Self management of Patello-femoral pain syndrome(PFPS)

Information and Exercises

Dr Julia Newton, Dr Natasha Jones, Mr Simon Wood

Contact: contactus@oxfordsem.net

17

Content	Page

.

This booklet has been designed to help guide you through the management of your Patello-femoral pain syndrome. It is important that you read this booklet so that you have a better understanding of the condition and its management.

Prevalence of PFPS:

PFPS is probably the most common sports injury in both athletes and recreational exercisers alike. PFPS occurs when excessive loading through the knee occurs. This can occur in sports which involve running, or jumping. It is more common in people who participate in sports and can affect men and women of all ages. PFPS is also known as anterior knee pain, chondromalacia patellae or patellofemoral disorder but the terms are interchangeable.

What causes PFPS?

The precise cause of PFPS can be difficult to establish. PFPS is often associated with the start of a new activity or an increase in the intensity and/or frequency of an existing activity. It is essentially an overuse injury although this does not necessarily mean you are over exercising. There are many contributing factors that vary from person to person and rarely are they all present. Figure 1 demonstrates a proposed model for the development of PFPS.

Typically, PFPS can occur without an injury to the knee but can also be a result of an injury such as a fall onto the knee. The pain can be felt anywhere around the knee cap and can even be felt at the back of the knee and can affect one or both knees. There are a variety of symptoms that are often used to describe symptoms of PFPS such as:

Clicking or clunking Mild swelling
Instability
Pain on squatting, coming downstairs or sitting for prolonged periods.

Some people find that going to the cinema or taking long journeys are painful or uncomfortable.

