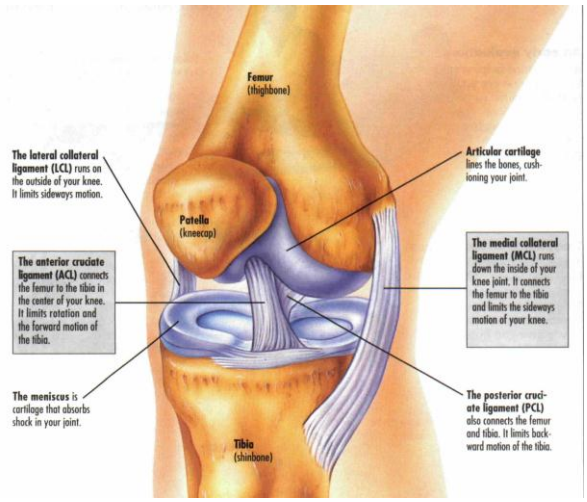
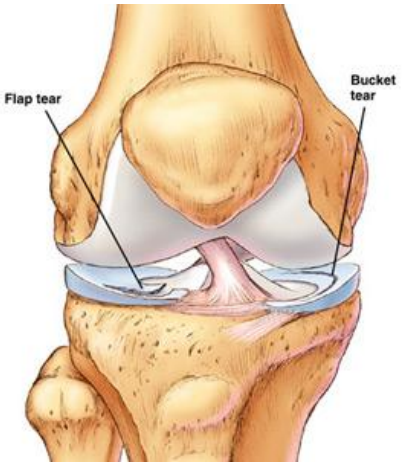
Knee Joint



- The knee joint is made up of 3 bones; the femur, tibia, and patella.
- The function of the knee joint is to absorb load, allow locomotion through flexion and extension.
- Flexion of the knee joint occurs when the knee bends.
- Extension of the knee joint occurs when the knee straightens.
- Rotation of the knee joint is possible through the shape of the ends of the bones that articulate with each other.
- Side to side of varus-valgus-motion can occur at the knee joint.
- Motion in the 3 planes is controlled by muscle and ligaments.
- Articular cartilage covers the ends of the bones of the knee joint and is involved in load absorption and the motion of the knee joint.

Meniscus



- Meniscus is the C shaped cartilage that sits between the bones of the knee joint.
- Medial meniscus is the meniscus that sits on the inner side of the knee joint.
- Lateral meniscus is the meniscus that sits on the outer side of the knee joint.
- There is no meniscus that sits between the patella or kneecap and the femur.
- Menisci absorb compressive load through the knee.
- The menisci do provide some stability to the normal knee
- The menisci have a poor blood supply.
- The menisci have a poor nerve supply.
- The menisci can be torn as a result of sufficient stress usually in a rotation and weight bearing situation, or through the aging process.
- Degenerate tears of the meniscus are common in patients between the age of 35 and 65 as a result of the varying amounts of trauma.
- The symptoms of meniscal tears are pain, swelling, catching, or locking.
- Meniscal tears are diagnosed by history, examination, and MRI scans.
- Meniscal tears are commonly treated by arthroscopic surgery.
- Arthroscopic surgery on meniscal tears usually involves resection of the torn piece of meniscus.
- Arthroscopic meniscal repair is less commonly successful in patients over the age of 25 years.
- Meniscal tears can be evident on MRI scan and not symptomatic.

