

Anterior Cruciate Ligament (ACL) Injuries

Common Questions



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Dr. Stetson's website at www.sportsmedicinedr.com**



What is an anterior cruciate ligament or ACL tear?

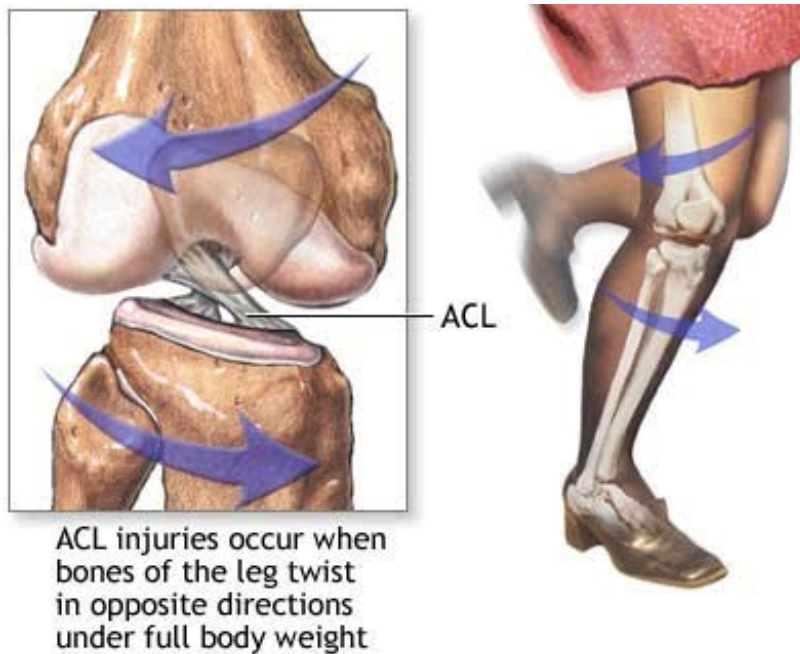
One of the most common knee injuries is an anterior cruciate ligament sprain or tear. Athletes who participate in high demand sports like soccer, football, and basketball are more likely to injure their anterior cruciate ligaments. If you have injured your anterior cruciate ligament, you may require surgery to regain full function of your knee. This will depend on several factors, such as the severity of your injury and your activity level.

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What does the ACL do?

The ACL is one of the cruciate ligaments of the knee joint. It provides stability to the knee by connecting the femur or thigh bone to the tibia or shin bone.



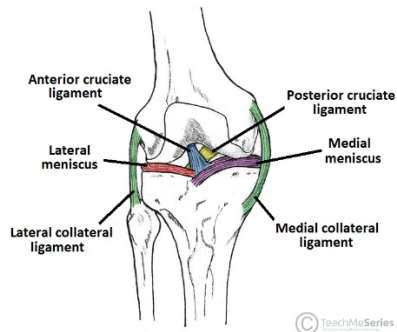
What does the ACL look like?

Three bones meet to form the knee joint, this includes your femur or thigh bone, your tibia or shin bone and also your patella or kneecap. The bones are connected by ligaments. The ACL is the ligament in the middle part of your knee that crosses the knee joint and connects the tibia to the femur. There are other ligaments that support the knee including the posterior cruciate ligament, the medial collateral ligament and the lateral collateral ligament.

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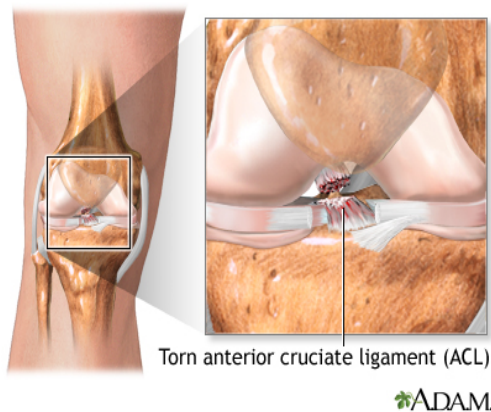
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What is an ACL tear?