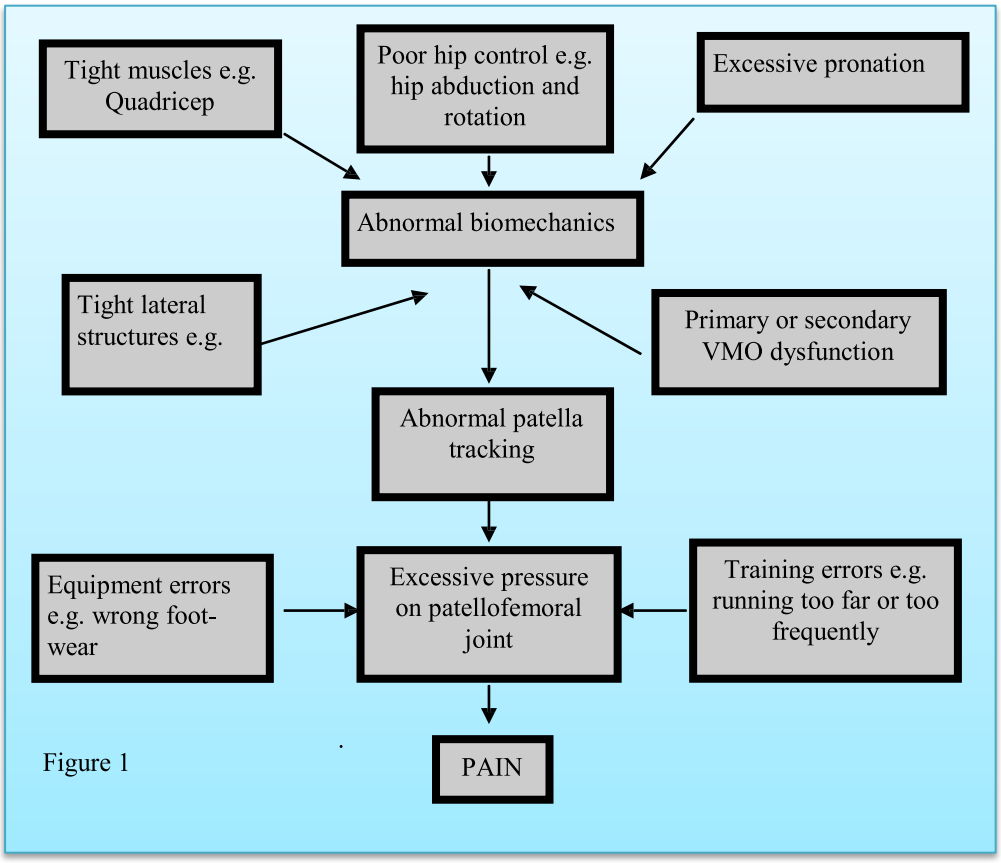


Figure 1: Causation of PFPS

Imaging

Imaging is not routinely used to diagnose PFPS. PFPS is usually diagnosed by the classical signs and symptoms that a patient presents with. Occasionally you may have some form of imaging such as an Ultrasound scan or X-ray to exclude other causes of knee pain that present with similar symptoms. If the symptoms are not straight forward the doctor may refer you for an MRI to exclude any other causes of your knee pain.

Treatments

PFPS is most effectively treated with a targeted exercise programme. You will be assessed by a doctor or physiotherapist who may identify certain muscles that are weak or tight. They will recommend some specific exercises for you to do as a home exercise programme. You may be referred for physiotherapy to progress your rehabilitation and the physiotherapist may also use additional techniques to assist in your rehabilitation such as taping or soft tissue techniques.

In some cases you may also be referred to an orthotist who are specialised at assessing your foot biomechanics and may prescribe orthotics to change your foot posture.
The exercise program is divided up into specific sections addressing different issues that can cause PFPS.
The following sections are divided up into:

- Stretches
- Strengthening
- Lumbo-pelvic stability
- Plyometrics

It is important to note that you may **not** have to do exercises in all the above sections as the exercise program will be tailored to your needs.
Sometimes while doing the exercises you may feel an increase in your symptoms around your knee cap. This is temporary and you will find that as you progress with your exercises your symptoms will improve. You may not feel the benefits of the exercises until approximately 3 months after starting so it is important for you to persevere.

Stretches

Always stretch after you have warmed up, never cold.
Always stretch on both sides.

Left Gastrocnemius Muscle stretch

Hold the Stretch for at least 1 minute(time it!)

Do not let your heel come off the ground

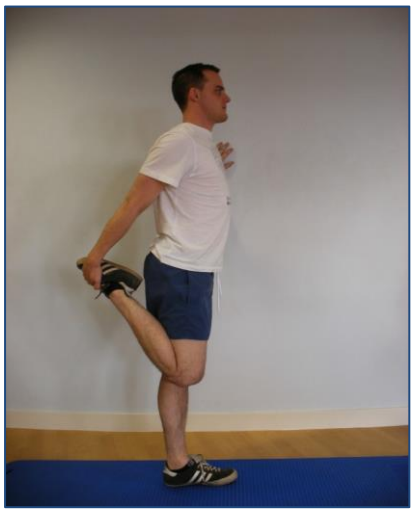
You should feel a stretch at the back of your calf.

Left Soleus Stretch

Hold the Stretch for at least 1 minute(time it!)

You should feel a stretch at the back of your calf muscle

Right Quadriceps stretch



Hold the stretch for 1 minute(time it!)

You should feel the stretch at the front of your upper thigh

Left Hamstring Stretch

Hold the stretch for 1 minute(time it!)

You should feel the stretch at the back of your upper thigh

Left Gluteus stretch

Hold the stretch for 1 minute(time it!)

You should feel the stretch in your Left Buttock

Right Iliotibial band release with a tennis ball

Lying on the ball, move up and down over the ball, massaging it through the outside of your upper thigh.

The Strengthening Programme:

Wall slides

Slide down the wall until discomfort is felt then slide back up the wall.

Try to slide down the wall aiming for your knees to be at 90°

You can squeeze a ball between your knees.

