

Knee Pain in Young Adults (Chondromalacia Patella)

An Information Booklet

Introduction

Knee pain affects as many as 1 in 3 teenagers and young adults at some time or other. A common cause of this pain is a complaint known as **chondromalacia patellae**. This is a softening of the cartilage that lines the back of your kneecap. This booklet deals with the type of knee pain caused by this condition.

Your kneecap (patella) lies at the front of the lower end of your thigh bone (femur). Its upper part is attached by a tendon to your thigh muscles (quadriceps) and its lower part by a tendon to your shin bone (tibia). Its function is to enable the quadriceps muscle to contract, straightening your leg, and to stabilise your knee joint when you walk.

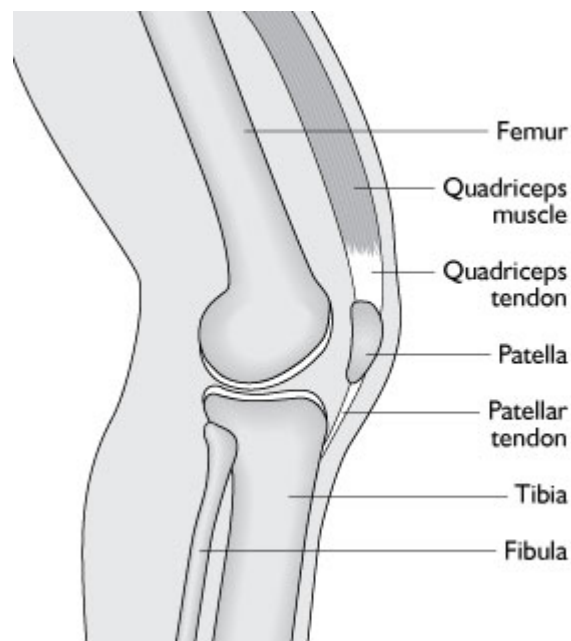


Figure 1. Normal knee joint

What are the symptoms?

The main symptoms are **pain** and **crepitus** (grinding or clicking). The amount these interfere with everyday activities varies both from person to person and also from time to time for any particular individual.

Pain

The pain is felt in the front of your knee, behind the kneecap. It can sometimes be quite severe and everyday activities like going up and down stairs can make it worse. At other times it may be felt as a dull ache after you have been sitting for any length of time. The pain often makes it difficult to kneel or squat.

Crepitus

Because the cartilage is soft, and often rough – rather than smooth as it should be – when the knee is moved there is usually a grinding that may be felt or heard behind the knee cap. Sometimes it is loud enough to be heard by other people in the room! Many people have similar grating but no pain.

How is the diagnosis made?

Your doctor will make a diagnosis after you have described your symptoms and s/he has carried out a physical examination of your knee. The doctor will be able to detect any roughness behind the kneecap which is causing pain when the kneecap is moved over the femoral bone. To check this s/he may, for example, ask you to tighten your thigh muscles while s/he holds your kneecap down, as this will reproduce the pain.

Very occasionally increased fluid in the joint (an effusion) can lead to a certain amount of swelling.

What tests can be done?

Blood tests are normal in this condition. However, your doctor may carry out a blood test to exclude any other cause of pain in the knee.

X-rays tend to be unhelpful since cartilage does not show up on x-rays. Occasionally they are asked for, however, and x-rays are taken from particular angles.

MRI (magnetic resonance imaging) scans can be used to show up the structure of the knee including the cartilage. Please note, though, that the equipment is noisy, and it can make some people feel claustrophobic.

It is now possible to look inside the knee joint and the back of the kneecap with an instrument called an arthroscope. This leaves just a very small scar. It is only necessary in a small number of cases where there is doubt about the diagnosis.

What is the cause?

The exact cause of chondromalacia patellae is unknown. A current theory is that cartilage changes could be due to repeated small injuries happening during falls or vigorous exercise. Some people will be more prone to developing this condition because of underlying slack ligaments, or because their kneecap is in the wrong position, lying slightly outside the normal groove.