An ACL tear is one of the most common knee injuries. Athletes who participate in high demand sports like soccer, football, and basketball are more likely to injure their anterior cruciate ligaments. If you have injured your anterior cruciate ligament, you may require surgery to regain full function of your knee. This will depend on several factors, such as the severity of your injury and your activity level.



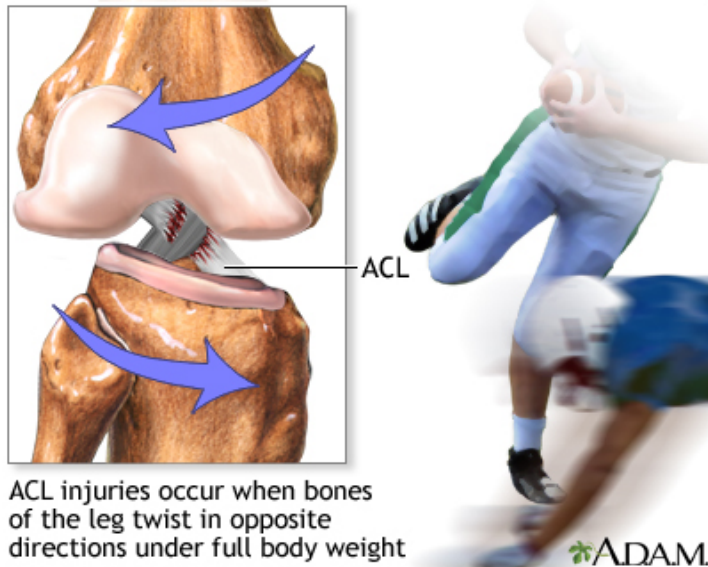
How common are ACL tears?

The incidence of ACL tears is higher in people who participate in sports such as soccer, basketball, football, volleyball and skiing. It is one of the most commonly injured ligaments of the knee.

What are the causes of an ACL tear?

The anterior cruciate ligament can be injured in many different ways. This includes changing direction rapidly, stopping suddenly, slowing down while running, landing from a jump incorrectly, or direct contact or collision such as a football tackle.

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ACL injuries occur when bones of the leg twist in opposite directions under full body weight

Are ACL tears more common in women than in men?

Yes. Several studies have shown that female athletes have a higher incidence of ACL injury than male athletes in certain sports. It has been proposed that this is due to differences in physical conditioning, muscular strength, and neuromuscular control. Other suggested causes include differences in pelvis and lower extremity or leg alignment, increased looseness in ligaments, and the effects of estrogen on ligament properties.



What are the symptoms of an ACL tear?

When you injure your anterior cruciate ligament, you very well may hear a "pop" noise and you may feel your knee give out from under you. Other typical symptoms include pain with swelling within the first 24 hours after injury. Patients may also have a loss of motion of their knee and discomfort while walking. If ignored, the swelling and pain may resolve on its own. However, if

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you attempt to return to sports, your knee will probably be unstable and you risk causing further damage to the cushioning cartilage or meniscus of your knee.

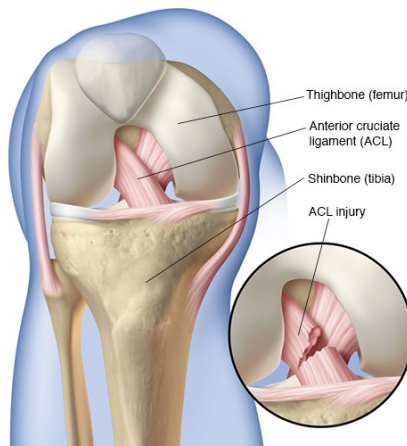


Will this cause permanent damage to my knee?

About half of ACL injuries occur in combination with damage to the meniscus, articular cartilage or other ligaments of the knee joint. Secondary damage may occur in patients who have repeated episodes of instability due to an ACL injury. With chronic instability, a large majority of patients will have meniscus damage. Similarly, the prevalence of articular cartilage lesions or damage increases in patients who have a 10-year-old ACL deficiency.

Are there different types of injuries or sprains to the ACL?