Stand on the affected leg and attempt a single leg dip. Maintain your knee position over your toes during the movement

Phase 2: Forward lunge

Leading with your effected leg. Lunge forwards but do not let your leading knee go beyond your toes.

Single leg circles

Keep the affected leg straight.
Draw large circles with your foot but do not allow your pelvis to move

Proprioception: Balance awareness

Stand on your affected leg for one minute without putting your foot down to correct your balance.

If able to do this for one minute, try with your eyes shut for one minute without putting your foot down.

Progress this to: Added instability of surface

If your are able to do the above exercise then progress to standing on an unstable surface. A thick pillow, wobble board or trampette will often prove challenging.

Repeat the stages as above

Lumbo-pelvic stability

Core stability concentrates on strengthening the muscles around your pelvis and tummy. You need good muscular control of the pelvis as this acts as a stable base from which your legs move from. Without a stable pelvis, your legs will be subjected to abnormal loading which can lead to injury.

To engage your deep tummy muscles (Transversus Abdominis), think about pulling your belly button inwards. Imagine that you are fitting into a pair of jeans that require you to pull your belt into the third hole of a ten hole belt. While doing this **do not hold your breath!** You should feel your tummy muscles tighten slightly and you can feel this if you place your fingers over the lower part of your tummy. When doing the core stability exercises, engage your tummy muscles prior to doing each exercise .

Bridging level 1

Lying on your back with hip and knees bent. Engage your tummy muscles. Tilt your pelvis backwards as if pressing your back into the floor. Squeeze your bottom muscles together. Slowly lift your pelvis and back off the floor.
Hold for 5 seconds and then slowly return back to the starting position.
Repeat

Bridging level 2

If you are able to do the above easily then progress the exercise as shown.

When in the bridge position, take one leg off the floor without letting your pelvis move
Hold for 10 seconds then repeat.

Lumbo-pelvic stability continued

Clam level 1

Engage your tummy muscles.
Keep feet together and lift the uppermost knee towards the ceiling.
Lift knee as high as you can until your pelvis starts to roll backwards.
Slowly lower your knee to the start postion. You should feel a 'burning' sensation in your 'back pocket' area after approximately 20 repetitions

Repeat 40 times

Progress to level 2 when you can do 40

Clam level 2

As above but keep feet off the floor while lifting the uppermost knee.

Repeat 40 times

Progress to level 3 if able to do 40

Clam level 3

Still lying on your side, hook the uppermost foot behind the knee of the leg that you are lying on.

Lift the leg up as far as it will go before the pelvis rolls backwards. Then lower down.

Repeat 40 times

Lower and lift

Lying on your side engage your tummy muscles.
Raise the uppermost leg approximately 6 inches off the ground then lower leg to start position.
While moving leg do not let your pelvis move

Repeat 50 times

Plyometric Exercises

Plyometric exercises is a form of resistance training which in- creases muscle power which is defined as the ability to increase force and velocity of a muscle contraction e.g. to be able to jump higher or jump further, which some sports require.

Plyometric exercise refers to the ability to jumping upwards, forwards, or landing from a height, or a combination of two or more. This makes the leg muscles work harder to provide force for acceleration and deceleration against gravity and velocity which is often required for sporting activities that involve running, and/or jumping.

Plyometric exercises should be attempted at the end of your re- habilitation program and should mimic to some extent the sport that you participate in for example basketball or football.

However, plyometric exercises should only be performed once or twice a week when you are feeling fresh as the demand on the muscles has a greater potential for injury. The plyometric exercise should also be performed on a surface that is forgiving e.g. foam mat or on soft ground. It is recommended that prior to engaging in plyometric work that you perform a warm up first.

