

PATELLOFEMORAL PAIN

KNEE PAIN IN YOUNG ADULTS

PHYSIOTHERAPY

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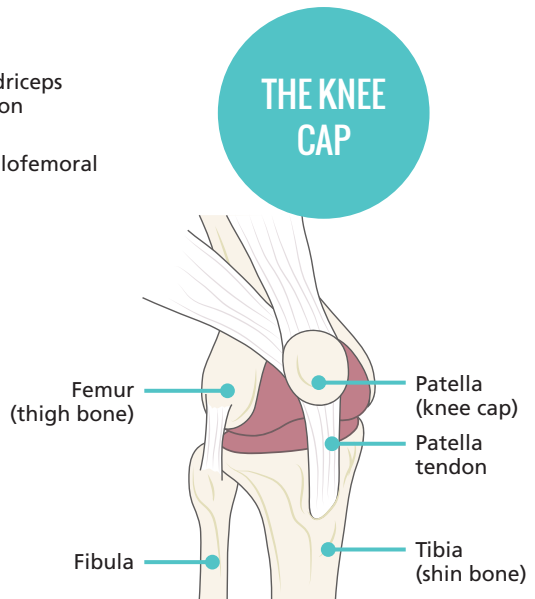
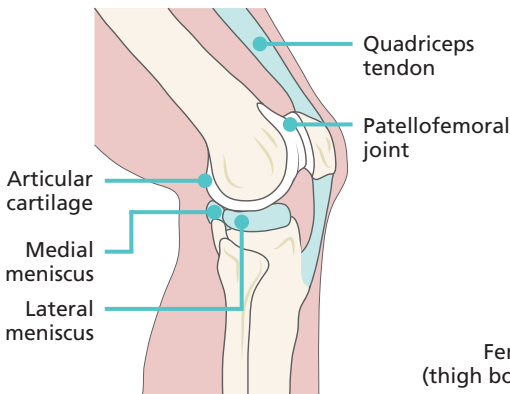
**MAKING A
DIFFERENCE
FOR YOU,
WITH YOU**

WHAT IS PATELLA FEMORAL PAIN SYNDROME (PFPS)?

PFPS is a condition with pain or discomfort around, behind or under the Knee cap (patella) caused by stress in the patellofemoral joint (PFJ). It commonly affects the teenagers and young adults but can occur at any age and in 50% cases it can affect both knees.

The kneecap (patella) lies in a groove at the lower end of the thigh bone (femur) and it is designed to move up and down in its groove when you bend or straighten your knee (see Figure 1). If the muscles imbalance 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 behind the kneecap. This pressure can lead to pain in front of the knee.

The pain during the normal activities such as prolonged sitting, walking up and down the stairs, running and squatting is often the case.



CAUSES OF PFPS

The causes of PFPS remain controversial, primary causes of PFPS include:

- Excessive loading or varied and rapid increase in your physical activity.
- Poor or altered biomechanics (alignment) which can be due to several factors described in Figure 3, thought to move the knee cap outside its normal tracking.
- Joint hypermobility affecting the knee
- Reduced muscle strength in the leg
- Muscle tightness either in the hip, knee or ankle.

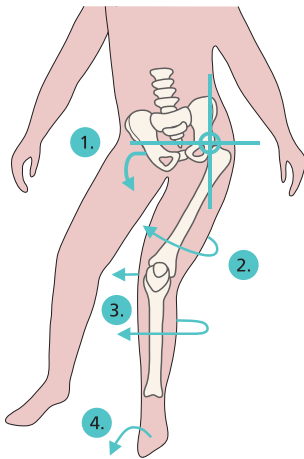


Figure 3.

1. Pelvis drops on opposite side, causing increased tension on the outside of the leg and pulling the Knee cap outward.
2. Hip collapses inward and rolls under the knee cap due to hip muscles poor function and weakness.
3. Thigh muscles weakness and poor function provides inadequate support for the Knee and Knee cap.
4. Foot rolls in too much, placing the shin and knee to collapse inward under the knee cap.

OTHER COMMON CAUSES

Osgood-Schlatter disease is the common cause of pain in the front of the knee in young people, pain is usually in the upper part of the shin bone near the attachment of the patella tendon.

For more information <https://patient.info/health/knee-pain-patellofemoral-pain/osgood-schlatter-disease>

Sinding-Larsen-Johansson disease is the condition where the pain is located near the pole (down edge) of the patella at the start of Patella tendon attachment. For more information <https://patient.info/doctor/sinding-larsen-johansson-disease>

Both these conditions are usually aggravated by jumping and kneeling activities.

Patellofemoral misalignment (patellofemoral instability/ recurrent patellar subluxation) is more common in young females - patellar hypermobility with apprehension and pain when the patella is pushed laterally are found on examination.

