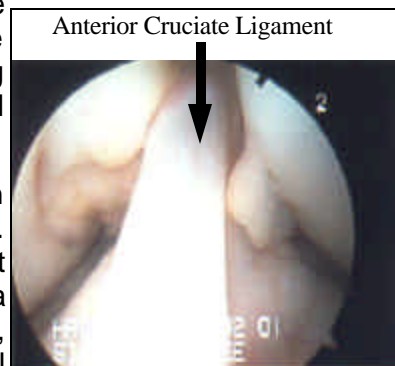




## Anterior Cruciate Ligament Reconstruction

The Anterior Cruciate Ligament (ACL) is the main support structure of the knee that prevents rotation of the Femur (thigh bone) on the Tibia (shin bone). The ACL also prevents the Tibia from translating forward on the Femur. This ligament is injured more than we would like in sports.

The knee is a hinge joint, comprised of three bones and four main ligaments. The joint has one plane of motion, flexion and extension. Due to this construction, a slight amount of rotation does occur, but the ligaments limit this motion. The three bones are the Femur, Tibia and Patella (knee cap). The four ligaments in the knee are the ACL, Posterior Cruciate (PCL), Medial Collateral (MCL), and Lateral Collateral (LCL).



Torn ACL

These ligaments connect the Tibia and Femur and provide the structural integrity to the knee.

The ACL and PCL were named for their location. The two ligaments are located in the middle of the knee and cross one another (cruciate is Latin for cross). The ACL has its origin on the front, or anterior, aspect of the Tibia, while the PCL originates on the back, or posterior, aspect of the Tibia. The MCL is located on the inside, or medial, aspect of the knee and the LCL is located on the outside, or lateral, aspect of the knee.

In the case of the ACL tear (picture above), the knee will feel unstable, and give out. The old phrase "Trick Knee" is most often associated with an ACL-deficient knee. When walking or climbing, the knee will suddenly "give out," usually to the side, and the individual falls to the ground.

This give out is due to the knee having a rotational instability. When weight is borne on the ACL-deficient knee, the Femur has a tendency to rotate on the Tibia. This causes pain and places the knee in a position that is unnatural. Consequently, the muscles can not control the motion of the knee, and it gives way. This "giving out" is even more apparent when an athlete attempts to cut, start, or stop during competition. When the knee is unstable, cutting, starting or stopping places severe rotational stress on the knee.

If an unstable knee is not repaired, the constant rotation will cause other structures to be damaged. The most common associated injury is a meniscal tear. The meniscus is a "C-shaped" object located between the Tibia and Femur that acts as a shock absorber. When the meniscus is torn, it causes pain, popping, swelling, and giving way.

Another associated injury with a chronically unstable knee is degenerative changes to the joint surfaces, or arthritis. The constant rotation of the femur begins to "wear away" the joint surfaces.

## Repairing the ACL Tear



Surgery to repair a torn ACL is performed as an out-patient procedure. The athlete will report to the facility in the morning and be home before the end of the business day. The treating physician will use an arthroscope to assist in repairing the torn ligament.

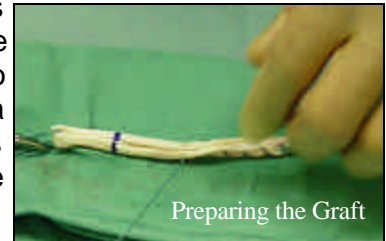
The surgeon begins by viewing the torn ligament as a final diagnostic evaluation. Also, the surgeon will inspect the knee for other possible damage. The remains of the ligament are then removed with an arthroscopic shaver. Other damage will be addressed as the procedure continues.

The replacement tissue for the torn ligament can be harvested from the hamstring muscle tendons on the medial (inside) of the knee or from the patellar tendon at the front of the knee. Once the tendon is harvested, it is prepared for the replacement.



Replacing the ligament requires some special preparation of the bones in the knee. A hole is drilled from the front of the shin, diagonally into the knee. This hole ends up where the ACL attaches to the top of the shin. The surgeon will then drill a hole in the thigh bone between the two heads running diagonally and up from the middle to the

outside.



During this time the surgeon's assistant prepares the replacement tendon for insertion into the joint. During this time the tissue is checked for proper size and is attached to two long sutures.

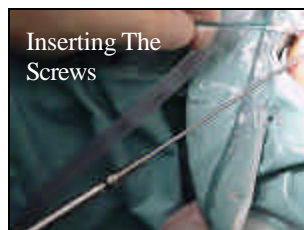


The replacement ligament is attached to the drill bit and pulled into place through the holes drilled. The new ligament is held in place with two screws while the holes in the bone heal.

The knee is then checked by the physician for structural stability. Also the surgeon carries out any other repairs that may be necessary such as a cartilage repair.



The last phase of the repair is the rehabilitation. The repair will fail if the muscles around the knee are not restored to full strength, coordination and functional ability.



Rehabilitation usually begins the day after surgery. Initially it focuses on restoring early range of motion, followed by increasing strength. The rehab gradually progresses to more complex exercises, running, plyometrics, and sport specific activities. Full return to athletics is usually 4 to 6 months after the surgery.

For more information about this or any other athletic injury contact one of our athletic trainers.