Plyometric Exercises: Hop to stop

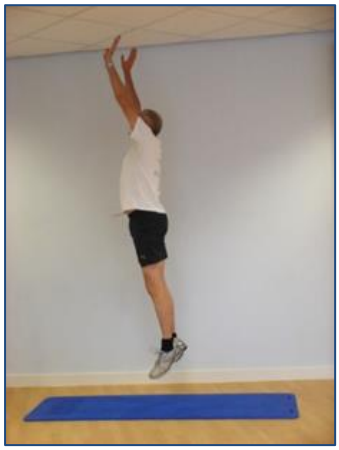
Standing on your affected leg try to hop as high and as far forwards as you can.

The aim is to land on the same leg, but not to lose your balance. When you land try not to place your other leg on the ground to steady yourself.

You will benefit from doing this on a soft, non-slip surface such as a mat or on grass

Repeat

Plyometric Exercises: Squat Jumps



Stand on a soft non-slip surface such as a mat or on grass.

Start from a squatting position

Try to jump as high as you can.

When landing try to land in the squatting position.

Keep your knees in good alignment on landing.

Repeat

Frequently asked questions

Q. How long will it take for the exercises to work?

A. To strengthen muscle or to alter muscle length through stretching takes time. It is recommended that you should do the exercises for 3 months.

Q. How often should I do the exercises?

A. We recommend that you should try to incorporate the exercises chosen for you into a daily routine.

Q. Will I be referred for physiotherapy?

A. In some cases you may be referred for physiotherapy as the physiotherapist may need to intervene with other treatments that will assist in your recovery

Q. Will I cause any damage to my knees if I continue to exercise?

A. No, There is no evidence to suggest that the pain you are experiencing is damaging your knees.

Q. What happens if I do not respond to the treatment?

A. You should contact OxSEM for further advice and treatment

Q. When can I go back to my sport?

A. This solely depends on how much pain you are in. If you have a lot of pain and are not able to compete in your sport without pain then it may be advisable to rest from your chosen sport. If you only have mild discomfort then it is OK to participate in sport. Participating in sport with PFPS does not mean that you are damaging your knees. It purely means that doing sport will be uncomfortable.

Q. Will rest help?

A. Rest will to some extent will help reduce your symptoms but will not necessarily treat the cause, e.g. tight muscles etc. However, cross training is useful. Cross training refers to participating in other sports to maintain your fitness which puts less stress through your knees, e.g. Swimming instead of running

Q. I'm a runner, how often should I change my trainers?

A. The rule of thumb is that you should have at least two pairs of trainers on the go and it is recommended that you should change your trainers every 300 to 500 miles.

Q. I was given a pair of Orthotics, should I put these in the trainers that I run in?

A. We recommend that you only put the orthotics in your trainers if your trainers are 'neutral' trainers. This means that they do not have a built in arch support.

Q. Will I need surgery to my knee?

A. No. True PFPS does not require surgery as there is generally nothing to operate on.

Q. Will I need a scan?

A. Not Usually. However if you do not respond to treatment a scan may be required such as an MRI and/or X-Ray to see if there is an underlying pathology which might explain why physiotherapy did not work.

Helpful tips for training

- ✓ Increase your running distance or intensity by 10% each week.
- ✓ Renew your trainers every 300 to 500 miles. Consider having two pairs of trainers 'on the go' at the same time.
- ✓ Vary your training. Combine different speeds, distances and times during your training period. This will allow the tendon to adapt to the loads placed upon it.
- ✓ Plan your training regime. Use websites such as *www.runnersworld.co.uk* for advice and training tips.
- ✓ Make training more fun. Vary your exercise in different ways to train other parts of your body. This is termed 'cross training' and is a valuable method of reducing injury by distributing the loads placed upon your body.
- ✓ Examples of cross training that you may find useful:

Cycling: including spin classes, mountain biking, road biking.
Cross training
Cross country and downhill skiing
Weight lifting
Aerobics, body pump, Zumba
Pilates and yoga
Rowing
All kinds of Dance
Swimming: Freestyle and backstroke are easier when your knees are painful

For all questions or difficulties contact us at:
mailto:christine.prior@privatepractice.co.uk