Fat pad impingement the fat pad located under the patella can get irritated between the patella and the lower end of the thigh bone. This is thought to be due to a direct blow to the knee, but symptoms without any trauma can be possible.

Patellar tendinopathy (jumper's knee) is a common and painful overuse disorder.

Chondromalacia Patella is the softening of the articular cartilage of the patella. There is a poor correlation between the degree of knee pain in the front and cartilage damage. It may be associated with patellar misalignment.

For more information <https://patient.info/bones-joints-muscles/knee-pain-patellofemoral-pain/chondromalacia-patellae>

Bursitis (inflammation of the fluid-filled sac).

Prepatellar bursitis (housemaid's knee) inflammation of the bursa at the front of the patella.

Deep infrapatellar bursitis (parson's knee), inflammation of the bursa situated below the patella.

Anserine bursitis often presents with spontaneous pain with tenderness in the inner and lower part aspect of the knee in the inferomedial aspect of the joint.

Iliotibial band syndrome is a common knee injury that usually presents with pain and/or tenderness either upper or lower part of the joint line on the outside of the Knee. It is considered a non-traumatic overuse injury and is often linked with underlying weakness of hip muscles.

Patellofemoral osteoarthritis is a common form of knee osteoarthritis in middle and older age.

Other contributing factors include the Trauma, the structure of your knee itself, surgery and any systemic disease.

Increased levels of anxiety, depression, catastrophising and fear of movement have also been reported in people with PFPS, which has the capacity to negatively influence physical function and activity related behaviours.

UNDERSTANDING YOUR PRESENTATIONS OF PFPS

Individuals with PFPS may describe pain, grinding or clicking sensation arising from the PFJ with or without swelling.

Knee pain is often both side usually one knee is more severe than the other.

Pain may be difficult to localise but is usually front or around the knee cap.

Pain may be aggravated by particular activities such as walking, running (commonly downhill), stairs (especially going down stairs), squatting and when getting up after prolonged sitting.

MANAGEMENT

So far there is no evidence to prove that any single modality treatment works for all people with patellofemoral pain. Since PFPS is caused due to multiple factors, there may be an effective treatment for some causes but same treatment may not be effective for others. However, conservative treatments are usually effective and most patients will not require surgical intervention.

PAINKILLERS

It is advisable to take painkillers when pain is limiting your movement and function; Counter pain medication such as paracetamol and ibuprofen may often help to relieve discomfort. This can be guided by your GP, pharmacist, extended physio practitioner. It is best to take them regularly rather than taking them now and again. This will enable you to continue with routine activities more comfortably.

HEAT AND COLD

In the first 48 hours you can try a cold pack on your back for 5-10 mins at a time - a bag of frozen peas or ice cubes wrapped in a damp towel. Some people prefer heat - a bath, shower or hot water bottle/microwavable heat pack wrapped in a towel.

PHYSIOTHERAPY

Physiotherapy will assess your knee to identify the reason for your knee pain and may provide you with more appropriate strengthening and stretching exercises that may help. If appropriate Manual therapy, taping, advice on footwear will also be involved and assist you overall management of your condition aiming towards your realistic targeted goal.

Hip, Ankle and local to the knee, biomechanical deficits are evident in people with PFPS. In some cases, these deficits may exist prior to the development of pain, potentially typical

primary driver of your symptoms through subsequent altered loading and loss of tissue homeostasis about the PFJ

KEY TREATMENT OPTIONS

Muscular imbalance is thought to be the cause of the patellar malalignment and appropriate muscles strengthening can assist realignment of the patella and reduce or eliminate symptoms with time (see figure 5).

Figure 5

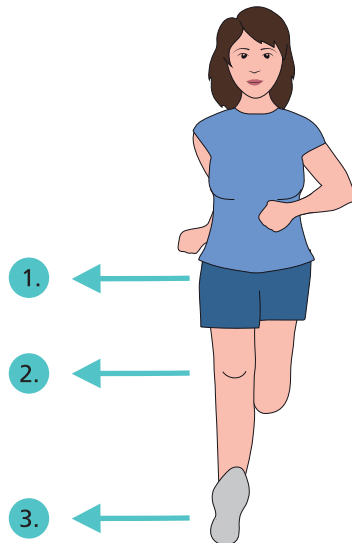
Key biomechanical

Factors to address

1. Poor function and weakness of hip muscles.
2. Poor function and weakness of Knee muscles.
3. Too much foot roll (Flat feet).

Key treatment options

1. Exercises for hip and thigh muscles to improve strength and function.
2. Short term, taping of the kneecap to reduce pain.
3. Foot orthotics.



Exercise therapy has been shown to be effective in reducing pain this should involve hip muscles and quadriceps strengthening.

Sometimes exercises to the foot or Back may be required.

