APPLIED ANATOMY

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The knee joint is a synovial hinge joint. It consists of two condyloid tibiofemoral joints and a sellar (or saddle shaped) patellofemoral joint. The shape makes the joint inherently unstable, but stability is achieved by a combination of static (ligaments) and dynamic (muscles) stabilisers acting across the joint. Interposed between the tibia and femoral condyles are the medial and lateral menisci. These fibrocartilaginous structures aid shock absorption, increase the area over which load is dissi pated and have a role in anteroposterior stability (Figure 40.1 Loss of the protective function of the meniscus through injury , degeneration or meniscectomy can accelerate degenerative change and prog ression to arthritis. Medial meniscal tears are three times more common than those in the more mobile lateral meniscus. Tears or meniscectomy that disturb the cir cumferential fibres and defunction the protective hoop stresses (such as radial tears, disruption of the root attachments or remov al or large portions of the meniscus) can cause rapid deterioration of the joint. The medial and lateral collateral ligaments are the primary restraints to valgus and varus stress, respectively . The medial collateral ligament (MCL) is a broad, flat ligament composed of a superficial and a deep layer. The deep layer is attached to the medial meniscus and to the tibia, close to the joint. The superficial MCL attaches more distally on the tibia. The MCL is commonly injured, but frequently heals with conservative management. The lateral collateral ligament (LCL) is a simple cord-like structure but works in combination with other struc tures (including the popliteus, biceps, popliteofibular ligament, iliotibial band, joint capsule) to form the lateral/posterolateral ligament complex. Injuries to the LCL are less likely to heal with conservative management and are more likely to require reconstruction. Heinrich A Wrisberg , 1739–1808, German anatomist and gynaecologist. -). - The anterior and posterior cruciate ligaments are each made up of two bundles. The anterior cruciate ligament - (ACL) has an anteromedial bundle that is tight in flexion and a posterolateral bundle that is tight in extension. The posterior cruciate ligament (PCL) has an anterolateral bundle (tight in flexion) and a posteromedial portion (tight in extension). The ACL and PCL prevent anterior and posterior translation of

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injuries are more likely to occur during sport. Multiple liga ment injuries completely disrupt two or more of the four main ligaments and are associated with high-energy trauma such as car crashes. This can result in complete dislocation of the joint and damage to arteries and nerves. Hyaline articular cartilage is a highly specialised connective tissue that lines the joint surface and has a low coe ffi cient of friction. Hyaline cartilage is devoid of blood vessels, lymphat ics and nerves and has

a limited capacity for repair. The con figuration of cartilage changes with ageing and with disease predisposing to injury . The knee has bursae surrounding it that can become inflamed and infected. Summary box 40.1 Anatomy of the knee joint /uni25CF /uni25CF /uni25CF /uni25CF

Complex synovial hinge joint The shape of the joint surfaces makes it inherently unstable The static stabilisers are the joint capsule, menisci, cruciate and collateral ligaments The dynamic stabilisers are the quadriceps and hamstring muscles

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