

[Active Bones]

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ORTHOPAEDIC SURGERY AND SPORTS MEDICINE TEACHING AND RESEARCH FOUNDATION

**THIS ISSUE
INCLUDES:**
The Dreaded
ACL Injury



Upcoming Topics:

Traveler's Workout • Tommy John Surgery
Heat Illness • Football Workout

Dear Reader,

ACTIVE BONES is the official newsletter of the Orthopaedic Surgery and Sports Medicine Teaching and Research Foundation (OTRF). The newsletter is a brief, easy-to-read educational piece that provides continuing education about musculoskeletal injuries, health performance, and new research and development in the field of Orthopaedic Surgery and Sports Medicine.

Please contact us at www.otrfund.org or stevenchudikmd@hoasc.com with any questions, suggestions for any specific topics that may be of interest to you, or if you just wish to be added to the distribution list to receive this publication directly.



Sincerely,

Steven C. Chudik MD.
Orthopaedic Surgeon
OTRF Founder and President

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The Dreaded ACL Injury: *Facts and Myths*



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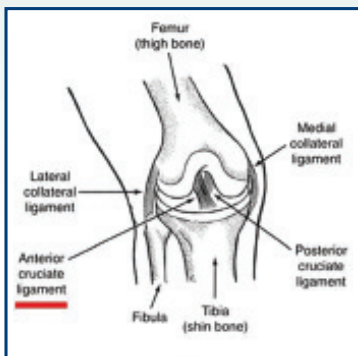


Figure 1

The letters “A-C-L” have become as much a part of the English language as FBI, CIA and NBA. It is casually brought up in sports, but not everyone is clear on what the injury means to athletes’ seasons or careers.

The anterior cruciate ligament (ACL) stabilizes the knee joint. It runs through the center of the knee connecting the femur (thigh bone) to the tibia (shin bone) (See Figure 1). The ACL

keeps the tibia from moving too far forward and limits rotation relative to the femur. This function makes the ACL essential for the pivoting, cutting, jumping athlete.

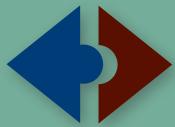
Most ACL injuries (70 to 80%) occur without any significant outside contact as an athlete attempts to quickly decelerate on a single planted foot when changing direction or landing from a jump (non-contact ACL injury). Less often, the ACL can also be torn when the knee is contacted directly by another athlete, the ground, or in a motor vehicle accident (contact injury). An ACL tear is typically painful and prevents further participation. There is often an audible “pop,” delayed swelling in the knee, and sometimes a feeling of instability with weight bearing. Diagnosis is typically made by physical exam using the Lachman test, where the examiner attempts to pull the tibia forward relative to the femur with the knee in early flexion (bending) (See Figures 2a and b). When the ACL is torn, the tibia translates forward relative to the femur and there is no firm endpoint felt as compared to opposite normal knee.



Figure 2a



Figure 2b



The Dreaded ACL Injury continued

Studies indicate that female athletes are two to ten times more likely to tear their ACL than males. Current research supports that women are more susceptible to ACL injury than men because of differences in neuromuscular control (pre-programmed patterns of movement) when making sudden adjustments (reacting to a ball, player contact, etc) while performing ACL-risky maneuvers. Women relative to men, tend to land with less bend in their knees, more valgus (knock-kneed) knee positioning, more quadriceps force, less hamstring force, and higher external landing forces, all of which have been shown to cause increased strain to the ACL. Training programs to correct these errors in neuromuscular control (patterns of movement) have been able to decrease the incidence of ACL injury for both men and women in some studies.

Not all ACL injuries require surgery. After proper rehabilitation, most people can perform tasks of daily living, run, bike, lift weights, and even sometimes ski less aggressively without a functioning ACL. Although without surgery the ACL deficient knee is at risk for further meniscal and cartilage injury, as well as symptomatic instability, which can lead to premature degeneration of the knee. Many elect to have surgery to reconstruct the ACL to stabilize the knee, protect the meniscus and cartilage, and allow higher levels of function required by sports such as basketball, volleyball, and soccer. Infrequently, some people experience instability (giving way) with everyday activities despite proper rehabilitation and may also require surgical reconstruction. ACL surgery is also necessary in combination with other injured ligaments, repairable meniscus tears and cartilage injuries, and in young active children.

