

## Treating inflammation with PRICE - immediately after injury and for 3-5 days afterwards

Tissue injury usually involves damage to small blood vessels that results in bleeding at the site of injury. This bleeding leads to the five main signs of inflammation: heat, redness, swelling, pain and loss of function. The inflammatory reaction is necessary as it is part of the natural healing process. However the body tends to overreact to sudden traumatic injury and as a result more inflammatory fluid accumulates than is necessary for healing. This fluid contains a protein that turns into replacement 'scar' tissue. Too much scar tissue may prevent the structure returning to normal function with reduced flexibility and increased risk of re-injury. The advice below should be followed for 3-5 days depending on severity. It can be remembered by the acronym **PRICE**.

- **PROTECT** - Protect the injured tissue from undue stress that may disrupt the healing process and/or cause further injury. Make sure the mode of protection can accommodate swelling.
- **REST** - This reduces the energy requirements of the area, avoids any unnecessary increase in blood flow, ensures protection of the area and optimises healing. For example using slings, crutches or static rest (ie. sitting or lying down).
- **ICE** - The ice helps constrict the blood vessels thereby limiting bleeding and reducing the accumulation of unnecessary scar tissue. Crushed ice wrapped in a damp towel (to prevent ice burn) is best (ice cubes can be wrapped in the cloth and smashed against a wall to crush the cubes). Ice should be applied immediately after injury for 20 minutes every 3-4 hours or no more than 5-10 minutes at a time on bony areas.
- **COMPRESSION** - Simple off-the-shelf compression bandages such as Tubigrip™ and adjustable neoprene supports are adequate. It is important to ensure the bandages are not too tight to cause pins and needles or any loss of feeling around the joint.
- **ELEVATION** - Lowers the blood pressure and helps limit bleeding and encourage drainage of fluid through the lymphatic system.

When following **PRICE** it is also important to avoid **HARM**, hence the saying: 'Give **PRICE** and avoid **HARM**'.

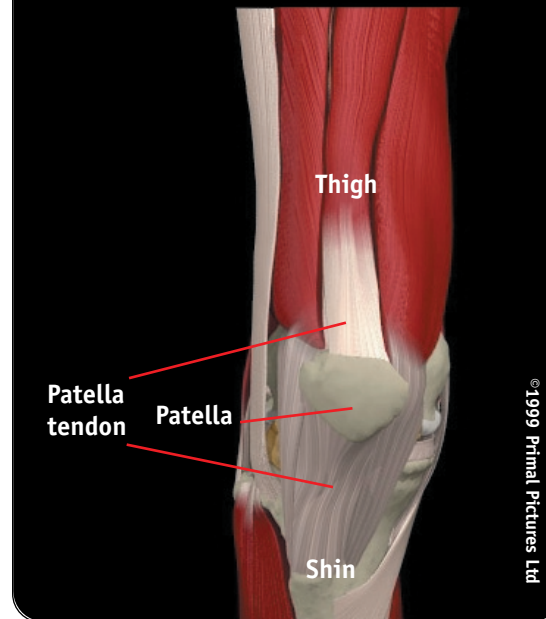
### AVOID

**H** - Heat (eg. hot bath, sauna)  
**A** - Alcohol  
**R** - Running  
**M** - Massage

} these are counter-productive to **PRICE** treatment

## Exercises for patellofemoral pain syndrome

Diagram showing the knee, patella and surrounding structures



### USEFUL RESOURCES

- SportEX Medicine magazine  
[www.sportex.net](http://www.sportex.net)
- The Organisation of Chartered Physiotherapists in Private Practice -  
[www.physiofirst.org.uk](http://www.physiofirst.org.uk)
- General Osteopathic Council  
[www.osteopathy.org.uk](http://www.osteopathy.org.uk)
- The Sports Massage Association  
[www.thesma.org](http://www.thesma.org)
- The Osteopathic Sports Care Association  
[www.osca.org.uk](http://www.osca.org.uk)

### YOUR INJURY

Patellofemoral pain syndrome is a condition which affects the knee cap (patella) and the structures which support it, as it passes up and down the groove in the thigh bone, during bending and straightening of the knee. Pain is caused because the patella no longer tracks correctly up and down the groove, this places greater strain on the supporting structures and the joint surfaces. This mal-tracking of the patella may be caused by a number of factors such as the alignment of your lower limb during movement, weakness in the quadriceps and lack of flexibility in muscles of the leg. Your rehabilitation exercise programme aims to address these problems.

