



What is Patellofemoral Pain Syndrome (PFPS)?

Patellofemoral pain syndrome (PFPS) is a term used to describe pain in the front of the knee, often originating from behind the patella (kneecap).

While PFPS is common in people who are active, it also occurs in the non-athletic population. Like most overuse injuries, PFPS can come on suddenly or gradually over time, depending on a variety of factors.

PFPS is commonly caused by overuse or misalignment (or a combination of the two) of the patella. Vigorous physical activity (running, squatting, or lifting), repetitive stress (prolonged walking, kneeling, or climbing stairs) or a recent change in physical activity may bring on symptoms. Misalignment occurs when the patella does not track properly along the front of the knee joint. In a normal, healthy knee, the patella glides within a groove on the femur (thigh bone) as the knee flexes and extends. Misalignment can stem from excess pronation (arch collapse), which can cause the patella to move out of this groove, irritating the tissue and causing pain.

What do people experience?

While the most common symptom of PFPS is a dull, aching pain in the front of the knee that comes on gradually and gets worse with activity, you may also experience:

- Pain above the knee cap
- Pain after sitting for prolonged periods of time
- Pain while climbing stairs or rising from sitting
- Instability of the knee
- Crepitus (cracking or popping noise) in the knee

Risk factors & how to avoid discomfort

While overuse injuries like PFPS can affect a wide variety of people, there are several risk factors associated with developing symptoms of PFPS:

- **Gender differences.** Although the exact reason is not clearly defined, females are more prone to developing PFPS than males, according to several studies. Many clinicians attribute this to the variance in the Q-angle between males and females.
- **IT band tightness/ITBS.** Tension in the IT band can exert forces on the knee and knee cap that contribute to the mal tracking and increase pain. Reducing tension in the IT band can reduce this risk.
- **Tightness or weakness in the quadriceps.** The quadriceps work to stabilize the knee and allow it to function efficiently and smoothly. Weakness or tightness in the quadriceps decreases the stability and therefore allows for more motion of the knee cap, leading to mal tracking and symptoms of PFPS.
- **Calf tightness.** Tightness in the lower leg is also related to incidence of PFPS.
- **Training.** Volume, intensity, environment, and style of activity are all factors that can increase the risk for developing PFPS.

What are my options for treatment? Who else can help?

Just as there are many causes for PFPS, there are also many ways to manage the symptoms. Choosing which treatment is right for you will depend largely on the symptoms you experience, and when you experience them. Primary treatments have traditionally included local pain management via physiotherapy, nonsteroidal anti-inflammatory drugs (NSAIDs), rest, and cold therapy. Further interventions

might include devices or braces to alter any abnormal biomechanics or increase joint efficiency.

Your primary care provider is the best initial resource for this injury. They will be able to recommend activity modifications or medications and refer you to the right professional for further care.

Physiotherapists and kinesiologists can help with strengthening, stretching, and alignment issues that impact your pain. They may also be able to recommend a brace or provide taping or other modalities to control pain and abnormal biomechanics. For those who are more active, a physiotherapist or kinesiologist may also be able to assist with activity modifications and training changes to help manage your pain while keeping up activity levels.

A podiatrist can help control excessive movements at the foot that impact the alignment and movement at the knee. Your podiatrist may recommend a specific shoe or incorporate an orthotic device to correct these movements and realign the lower limb.

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Massage therapists can assist in reducing muscular tension that may put stress on the knee. Common areas where a massage therapist can help are the IT band, hamstrings, and quadriceps tightness. In conjunction with stretching, treatment from your RMT may significantly improve your symptoms.

Kinesiologists can help you modify your activity or training to reduce your pain. These changes can help manage your pain while remaining active.

Staying active with pain

Remaining active with PFPS is possible with a few training, lifestyle, and activity modifications. As a general rule of thumb, if it hurts, don't do it. Taking that golden rule a bit further, if it hurts after you finish your activity, reduce it by 10%.

Reducing volume and intensity of activity is often the simplest way to stay active through an injury. Reducing your volume gradually until the pain subsides, avoiding inclines and high impact activities, and alternating to non-weight bearing activities are all effective ways to stay active through your recovery.

Another option is to use over the counter solutions to help mitigate excess motion or strain through the knee. Using braces, compression sleeves, or taping can help

you maintain your activity and keep from injuring yourself further. Talk to your kinesiologist or physiotherapist about which devices might be right for you.

AVOID KNEE PAIN BY ADDRESSING YOUR ALIGNMENT.

To feel better, read on!

How can SoleScience help you feel better?

Your SoleScience Pedorthist will create an individualized treatment plan that suits your specific needs, goals, and symptoms. We will work with you to determine not only what we need to do to address your current concerns, but also to prevent future problems.

Your pedorthist will complete a thorough and comprehensive foot examination at your initial appointment. A comprehensive follow-up exam will ensure that you are meeting your goals and allow your pedorthist to reassess your treatment plan (as necessary). During these appointments we will:

- Assess joint and muscle function, including range of motion and gait assessment
- Assess your footwear for both fit and function
- Identify any risk factors that can be modified and make recommendations for change
- Identify areas of risk with specialized tools such as pressure mapping (F-Scan or Pedograph)
- Discuss a treatment plan, which may include a change in footwear, activity modification, or custom foot orthoses and/or a complementary treatment referral (such as physiotherapy)

In addition to your individual treatment plan, your SoleScience Pedorthist will provide you with educational resources to help you best maintain your foot health.

Our take on the need for custom foot orthoses

Patellofemoral pain syndrome (PFPS) can be caused by a wide variety of biomechanical, environmental, or other pathophysiological factors, making its

treatment multi-faceted. Custom foot orthoses have been shown to be an effective treatment for PFPS by reducing some of the excessive foot and lower limb mechanics commonly associated with the disorder (1).

In some cases, your biomechanics might be the cause of your injury. In these cases, orthotics can help by reducing the mechanical cause of your injury and preventing re- injury from happening in the future. In other cases, your biomechanics may simply be slowing your recovery or preventing the injured tissue from healing. In these cases, orthotics might be an instrumental tool in your recovery, but might not be required long- term.

Custom vs. OTS

Custom foot orthoses are made using a mold (cast) of your foot. This type of insole is made specifically for you and your needs. Your pedorthist will not only take a cast of your foot in a specific position, but will also choose the materials and construction details tailored specifically to you. For those with more complex biomechanical issues or who suffer from more chronic symptoms, a custom device may be right for you.

Off-the-shelf (OTS) devices are pre-fabricated for an “average” foot and are designed to slip into most footwear. This type of insole may be heat moldable or modifiable for a degree of customization, but it is not entirely custom-made to your foot. For those who have mild symptoms and have only been experiencing pain for a short period of time, an OTS device may be right for you.

Footwear recommendations

Selecting appropriate footwear for your activity and lifestyle is important for everyone, especially those who are injured. Specific footwear recommendations will depend on your individual mechanics and foot type. Generally, footwear with a stable base of support, ample midsole cushioning, and structural stability work well when dealing with PFPS. Wearing shoes that are fit correctly is equally important when managing an injury.

References

(1) Numuera (2015).