushion blows to the area. A neck roll or cowboy collar can be used to limit excessive neck motion.

Recurrent stingers (more than 3) may be a sign of a more significant neck injury, and should be evaluated by a sports medicine specialist.