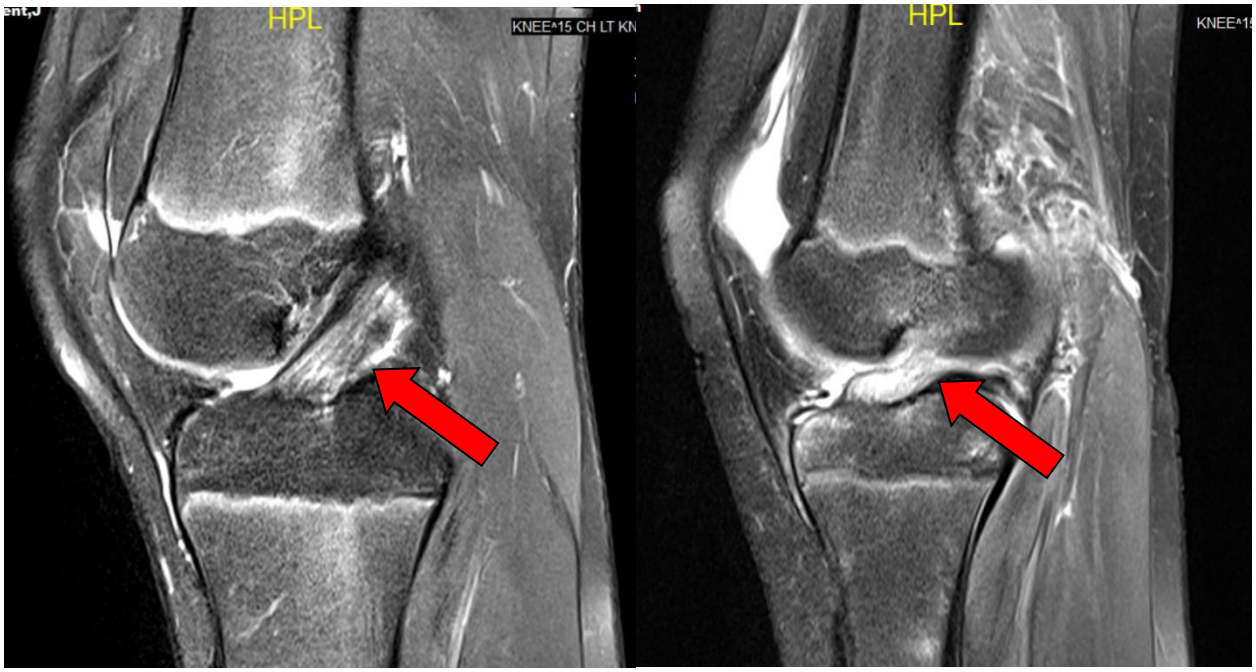
Tunnelless Anatomic Arthroscopic Anterior Cruciate Ligament Reconstructive Surgery

Indications for Surgery

- Athletes with an anterior cruciate ligament (ACL) tear who regularly perform sports that require pivoting, cutting, and jumping and landing
- Patients with recurrent giving way or knee instability, despite an adequate rehabilitation program
- Patients with an ACL tear and a repairable meniscus or articular cartilage tear
- Patients with an ACL tear combined with other ligament injuries in the same knee
- Young patients who are physically active regardless if they have open growth plates
- Patients with failed previous ACL reconstructions



Normal ACL on MRI

ACL tear on MRI

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Surgery is typically performed after the injured knee regains full range of motion and proper muscle control, generally three to four weeks following the injury. During ACL surgery, the torn ligament is typically replaced (reconstructed) with a graft because the ligament is so damaged that a simple repair usually is not possible. Common grafts used to replace the torn ligament include the hamstring tendons, bone-patellar tendon-bone, quadriceps tendon or allografts from cadavers. Tunnels are drilled into the femur and tibia bones of the knee in which the graft is secured and replaced. The goals of the surgery are to reconstruct the torn ligament, repair any other damaged structures (including meniscus, other ligaments, or cartilage) and restore function and stability to the knee

Contraindications to Surgery

- Individuals who do not need to perform sports/activities requiring frequent pivoting, cutting, jumping and landing may consider conservative management
- Persons who demonstrate an inability or unwillingness to complete the necessary postoperative rehabilitation program should not have surgery
- Infection of the knee, current or previous, is a concern, but not an absolute contraindication
- Severe knee arthritis