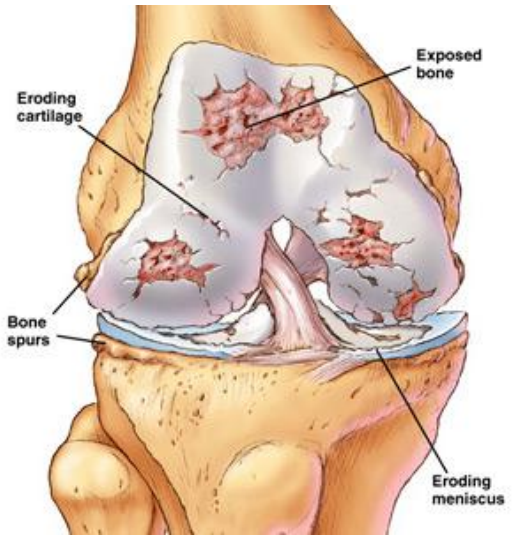
Fluid

- Fluid on the knee can result from the knee producing fluid in response to increasing load or joint irritation.
- Fluid on the knee is called an effusion.
- Synovial fluid is produced by the synovial cells that line the joint.
- The normal volume of synovial fluid in the joint is less than 5mls.
- Excessive synovial fluid in the joint is known as an effusion.

Cartilage and Chondral Wear

- Cartilage wear is often known as chondromalacia.
- Chondral wear can give symptoms of pain that is worse with weight bearing.
- Chondral wear can give symptoms of aching and stiffness after sitting.

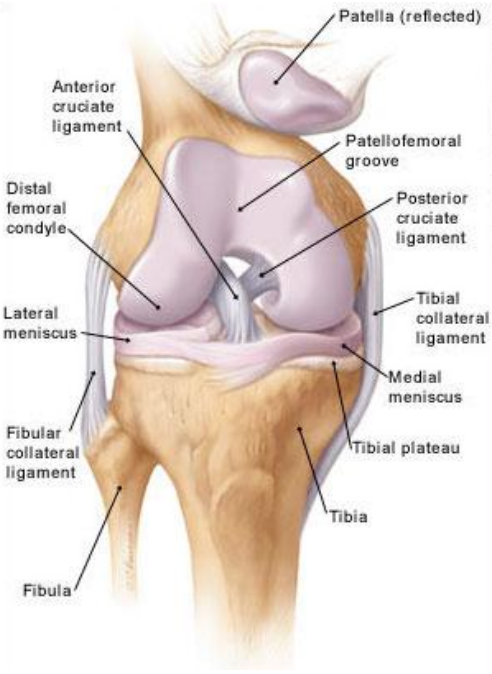
Articular Cartilage



- The ability of articular cartilage to heal is poor.
- Articular cartilage has a poor blood supply and a poor nerve supply.
- Loss of articular cartilage through wear and tear results in exposure of the bone under the cartilage (subchondral bone) and this is known as osteoarthritis.
- Subchondral bone is extremely sensitive and when exposed and loaded pain results.
- Microfracture is a technique that involves drilling into exposed subchondral bone and allowing blood clot to form in the defect and turn into a fibrocartilage scar which does have some load bearing potential.
- Articular cartilage transplantation is possible but the result still not predictable.

Ligaments

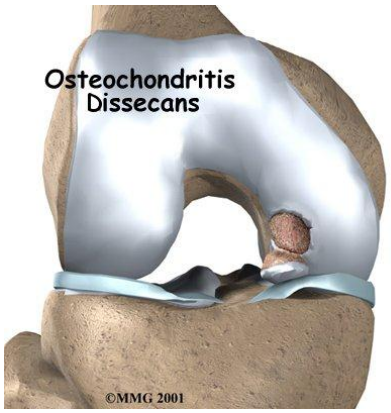
- Ligaments of the knee joint include anterior cruciate ligament (ACL), posterior cruciate ligament (PCL), lateral collateral ligament (LCL) and medial collateral ligament (MCL).
- The ligament that connects the patella to the tibia is called the patella ligament, but often referred to as the patella tendon.



