

## **Knee pain in young adults**

This booklet provides information  
and answers to your questions  
about this condition.



# What is patellofemoral pain syndrome?



As many as 1 in 3 young adults experience knee pain at some time or other. This is commonly caused by imbalances in the muscles surrounding the knee which affect the kneecap (patella). In this booklet we'll explain the symptoms of patellofemoral pain syndrome, what causes it, how it's diagnosed and the available treatments.

At the back of this booklet you'll find a brief glossary of medical words – we've underlined these when they're first used.

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**Patellofemoral pain syndrome is a common cause of knee pain, but it's not linked to generalised arthritis in later life. It can be treated with simple painkillers and exercise.**

# At a glance

## Patellofemoral pain syndrome (knee pain in young adults)

A common cause of knee pain in young adults is where the kneecap (patella) and cartilage in the joint is affected by imbalances in the muscles surrounding the knee. The medical term that describes this is patellofemoral pain syndrome, and we'll use this term throughout the rest of the book.

### What are the symptoms of patellofemoral pain syndrome?

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Symptoms may include:

- pain
- scratching, grinding, clicking sensation (crepitus).

### How is it diagnosed?

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Your doctor will make a diagnosis based on:

- your symptoms
- a physical examination of your knee.

To check for any changes behind the kneecap that could be causing your symptoms, your doctor may ask you to tighten your thigh muscles while they hold your kneecap down, as this will reproduce the pain.

The medical name for the kneecap is the patella.

### What treatments are there?

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Treatment may include:

- simple painkillers (analgesics) e.g. paracetamol
- exercises and physiotherapy – it may take at least 12 weeks of doing exercises several times a day for a total of 30 minutes a day before the muscle imbalance is corrected.

### How can I help myself?

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Try doing these wall squats to build up your muscle strength:

Stand with your back against a wall, feet together or apart at a 30° angle. Slide down the wall by bending your knees, until you can no longer see your toes. Hold this position and clench your buttocks for 5–10 seconds. Relax and repeat the whole exercise as many times as possible.

## What is patellofemoral pain syndrome?

Knee pain is very common in young adults, with as many as 1 in 3 experiencing problems at some time or other. It most often occurs in the teenage years, and is often caused by an imbalance in the muscles surrounding the knee joint, which puts pressure on the kneecap and cartilage within the joint.

## What are the symptoms of patellofemoral pain syndrome?

The main symptoms are pain and a scratching, grinding or clicking sensation (known as crepitus). The effect of these symptoms on everyday life varies from time to time and from person to person.

**Pain** – The pain is felt in the front of your knee, around and behind the kneecap. It can sometimes be quite severe and everyday movements like walking up and down stairs can make it worse. It can also cause a dull ache, for example after you've been sitting for a long time. The pain often makes it difficult to kneel or squat. It's often aggravated by running and therefore frequently occurs during or after sport.

**Crepitus** – Changes in the surface of the cartilage can produce a scratching or grating sensation from the kneecap, which you may be able to hear when you

bend or straighten your knee. Crepitus doesn't often cause pain.

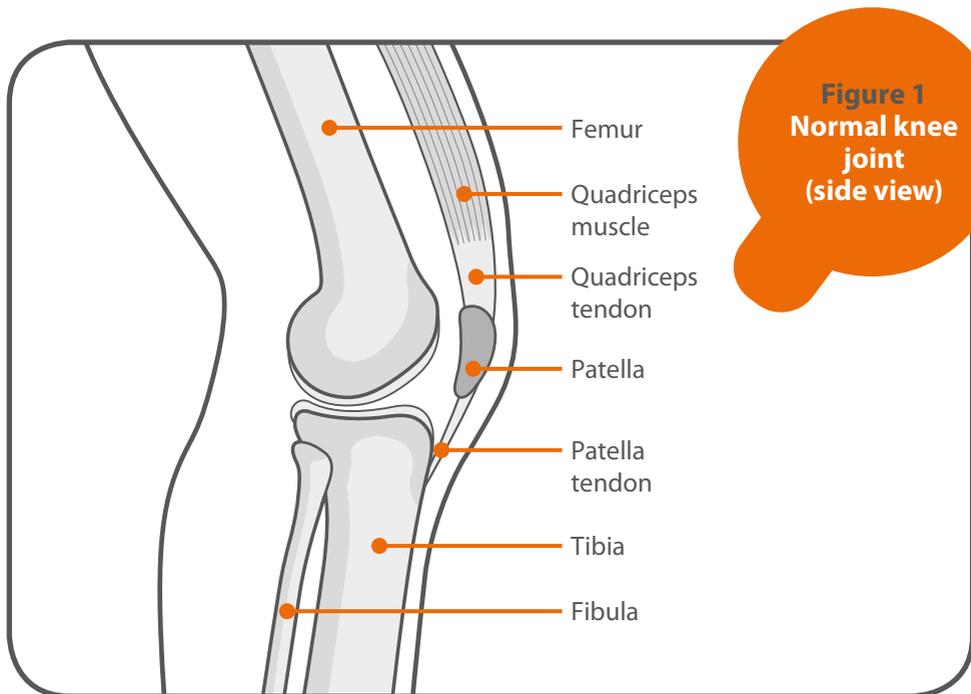
## What causes patellofemoral pain syndrome?

