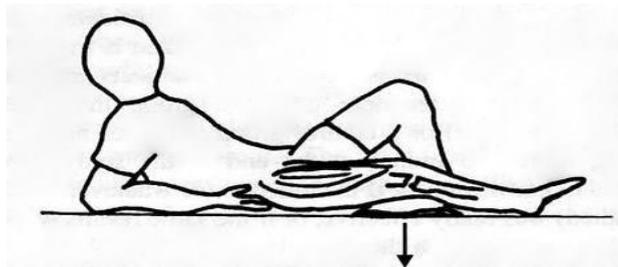


Knee pain relief

Multiple studies have shown that there are many people who have severe arthritic changes in their knees as shown on an X-ray and yet who have no pain. They have maintained function of their knees despite joint changes. You can take steps to improve the function of your knee. There are 4 abilities your knee must have to function well: muscular strength, flexibility, proprioception, endurance.

Strength

Quadricep (thigh) strength has been shown to be consistently weak in people with knee pain. 8 weeks performing the following exercise has been shown to increase quadricep strength by 33%



- Fold a pillow in half and place it under your knee as shown. If necessary the exercise can be done straight legged without a pillow.
- Press down as hard as you comfortably can with the extended knee and hold for 3 to 5 seconds.
- Do this 30 times, or as many as you can manage, holding each contraction for 3-5 seconds.
- Repeat 3 times a week separated by days between sessions. If necessary gradually build up to 30 reps a session.

Proprioception

Proprioception is the body's ability to sense its own position. A knee with decreased proprioception fails to react fast enough to keep the knee stable. Proprioception helps to protect your knee from injury and joint damage. Many studies have shown that people with knee pain and various knee injuries have problems with proprioception. It is incredibly easy to improve, just perform the following exercise:

- Stand on the painful leg. The knee can be straight or slightly bent, whichever is more comfortable.
- Stand next to a table, chair or doorway to lightly hold onto if needed.
- When you can stand well balanced for 30 seconds start performing the exercise with your eyes closed.
- When you can stand well balanced for 30 seconds with eyes closed your proprioception should be sufficiently improved.

Endurance

Poor endurance of the knee has been associated with knee pain as well as increased risk of falling in the elderly. Knee pain can also affect your overall cardiovascular endurance as well. The following exercises are ways of increasing knee endurance. You can alternate between them if you get bored of one. Continuous movement is the key, keep adding a couple of minutes a time. Try to build up to 20-30 minutes of exercise 2-3 times a week.

- Walking – it doesn't matter how fast you're moving as long as you're moving continuously to build endurance. Walk in supportive athletic shoes or walking shoes. If balance is an issue use cane or walker to stay safe. If you prefer you can use a treadmill.
- Walking in a swimming pool – This will help to support your body weight. Walk continuously at a comfortable pace. Walk at about chest deep. Never exercise alone in water.
- Stationary bike – Seat height is important. Set it so you are comfortable all the way round. The knee should be slightly bent at the bottom of the revolution. Set the bike for the least amount of resistance and build up to the required time. Only increase resistance once you are cycling for 20 minutes or more .

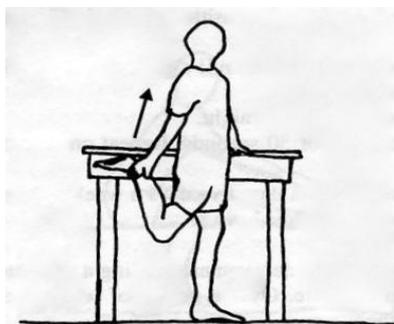
Flexibility

Clinical studies show that one stretch a day held for 30 seconds and performed 5 days a week is enough to make your muscles longer and more flexible. The good news is it only takes 2 stretches to get the job done. Do not be too aggressive with your stretches. As long as you can feel the stretch it doesn't matter if you don't match the picture exactly.



Hamstring Stretch

- Using a towel get in the position shown in the picture. Either on the floor or on the bed.
- Pull your foot towards you until a gentle stretch is felt in the back of the thigh.
- Try to keep your knee straight.
- Hold for 30 seconds.



Quadriceps Stretch

- Get into the position shown in the picture.
- Grabbing your ankle, pull your foot towards you until you feel a gentle stretch in the front of your thigh.
- Bring your knee backwards as well for an even stronger stretch.
- Hold for 30 seconds.

You should not be in a lot of pain while doing these exercises. Some discomfort is OK as you are working muscles which you may not have been using for a while. **Stop the exercise if you have any significant increase in knee pain or symptoms and consult your medical professional.** These exercises should be safe for your knee, however use your common sense and stop if you feel any harm is being done.