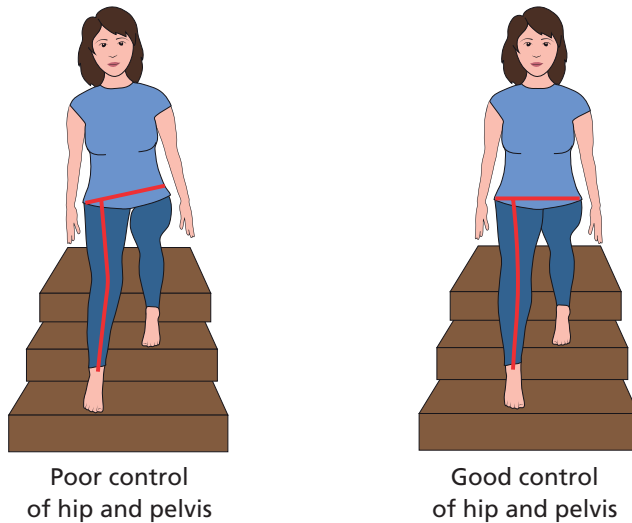
You may need to stretch your thigh, hamstring or calf muscles.

Patellar taping and Knee braces may be beneficial to reduce pain and improve function while you build the muscles strength.

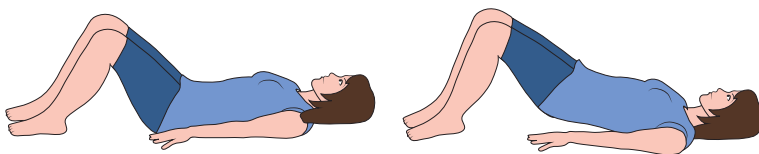
Supportive laced trainer/shoes are important. Foot orthotics sometimes is effective if foot roll is thought to contribute your PFPS.

However as soon as pain allows exercises should be progressed with activities in standing which has caused pain previously and to be performed with a good technique (see figure 6).

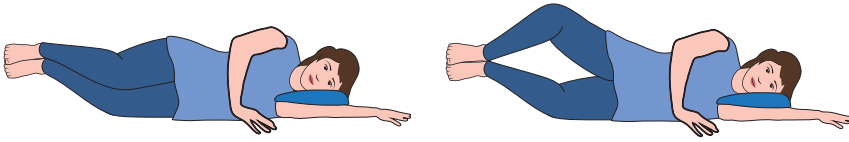
Figure 6



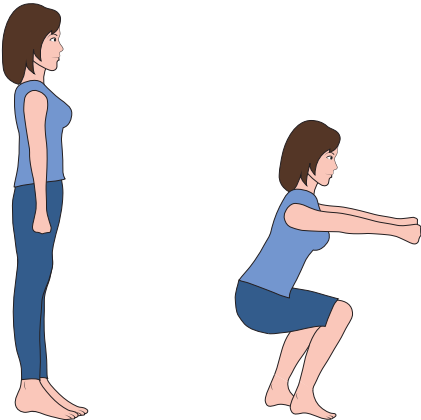
EXERCISES



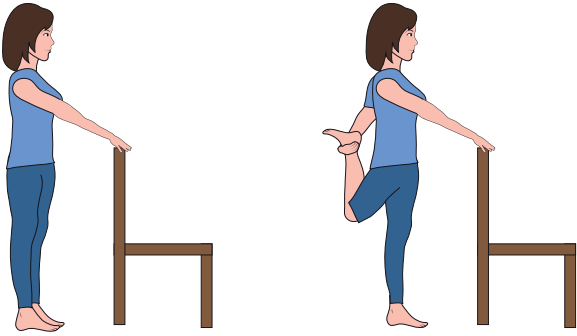
- Lie on your back with your knees bent.
- Contract your buttocks while lifting your buttocks off the ground followed by the lower back until your thigh is level with your trunk if possible.
- Slowly return to the initial position and repeat.
- Hold 5 -10 secs Repeat up to 5 – 10 rep.



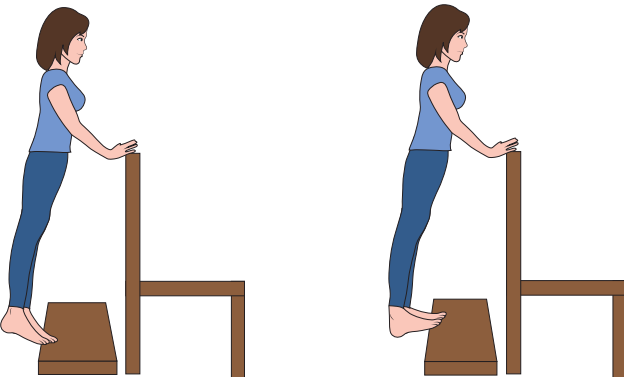
- Lie on your side with Hips bent to approx.45 degrees and knees bent to 90 degrees. Ensure your back is in neutral and in alignment with the trunk.
- Gently draw your lower tommy muscles but breathing normally and lift the top knee upwards keeping the feet together.
- Slowly lower the top knee onto the bottom leg.
- Hold 5 -10 secs, 10 reps.



