

# Patient Information Sheet

## LIGAMENT TEAR

### Structure

The knee lies between the thigh bone (*femur*), leg bone (*tibia*) and knee-cap (*patella*). Covering the ends of the bones is a tough low friction surface (*articular cartilage*). The knee consists of two joints: the thigh-leg (*tibio-femoral*) and the thigh-kneecap (*patello-femoral*). These joints are stabilised by ligaments: the collaterals (*inner-medial & outer-lateral*) prevent side-to-side movement and the cruciates (*anterior-front & posterior-back*) prevent twisting (*rotational*) movement. The knee is straightened (*extended*) by thigh muscles (*quadriceps*) and bent (*flexed*) by hamstring muscles. The menisci are spacer washers in the tibio-femoral joint that transfer load evenly.

### Function

Ligaments run from bone to bone and consist of fibre bundles (*collagen*) highly aligned to resist tension. They guide motion to prevent injury and aid joint position sense (*proprioception*).

### Failure

Ligaments tear when an excessive pull (*tension*) is applied. Collateral tears result from excess side-to-side (*medio-lateral*) force whilst cruciate tears result from excessive twisting (*axial rotational*) force. A simple low energy event (low speed skiing fall) causes a partial tear. *Partial tears will heal*. Conversely, a complex high energy injury (tackle) causes a complete ligament tear associated with meniscal and articular cartilage injuries. *Complete tears do not heal*.

### Diagnosis

Partial tears are diagnosed by a history of a low energy event, pain and a tender but strong ligament on examination. Complete tears are diagnosed by a history of a high energy injury, painless giving way and ligament weakness on examination. X-ray may show a flake of bone pulled off by the ligament. MRI scanning is not required to make the diagnosis but may be necessary to exclude other injuries (meniscus / articular cartilage).

### Management principles

**Partial tears** will heal and require bracing for 8 weeks to protect the healing ligament. Physiotherapy starts immediately to maintain optimal function in the uninjured parts of the knee.

**Complete tears** do not heal and require either repair (immediate surgery to the torn ligament ends) or reconstruction (delayed surgical replacement of the entire ligament with a graft).

### Management of common tear patterns

Partial MCL (medial collateral ligament) tears will heal with bracing and physiotherapy. No surgery is required. A return to full function takes 3-6 months.

Complete ACL (anterior cruciate ligament) tears do not heal and require surgical reconstruction with a hamstring tendon. Return to full function takes 6-12 months after surgery.

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### The Knee Joint

