

## Knee Stretching and Strengthening

There are certain activities in the work place that may contribute to developing a sore knee. These could include repetitive activities at work, walking, standing or kneeling for long periods of time, lifting objects or operating machine tools. The nature of these activities can, if not addressed lead to the gradual build up of tension and stiffness in the knee. These exercises have been designed by our team of Chartered Physiotherapists to assist in preventing the onset of tension and stiffness or to ease any pain if it occurs.

1

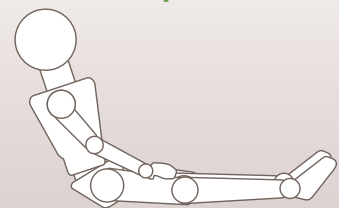
### Bending the knee in sitting

This is a great, gentle exercise for the knee. As some of us sit for long periods or work in manual environments the knee can become a little stiff and the ability to bend the knee fully can reduce. This simple exercise will stretch out the tissue around the knee and lift a lot of that pressure and stress on the area.

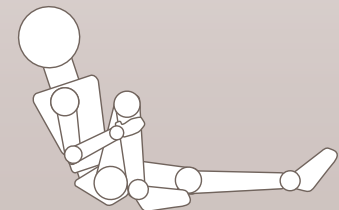
- Sit with both knees straight out on the floor
- Bend one knee towards you as far as possible
- Use the arms to apply gentle pressure to further bend the knee and hold the stretch for 2 seconds, return to the start position and then repeat

If you do just 5 of these on either knee once per day, you will really help reduce the gradual build up of tightness in the knee and maintain the correct range of movement.

Step 1



Step 2



2

### Straightening the knee

Over time as we get a bit older, you can start to lose some movement in the knee and the ability to fully straighten the knee is one of those movements.

This movement, known as extension is very important to maintain. If you are unable to fully extend the knee, this will really affect the ability of the thigh muscles, known as the quadriceps, to contract and this will affect both the strength and the stability of the joint. For those of you who have had a knee operation and have seen a Physiotherapist, it is the movement of extension that the Physio will want to get back first.

By doing this simple exercise each day, you can maintain this very important movement.

- Sit on a chair with one foot supported on another chair or stool in front of you that is at hip height
- Relax your leg and let the knee straighten
- If you would like to progress and increase the stretch, gently press down on the thigh just above the knee to further stretch it
- Hold the stretch for 2 seconds, gently bend the knee slightly to release the stretch and then repeat

If you do just 5 of these on either knee once per day, you will really help reduce the gradual build up of tightness in the back of the knee and maintain this very important movement.

Step 1



Step 2



### 3

#### Hamstring stretch

Again, this is another great exercise for stretching the hamstring and reducing the build up of tension in this area.

The hamstring is the large muscle at the back of the thigh. It actually attaches to your pelvis and then below the knee at the top of the shin bone. This muscle group that comprises of 3 muscles, both moves and stabilises the hip and the knee.

It is really important to stop this muscle from getting tight, both for the hip and the knee; however, also for the lower back as this muscle attaches to the pelvis.

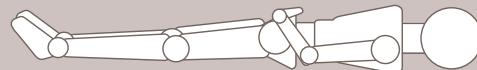
When we sit for a long time or work in a manual environment, this muscle group can become stiff and tight. This simple stretching exercise will assist in maintaining the correct length of the muscle.

- Lie on your back holding one of your knees from behind and pull towards your chest so the hip is at 90 degrees
- Gently straighten the leg while keeping the knee in the same position, hold the stretch for 5 seconds
- Slowly return to the starting position and repeat 5 times
- If you bend the opposite knee slightly, you may find this exercise easier to do
- Repeat on the other side

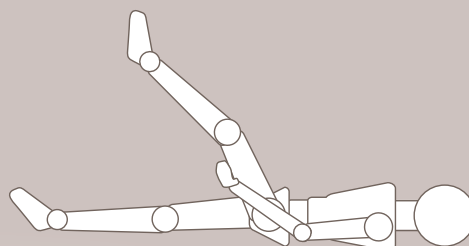
As this exercise involves lying down, you may want to do this one when you get home.

If you do this exercise just once per day, you will really assist in preventing the gradually build up of stiffness and tightness in this area.

#### Step 1



#### Step 2



### 4

#### Calf stretch

The calf is prone to becoming stiff and tight and when this happens it can cause more stress on the back of the knee. The calf muscle attaches above the knee in the lower part of the thigh bone called the femur, so when the calf becomes stiff and tight, particularly the upper part of the calf, it can affect the knee joint and lead to pain behind the knee.

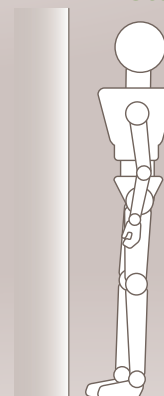
The calf can become tight over time for those working in both sedentary and manual environments.

It is important therefore to maintain the movement in the calf.

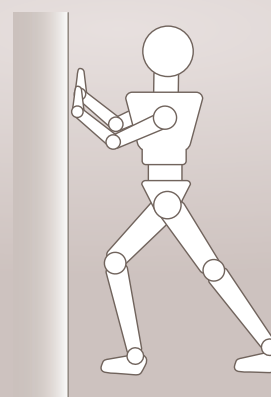
- Stand and place both hands on a wall, with your feet about half a meter from the wall
- Place one leg behind the other and lean your body forward until you feel a stretch in your calf and hold for 5 seconds
- Whilst stretching the calf, keep your knee straight and your heel on the ground as you lean forward
- Repeat this 5 times on each side once per day

By keeping the calf flexible, it can reduce the stress on the area and again reduce the likelihood of knee pain.

