

Acute ACL Injury

An acute ACL injury is a tear or sprain of the anterior cruciate ligament (ACL). The ACL is a major stabilising ligament in the knee. It is crucial in preventing excessive forward movement of the tibia (shin bone) concerning the femur (thigh bone). It often occurs during sports or other activities involving sudden stops, direction changes, or pivoting movements. Symptoms of an ACL injury include pain, swelling, instability, and difficulty bearing weight on the affected knee. Diagnosis is made through a physical examination and imaging tests such as an MRI. Treatment options include physical therapy, bracing, and surgery.

What are the causes of an acute ACL injury?

Acute ACL injuries typically occur due to sudden, forceful movements that put excessive stress on the ligament. Common causes of ACL injuries include:

1. Non-contact injuries:

These occur when an individual plants their foot and suddenly pivots, twists, or changes direction.

2. Contact injuries:

These occur when an individual is tackled or hit on the knee, which can cause the knee to twist or bend unnaturally.

3. Overuse injuries:

Repeated stress on the ACL from jumping and cutting can lead to small tears in the ligament, eventually progressing to full-blown tears.

4. Genetic factors:

Research suggests that some people are born with a higher risk of ACL injuries because of variations in their bones, ligaments, or muscles.

5. Imbalance in muscle strength and flexibility:

People with muscle imbalances or poor flexibility are at increased risk of ACL injury.

What are the sign and symptoms of acute ACL injuries?

The signs and symptoms of an acute ACL injury can vary depending on the severity of the injury but generally include the following:

1. A "popping" sound or sensation at the time of injury:

This is often the result of ligament tearing.

2. Pain:

Pain in the knee is usually felt immediately after the injury and can range from mild to severe.

3. Swelling:

Swelling usually begins within a few hours of the injury and can be significant in some cases.

4. Instability:

The knee may feel unstable or "wobbly" and may give out or "buckle" during weight-bearing activities.

5. Loss of range of motion:

The knee may be stiff and unable to straighten or bend fully.

Exercise for acute ACL injuries

Exercise is an important part of the rehabilitation process for an acute ACL injury, whether the injury is

treated conservatively or surgically. The specific exercises prescribed will depend on the individual's injury and progress. Still, some commonly prescribed exercises for ACL injuries include:

1. Quadriceps and hamstring strengthening:

Exercises such as leg presses, squats, and leg extensions can help to improve the strength of the muscles around the knee.

2. Plyometrics:

Plyometric exercises, such as jumping and hopping, can help improve the knee's power and explosiveness.

3. Proprioception and balance:

Exercises that improve proprioception, or the ability to sense the knee's position, can help improve stability and reduce re-injury risk. Examples of proprioception exercises include single-leg squats and balancing exercises.

4. Stretching:

Stretching exercises, such as calf stretches, hamstring stretches, and quad stretches, can help improve the knee's flexibility and range of motion.

prevention from the acute ACL injury

Preventing an acute ACL injury can be challenging, as many risk factors, such as genetics, cannot be controlled. However, several steps can be taken to reduce the risk of an ACL injury, including:

1. Strengthening exercises:

Exercises to improve the strength of the muscles around the knee, such as the quadriceps, hamstrings, and glutes, can help to reduce the risk of an ACL injury.

2. Plyometrics:

Plyometric exercises, such as jumping and hopping, can help improve the knee's power and explosiveness, which can help reduce the risk of an ACL injury.

3. Proprioception and balance:

Exercises that improve proprioception, or the ability to sense the knee's position, can help improve stability and reduce re-injury risk.

4. Sport-specific training:

Incorporating sport-specific training in your exercise routine can improve the knee's ability to handle the demands of the sport.

When an acute ACL-injured patient visits a doctor

An acute ACL injury can cause significant pain, swelling, and instability in the knee. It is important to seek medical attention as soon as possible. It is recommended that individuals who suspect they have an ACL injury visit a doctor or a physical therapist as soon as possible. Especially if they are experiencing any of the following symptoms:

1. A "popping" sound or sensation at the time of injury
2. Severe pain in the knee
3. Swelling that develops within a few hours of the injury
4. Instability in the knee, making it difficult to bear weight or walk
5. Loss of range of motion in the knee
6. Bruising around the knee

What is the treatment plan for acute ACL injuries?