Potential Surgical Risks and Complications

- Infection
- Nerve injury (numbness) in the skin around the knee. It is not uncommon to have some small area of numbness, temporary or permanent, around the incisions
- A post-operative infection often requires ACL graft removal to treat the infection.
- Re-rupture or stretching of the reconstructed ligament, causing recurrent instability (more common with allografts)
- Knee stiffness (loss of knee motion) requiring prolonged rehabilitation or repeat surgery
- Rupture of the patellar tendon, patellar fracture, patellofemoral arthritis, kneeling pain for bone-tendon-bone grafts
- Pain from the fixation device used to hold the graft (rare)
- Rarely, a clot in the veins of the calf or thigh (deep venous thrombosis, phlebitis) that can break off in the bloodstream and go to the lungs (pulmonary embolus)

Hospitalization and Anesthesia

- Outpatient surgery (go home the same day)
- General anesthetic, femoral nerve block or adductor canal block and IPACK block (See "***Your Surgical Experience***" guide)

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General Surgical Technique

Dr. Chudik is developing techniques for tunnelless ACL surgery. This surgery is less invasive procedure that reconstructs the ACL without drilling large tunnels in the bones of the femur and tibia and better reproduces the normal anatomy and function of the ACL. It will be performed as an outpatient procedure (go home the same day) with general anesthesia and an adductor or femoral nerve and IPACK block. The nerve block involves injecting numbing medicine around the nerves of the leg by the anesthesiologist just prior to the surgery. The torn ACL is replaced by a graft that is aligned and secured in place with special fixation devices on the bone surface where the original ACL was connected and without drilling large tunnels in the femur and tibia as done with traditional ACL reconstruction techniques. Each graft type has its own risks and benefits. Prior to surgery, Dr. Chudik will discuss the type of graft that is best for you.

Post-operative Course

- Crutches and partial weight bearing for approximately 4 weeks for an isolated ACL reconstruction
- A post-op knee brace for only 24 hours if a nerve block was used, or six weeks if the meniscus is repaired, or if another ligament also had to be repaired/reconstructed
- Keep the incisions clean and dry for the first 10 to 14 days after surgery. Showering lightly is allowed after two weeks but wounds cannot be submerged under water for at least three weeks
- Driving after six weeks if right lower extremity is involved
- Return to school/sedentary work in less than one week as long as the extremity can be elevated and the patient can use crutches
- Physical therapy to restore motion, strength, and proprioception (balance) for up to four to six months
- After the knee is fully rehabilitated, **Dr. Chudik's ACL Return to Sport Testing** is performed to determine that the knee is fully rehabilitated and more importantly, that any errors in movement patterns known to put patients at risk for knee injury are corrected and the patient can return to activities safely

Return to Activity

- Return to walking and regular daily activities once off crutches (usually about four to six weeks after surgery)
- Return to light running at about three months post-op
- Return to sports at four to six months post-op

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Preoperative Instructions

- Discontinue birth control pills
- Stop blood thinners such as aspirin, Coumadin®, Lovenox®, Xarelto® according to the prescribing doctor's directions
- Stop anti-inflammatory medicines such as ibuprofen, Advil®, Motrin®, Naprosyn®, Alleve®, etc.)
- Stop nutritional supplements and drinks like Vitamin C, ginseng, ginkgo biloba, etc.
- Stop smoking for surgery and during the first six weeks postoperatively to allow proper tissue healing

Do not eat or drink anything after midnight the evening before surgery

Scheduling Surgery

Contact Dr. Chudik's surgery scheduler at 630-324-0402 or email *contactus@chudikmd.com* to:

- Schedule the date and location of surgery; the hospital will call the day before with the arrival time
- Schedule an appointment with Dr. Chudik's PA to complete pre-operative surgical education and other requirements
- Schedule a post-operative appointment with Dr. Chudik's team to remove sutures and review post-op instruction.

Notify My Office if Symptoms Worsen

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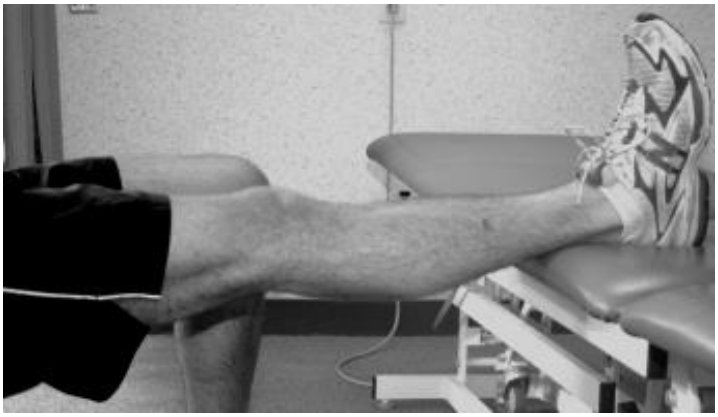
Pre-Operative Simple Knee Exercises

Knee Extension



1. Sit with affected leg propped and the knee unsupported as shown. (A couch with a coffee table will work.)
2. Straighten your knee by contracting your quadriceps (front of thigh) muscles and by placing your hand on your thigh just above the knee and pushing down.
3. Hold this position for five to 10 seconds then repeat 15-20 times two to three times per day.