Injured ligaments are considered sprains and can be graded according to the severity of the tear. With a grade one sprain, the ligament is mildly damaged or stretched. It is still connected to help keep the knee stable. A grade two sprain stretches the ligament where it becomes loose. This is often referred to as a partial tear of the ligament. A grade three sprain is commonly referred to as a complete tear of the ligament.



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Why does my knee hurt so much after tearing my ACL?

Your knee will typically become swollen after tearing your ACL. This is caused by the ligament tearing away from the attachment to the bone and causing bleeding inside the knee joint. The knee joint is like a capsule and can only be stretched so much with fluid until it becomes very painful. You may have also had other damage to the knee joint at the time of your injury including other ligament tears or sprains or damage to the meniscus. All of these things can cause pain inside of your knee.



What happens to my knee if I do not have surgery?

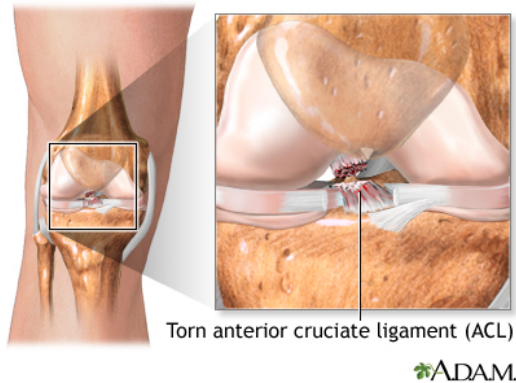
What happens naturally with an ACL injury without surgical intervention varies from patient to patient and depends on the patient's activity level, degree of injury and instability symptoms. The prognosis for a partially torn ACL is often favorable, with the recovery and rehabilitation period usually at least 3 months. However, some patients with partial ACL tears may still have instability symptoms. Close clinical follow-up and a complete course of physical therapy helps identify those patients with unstable knees due to partial ACL tears. Complete ACL ruptures have a much less favorable outcome without surgical intervention. After a complete ACL tear, some patients are unable to participate in cutting or pivoting-type sports, while others have instability during even normal activities, such as walking.



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Will the ACL heal on its own?

No, an ACL tear does not heal on its own. However, the swelling and pain will subside after one to two weeks and walking may become easier.



What will the doctor do during my first examination?

During your first visit, your doctor will talk to you about your symptoms and medical history. He will also ask you questions about your activity level and what activities you enjoy doing and what activities are important to you. During the physical examination, your doctor will check all the structures of your injured knee, and compare them to your non-injured knee. Most ligament injuries can be diagnosed with a thorough physical examination of the knee.



Do I need an x-ray of my knee?

Although an x-ray will not show any injury to your anterior cruciate ligament, x-rays can show whether the injury is associated with a broken bone. It can also show your alignment of your bones

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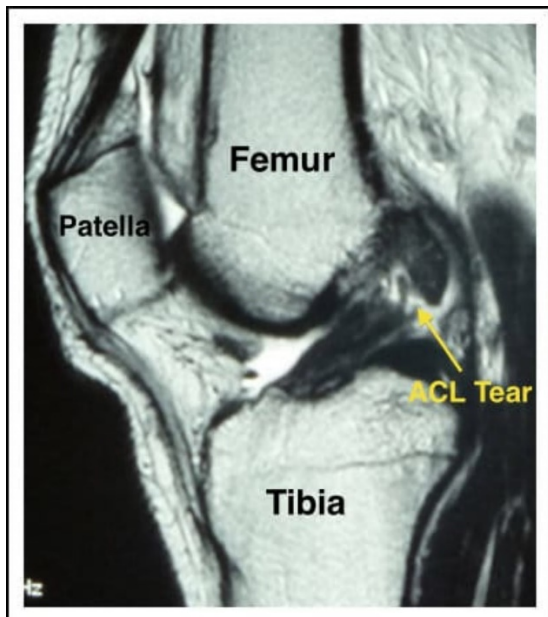
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which can be important if surgery is done in the future. Also, if you are younger and still growing, your growth plates may be open and this can also be seen by x-ray.



