What to expect when you have ACL reconstruction

Patient Guide
Introduction

The anterior cruciate ligament, or ACL, is the ligament between your shin bone, the tibia, and the thigh bone, the femur, that prevents the forward movement of the tibia on the femur (see picture). The ligament is deep within the joint and maintains the stability of the knee when doing many activities from running, to walking, pivoting, and jumping.

ACL tears can occur in the knee in a variety of different ways. Usually during a sporting event, you may have planted your foot into the ground and twisted and experienced a pop and a feeling of your knee giving away, or you may have had a traumatic fall or were hit by something that generated enough force to twist your knee and tear the ligament. Most ACL injuries are non-contact injuries and females are 2 to 8 times more likely to sustain this injury.

**The signs and symptoms of an ACL tear include:**
- A loud popping or cracking sound when you have planted and twisted, or from a blow to the knee
- Immediate swelling
- The knee giving way, or feeling like it is going to give out
- **Pain:** usually because of the swelling or the guarding of your muscles trying to protect your joint
There are different types of grafts that are available for repairing your ACL; Hamstring, Quadriceps tendon, Patellar Tendon, and Allograft (or donor) tissue. There are several factors to consider when choosing the graft that is right for you.

These include the following:
• Surgery preference
• Gender
• Activity level
• Availability
• Concomitant/associated injuries
• Recurrence of tearing

These options should be discussed with your surgeon. Your surgeon will be able to review these options with you and help you decide which graft is best for you.

Pre-operative Rehabilitation
Most patients will experience pain, swelling and loss of motion immediately following ACL injury. Performing ACL surgery while the knee is still acutely injured and inflamed is a risk factor for stiffness and difficultly rehabilitating post-operatively. Accordingly, your surgeon will often recommend pre-operative rehabilitation, known as Pre-hab.

Signs that you may require rehabilitation before getting surgery include:
• Limitations in Range of motion
  – The knee does not straighten all the way to 0 degrees
  – The knee does not bend to the same amount of degrees as the non-injured leg
• Increased Swelling
• Decreased Strength
• Muscle guarding of the Hamstrings and Quadriceps
• Inability to weight bear through the leg or use crutches appropriately or difficulties walking normally

Your physical therapist or physical therapist assistant will provide you with exercises and treatment techniques to help decrease pain, increase range of motion, reduce swelling, increase strength, and improve your use of your knee as much as possible before surgery. Pre-hab recommendations are usually 2 to 3 times a week for 2 to 3 weeks depending on the limitations of your knee and how quickly you gain back what you have lost. Some treatments and goals are listed on the following page.
Treatment goals:

Modalities
They may use modalities such as Ultrasound, Electrical Stimulation, and cryotherapy, or ice, to reduce your pain and swelling. Neuromuscular Electric Stimulation units may also be used to get a good muscle contraction of the muscles of the thigh.

Range of Motion
Your Physical Therapist will also teach and perform techniques to help you regain motion. The goal is to obtain motion at least 90-95% of your normal, uninvolved knee’s motion. Obtaining full extension, or a fully straightened knee, is particularly important to help restore normal walking and running mechanics. Once you get full extension of your knee, bending your knee gets easier.

Strength
Muscle weakness and atrophy develops very quickly after ACL injury due to pain, swelling, and limited use. It takes 2 days to lose a full muscle grade of strength and 2 weeks to gain half of that grade back. We want you as strong as possible going into your surgery, and regaining strength after injury may take several weeks. Strengthening activities may include Quad Sets, which is a way of tightening your knee to make your quads turn on. These exercises will be some of the first you do before and after surgery. The therapists will address your hips, your knee, and your ankles when it comes to strengthening. The hips being strong are vital because they control the amount of movement and stability at the knee.

Crutch Education
If you are not familiar with using crutches or feel unsafe using them, you should ask your physical therapist prior to surgery to teach you how to use them safely and effectively. They can teach you how to use crutches safely and effectively while walking, on stairs, in the community, in and out of a car and in and out of a chair. They will also fit you with the crutches so they are adjusted to your height and needs.
**Day of Surgery**

When you are planning your trip to the surgical center, be sure to wear loose-fitted, comfortable clothing. Shorts are recommended as you will come out of surgery in a big brace. During cold weather months, baggy sweat pants that can go over the brace are recommended. Also make sure you wear sneakers and are not wearing flip flops or sandals. You will use crutches after surgery and loose shoes can increase your risk of a trip and fall.

The anesthesia team will perform a nerve block, which reduces pain immediately after surgery greatly. Equipment that you may go home with include crutches, a post-operative brace, and often a cold therapy pad (cryocuff) that will connect to a cooler and helps with icing the knee by circulating cool water through the cuff.

**First 24 Hours Post-Operative**

You may feel drowsy for the first several hours after surgery, so try to get as much rest as possible. It is recommended that you stay ahead of your pain by following you pain medication prescription and by icing for 30-40 minutes every 1-2 hours. The pain after ACL reconstruction can be moderate to severe when the nerve block wears off. We recommend you stay ahead of the pain as best as possible, using a combination of prescription and non-prescription medications as recommended by your surgeon. Cold therapy helps reduce pain significantly and should be used often, particularly in the first 24-48 hours after surgery. Pain medication can cause constipation and other side effects. Discuss these side effects with your doctor or pharmacist and have a plan in place if you experience any of the adverse effects.

You will also want to keep your leg elevated often, and sleep in a comfortable place such as your bed or couch with the knee elevated above heart level. Ask for help when you go to the bathroom as you will feel unsteady while using your crutches for the first few days. Typically, during the initial stages of healing, you will be resting at home and not having physical therapy. The first follow up is often one-week post-operative and physical therapy and rehabilitation can begin.