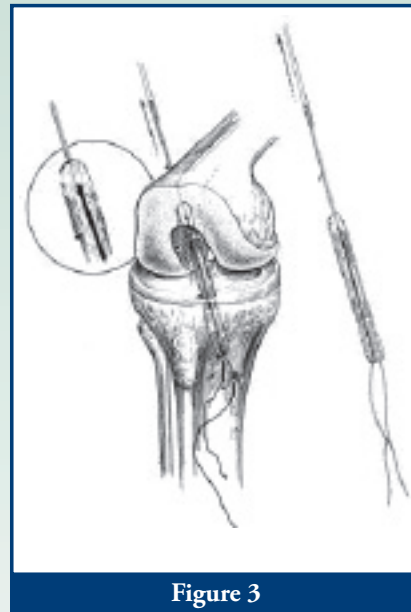
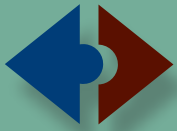


Figure 3

ACL reconstruction is performed by creating tunnels in the femur and tibia and fixing a free tendon graft (usually the patellar tendon, medial hamstring tendons, quadriceps tendon, or cadaver graft) in the tunnels, replacing the torn ACL (Figure 3). Following ACL reconstruction, generally four to six months of rehabilitation are needed to restore the range of motion, strength, and function of the knee and allow a safe transition back to sports.

Unfortunately, once the ACL is injured, the knee is predisposed to developing arthritis later in life. ACL surgery, while showing excellent results for restoring knee stability and function, has not been shown to prevent the future development of arthritis. Thus, the prevention of ACL injuries is extremely important and much effort is being placed in developing and researching training programs to reduce the risks for injury.



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We Need Your Help

OTRF can't do it without you. There is no question that health-care is expensive and difficult for most to afford; however, to continue to make important advances in healthcare, we need everyone's help to fund research and education. To conduct its work, OTRF has been fortunate to receive large donations from larger, more affluent parties and organizations; but, it still thrives mostly on small donations from many different individuals. Most donations come from the many patients and families that Dr. Chudik directly touches in his practice. Often, it is no more than the price of a Starbucks cup of coffee; but every donation, large or small, makes a difference.

**Thank you
for your support.**

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OTRF was founded by Dr. Steven Chudik in 2007 and is a non-for profit organization dedicated to funding research and education for the purpose of keeping people active and healthy.

Injury to and degeneration (wear and tear with use and age) of our musculoskeletal system (our joints and cartilage, muscles and tendons, bones and ligaments) threaten our ability to stay active, work, and lead healthy lifestyles. Too many individuals are getting injured or developing arthritis at younger and younger ages. At alarming rates, little leaguers are injuring their elbows, young female athletes are rupturing their anterior cruciate ligaments (ACL), weekend warriors are tearing their meniscus, golfers are missing the season with rotator cuff tears, physical laborers are getting injured and are unable to work, and young adults are unable to stay active because of debilitating arthritis.

There is a great need to disseminate knowledge amongst our community so that we can better prevent these injuries and degeneration (wear and tear) and best preserve our ability to stay active and healthy. We also need to fund unbiased, quality, and cutting edge research to develop better and less invasive methods to prevent and manage these injuries and degeneration.

To meet these needs, OTRF produces the newsletter, "ACTIVE BONES," shares information regarding health performance related issues of nutrition and fitness, hosts Athletic Training educational programs, conducts local educational seminars for health care providers and the community, and most importantly funds research and development particularly in the areas of cartilage injury and repair; sports injury prevention; knee ligament injury prevention and reconstruction; and minimally invasive surgery for fracture, tendon, ligament, cartilage and joint repair.