Do I need an MRI or ultrasound?

A magnetic resonance imaging or MRI scan creates better images of soft tissues like the anterior cruciate ligament. However, an MRI is not always required to make the diagnosis of a torn ACL but can help in the diagnosis of other injuries to the knee. An ultrasound is usually not helpful in diagnosing ACL tears.



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Do I have to have surgery on my ACL?

No, you do not have to have surgery on your knee if you tear your ACL. There are some people who choose not to have surgery on their ACL but they must modify their lifestyle and activities to prevent further damage to the knee joint.

What are my non-surgical options for a torn ACL?

A torn ACL will not heal without surgery. But nonsurgical treatment may be effective for patients who are elderly, modify their activities or have a very low activity level. If the overall stability of the knee is intact, your doctor may recommend simple, nonsurgical options. This may include a brace to protect your knee from instability. As the swelling goes down, a careful rehabilitation program is started including a formal physical therapy program. Specific exercises will restore function to your knee and strengthen the leg muscles that support it.



What if I choose not to have surgery?

If you choose not to have surgery, most patients will recover the function in their knee after a couple of months of physical therapy and exercises. It is important to then gently transition back to certain activities that do not involve running, twisting or jumping as this may cause more episodes of giving way or of instability causing further damage to the knee joint.

What if I delay treatment?

If you choose to delay having surgery on your knee, it is very important that you first regain motion and strength in your knee with a combination of formal physical therapy and a home exercise program. Once this is achieved, continuing on a home exercise program to maintain flexibility and strength in your knee joint will help you recover from your knee surgery in the future.

What are my surgical options for my knee with a torn ACL?

Most ACL tears cannot be sutured or stitched back together. To surgically repair the ACL and restore knee stability, the ligament must be reconstructed. The surgeon will replace your torn ligament with a tissue graft. This graft acts as a scaffolding for a new ligament to grow on.

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What types of ACL grafts are there?

Grafts can be obtained from several sources. Often they are taken from the patellar tendon, which runs between the kneecap and the shinbone. Hamstring tendons at the back of the thigh are also a common source of grafts. Sometimes a quadriceps tendon, which runs from the kneecap into the thigh, is used. Finally, cadaver graft or what is called an allograft can be used.



A. *Achilles tendon*



B. *Hamstring tendon*



C. *Patellar tendon*



What are the advantages and disadvantages of each type of ACL graft?

There are advantages and disadvantages to all graft sources. You should discuss graft choices with your own orthopaedic surgeon to help determine which is best for you. Because the regrowth takes time, it may be six months or more before an athlete can return to sports after surgery.

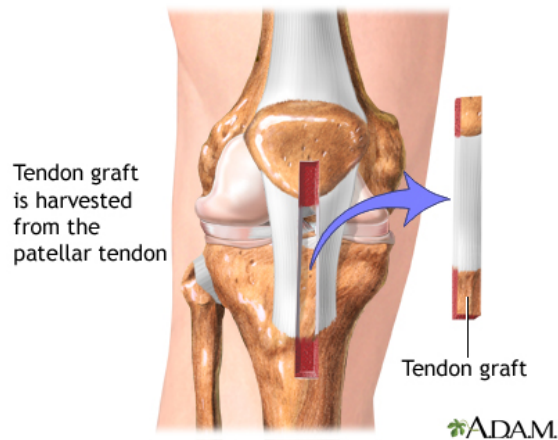
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What is a bone patellar tendon bone autograft?

This is also called a patellar tendon autograft. The middle third of the patellar tendon of the patient, along with a bone plug from the shin and the kneecap is used in the patellar tendon autograft. Occasionally referred to by some surgeons as the "gold standard" for ACL reconstruction, it is often recommended for high-demand athletes and patients whose jobs do not require a significant amount of kneeling.



How does this patellar tendon autograft compare to others?

In studies comparing outcomes of patellar tendon and hamstring autograft ACL reconstruction, the rate of graft failure was lower in the patellar tendon group. In addition, most studies show equal or better outcomes in terms of postoperative tests for knee laxity when this graft is used compared to others.