#### Step 1



#### Step 2



## 5

### Strengthening the knee

You may have heard of Physiotherapists talking about strengthening the quadriceps muscle. The quadriceps muscle at the front of the thigh comprises of 4 muscles and it is very important to keep this muscle strong, whether your job is sedentary or manual. A strong quadriceps; often just referred to as the quads, really helps to maintain a strong knee.

This exercise works the lower part of the quads and in particular, the muscle on the lower inside called the Vastus Medialis.

This muscle assists in stabilising the knee cap and in turn the knee itself. Physiotherapists are very keen to keep this muscle strong.

- Sit on a firm surface with a rolled up towel under your knee
- Push your knee down into the towel and lift your heel up off the floor as high as you can until the knee is straight. During this movement, pull your toes and foot up towards you. By pulling your toes and foot up towards you, it assists in the contraction of the quads muscle
- Please note that when you lift up your foot, make sure that your knee remains in contact with the towel
- Slowly return to the start position and repeat

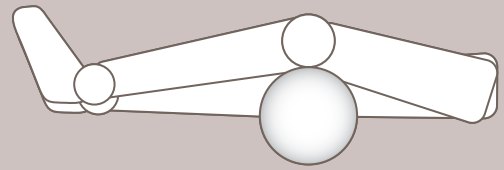
Although this is only a very small movement, it specifically works this muscle on the lower inside of the knee.

If you would like to progress this exercise, you can place a small weight around your ankle.

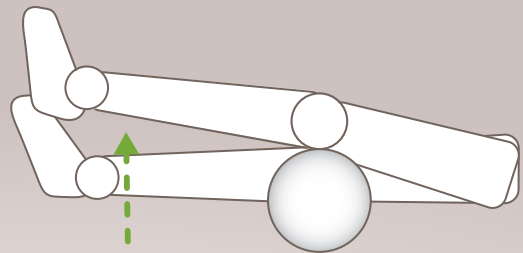
Again, as this exercise involves sitting down, you may want to do this one when you get home.

Start with doing 1 set of 10 and build up gradually to 5 sets of 10.

Step 1



Step 2



## 6

### Straight leg raise

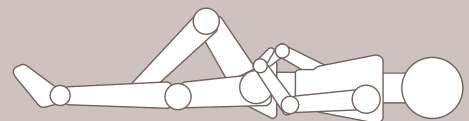
This is another way of strengthening the quads muscle, however, on this occasion it works more of the muscle rather than just the Vastus Medialis on the lower inside.

- Lie on your back with one knee bent, this takes the pressure off the lower lumbar spine
- Straighten your other knee so the leg is straight out in front of you and pull your toes and foot up towards you. By pulling your toes and foot up towards you, it assists in the contraction of the quads muscle
- Lift your leg off the floor to about 45 degrees
- Lower your leg back onto the floor while still keeping your knee straight and repeat
- Once you have exercised one leg, repeat on the other

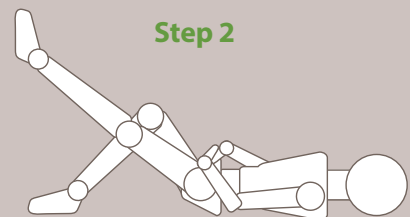
Again as this involves lying down, you may want to do this one when you get home.

Start with doing 1 set of 10 and build up gradually to 5 sets of 10.

Step 1



Step 2



## 7

### Strengthening wall squat

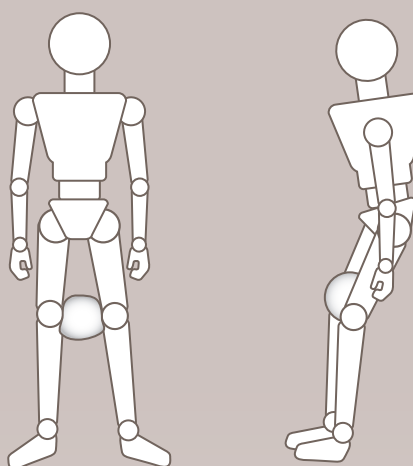
This exercise works more than 1 muscle group and is a great exercise for improving the general strength of the knee.

- Stand with your body leaning against a wall
- Move your feet forward to position your legs at a 45 degree angle from the wall
- Place a ball or a rolled up towel between your knees
- While you gently squeeze the ball or the rolled up towel, slowly bend your knees to 45 degrees
- Slowly return to the standing position and repeat 5 times
- Please maintain a good posture with the lower back slightly arched and keep the knees stable at all times

Like all the exercises do this carefully and slowly, particularly if you are not used to doing this.

Start with doing 1 set of 5 and build up gradually to 5 sets of 5.

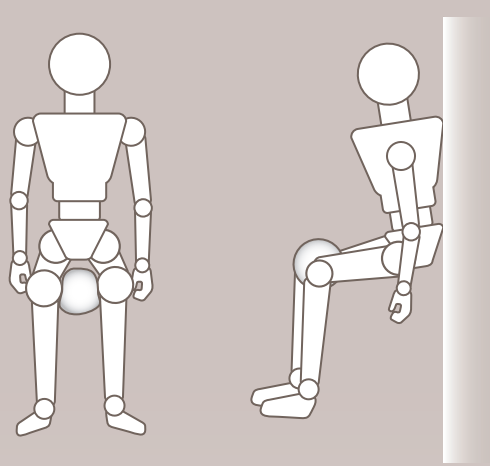
#### Step 1



Front

Side

#### Step 2



Front

Side

Overall, remember to do these exercises slowly and carefully and also remember that by maintaining the movement and strength in your knees, you really will help to reduce the likelihood of knee problems.

Please be aware Physio Med are not liable for your health and wellbeing as a consequence of following our exercises.

Please consult a doctor and or physiotherapist before starting any new exercise or musculoskeletal rehabilitation programme.