### WARM UP & WARM DOWN

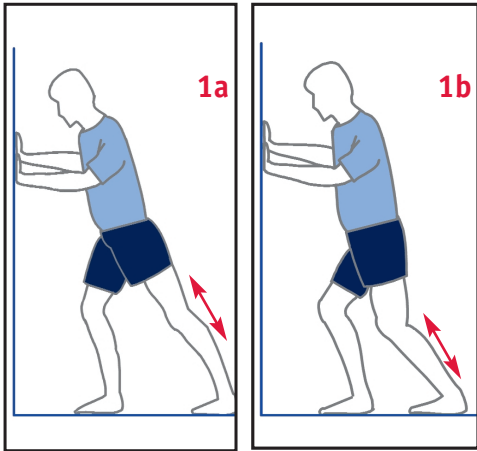
When injured it is particularly important that you warm up with a fast walk (at a pain free pace) for 3-4 minutes before you start your exercises. This increases your circulation and helps prepare your muscles for the activity to come. When you have finished your exercises, it is also important to allow your heart rate to slow down gradually by ending the session with a gentle walk for 3-4 minutes.

# Exercises for patellofemoral pain syndrome rehabilitation

## Stretching exercises

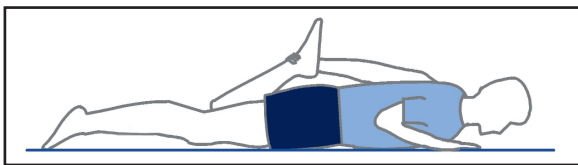
### Guidance for stretching exercises

Hold all the stretches for 20 seconds each and repeat them three times on each leg.

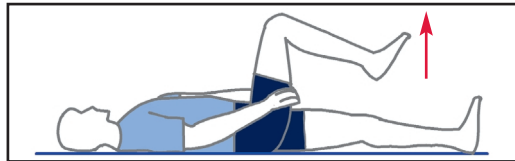


### 1 a) Gastrocnemius stretch and b) Soleus stretch

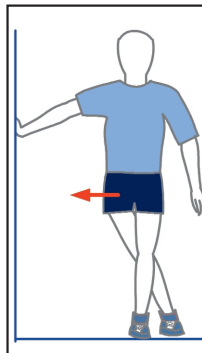
a) Take the position above with feet pointing forwards and heels in contact with floor. Bend the front knee and straighten the back one keeping your head up and pelvis/hips forward and maintain neutral foot position. b) Bend your back knee to stretch the soleus muscle.



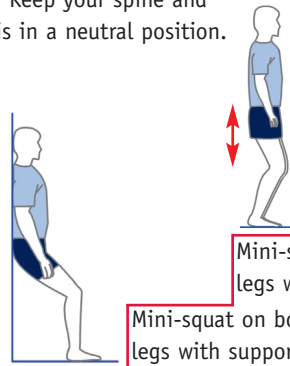
**2 Quadriceps stretch:** Lying on your front, bend one knee, grasp the ankle and draw the heel towards your bottom. Do not allow the lower back to over-hollow.



**3 Hamstring stretch:** Lying on your back, bend one knee and hip to 90°, support the thigh at 90° and straighten the leg until you feel a stretch at the back of your thigh, maintain the hip at 90°.



**4 Iliotibial muscle stretch:** Stand side on to a wall with the affected leg closest to the wall. Place your arm on the wall for support and cross the affected leg behind other. Lean your hips towards the wall. Keep your spine and pelvis in a neutral position.