What are the complications of a bone patellar tendon bone autograft surgery?

The pitfalls of the patellar tendon autograft are postoperative pain behind the kneecap, pain with kneeling, and slightly increased risk of postoperative stiffness. There is also a low risk of patella fracture.



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What is a hamstring tendon graft?

The hamstring tendon autograft is the semitendinosus hamstring tendon on the inner side of the knee is used in creating the hamstring tendon autograft for ACL reconstruction. Some surgeons use an additional tendon, the gracilis, which is attached below the knee in the same area. This creates a two- or four-strand tendon graft. Hamstring graft proponents claim there are fewer problems associated with harvesting of the graft compared to the patellar tendon autograft including fewer problems with anterior knee pain or kneecap pain after surgery, less postoperative stiffness problems, and smaller incisions meaning a faster recovery.



What are the complications of a hamstring tendon graft?

The hamstring graft function may be limited by the strength and type of fixation in the bone tunnels, as the graft does not have bone plugs. There have been conflicting results in research studies as to whether hamstring grafts are slightly more susceptible to graft elongation or stretching, which may lead to increased laxity during objective testing. Recently, some studies have demonstrated decreased hamstring strength in patients after surgery.

What is a quadriceps tendon graft?

The quadriceps tendon autograft is often used for patients who have already failed ACL reconstruction. The middle third of the patient's quadriceps tendon and a bone plug from the upper end of the knee cap are used. This yields a larger graft for taller and heavier patients. Because there is a bone plug on one side only, the fixation is not as solid as for the patellar tendon graft. There is a high association with postoperative anterior knee pain and a low risk of patella fracture. Some patients may also find the incision is not cosmetically appealing.

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What is an allograft?

Allografts are grafts taken from cadavers and are becoming increasingly popular. These grafts are also used for patients who have failed ACL reconstruction with their own tissues before or to repair or reconstruct more than one knee ligament. Advantages of using allograft tissue include elimination of pain caused by obtaining the graft from the patient, decreased surgery time and smaller incisions.



What are the advantages of a bone patellar tendon bone allograft?

The patellar tendon allograft allows for strong bony fixation in the tibial and femoral bone tunnels with screws, similar to a patellar tendon autograft. Many years ago, allografts were associated with an increased risk of infection. However, recent studies with new sterilization techniques have now shown that the risk of infection is no greater than with an autograft. There have also been conflicting results in research studies as to whether allografts are slightly more susceptible to graft failure. However, many of these studies were done with allografts prepared with heavy doses of radiation which are no longer done. Allografts are a very good option in most patients these days as the recovery time is much faster and the end results can compare to autografts.

What are the disadvantages of an allograft?

Some published literature may point to a higher failure rate with the use of allografts for ACL reconstruction. Higher failure rates for allografts have been reported in young, active patients returning to high-demand sporting activities after ACL reconstruction, compared with autografts. The reason for this higher failure rate is unclear. It could be due to graft material properties such as the sterilization processes used and the graft donor age and the storage of the graft. It could also possibly be due to an ill-advised earlier return to sport by the athlete because of a faster perceived physiologic recovery, when the graft is not biologically ready to be loaded and stressed during sporting activities. Further research in this area is indicated and is ongoing. Even so, an allograft is a good option in most patients.

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What can I do before surgery?

Before any surgical treatment for the ACL, the patient is usually sent to physical therapy. Patients who have a stiff, swollen knee lacking full range of motion at the time of ACL surgery may have significant problems regaining motion after surgery. It usually takes two to three weeks or more from the time of injury to achieve full range of motion. Once knee range of motion has returned, surgery can then be planned.



How is the surgery done?

