

# WHAT TO EXPECT AFTER ACL RECONSTRUCTIVE SURGERY

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Anterior cruciate ligament (ACL) injuries are very common, with as many as 150,000 new tears occurring each year. These injuries usually occur in sports involving contact, cutting and/or jumping but also can occur in falls or car accidents. In some instances reconstructive surgery is required to return an individual to their prior level of function, while other individuals choose not to undergo a surgical procedure. Physical therapy is an integral part of rehabilitating an individual after reconstructive ACL surgery.

## **ANATOMY**

The femur (thigh bone) and the tibia (shin bone) meet to form the knee joint, which is a complex hinge joint. The patella (kneecap) is a small bone that protects the front of the knee. Articular cartilage helps to cushion the joint both behind the patella and between the femur and tibia. The lateral and medial menisci provide further shock absorption for the joint. The primary muscles supporting the knee joint are the quadriceps in the front and the hamstrings and calf muscles in the back. There are many ligaments serving to stabilize the knee. The ACL is a ligament in the center of the knee joint which functions to control anterior (forward) movement of the tibia relative to the femur.

## **ACL INJURY**

ACL injuries occur at times when the ligament is under the most stress. These injuries commonly occur with sports involving cutting and pivoting with sudden deceleration, such as skiing, soccer, basketball, football, and field hockey. When an individual ruptures an ACL there can be an audible pop, often associated with immediate pain and swelling around the knee joint. An athletic trainer or doctor can perform manual testing at the site of the injury to assess the laxity of the ligament. If an ACL tear is suspected the diagnosis can be confirmed with an MRI. At this point the patient and doctor explore the options of surgical versus non-surgical intervention. In patients that wish to return to a high level of activity, particularly a sport involving cutting or lateral movement, ACL reconstruction is recommended.

## **ACL RECONSTRUCTION**

Surgical treatment for ACL tears usually involve arthroscopic reconstruction of the ligament. A variety of tissues can be used for this procedure. A common method involves harvesting the central third of the patella tendon, which is located just below the kneecap and attaches to a bony area called the tibial tubercle. After part of this tendon is harvested, holes are drilled in the femur and the tibia at the attachment sites of the original ligament. The graft is then pulled through the drill holes and held in place with bioabsorbable or metallic screws. This is usually an outpatient procedure. ACL reconstruction surgery is highly successful in returning patients to their desired level of function. Whether a patient is looking to return to simple activities of daily living or to a high level sport, physical therapy is a crucial part of the rehabilitation process.

## **REHABILITATION**

If the patient and physician choose to proceed with surgery, it is helpful to do some preoperative therapy. The aim is to reduce swelling, maintain or regain full knee range of

motion, and to activate the quadriceps muscles as much as possible. The patient may increase chances of a quicker recovery by working hard on these factors prior to surgery. Physical therapy is usually initiated within days after surgery to restore range of motion. The patient may or may not be wearing a protective brace at this point, depending on the surgeon's preference. The patient will usually be using crutches immediately after surgery, typically bearing as much weight as tolerated unless otherwise specified by the physician.

### **Weeks 1-2**

The early goals of physical therapy are to reduce inflammation and pain and to restore the knee's range of motion. Ice and elevation are important in this early phase, as less swelling leads to decreased pain and increased range of motion. Therapy at this point involves range of motion exercises to restore at least 100 degrees of knee flexion (out of roughly 135-150 degrees, depending on the individual) and full knee extension (0 degrees). The hamstrings and calf muscles should be stretched throughout this phase. It is also important during the first few days to contract the quadriceps muscles as much as possible, as these muscles weaken with decreased weight bearing and swelling in the joint, or effusion. Quadriceps sets and straight leg raises are implemented for this purpose. It is also appropriate to do some gentle weight bearing, or closed kinetic chain exercises, as tolerated.

### **Week 2-6**

The patient is likely able to bear full weight on the involved leg after the second postoperative week. At least 120 degrees of knee flexion should be obtained, and the patient will be using a stationary bike to maintain flexibility and conditioning. Strengthening exercises for the quadriceps, hamstrings, and hip musculature are progressed as tolerated, always including closed kinetic chain exercises. It is also appropriate to initiate some balance training in the early phases, especially for patients returning to sports. By the end of this stage the patient should have minimal to no swelling or pain. Activities of daily living including walking and using stairs should not be restricted at this point.

### **Week 6-12**

At this point the therapist will begin to add more difficult exercises to the program to prepare the patient to run. These include squats, lunges/walking lunges, single leg press or squats, and eventually single leg hopping. Straight jogging can usually begin at or before week 12 depending on physician preference. In order to progress a running program without pain the patient has to demonstrate good quad and hamstring strength and no effusion.

### **Week 12 and beyond**

Depending on the individual, this is usually the stage where more agility work can be performed. This will include lateral movement such as side shuffling and grapevine, jumping and landing drills, and eventually cutting drills when appropriate. The strengthening exercises should be continued and progressed per individual. The surgeon will always have the final say regarding return to sports, and it may be 6 months or more for a cutting sport.

These guidelines are general and are always subject to the surgeon's preferences. It is extremely important to ensure complete healing of the graft while avoiding a stiff knee, as well as strengthening the appropriate muscles in a safe but challenging manner. This surgery can be very successful if an individual rehabs appropriately, and collaborated guidance of the surgeon and physical therapist is necessary to this end.