**Rehabilitation**

Physical therapy and rehabilitation will progress in phases. Phase I of rehabilitation is much like your pre-hab was. The first goals are decreasing pain, increasing range of motion and initiating low levels of strength. Depending on the type of graft that you and your doctor selected will determine how you progress through the rehab process. It is important that during the whole rehabilitation process that you listen to your body and your therapist who is directing your care. You may choose to take your pain medication or any types of medication that the doctor prescribed for you at least 45 minutes before your scheduled appointment. That allows for the medication to be effective and for physical therapists to get the most out of your knee during that hour or so of your appointment.

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After the first phase of rehab, which usually is 6 to 8 weeks in length, your physical therapist will transition you to more strengthening activities, advancing you as you achieve goals, milestones, and phases of the protocols that are evidenced based and practiced daily. It is at this point that you will go through your first phase of testing to gauge how you are doing and where you are in the process. This is a good time to discuss your goals with your rehabilitation team.

The second time you will be tested, Phase II, occurs around the 12 to 16 week post-operative mark. This testing series looks at how you are moving, your ability to reach through and outside your base of support, your baseline strength, and your overall balance and proprioception score. Strength testing will be performed with state of the art equipment and the team will look not only at your knee but also at the muscles around your hips and core. The goal is to return you to function before returning you to your sport.

After Phase II testing, you may be referred into the Bridging the Gap program, where the goal is that you are in your strengthening phase and exercise physiologists who are certified as strength and conditioning specialists, will take you through guided strength and conditioning program. This allows you to save your Physical therapy visits for the return to sports phase of testing. If you do not meet the criteria for referral into the Bridge program that means that you still have opportunities to improve under the guidance of your physical therapy team. Re-testing will occur periodically until you qualify for bridge programming.

**Things to expect:**
- Running does not usually occur until the 4 month mark
- Return to sports is usually around the 6 month mark and you are usually in a post-operative brace for up to a year after having surgery
- There are published protocols established by Hartford Hospital Rehabilitation Network for each individual sport and we will progress you as we see fit to return to your sport
- We have available a bridge program that will return to you to your sport once you have completed your physical therapy that is allowed by insurance.
- Ask for more information on the bridge program as we have that available to you.

Before being cleared for return to sports you will undergo Phase III testing, which repeats some of the tests in phase II but also looks at your ability to decelerate, or control your body as you slowdown, which is really important for cutting, jumping, and sport specific tasks. Phase III testing usually occurs between the 24 to 32 week post-operative mark. Your doctor will use this information along with their clinical exam, to determine the best, safest, and most optimal timeline for returning you to your sport(s).
Treating the Whole Athlete
Hartford HealthCare Sports Medicine Specialists believe there is more to your treatment than the knee. We have specialists in Behavioral Health and Sports Nutrition to help optimize your recovery as well.

Behavioral Health
There is a newly emerging theme in the scientific literature on recovery from ACL tear regarding athlete’s mindset toward recovery. Some of these findings indicate that lack of psychological readiness to return to sport may contribute to risk of re-injury. Recovery from ACL tear can be challenging for athletes for a variety of reasons including: lack of engagement in active coping via sport, disconnect from social network, and perceived loss of identity. As such, behavioral health services can assist throughout an athlete’s recovery from ACL tear via the following:

• Normalize an athlete’s emotional response to injury via supportive discussion.
• Teach skills to cope with emotional distress associated with recovery pre and post-surgery.
• Provide collaborative care to assist athlete in navigating pain sensations through different phases of care.
• Educate family and supports to best assist athlete in psychologically recovery from injury.”

Sports Nutrition
Nutrition is one method which may counter the negative impact of exercise induced injury. The field of nutrition support for exercise induced injury is a newly emerging topic in the scientific literature. However, it is clear that deficiencies in energy (calories), protein and other nutrients should be avoided. However, the current literature concerning other nutrients is extensive but the evidence remains unclear.

Energy expenditure for athletes via sport may have attenuated however; the decrease in energy expenditure following an injury is likely not as great. During the healing process, energy expenditure is increased by as much as 15% to 50% depending on the type and severity injury. Also, when initially on crutches the energy cost to move around is 2-3x as much as prior to injury. Protein is the most prominent nutrient analyzed for nutrition support for injuries. Reduction in protein intake is detrimental to muscle metabolism. A great starting point for athletes is consuming at least 1.6 gram/kilograms of athlete’s bodyweight of protein to maintain protein synthesis following the injury.
It is quite clear that careful evaluation of the athlete’s situation and injury must be conducted and nutritional services from a registered dietitian can assist throughout an athlete’s recovery from ACL tear via the following:

- Assessment of energy intake and avoiding energy deficit.
- Assessment of overall protein intake as well as bioavailability of sources.
- Provide individualized care to assist athlete with individualization of nutritional needs based on religious/cultural dietary needs, dietary eating style (vegetarian, etc.), food allergies and more.
- Advise to limit (exclude) variety of nutrients which may delay healing process (ex. alcohol).
- Educate family to best support athlete with nutritional needs to recovery from injury.
- Assist athlete’s with meal preparation and meal ideas which meets energy and protein needs with use of food processing database software.

**We are here to help.**

The Bone & Joint Institute Sports Medicine Specialists are here to help you become not only as good but better that you were before your injury.

**Call for a referral to one of our:**

- Orthopedic Surgeons
- Athletic Trainers
- Sports Psychologists
- Sports Nutritionists
- Physical Therapists
- Strength & Conditioning Specialists
- Sports Neurologists
- Sports Cardiologists
- Sports Dentists
- Biomechanists
- Integrative medicine providers

**Our Team of Experienced Providers**

https://hartfordhealthcare.org/services/sports-health