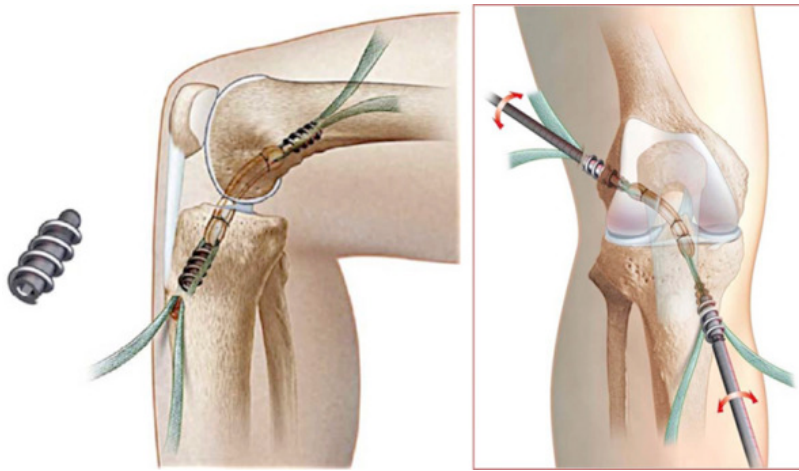
Surgery to rebuild an anterior cruciate ligament is done with an arthroscope using small incisions. Arthroscopic surgery is less invasive. The benefits of less invasive techniques include less pain from surgery, less time spent in the hospital, and quicker recovery times. At the time of surgery after the graft has been prepared, the surgeon places an arthroscope into the joint. Small one-centimeter incisions called portals are made in the front of the knee to insert the arthroscope and instruments and the surgeon examines the condition of the knee. Meniscus and cartilage injuries are trimmed or repaired and the torn ACL stump is then removed.



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How is the graft placed inside the knee joint?

In the most common ACL reconstruction technique, bone tunnels are drilled into the tibia and the femur to place the ACL graft in almost the same position as the torn ACL. A long needle is then passed through the tunnel of the tibia, up through the femoral tunnel, and then out through the skin of the thigh. The sutures of the graft are placed through the eye of the needle and the graft is pulled into position up through the tibial tunnel and then up into the femoral tunnel. The graft is held under tension as it is fixed in place using interference screws, spiked washers, posts, or staples. The devices used to hold the graft in place are generally not removed.



Will I need general anesthesia for the surgery?

The patient, the surgeon, and the anesthesiologist will select the best anesthesia option used for surgery. Nowadays, most patients elect to have a general anesthesia which is extremely safe. The knee joint and surrounding tissues are also injected with local pain medicine at the end of surgery which may last up to twelve to eighteen hours after surgery. Patients may also benefit from an anesthetic block of the nerves of the leg to decrease postoperative pain.



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How long does the surgery take?

The surgery typically takes approximately 90 minutes to two hours. You will then be in the recovery room for at least one hour after surgery. Once you are comfortable, you will be discharged home.

How much pain will I have after surgery?

After surgery, you will feel some pain. This is a natural part of the healing process. Our doctor and nurses will work to reduce your pain, which can help you recover from surgery faster. Medications are often prescribed for short-term pain relief after surgery. Many types of medicines are available to help manage pain, including opioids, non-steroidal anti-inflammatory drugs, and local anesthetics. Be aware that although opioids help relieve pain after surgery, they are a narcotic and can be addictive. Opioid dependency and overdose has become a critical public health issue in the U.S. It is important to use opioids only as directed by your doctor. As soon as your pain begins to improve, stop taking the opioids.

Do I go home the same day?

Yes. ACL surgery is done on an out-patient basis meaning that you will go home the same day of surgery.

What are the risks of surgery?

With any surgery, there are always risks. However, the surgical risks are very rare but do include a small risk of infection, bleeding, blood vessel or nerve damage, and the risk of general anesthesia and local anesthesia. Again, these risks are very small but they do exist. You can always discuss these risks with your surgeon before surgery.

Will I go home with crutches after surgery?

Yes. You will go home with crutches after the surgery. It is ok to put weight on your leg after surgery as long as you are wearing your brace.



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How much does the surgery cost?

The cost of the procedure includes the surgeon's fee, the anesthesiologist's fee, the facility fee and the use of the operating room and the equipment. Depending on your insurance, everyone's cost will be different. You should discuss this with our staff before surgery and they can let you know approximately what your cost will be.

When can I go back to work?