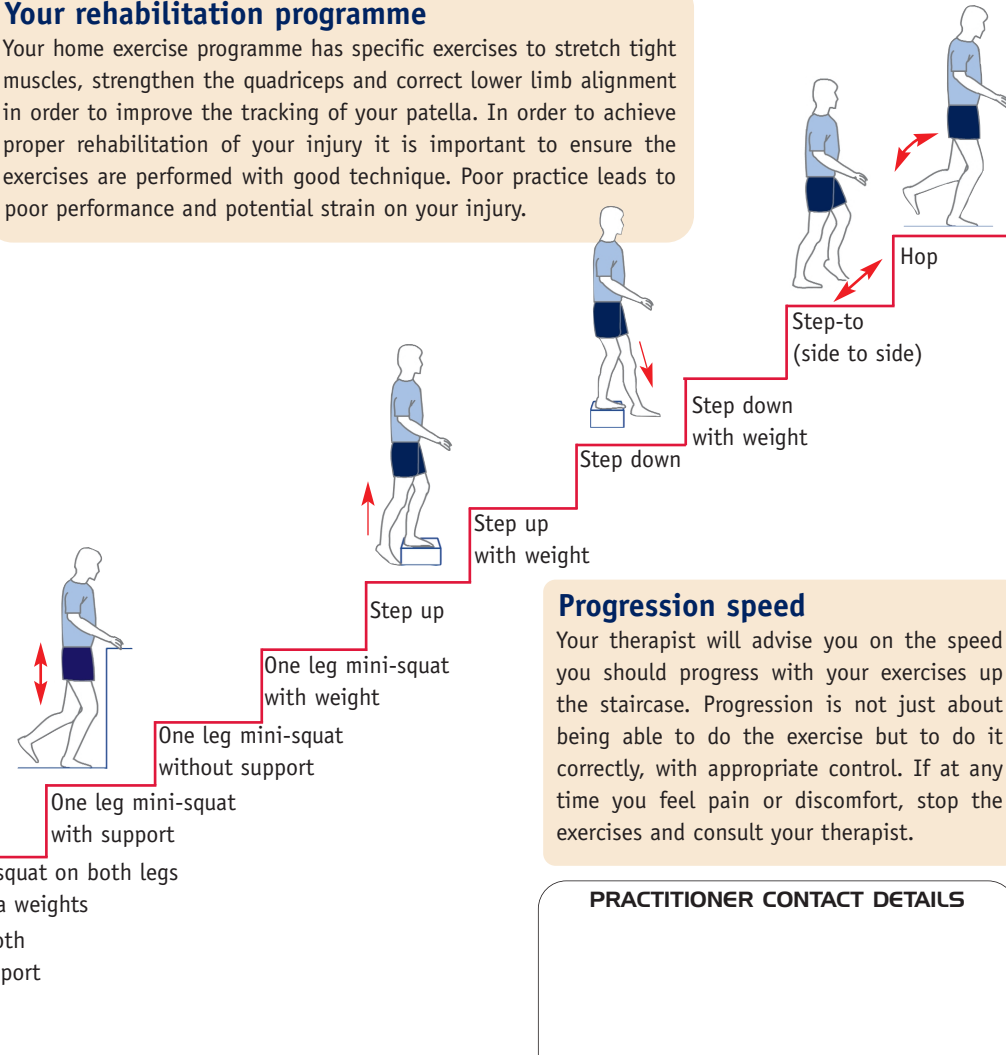


Static squat against wall

## Strengthening exercises

### Your rehabilitation programme

Your home exercise programme has specific exercises to stretch tight muscles, strengthen the quadriceps and correct lower limb alignment in order to improve the tracking of your patella. In order to achieve proper rehabilitation of your injury it is important to ensure the exercises are performed with good technique. Poor practice leads to poor performance and potential strain on your injury.



### Progression speed

Your therapist will advise you on the speed you should progress with your exercises up the staircase. Progression is not just about being able to do the exercise but to do it correctly, with appropriate control. If at any time you feel pain or discomfort, stop the exercises and consult your therapist.

### PRACTITIONER CONTACT DETAILS