The treatment plan for an acute ACL injury will depend on the severity of the injury and the patient's

individual needs and goals. Generally, treatment options include:

Conservative treatment:

Conservative treatment for an acute ACL injury typically includes the following steps:

1. **Rest:** Resting the affected knee is important to reduce pain and swelling and to prevent further injury. This may involve using crutches or a knee brace to reduce weight-bearing on the knee.
2. **Ice:** Applying ice to the knee can help reduce pain and swelling. It should be applied for 20-30 minutes at a time, several times a day, for the first few days after the injury.
3. **Compression:** Wearing a compression bandage or brace can help reduce swelling and provide additional support to the knee.
4. **Elevation:** Keeping the knee elevated can also help reduce swelling.
5. **Medications:** pain relievers such as ibuprofen or acetaminophen can be used to manage pain.
6. **Physical therapy:** Physical therapy can be an important part of conservative treatment for an acute ACL injury. A physical therapist can help the patient regain strength, range of motion, and stability in the knee. Physical therapy may include exercises to improve flexibility, strength, and balance.
7. **Bracing:** A knee brace can help stabilise the knee and reduce the risk of further injury.

Surgery:

Surgery is typically recommended for individuals who want to return to high-level activities such as sports or who have significant knee instability. The surgical procedure used to repair or reconstruct the ACL is typically done arthroscopically, which involves making small incisions in the knee and using a camera to visualise the joint. The surgery process for an ACL reconstruction typically involves the following steps:

1. **Anesthesia:** The patient will be given general anaesthesia or spinal anaesthesia to ensure they are comfortable and pain-free during the procedure.
2. **Arthroscopy:** The surgeon will make several small incisions around the knee and insert an arthroscope (a thin tube with a camera on end) to visualise the joint.
3. **Graft preparation:** The surgeon will prepare a graft, typically taken from the patient's body, such as the patellar tendon or hamstring tendon. In some cases, donor tissue may be used.
4. **Graft insertion:** The surgeon will use small instruments to create tunnels in the bone where the graft will be inserted. The graft will be positioned in the tunnels and secured with screws or other fixation devices.
5. **Closure:** After the graft is in place, the incisions will be closed with sutures or staples, and a bandage will be applied to the knee.
6. **Rehabilitation:** Physical therapy and rehabilitation are important parts of recovery after an ACL injury. The patient will typically start physical therapy within a week or two of the surgery under the guidance of a physical therapist.

Rehabilitation:

Physical therapy and rehabilitation are important parts of recovery after an acute ACL injury, whether the injury is treated conservatively or surgically. The rehabilitation process for an ACL injury typically involves the following steps:

1. **Early phase:** During the first few weeks after the injury or surgery, the focus is on reducing pain and swelling and protecting the knee. This may involve crutches, a knee brace, ice, and other modalities to control pain and swelling.
2. **Intermediate phase:** As the knee starts to heal, the focus shifts to regaining range of motion and strength. This phase may last several weeks to a few months. It may include exercises to improve

- knee flexion and extension and to regain quadriceps and hamstring strength.
3. Advanced phase: Once the knee has regained most of its strength and range of motion, the focus shifts to more functional exercises and activities, such as sport-specific training and plyometrics. The patient may also be taught exercises to improve proprioception, balance, and coordination.
 4. Return to activity: The patient will be able to return to normal activity gradually under the guidance of a physical therapist and the surgeon. The return to sports or high-level activities will be determined by the patient's progress, and the surgeon's evaluation will determine the return to sports or high-level activities.

In summary, an acute ACL injury is a significant injury that can significantly impact an individual's daily activities and ability to return to sports or other high-impact activities. Early diagnosis and appropriate treatment, including rest, physical therapy, and in some cases, surgery, are crucial for a successful recovery. Rehabilitation, which focuses on regaining strength, range of motion, and proper movement patterns, is an essential part of the recovery. It is important to seek medical attention as soon as possible and follow a doctor's or physical therapist's guidance to ensure proper healing and prevent further injury.

Reference

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