

# COLLATERAL LIGAMENT KNEE INJURIES

**A** ligament is a short band of tough fibrous connective tissue. Ligaments connect bones to other bones in and around joints. They do not connect muscles to bones, that is the function of tendons. Ligaments limit the amount of mobility in a joint, or prevent certain movements altogether.

There are four main ligaments that stabilise your knee (essentially hold it together). Two cruciate ligaments (anterior (ACL) and posterior (PCL), found deep within the joint) and two collateral ligaments found on either side of the knee joint.

Your **medial collateral ligament (MCL)** is the wide band-like ligament on the inner side of your knee connecting the bottom of the thigh bone (femur), to the top of your shin bone (tibia).

Your **lateral collateral ligament (LCL)** is a cord-like ligament on outside of your knee. It connects the thigh bone (femur) to the fibula (the smaller bone that makes up the outside of your shin).

Together they work to control sideways and twisting movement of the knee.

The MCL is often injured during a sharp change in direction, twisting the knee whilst the foot is fixed, landing badly from a jump, or the most common cause is a blunt force hit to the outside of the leg, forcing the knee inwards often during a rugby tackle.

The LCL is injured when the knee is forced from the inside, outwards which again can occur through a sharp change in direction, twisting the knee whilst the foot is fixed, incorrect landing technique, hyperextension of the knee or a blunt force hit to the knee, such as a tackle.

Injuries to either collateral ligaments often occur at the same time as injuries to other structures in the knee such as the cruciate ligaments and/or the meniscus (cartilage pads which provide shock absorption between the bones of the knee).

Injuries to the collateral ligaments

usually happen at speed. Muscle weakness or incoordination predispose you to a ligament sprain or tear.

## HOW DO YOU KNOW IF YOUR KNEE INJURY IS SERIOUS?

While it is always best to seek professional advice from your doctor or physical therapist, here are seven signs that could indicate a severe knee injury.

- 1 Obvious deformity. You may have a fracture or dislocation.
- 2 You heard a "pop" or "snap"
- 3 You've experienced swelling
- 4 Greater than normal movement
- 5 Less than normal movement eg. can't straighten completely
- 6 You are unable to weight-bear on your leg
- 7 Your knee "gives way" or "buckles".

## SYMPTOMS AND SEVERITY OF COLLATERAL LIGAMENT INJURIES

The severity and symptoms of a ligament sprain depend on the degree of stretching or tearing of the ligament.

- Mild grade I sprain, the ligaments may stretch, but they don't actually tear. Although the joint may not hurt or swell very much, a mild sprain can increase the risk of a repeat injury.
- Moderate grade II sprain, the knee ligament tears partially. Swelling and bruising are common, and the use of the joint is usually painful and difficult.
- Severe grade III sprain, your ligament tears completely, causing swelling and sometimes bleeding under the skin. As a result, the joint is unstable and unable to bear weight. Often there will be no

pain following a grade III tear as all of the pain fibres are torn at the time of injury.

## WHAT'S THE HEALING TIME FOR A COLLATERAL LIGAMENT INJURY?

Treatment of a ligament injury varies depending on its location and severity. As with all acute injuries it helps to use the PEACE and LOVE protocol for the first 24-72 hours then seek advice from a doctor or physical therapist.

- **Grade I sprain**
  - Usually heal within a few weeks
  - Maximal ligament strength will occur after six weeks when the collagen fibres have matured
  - Resting from painful activity, icing the injury, and some anti-inflammatory medications may be useful
  - Physical therapy will help to hasten the healing process via electrical modalities,



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massage, strengthening and joint exercises to guide the direction that the ligament fibres heal.

### ● **Grade II sprain**

- Use of a weight-bearing brace or some supportive taping is common in early treatment. This helps to ease the pain and avoid stretching of the healing ligament.
- Return to activity once the joint is stable and you are no longer experiencing pain. This may take up to six weeks, part of which may involve the use of crutches to offload the joint. During this time other activities/ cross-training may be possible to maintain fitness and strength.
- As in Grade 1 sprains physical therapy helps facilitate the healing process. Optimal tissue recovery followed by strengthening of the surrounding muscles, including the pelvis, buttocks, thigh and calf are all dependant on you completing a treatment and rehabilitation programme with your therapist. This not only helps you return to sport sooner and better, but helps to prevent a future tear or subsequent knee injury.

### ● **Grade III injury**

- Wear a hinged knee brace to protect the injury from weight-bearing stresses. The aim is to allow for ligament healing and gradual return to normal activities. This will require the use of crutches for a period.
- These injuries are most successfully treated with physical therapy and

a stringent graded return to sport program.

- You may not return to your full level of activity for up to 3 or 4 months.

Most knee ligament injuries resolve well with conservative management, however, surgery may be considered if there is significant ligament disruption with instability, for example a Grade III sprain.

Surgery may also be required if there are significant combination injuries involving the cruciate ligament and/or meniscus. In these cases a knee specialist will guide the need for surgery. Successful surgical outcome depends on completion of a full rehabilitation programme with your physical therapist. Surgery alone does not guarantee you a full (or faster) return to pre-injury sporting prowess.



### **REHABILITATION OF THE KNEE**

The most successful and quickest outcomes result from the guidance and supervision of an experienced sports physical therapist. Whether it is conservative management or following knee surgery, focus on restoring full knee motion, strength, power and endurance are crucial. You'll also require balance, proprioception and agility retraining that is individualised towards your specific sporting or functional needs.



### **WHAT DOES ALL THIS MEAN?**

Consider a body builder – he may have done some serious strength training in his life but essentially moves like a brick. However if you watch a sport like rugby, your body not only has to be strong, but also has to move fluidly, bend, rotate, and be co-ordinated, quite the opposite of a body builder. So don't be mistaken that rehabilitation only means multiple repetitions with heavy weights in a gym.

**Proprioception** is the sense of knowing where your body part is in space. This can

be a difficult concept to grasp until you lose it, because so much proprioception occurs subconsciously. Proprioceptive and balance exercises teach your body to control the position of a deficient (unstable) or an injured joint. When recovering from an injury or surgery, it is important that a careful post-operative or post-injury programme be planned. All the caution and careful rehabilitation in the world cannot account for what will actually take place out on the field. Having a knee joint that is well-conditioned and responsive to unexpected movements or impacts may help prevent an injury.

**Agility and sports-specific exercises** aid in the development of improved quickness and speed required for your return to sport. Drills that replicate what will be required of your body and knee once back on the field of play.

**Biomechanics** is the study of human motion, and plays a huge role in determining what causes injuries. The way your foot and ankle move in relation to your leg, hips, pelvis and lower back can all impact on your knee alignment and therefore load/stress. Your therapist may assess your posture, both standing, walking and running to see how everything works in relation to each other and prescribe you orthotics and or strengthening or stretching exercises to 'balance' out your movements.



### **HOW TO PREVENT RECURRENCE OF MCL OR LCL INJURIES?**

- A knee strengthening, agility and proprioceptive training programme is the best way to reduce your chance of a knee ligament sprain.
- Premature return to high-risk activities such as contact sports are best discussed with your physical therapist or surgeon, as too soon may result in re-injury.
- Biomechanical assessment, as mentioned above, may determine what is weak or tight, rotated in or out, flat or sluggish. In sport, no muscle or joint moves in isolation, it requires a very well-conducted and orchestrated collaboration between the brain, nerves, your eyes and ears, limbs and trunk with any one component being out of tune disrupting the melody and causing injury. Be proactive and address any imbalances prior to sustaining an injury. Prevention is definitely better than a cure.



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