

## The Knee

### The knee joint is a frequent source of problems requiring the attention of an orthopaedic surgeon.

The joint is primarily formed by the two large bones of the lower limb, the femur (thigh bone) and the tibia (shin bone). The patella (kneecap) articulates with the femur at the front of the knee. The fibula joins with the tibia on the lateral (outside) side of the knee. Together, the femur, tibia and patella make three compartments (medial, lateral and patellofemoral). Each of the bones has a bearing surface of articular or hyaline cartilage. In addition there is a meniscus in each of the medial and lateral compartments. The menisci are like cushions or spacers and are made of fibrocartilage. They often simply referred to as the cartilages.

The direction of movement of the bones is controlled by the ligaments and the muscles make the joint move. The major ligaments are the anterior and posterior cruciate ligaments and the medial and lateral collateral ligaments. In addition, the collateral ligaments have important associated ligaments towards the back of the knee. The major muscle groups are the quadriceps at the front of the thigh and the hamstring muscles at the back. Muscles attach to bones via tendons. The main tendons around the knee are the quadriceps and patellar tendons which attach to the top and bottom of the patella respectively. The iliotibial band is like a tendon on the lateral side of the knee.

There is a wide range of pathology and problems in the knee.

The menisci can be torn as a result of an injury, although most meniscal tears are the result of a degenerative process and a specific injury may not be recalled. Not all meniscal tears require treatment, but if they do, this is usually done by arthroscopy. The tear can either be resected (cut out) or repaired.

The articular cartilage can wear away. This is called osteoarthritis. Treatment depends on the severity of the disease and can range from quadriceps strengthening exercises to a realignment procedure called an osteotomy or to joint replacement. Isolated injuries may also occur causing local defects for which there may be specific treatment to try to restore the surface. Osteochondritis dissecans is a condition that involves an area of articular cartilage and the underlying bone and usually occurs in teenagers. The appropriate treatment depends on many factors.

The bone underlying the articular cartilage may occasionally be affected by a condition called avascular necrosis in which the blood supply to an area of bone becomes disrupted. It may recover spontaneously or deteriorate to the point that intervention such as joint replacement may need to be considered. The cause of avascular necrosis is poorly understood.

Ligaments can be torn. Medial collateral ligament injuries usually heal without surgery but may require bracing. Anterior cruciate ligament injuries are often treated by reconstruction, but there are also situations in which they do not need surgical intervention. Posterior cruciate ligament injuries are not usually treated with reconstruction unless they are combined with other injuries or have been causing instability. Lateral ligament injuries are often associated with other injuries and may require surgery.

The patellofemoral joint is a frequent source of problems. There can be the same articular cartilage problems as in other parts of the knee. In addition there can be problems with instability of the patella as well as maltracking of the patella in its groove in the femur. Physiotherapy is often the first line treatment for many of these problems, but surgery may be required for recurrent dislocation of the patella. There are a variety of stabilization procedures that can be used depending on the specific problems of an individual.

Tendons can be torn and usually require repair. However the more common problem is tendinopathy that results in local pain and which is usually treated without surgery, although surgical intervention may occasionally be required for symptoms that fail to resolve. The iliotibial band can impinge on the lateral aspect of the femur causing pain with running. It can usually be managed without surgery but surgical release is sometimes performed in chronic situations.

*These notes have been prepared by orthopaedic surgeons at OrthoSport Victoria. They are general overviews and information aimed for use by their specific patients and reflects their views, opinions and recommendations. This does not constitute medical advice. The contents are provided for information and education purposes only and not for the purpose of rendering medical advice. Please seek the advice of your specific surgeon or other health care provider with any questions regarding medical conditions and treatment.*