- Stand with your feet facing forward at hips width apart.
- Push the hips back and flex the knees to lower the body down up to the mini squat or half squat (as in the picture) position.
- Keep the back straight and your knee caps aligned with 2nd toe; you can balance yourself by raising the arms forward as



- Stand in front of a chair and hold on to it with one hand.
- Grab the top of one ankle with the other hand and pull your foot towards your buttock until you feel a gentle stretch in front of the thigh.
- Hold the stretch 30 secs, keeping your lower back neutral.
- Repeat 3 reps.

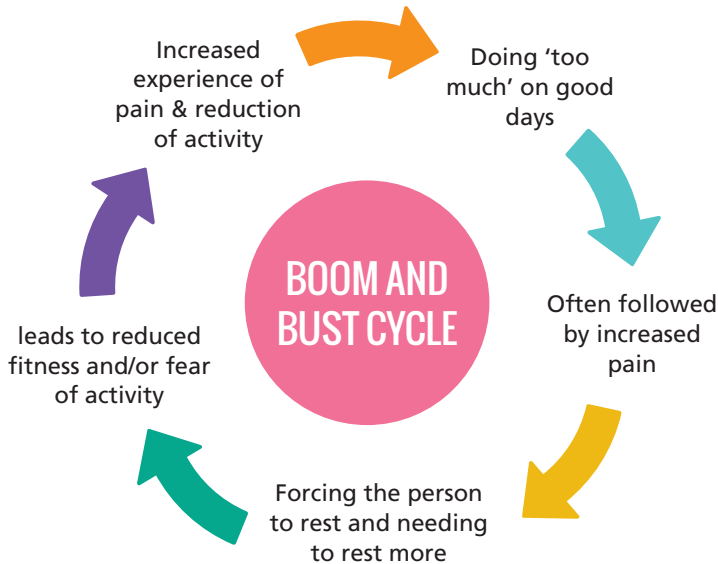


- Stand up on a step, placing only your forefeet on it.
- Lower your heels until you feel a stretch in your calves.
- Maintain the position for 30 secs and relax. Repeat 3 reps.
- You can perform this exercise with just one leg by lifting the other foot up.

ACTIVITY AND PACING

Excessive loading, varied or rapid increase in your physical activity which your knee cannot cope with more likely to contribute to your pain symptoms onset. You may need to modify and pace your training or activities

Why it is important to pace your activity



GET GOOD QUALITY SLEEP

Sleep reduces stress and improves your overall feeling of wellbeing. If you struggle sleeping due to pain then discuss with your GP, you may need advice on pain medications.

Remember there is no scientific evidence supporting any best position or type of mattress- whatever you feel most comfortable is best.

SCHOOL

You don't need to stay away from school though you have to make arrangements to make sure you don't overwork your knee. Talk to a teacher about your knee problem if the walk to school, certain sports or climbing stairs makes your pain worse.

PREDICTION

If appropriate intervention is taken at an early stage, then the full functional recovery is very good particularly in young people.

TOP TIPS:

- There's no link between this kind of knee pain and generalised arthritis later on in life.
- Seek help as yearly as you can this gives you chances of good recovery .
- A period of rest before starting exercise again may be suggested by your therapist.
- Consider modifications of trainings or activities which aggravate symptoms.
- Pain free exercises in sitting or lying at the beginning may help to get your hip and thigh muscles functioning.
- Ensure you gradually and safely build up your physical activities level.
- Using mirrors and video recordings may assist you to complete correct exercise techniques at home.
- Exercises will not help until you perform with a good technique and on a regular basis.
- Actively participating in the rehabilitation increase your chance of successful recovery
- Remember it may take at least 10-12 weeks of doing exercises before the muscle imbalance is corrected

INVESTIGATIONS

X-ray and MRI to your knee are rarely needed. X-ray is not very helpful in predicting how much pain you will experience, as some people have a small amount of change on the X-ray and experience lots of pain whilst others have lots of change and experience no pain at all. An X-ray and MRI is often not required but may be suggested by your GP or Physiotherapist if trauma is involved and your symptoms are not responding to usual management.

SURGERY

The biomechanical problem needs addressing and if conservative management has failed you may be referred for a surgical opinion. Surgical intervention usually involves arthroscopic evaluation sometimes arthroscopic trochleoplasty for patellar instability or release of the tight lateral attachments of the patella. National institute for Health and Care Excellence recommends that current evidence on the safety and effectiveness of these surgeries as inadequate.



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