AAOS
American Academy of Orthopaedic Surgeons

Plain Language Summary
Anterior Cruciate Ligament Injury

Background
This plain language summary provides an overview of the management of anterior cruciate ligament (ACL) Injuries. The ACL is a tether in the center of the knee that connects the femur (thighbone) to the tibia (shinbone). The ACL works with other ligaments to provide a stable knee, especially while playing sports. The location of the ACL is shown below. Injuries to this ligament can occur in various ways, such as suddenly stopping, rapidly changing direction, landing incorrectly, and a direct collision. It is estimated that 252,000 patients per year suffer from an ACL injury.

What is an ACL injury?
An ACL injury occurs when the ACL is stretched too far. The majority of ACL tears are complete tears (or ruptures), not partial tears.

What should you do?
The following may indicate an ACL injury:

- You heard a distinct popping sound and/or felt a popping and/or tearing sensation inside your knee
- Your knee gave way beneath you, or you have had episodes in which your knee 'gives out' or "shifts".
- There is pain and/or swelling of the joint after the new injury
- Difficulty bearing weight after a knee injury
- Loss of knee motion

If you think that you have injured your ACL, seek medical attention. It is also recommended that you immobilize for a short time, and, if possible, elevate the injured leg. You should also avoid placing weight on the injured leg, using crutches or assistance as able.

How is an ACL injury diagnosed?
There is strong evidence supporting initial diagnosis with a history and physical examination. By determining the origin of the injury and identifying the symptoms present (such as swelling, loss of range of motion, etc.), your doctor will be able to determine if an ACL injury is present. There is also strong evidence that supports the use of an MRI to confirm the injury and identify any associated injuries in the area (damage to the meniscus, cartilage, or other ligaments). Your physician may also elect to obtain x-rays to identify any potential fractures or dislocations.

What treatment options are available for ACL tears?
Treatment options depend on many factors, including knee function, patient activities or work demands, and patient preferences. Your doctor may elect to treat your injury non-operatively. This option is supported in various studies for lower risk patients, as defined by lower activity levels and knees that are less 'loose.'

Reconstruction is replacement of the ruptured ACL with a new ligament. There is evidence supporting reconstruction in active young adults (18-35 years) as well as in pediatric patients. For patients requiring surgical reconstruction of the ACL, moderate evidence supports that surgery should take place within 5 months of the initial injury. There is an option as to the tissue used in ACL reconstruction.

An autograft is tissue that has been grafted from elsewhere on your body and an allograft is tissue from another person. In some patients, the use of allograft may have a higher risk of failure, especially in younger or very active patients – this decision should be discussed with your surgeon. There is also strong evidence that if your own tissue is used in the reconstruction, this tissue should come from either the bone-patellar tendon-bone or hamstring-tendon. This decision is based on each patient's individual needs and should be discussed with your surgeon.

What can you expect after surgical treatment?

After surgery, you can expect to complete a physical therapy program. The evidence shows that both accelerated and non-accelerated programs have similar outcomes. The use of a knee brace is not supported by evidence, as there has been no proven benefit to post-operative healing. The time it will take to recover from surgery ranges from 6-12 months, depending on the individual patient. The time it takes to return to your sport is also highly individual. Erring on the side of caution is advised, as the ACL needs time to heal. The healing process consists of the integration of any tissue used for reconstruction as well as its reattachment to the bone. Neuromuscular healing also requires time to adequately regain balance, strength, and coordination.

What can you do to prevent ACL injury?

There is evidence that neuromuscular training programs may reduce ACL injuries in athletes. Neuromuscular training can be as simple as what some consider a warm-up routine, which includes jumps, turns/pivots, or even marching with feedback from coaches and instructors. This type of training strengthens muscles as well as teaches the athlete how to move safely.

The use of a knee brace to prevent ACL injury is not supported by evidence. The evidence shows that there is no difference in injury rates between those who use a knee brace and those who do not.