

## 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

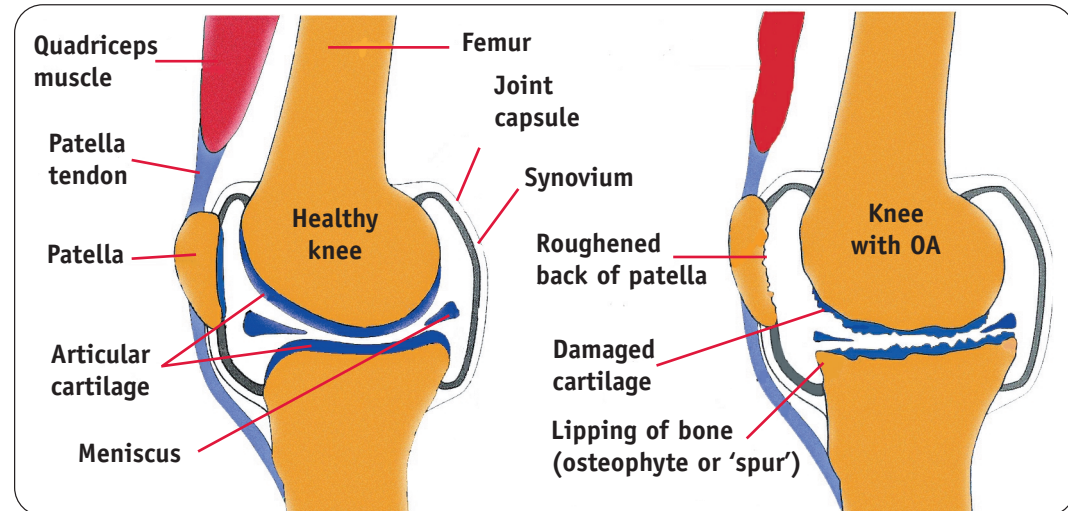
**R** - Running

**M** - Massage



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

## Exercises for osteoarthritis of the knee



### OSTEOARTHRITIS

Osteoarthritis (OA) is a disease of the joint cartilage associated with secondary changes in the underlying bone which may cause pain and compromise the function of the affected joint. OA is the result of aging and general wear and tear.

Exercise is important in order to maintain a full range of movement at the knee, improve strength and preserve joint function. Be careful not to over-exercise as this may cause increased pain. Controlled rehabilitation exercises have been proven to increase leg muscle strength and decrease disability without increasing pain in patients with OA of the knee.

### 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)

# Exercises for osteoarthritis of the knee

## Your rehabilitation programme

This exercise programme has specific exercises to help maintain your range of joint movement, and strengthen the muscles around your knee. In order to achieve these goals it is important to ensure the exercises are performed with a good technique. The following leaflet includes some exercises to help in your rehabilitation.

## Warm up and warm down

It is important that you warm up if possible with a gentle pain free walk 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 a few minutes.

## General guidelines

During acute attacks, rest will help by decreasing inflammation but you're likely also to experience increased stiffness and reduced muscle power.

When attempting the following exercises there should be no pain but it is relevant to work the muscles as hard as feasible. If the exercises cause pain and swelling then you should allow a period of time, perhaps two days, for the irritation to settle.

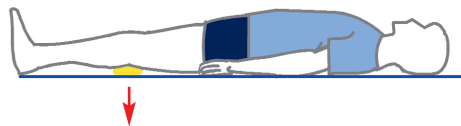
All exercises should be performed gently, slowly and ideally little and often.

## Early rehabilitation exercises

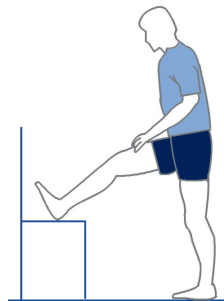
**1 Quadriceps stretch** – Lie on the floor (or bed if the floor is difficult) with your knee straight, slowly bend the affected knee as far as possible (moving your ankle as close to your bottom as possible). When you feel a stretch in the thigh muscle hold the position for 10 seconds then return to a straightened position and hold again for 10 seconds. **Repeat 10 times.**



**2 Quadriceps tense** – Remain lying on your back with your legs straight and place a rolled up towel under the knees. Tighten the front thigh muscle (quadriceps) by pushing the knee in to the towel. Hold for 10 seconds and then release for 20 seconds. **Repeat this process 10 times.**

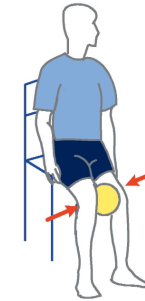


**3 Hamstring stretch** (tight hamstrings are a common finding in OA) – Stand upright and place the foot of your affected leg on a stool or chair. Try not to push down on



your knee with your hands but slowly lean forward until you feel a stretch at the back of the thigh. Hold the stretch for 20 seconds. **Repeat 5 times.**

**4 Inside thigh muscles and gluteal muscles tense** – Sit on a chair, place a towel or ball between the thighs, tighten buttocks and squeeze thigh muscles together. Hold for 10 seconds. **Repeat 5 times.**



## Later rehabilitation exercises

**1 Straight leg raise** – Lie on your back, lean on forearms with the knee of the affected leg straight and foot pulled up (bend the knee of the unaffected leg for balance). Lift



the straight leg about 4-6 inches off the ground and hold for 10 seconds. **Repeat 10 times.**

**2 Quadriceps strengthening** – Sit on a chair with your arms folded, slowly stand up without using your arms. When upright, return

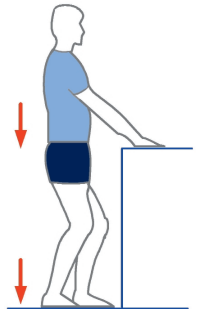


slowly to the sitting position again without using your arms. **Repeat 10 times.**

**3 Quadriceps strengthening - step down** – Place the affected leg on a shallow step about 3 inches high. Step down with the good leg (slowly), taking 3-4 seconds to complete the step. **Repeat 7 times.** You can hold on to a bannister for support.



**4 Quadriceps strengthening - minisquats** – Using a chair, squat down bending both knees but keeping the back straight. The squat should be to approximately 45 degrees. **Repeat 10 times.**



## Additional exercises

Swimming and cycling may be appropriate for certain individuals as mobility, strength and aerobic capacity can be increased without too much stress to the joint.

### PRACTITIONER CONTACT DETAILS