- The medial collateral ligament (MCL) connects the femur to the tibia along the inside of the knee and helps control the sideways motion of the knee.
- The medial collateral ligament is the most commonly injured ligament of the knee.
- Injury to the medial collateral ligament commonly occurs from a contact injury from the outside of the knee or from a skiing injury where the bindings fail to release.
- The lateral collateral ligament (LCL) connects the femur to the tibia along the outside of the knee and helps control the sideways motion of the knee
- An LCL injury usually occurs with a significant hyperextension mechanism or a contact injury from the inside of the knee with the force directed to the outside.
- The LCL is not commonly injured. If a lateral collateral ligament injury is diagnosed
- Anterior cruciate ligament (ACL) connects the femur to the tibia at the centre of the knee and helps control forward motion or translation of the knee as well as rotation. The ACL is most commonly injured from a side stepping mechanism or on landing from a jump with a sudden deceleration mechanism.
- 60-70% of anterior cruciate ligament injuries occur from a non contact mechanism of injury.
- The posterior cruciate ligament (PCL) connects the femur to the tibia at the back of the knee and crosses the anterior cruciate ligament. The posterior cruciate ligament prevents backward motion of the tibia on the femur. The posterior cruciate ligament is injured by a direct trauma to the front of the knee.

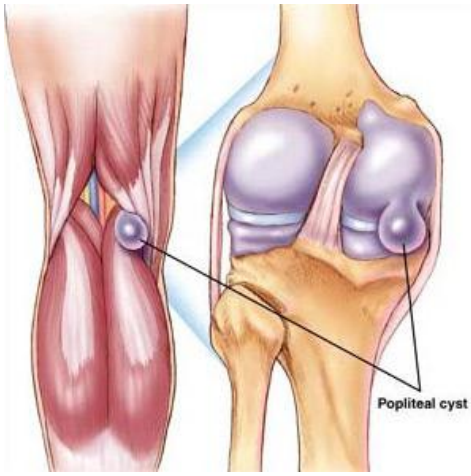
Osteochondritis Dissecans (OCD)

- Osteochondritis Dissecans (OCD) is a condition of the adolescent knee referring to a defect in the joint surface of the femur. This results in partial or complete separation of a fragment of bone with overlying cartilage.
- OCD can often result in symptoms of pain, swelling, and locking of the joint due to a loose body in the knee joint.
- OCD is twice as common in males as females.
- OCD is often associated with repetitive overloading of the knee joint. Treatment of OCD is dependent on the age onset of symptoms and the size of the lesion.
- Skeletally immature of younger patients have a better prognosis following diagnosis of OCD.
- Removal of loose OCD fragments and microfracture of the defect usually has a good outcome.



Baker's Cyst

- A Baker's Cyst or popliteal cyst is a swelling that occurs at the back of the knee.
- A Baker's Cyst is an out pouching of the knee joint synovial cavity or a collection of fluid lined in a sack lined by synovial cells that produce the fluid.
- Baker's Cysts form when fluid is produced in the knee joint and drains into the cyst or when the cells lining the cyst are turned on in response to some irritant.
- Baker's Cysts are usually managed without surgery.
- Baker's Cysts are common in both adults and children.
- Baker's Cysts cause symptoms of pressure in the back of the knee.
- Baker's Cysts in adults are often associated with cartilage wear and tear in the knee joint.
- The presence of fluid on the knee results in a unidirectional flow of fluid through a one-way valve into the baker's cyst in the back of the knee.
- Baker's cysts can rupture causing a release of fluid into the calf which may be painful.
- Baker's Cysts may be associated with degenerative cartilage wear or meniscal tear.
- Baker's Cysts are rarely treated with open surgery anymore.
- Baker's Cysts are often seen on MRI scan or ultrasound.
- Patients should not be concerned by the diagnosis of a Baker's cyst.



Bursa

- A bursa is a sack of fluid located near or around a joint.
- Bursitis is an inflamed bursa and can result from overuse or friction.
- Bursitis can cause symptoms of swelling, pain and tenderness to touch.
- Bursitis is not treated with arthroscopic surgery.
- Bursitis is often treated by rest and anti-inflammatory medications and modalities.