Depending on what you do for a living, most patients who have desk jobs go back to work within 7 to 10 days after their surgery. If you have a physical job, it may take six to eight weeks before you can return to work.

When can I drive after surgery?

You can usually drive within two weeks after your surgery.

When can I return to normal activities?

Most patients return to normal activities of daily living within four to six weeks after their surgery.

Can I re-tear the ligament again after surgery?

Yes, you can re-tear the ligament after surgery. This can occur in the early post-operative period if you do not wear your brace after surgery. A re-tear can also occur when you return to sporting activities too soon. It is very important that you regain your flexibility and strength completely before you return to sports.

What about physical therapy after surgery?

Physical therapy is a crucial part of successful ACL surgery, with exercises beginning immediately after the surgery. Much of the success of ACL reconstructive surgery depends on the patient's dedication to rigorous physical therapy. With new surgical techniques and stronger graft fixation, current physical therapy uses an accelerated course of rehabilitation. You will start physical therapy within one week of your surgery. The goals for rehabilitation of ACL reconstruction include reducing knee swelling, maintaining mobility of the kneecap to prevent anterior knee pain problems, regaining full range of motion of the knee, as well as strengthening the quadriceps and hamstring muscles.

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Will I need a brace after surgery?

You will go home after surgery in a brace to protect the surgical repair. Most patients will need a brace for the first six weeks after surgery and then it can be discontinued. The use of a functional brace when returning to sports is ideally not needed after a successful ACL reconstruction, but some patients may feel a greater sense of security by wearing one.



Am I too old to have my ACL reconstructed?

Active adult patients involved in sports or jobs that require pivoting, turning or hard-cutting as well as heavy manual work are encouraged to consider surgical treatment. This includes older patients who have previously been excluded from consideration for ACL surgery. Activity, not age, should determine if surgical intervention should be considered.

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I thought ACL surgery was only done on young people or only on athletes?

Many years ago, ACL reconstruction was normally only carried out on 18 to 30 year old patients in the past who lead active lifestyles, whereas older patients frequently received non-operative treatments such as modification of their lifestyles, bracing and physiotherapy. However, recent studies have suggested that these treatments result in a high rate of re-injury when patients return to moderate activity levels. Recent studies have shown that the clinical and functional results of ACL reconstruction in patients aged 50 and over are similar to those in younger patients with no increased risk of complication.

What about my young child who tore their ACL?

In young children or adolescents with ACL tears, early ACL reconstruction creates a possible risk of growth plate injury, leading to bone growth problems. The surgeon can delay ACL surgery until the child is closer to skeletal maturity or the surgeon may modify the ACL surgery technique to decrease the risk of growth plate injury.



When can I go back to sports after my ACL surgery?

You may return to sports when there is no longer pain or swelling, when full knee range of motion has been achieved, and when muscle strength, endurance and functional use of the leg have been fully restored. The patient's sense of balance and control of the leg must also be restored through exercises designed to improve neuromuscular control. This usually takes 4 to 6 months. The use of a functional brace when returning to sports is ideally not needed after a successful ACL reconstruction, but some patients may feel a greater sense of security by wearing one.

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Are there specialists who deal with tears of the ACL?

Yes, there are specialists who deal with ACL tears. They are orthopaedic surgeons who have done additional training or what is called a fellowship in sports medicine.

Is Dr. Stetson a knee specialist?

Yes, Dr. Stetson is a knee specialist and he is fellowship trained in sports medicine which includes ACL reconstructive surgery.

How many ACL surgeries has he done?

Dr. Stetson has been an orthopaedic surgeon since 1995 and has done over one thousand ACL reconstructions in his surgical career.

Does Dr. Stetson do ACL surgery on younger patients and older patients?

Dr. Stetson is a big believer that age is not a factor when it comes to anterior cruciate ligament or ACL reconstruction. If you are active and have torn your ACL and want to return to your passion for sports, reconstructive surgery can help.

What if I have any other questions?

If you have any other questions, more information can be found on Dr. Stetson's website at www.sportsmedicinedr.com or just call Dr. Stetson's office, we are always happy to answer any questions you may have.

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