We don't yet fully understand all the causes of patellofemoral pain syndrome, but it's most likely a combination of factors. Some factors that could lead to it are:

- weakness or imbalance in the thigh or buttock muscles
- tight hamstrings (the muscles at the backs of your thighs)
- short ligaments around the kneecap
- problems with weight bearing and alignment through the feet.

An imbalance in the muscles surrounding your knee puts pressure on the kneecap and cartilage within the joint. To understand why this happens, you need to know a little about how the knee joint works.

The kneecap (patella) lies in a groove at the front of the lower end of the thigh bone (femur) and is shaped to move up and down in the centre of its groove when you bend or straighten your knee (see Figure 1). If the muscles or ligaments surrounding the knee cause the kneecap to move away from the centre of its groove, this can put too much pressure



on the cartilage lining the side of the groove and on a small area on the back of the kneecap. This pressure can lead to changes in a small area of cartilage where the kneecap meets the thigh bone, which can lead to knee pain.

### What is the outlook?

The outlook is very good. In most cases the knee will get better by itself, without needing any specific treatment. There's no link between this kind of knee pain and generalised arthritis later on in life.

### How is patellofemoral pain syndrome diagnosed?

Your own doctor (GP) will make a diagnosis based on your symptoms and a physical examination of your knee. To check for any changes behind the kneecap that could be causing the pain and crepitus, your doctor may ask you to tighten your thigh muscles while they hold your kneecap down, as this will reproduce the pain. Occasionally, increased fluid in the joint can cause swelling, so your doctor will also check for this.



Patellofemoral pain syndrome is usually easily recognised from your description of your symptoms and confirmed by an examination of your knee. Blood tests don't help in diagnosing it but may be useful for ruling out more serious problems. X-rays aren't usually helpful as cartilage doesn't show up on them. Your doctor may suggest a magnetic resonance imaging (MRI) scan, for example if you've received a blow to your knee.

## What treatments are there for patellofemoral pain syndrome?

Patellofemoral pain syndrome often gets better on its own without any treatment, though you may have symptoms for several years. However, painkilling drugs and physiotherapy can help to reduce the pain.

### Drugs

Simple painkillers (analgesics) such as paracetamol can help to ease pain. Non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen may not offer any additional benefit over paracetamol, and NSAIDs are more likely to cause side-effects.

### Physiotherapy

It's important to keep your thigh muscles (quadriceps) strong and balanced to avoid putting pressure on your knee joint. An exercise that will help is described in

the next section, but your doctor may suggest that you see a physiotherapist who will be able to suggest other exercises. They'll assess your knee and decide what's causing the pain and which exercises will best fit your particular problem. They'll also make sure that you're doing them properly and safely.

It may take at least 12 weeks of doing these exercises several times a day for a total of 30 minutes a day before any muscle imbalance or weakness is corrected, and it could be some time after that until the pain completely settles down.

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**i** See Arthritis Research UK booklets *Painkillers (analgesics), Physiotherapy and arthritis*.

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**Your physiotherapist may apply adhesive tape to your kneecap to stretch tight soft tissue and relieve pain.**

**Exercise is important because it helps you to strengthen your thigh muscles. Your physiotherapist may give you specific exercises to try, and you should do other kinds of physical activity.**

**Swimming is a great way for people with knee pain to exercise.**

## Self-help and daily living

### Exercise

It's important to exercise your thigh muscles to stop them from becoming weak. Swimming is an excellent form of exercise for people with knee pain, and front and back crawl will put less strain on your knees. Sports that put a lot of pressure on the knees, like football, rugby or cross-country running, should be avoided if they make the pain worse, although it should be possible to start these again once symptoms have eased.

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**i See Arthritis Research UK booklet**  
*Keep moving.*

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Wall squats will be helpful if you do them regularly, as well as any additional exercises your physiotherapist recommends.

