The Knee Joint

A joint is where two or more bones meet. A joint allows the bones to move freely. The knee joint is a strong weight bearing joint. It has to be strong enough to uphold a person’s weight and it needs to be able to withstand stresses such as twisting and turning.

The knee joint is where the femur (thigh bone) and the tibia (shin bone) meet. The ends of these bones are covered in cartilage. This allows the bones to move freely against each other without friction.

On top of the tibia (shin bone) the knee joint has two additional rings of cartilage called menisci. These two rings of cartilage act as shock absorbers and help spread the weight evenly over the joint.

The patella (kneecap) over lies the femur (thigh bone) and tibia (shin bone) and sits in a groove. The quadriceps tendon overlies the patella (kneecap) and attaches at the top of the tibia (shin bone).

The joint is surrounded by a membrane known as the synovium. This produces a small amount of synovial fluid which helps to lubricate the joint. The synovium is surrounded by a hard outer layer called the capsule.

The knee joint has 4 large ligaments, 2 inside the knee joint and 1 either side of the knee joint. Together the muscles, ligaments and capsule help to hold the knee joint in place.

The muscles also provide movement at the knee joint. The two major muscle group in the knee are the quadriceps and hamstring. The quadriceps is the strap like muscle in the front which helps extend or straighten the knee and the hamstring is the muscle at the back which is responsible for bending the knee.

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OSTEOARTHRITIS is the most common type of arthritis which is characterized by damage to the surface of the joint. It is commonly described as ‘wear and tear’ arthritis.

Symptoms of Osteoarthritis of the Knee

- **Pain** – This is the main symptom people suffer from. This can occur either alone or with other symptoms listed below. Pain can occur during activities and after resting for a long time associated with stiffness. This can impact on muscles working, causing them to become weaker. If this happens the joint is not as well supported and can cause further pain. It’s therefore important to exercise to maintain strength. Some good exercises are shown below.

- **Swelling** – This may occur during times of flare-ups and increased pain.

- **Decreased strength** – This can result from not using the muscles due to pain and swelling in the joint.

- **Clicking** – this may occur during movements such as walking up and down the stairs and bending down. This is due to the wearing of the cartilage.

- **Stiffness** – This is usually worse for people first thing in the morning after the knee has been still for a long time during the night or after they have been resting from activity for a long time. This can result in a loss of the amount of movement.

- **Functional Difficulties** ie, walking. Walking long distances or climbing stairs may cause an increase in pain or swelling. This can be due to stiffness and decreased strength.

Symptoms can also change with the weather. Often people find their symptoms can increase during cold weather periods such as damp weather or low pressure. Other people find that doing too much activity makes their pain worse.
TREATMENTS FOR OSTEOARTHRITIS

There is no cure yet for osteoarthritis at present, but there are a number of ways it can be managed to help reduce the symptoms and protect the knee joint from further deterioration.

1. SELF MANAGEMENT
   - Applying heat to the affected knee for 10-20 minutes can help ease your pain. This can be in the form of heat pads, hot water bottle or wheat bags (heated in microwave). Cover the heat pad, hot water bottle and wheat bag with a towel to avoid burning the skin.
   - Cold can also help relieve your symptoms especially during the first 24-48 hours of a flare up or when you notice that the knee is red, hot and swollen. Cover the cold pack or frozen peas with a damp cloth before applying to the knee and leave it for 10-20 min. A cold spray can also be used.
   - Using a walking stick held on the opposite hand of the affected knee will help reduce the pressure or compressive force on the knee joint enabling you to walk with less pain.

2. EXERCISE
   - Exercise is important to help maintain your knee movements and avoid joint stiffness, to strengthen the muscles around the knee joint and to keep you fit.
   - If possible, do regular walks but make sure that you have rest in between.
   - Also, pace your activities. Try to plan out your day and break up the difficult jobs into chunks and do something that you can easily manage.
   - Swimming and use of an exercise bike are two exercises recommended in patients with knee arthritis to help improve fitness.

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3. **WEIGHT CONTROL**

- Losing weight will decrease the added pressure on your knee joints. Even losing a modest weight can make a difference in your joints.

4. **PHYSIOTHERAPY**

- Your doctor may refer you to a physiotherapist if you need extra help and advice to manage your symptoms.
- The Physiotherapist will complete a thorough examination of your knee and, if appropriate, use specific techniques such as manual therapy, acupuncture or electrotherapy to help minimise your discomfort. However, the foundation of all Physiotherapy for arthritic knees is specific exercises to maintain/improve the movement and strength of your knee.

Here are a few simple exercises that are suitable for almost all knees and will get you started...

1. Gently bend and straighten your knee by sliding your foot towards and away from your buttocks. Do this alternately with the other leg and repeat this 10 times.

2. Keep the other knee bent and the affected leg straight. Tighten up the top muscle on the thigh of the affected leg. Keep it straight as you pull your toes up towards you and raise the leg about 20-30 inches off the floor or bed. Hold this for 5-10 seconds and repeat 10 times. Repeat the exercise on the other leg.

3. If you find it difficult to do exercise 2, place a rolled towel or cushion under the affected knee and raise your heel as you pull your toes up towards you. Tighten the muscles on the top of your thigh to straighten your leg, keeping the affected knee on the pillow. Hold for 5 sec and repeat 10 times. Repeat on the other leg.

Try these exercises several times per day for 2 weeks and if these do not help or do not resolve your problem, contact your GP to organise a referral to Physiotherapy.
5. **PODIATRY**

- A Podiatrist can assess your gait and feet posture, prescribe insoles or arch supports and give you advice on footwear to help improve your alignment in the legs and feet minimizing undue stress in your joint.

6. **MEDICINES**

- Painkillers or analgesics can help reduce the pain and stiffness but it will not be able to repair the damage in your joints. It is best taken when you are in pain or before you do your exercise. There are also other medications and supplements available that could help control your pain. You’re GP or your pharmacist may be able to give you advice on this.

Please note that ARC (Arthritis Research Campaign) also produce a detailed and informative leaflet regarding Osteo-arthritis of the knee which can accessed at the following website:-


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