What treatments are there?

The condition usually gets better on its own without any treatment, though the symptoms may persist for several years.

However, certain measures help to reduce the pain:

Pain-killing (analgesic) drugs

Simple painkillers such as paracetamol can help. In some cases a non-steroidal anti-inflammatory drug (NSAID) may be prescribed by your doctor. (See **arc** leaflet ['Non-Steroidal Anti-Inflammatory Drugs'](#).)

Physiotherapy

It is important to keep the quadriceps (thigh) muscles strong to keep the kneecap in the right position. Exercises that will help are described below. It is possible to work the muscles that move the knee without actually bending the knee. Tape is sometimes used to alter the 'tracking' of the kneecap.

Rest and sport

Complete rest will lead to weakness of the thigh muscles, which is undesirable. Swimming is an excellent form of exercise for people with knee pain. Tougher sports like football, rugby or cross-country running are best avoided if they aggravate the pain. There is no need to stay away from school, though you may have to make arrangements to ensure that you don't overtax your knee. A long walk to school, dashing up and down stairs all day when you get there and full participation in school sports may well aggravate your pain and would be best avoided. Talk to your head teacher and the clinical medical officer to sort out what you should and should not do.

Operation

An operation is rarely necessary. Sometimes in the most severe cases the rough surface of the back of the kneecap may need to be smoothed off. Occasionally, as a last resort, the patella itself can be removed.

What exercises can I do?

Quadriceps contractions and straight leg raises (see Figures 2 and 3) will be helpful if carried out regularly.

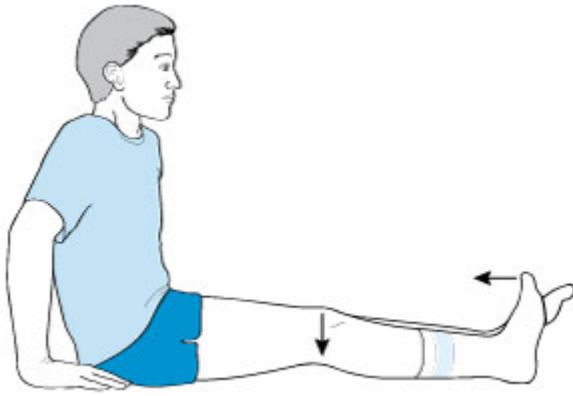


Figure 2. Quadriceps contraction

Sitting with your legs out straight, push the back of your knee down and pull your toes towards you. Hold this position for 10 seconds. Rest for 5 seconds. Continue this exercise for about 5 minutes. Repeat it 3 or 4 times a day.

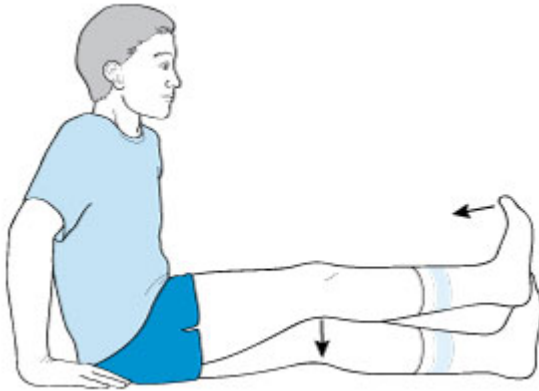


Figure 3. Straight leg raise

Sitting with your legs out straight, push the back of your knee down and pull your toes towards you. Lift your leg – keeping it straight – and hold it about 10 cm (4 inches) above the ground for 10 seconds. Lower it slowly. Rest for 5 seconds. Repeat the exercise 5–10 times and do both exercises 3 or 4 times a day.

What is the outlook?

On the whole the outlook is very good. Usually the knee will get better by itself, without needing any treatment. There is no link between knee pain (chondromalacia patellae) in your youth and general arthritis later on.