Stand with your back against a wall, feet together or apart at a 30° angle. Slide down the wall by bending your knees, until you can no longer see your toes. Hold this position and clench your buttocks for 5–10 seconds. Relax and repeat the whole exercise as many times as possible.

### School

There's no need to stay away from school, though you may have to make arrangements to make sure you don't overwork your knee. If the walk to school, certain sports or climbing stairs make the pain worse, talk to a teacher about your knee problem.



## Glossary

**Cartilage** – a layer of tough, slippery tissue that covers the ends of the bones in a joint. It acts as a shock-absorber and allows smooth movement between bones.

**Ligaments** – tough, fibrous bands which hold two bones together in a joint.

**Magnetic resonance imaging (MRI) scan** – a type of scan that uses high-frequency radio waves in a strong magnetic field to build up pictures of the inside of the body. It works by detecting water molecules in the body's tissue that give out a characteristic signal in the magnetic field. An MRI scan can show up soft-tissue structures as well as bones.

**Physiotherapist** – a therapist who helps to keep your joints and muscles moving, helps ease pain and keeps you mobile.

## Where can I find out more?

If you've found this information useful you might be interested in these other titles from our range:

### Therapies

- *Hydrotherapy and arthritis*
- *Occupational therapy and arthritis*
- *Physiotherapy and arthritis*

### Self-help and daily living

- *Fatigue and arthritis*
- *Keep moving*
- *Looking after your joints when you have arthritis*

### Drugs

- *Painkillers (analgesics)*

(Note: Arthritis Research UK drug leaflets are aimed at adults but will contain basic information about the featured drug(s). You should speak with your doctor for more information on appropriate dosages for children and young people.)

You can download all of our booklets and leaflets from our website or order them by contacting:

### Arthritis Research UK

PO Box 177  
Chesterfield  
Derbyshire S41 7TQ  
Phone: 0300 790 0400  
[www.arthritisresearchuk.org](http://www.arthritisresearchuk.org)





## We're here to help

Arthritis Research UK is the charity leading the fight against arthritis.

We're the UK's fourth largest medical research charity and fund scientific and medical research into all types of arthritis and musculoskeletal conditions.

We're working to take the pain away for sufferers with all forms of arthritis and helping people to remain active. We'll do this by funding high-quality research, providing information and campaigning.

Everything we do is underpinned by research.

We publish over 60 information booklets which help people affected by arthritis to understand more about the condition, its treatment, therapies and how to help themselves.

We also produce a range of separate leaflets on many of the drugs used for arthritis and related conditions. We recommend that you read the relevant leaflet for more detailed information about your medication.

Please also let us know if you'd like to receive our quarterly magazine, *Arthritis Today*, which keeps you up to date with current research and

education news, highlighting key projects that we're funding and giving insight into the latest treatment and self-help available.

We often feature case studies and have regular columns for questions and answers, as well as readers' hints and tips for managing arthritis.

### Tell us what you think

Please send your views to:

**feedback@arthritisresearchuk.org**

or write to us at:

Arthritis Research UK, Copeman House, St Mary's Court, St Mary's Gate, Chesterfield, Derbyshire S41 7TD

A team of people contributed to this booklet. The original text was written by GP Dr Adrian Dunbar who has expertise in the subject. It was assessed at draft stage by Sue Gurden. An **Arthritis Research UK** editor revised the text to make it easy to read, and a non-medical panel, including interested societies, checked it for understanding. An **Arthritis Research UK** medical advisor, Dr Ben Thompson, is responsible for the content overall.

## Get involved

You can help to take the pain away from millions of people in the UK by:

- volunteering
- supporting our campaigns
- taking part in a fundraising event
- making a donation
- asking your company to support us
- buying products from our online and high-street shops.

To get more **actively involved**, please call us on **0300 790 0400**, email us at **[enquiries@arthritisresearchuk.org](mailto:enquiries@arthritisresearchuk.org)** or go to **[www.arthritisresearchuk.org](http://www.arthritisresearchuk.org)**

**Arthritis Research UK**

Copeman House  
St Mary's Court  
St Mary's Gate, Chesterfield  
Derbyshire S41 7TD

**Tel 0300 790 0400**

calls charged at standard rate

**[www.arthritisresearchuk.org](http://www.arthritisresearchuk.org)**

**PA to Mr. Parag K. Jaiswal  
London Hip & Knee Consultant**

**0207-4594482  
[admin@londonhipknee.co.uk](mailto:admin@londonhipknee.co.uk)**

