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## Knee Pain (Patellofemoral Pain)

Patellofemoral pain is a common cause of pain around the front of the knee. It usually gets better with simple treatments such as physiotherapy and exercises. You may need to adjust your training programme if you do a lot of sport.

### What is patellofemoral pain?

Patellofemoral pain is the medical term used when pain occurs at the front of the knee, around the kneecap (patella), without signs of any damage or other problems in the knee joint.

It is also called patellofemoral pain syndrome, patellofemoral syndrome or anterior knee pain.

### What is the patella?

The patella is the kneecap bone. It lies within the quadriceps tendon. This large tendon from the powerful thigh muscles (quadriceps) wraps round the patella and inserts into the top of the lower leg bone (tibia). The quadriceps muscles straighten the leg.

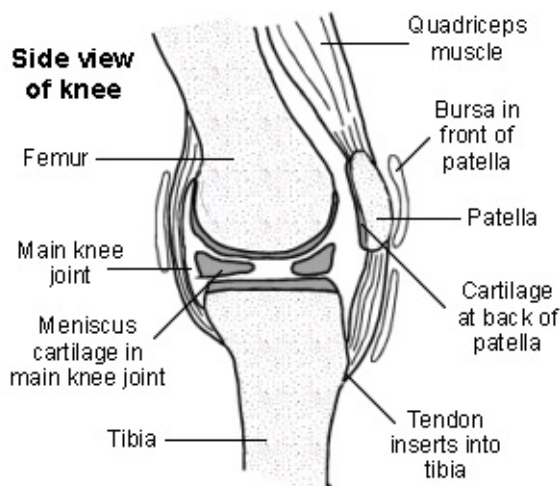
The back of the patella is covered with smooth cartilage. This helps the patella to glide over the lower part of the thigh bone (femur) when you straighten your leg.

### What causes patellofemoral pain?

It is probably due to a combination of different factors which increase the pressure between the kneecap (patella) and the lower part of the thigh bone (femur). This may happen during running, cycling, squatting and going up and down stairs. It is likely that the cause is not the same in everyone affected.

Situations where this can occur include:

- Overuse of the knee, such as in certain sports - particularly at times of increased training. Cycling when the saddle is too low or too far forward.
- Some people may have a slight problem in the alignment of the patella where it moves over the lower femur. This may cause the patella to rub on, rather than glide over, the lower femur. It may be due to the way the knee has developed. Or, it may be due to an imbalance in the muscles around the knee and hip - for example, the large quadriceps muscle above the knee and the muscles that stop the hips from tilting when standing on one leg.
- A combination of an alignment problem (as above) and overuse with sports may be the most common reason for getting patellofemoral pain.
- Weak hip muscles may cause patellofemoral pain by causing the thigh bone to be slightly turned inwards, leading to the patella being pulled slightly to one side.
- Foot problems may also play a part - for example, where the feet do not have strong arches (flat feet). This makes the foot roll inwards (pronate), which means the knee has to compensate for the inward movement. However, it is unclear whether this causes the knee problems or may be an effect.
- Injury to the knee - including repeated small injuries or stresses due to sports, or due to slack ligaments (hypermobile joints).



## Who gets patellofemoral pain?

Almost anyone - it is extremely common and is the cause of between 25% and 40% of all knee problems. It is particularly common in adolescence, when it affects young women more than young men.

## What are the symptoms of patellofemoral pain?

- Pain around the knee. The pain is felt at the front of the knee, around or behind the kneecap (patella). Often, the exact site of the pain cannot be pinpointed; instead the pain is felt vaguely at the front of the knee.
- The pain comes and goes. It is typically worse when going up or down stairs or with certain sports; anything that leads to the patella being compressed against the lower part of the thigh bone (femur). Also, it may be brought on by sitting still for long periods. For example, after going to the cinema or a long drive.
- There may be a grating or grinding feeling or noise when the knee moves. This is called crepitus.
- Sometimes there is fullness or swelling around the patella.

## How is patellofemoral pain diagnosed?

The diagnosis is made from your symptoms, the history of the problem, plus a doctor's examination. Tests such as X-rays or scans cannot diagnose patellofemoral pain and are not helpful, although they may sometimes be used to look for other conditions.

## What is the treatment for patellofemoral pain?

In the short term:

- Avoid strenuous use of the knee - until the pain eases. Symptoms usually improve in time if the knee is not overused. Aim to keep fit but to reduce the activities which cause the pain.
- **Painkillers** - **paracetamol** and/or **anti-inflammatory painkillers** such as **ibuprofen**.
- **Physiotherapy** - improving the strength of the muscles around the knee and hip will ease the stress on the knee. Also, specific exercises may help to correct problems with alignment and muscle balance around the knee. For example, you may be taught to do exercises which strengthen the muscles of the hip and buttock. The physiotherapist can give advice tailored to your individual situation.
- **Taping of the kneecap (patella)** - this is a treatment which may reduce pain. It involves adhesive tape being applied over the patella, to alter the alignment or the way the patella moves. Some people find this helpful. Some physiotherapists can offer patellar taping treatment.

In the longer term, treatment aims to treat some of the underlying causes - for example, by strengthening hip muscles and helping with foot problems:

- **Physiotherapy** - a long-term home exercise programme, for at least one year.
- **Suitable footwear** - for example, arch supports if you have flat feet; suitable shoes if you are running.

Surgery is no longer recommended, as there is no evidence that it is any better than other treatments.

## What is the outlook (prognosis)?

The outlook is good. Most people get better with simple treatments such as physiotherapy. However, it may take 4-6 months for full recovery and, meanwhile, you may need to reduce activities such as sports training. Unfortunately symptoms may persist in 25% of people for up to 20 years but patellofemoral pain is an area of active research interest.

## Further reading & references

- [van der Heijden RA, Lankhorst NE, van Linschoten R, et al; Exercise for treating patellofemoral pain syndrome. Cochrane Database Syst Rev. 2015 Jan 20;1:CD010387. doi: 10.1002/14651858.CD010387.pub2.](#)

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Original Author: Dr Naomi Hartree	Current Version: Dr Jacqueline Payne	Peer Reviewer: Dr Colin Tidy
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