**Knee Ligament injuries**

**What is a knee ligament injury?**

A ligament is made of collagen fibres organised into a thick band of tissue, like a rope. Ligaments connect one bone to another and are important stabilisers of joints.

The knee joint has four main ligaments: two are located inside the knee joint (the anterior and posterior cruciate ligaments); the others are located outside the joint (the medial and lateral collateral ligaments).

The knee ligaments can be injured when stretched suddenly and, depending on the number of collagen fibres damaged, result in a partial ligament injury (called a Grade 1 or 2 sprain/tear) or complete ligament rupture (Grade 3). Symptoms depend on the exact ligament torn and the severity of the injury, but are usually associated with localised pain, bruising and reduced movement. Injured ligaments can also present with a ‘pop’ or tearing noise, swelling and a feeling of giving way or instability when walking.

**What causes a knee ligament injury?**

The most common and serious knee ligament injuries include those to the anterior cruciate ligament (ACL) and the medial collateral ligament (MCL).

An ACL injury usually occurs during cutting or twisting movements, sudden stopping, or incorrect landing from a jump (all called ‘non-contact’ ACL injuries). These movements most commonly occur in sports such as netball, football, basketball, soccer and gymnastics. Less frequently, the ACL can be injured during a tackle or collision with another player (contact ACL injury) or an awkward fall while skiing. ACL injuries usually happen when the athlete’s foot is in contact with the ground and their knee is suddenly forced backwards, or when the knee is slightly bent and collapses inwards.

Young females and people with a family history of ACL injures are statistically at a higher risk of an ACL injury. Australia has the highest incidence in the world of ACL injuries, thought to be due to the sports we play and our climate and grass types.

The MCL is damaged when the lower leg (tibia) is stretched outwards, causing the knee ligaments on the inner aspect of the knee to tear. MCL injuries commonly occur during an awkward landing, a tackle or fall over another player, during skiing or when a foot or ski gets caught, causing the knee to collapse inwards.

Posterior cruciate ligament (PCL) injuries are less common than either ACL or MCL injuries. The PCL may be injured during a fall onto a very bent knee, or via the knee hyperextending if a player lands against the front of the knee, forcing the shin backwards relative to the thigh bone. PCL injuries are commonly associated with cartilage injuries.

**How do I know if I need have a knee ligament injury?**

Symptoms will vary depending on the actual knee ligament injured and the severity of the ligament injury. Complete ACL injuries are usually accompanied by a ‘pop’ or a crack at the time of injury and are usually initially extremely painful. Most people are unable to play on and report that their knee feels ‘wobbly’ to walk on.

However, some people’s pain settles within a few minutes and they can stand, walk and even run, and sometimes return to the field, without out pain of instability, until they try to change direction, when their knee may give way*.* The knee usually swells up within a few hours, remains generally painful (especially at the back and outside of the knee) and feels restricted to fully bend and straighten.

MCL injuries present with tenderness on the inner aspect of the knee, slight swelling and restriction of movement, all of which vary in intensity depending on the severity of the ligament injury. A complete rupture (Grade 3 MCL) can be associated with a noise at the time of injury and a feeling of wobbliness of the knee with walking.

Posterior cruciate injuries are usually accompanied by widespread knee pain worse at the back of the knee and calf but minimal swelling unless other structures are damaged as well. Your physiotherapist, GP or surgeon can examine your knee to determine which ligament or combination of ligaments are injured and the severity of the injury and refer you for imaging if required.

**How can physiotherapy help with knee ligament injuries?**

Your physiotherapist can advise you on the usual management of the knee ligament you have injured, including prescribing a physical rehabilitation program. Common to all knee ligament injuries, you will need to regain your knee movement, reduce any swelling, strengthen the muscles which support your knee and regain your normal walking pattern.

A complete rupture of the ACL does not heal, so treatment involves reconstructing the damaged ligament, usually with the persons own hamstring or knee-cap tendon, or training the surrounding muscles to try and ‘stabilise’ the knee joint.

Your physiotherapist will discuss with you your sporting goals, occupational requirements and knee function to help you decide how to proceed. Options to discuss include whether you should undertake a physical rehabilitation program for a period of time to assess what level of knee function you can achieve, or if you should get an early surgical opinion for an ACL knee reconstruction. The rehabilitation program will focus on regaining your muscle strength, particularly of your quads, hamstrings and hip muscles, and normalising your movement patterns of hopping, running, jumping, landing and turning to minimise the risk of knee re-injury. Ideally, you would do a two to three-month pre-habilitation (‘pre-hab’) program prior to surgery, and how well you respond to this pre-hab provides clues as to whether you should have surgery or stick with conservative management.

Your physiotherapist may fit you with a brace, depending on the severity/grade of the MCL ligament injury, to protect the ligament while it is healing. Gentle pain-free knee movement exercises will help you regain your knee motion, and strengthening exercises for the quads, hamstrings and hip muscles will help to support the knee. Taping to support the MCL will often be applied on return to sport, which varies from 2–6 weeks, post-injury, depending on the severity.

With posterior cruciate injuries, your physiotherapist may prescribe a brace for the first 4–6 weeks depending on the severity of the injury. Gentle pain-free knee movement exercises and a physical rehabilitation program, including quads strengthening exercises, are important in the recovery of this injury.

**How effective is physiotherapy for treating knee ligament injuries?**

**ACL injuries:** A recent trial in Sweden comparing a structured physical rehabilitation program, or early or delayed ACL reconstructive surgery, has shown no significant difference in outcomes of pain and knee symptoms, activities of daily living and sport and recreation function at two and five years, post-injury, for recreational athletes between the treatment groups. Approximately 50 per cent of the isolated ACL patients in this study required an ACL reconstruction because their knee was still unstable, even after completing a physical rehabilitation program.

Patients generally undertake physical rehabilitation programs (with or without surgery) for 9–12 months before they are strong and stable enough to return to their previous sports. It is recommended to participate in a pre-hab program under supervision by a physio for three months prior to surgery; this allows patient, family, physiotherapist and surgeon to make an informed decision regarding early or delayed surgery, or conservative management, and also improves the outcome of surgery both physically and emotionally.

The long-term outcome of ACL treatment choices is unknown and some researchers have found a higher risk of cartilage tears when ACL reconstructive surgery is delayed. Many people continue to experience some problems with their knee following an ACL injury no matter what treatment option they choose.

**Medial ligament injury (MCL):** Studies have shown physical rehabilitation is as effective as surgery for return to sport, even for complete ruptures of the MCL. The MCL is occasionally repaired surgically in conjunction with ACL Reconstructive surgery. Generally, rehabilitation from MCL injury takes between 2–6 weeks depending on the severity of the initial injury.

**Posterior cruciate injury (PCL):** PCL injuries are usually managed with a physical rehabilitation program, with or without a splint depending on the severity of the injury. Surgery is usually only considered if the PCL is damaged along with other important knee structures. Healing is variable depending on the severity of damage but generally from 4–12 weeks.

**What can I do at home?**

A physical rehabilitation program is very important for recovery from all knee ligament injuries, even if surgery has repaired or reconstructed the damaged ligament. The rehabilitation program is specific to the actual ligament damaged, the severity of damage and the sport you are returning to. You can optimise your recovery by completing the exercises specifically prescribed to you by your physiotherapist. You also need to heed the recovery advice given to you by your treating physiotherapist or surgeon, and ensure you rest and ice your knee, in addition to taking care with twisting movements which may stretch your healing ligament.

**How long until I feel better?**

Discuss with your physiotherapist alternative exercise and sports which are safe for you to participate in while you are recovering from your knee ligament injury.