Knee Flexion

1. Lie on your back on the floor with your knee straight.
2. Place a medium sized ball under your leg. This exercise can be performed without a ball if not available or too difficult.
3. Slowly bend your leg towards your buttocks. Gently bend until you feel a good stretch in the knee. You may support assist your knee by grasping your thigh with your hands.
4. Hold the stretch for three to five seconds then return to the starting position.
5. Repeat this exercise 10-15 times, two to three times daily.

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Quadriceps

Sets


1. Sit or lie on your back with the affected leg straight.
2. Tighten the muscles on the front of your thigh and push your knee down into the table.
3. Hold this position for five seconds then relax. Repeat exercise 10-15 times, two to three times daily.

Acknowledgements
Thanks to Larana Stropus, MS, ATC/L and Carmine Van Deven for their assistance in developing these post-operative instructions for Steven Chudik MD Shoulder, Knee & Sports Medicine Injury Clinic patient.

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STEVEN CHUDIK MD
SHOULDER, KNEE & SPORTS MEDICINE

Physical Therapy Prescription

Right/Left Knee ACL Reconstruction Pre-operative Rehabilitation Guidelines

Patient Name:_____ **Date of Injury:**_____

The following protocol should serve as a guideline in the rehabilitation of patients who have sustained an acute ACL injury and are electing to undergo ACL reconstruction. There are no time frames given and patients are allowed to progress as fast as safely possible. Goals of treatment are written in sequential progression.

It is essential for the patient to understand the importance of participating in the preoperative rehabilitation program. The goals of the preoperative rehabilitation program are to restore knee homeostasis, ROM, strength, and gait prior to surgery which in turn, optimizes the post-operative outcome and limits the risk of post-operative arthrofibrosis. Secondary goals are to educate and instruct the patient with regards to crutch walking, and the post-operative course and initial exercise program.

Pre-operative goals:

- To restore knee homeostasis, ROM, strength, and gait.
- To educate and instruct the patient with regards to crutch walking and the post-operative course and initial exercise program.

Duration/Frequency: two to three times/week for four to six weeks
Please instruct patients on safe methods of ambulation, bathing, and personal care.

Physical therapy notes:
Dr. Chudik does **NOT** accept faxed or emailed progress notes. Please have the patient bring the notes to the next clinical appointment for review and signature.

Steven C. Chudik, MD Date:

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ACL Reconstruction Preoperative Rehabilitation Guidelines

Goals

1. Decrease pain and swelling
2. Improve joint nutrition through weightbearing
3. Initiate early motion to achieve physiologic hyperextension and 120 degrees of flexion
4. Initiate muscular control and lower extremity conditioning
5. Normalize gait (FWB with heel to toe pattern) and wean from crutches
6. Improve quadriceps control and lower extremity strength
7. Improve lower extremity balance and proprioception
8. General body conditioning

Activities

1. Ice, compression, elevation
2. Emphasize normal gait pattern with/without assistive device
3. Heel props, prone hangs, wall slides, heel slides, patellar mobilization/glides
   Exercise bike, half arcs to full
   AAROM with therapist
4. E-stim for muscle re-education
   Quad sets, ham sets, adductor sets
   Weight shifts: med/lat, ant/post
   Mini-squats
   Prone/standing hamstring curls
   4-direction SLR
5. Gait training and treadmill walking
6. Total gym, bilateral/unilateral squats and calf raises
   Step-ups (forward, retro, lateral)
   Step-overs
   Stool scoots, progress bilateral to unilateral
   Wall squats with Swiss ball
   4-direction SLR, add weights
7. BAPS-limit medial excursion (towel under medial curve)
   Unilateral balancing on affected leg
   Progress with movement of uninvolved extremity, even to uneven surfaces, eyes open to closed
   Unilateral standing with uninvolved leg reaches (forward, backward, lateral)
8. Upper body ergometry, treadmill, stair stepper

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Objectives

- Prepare for post-operative course
- Teach proper crutch walking
- Instruct patient about timing and goals of rehabilitation
- Teach early post-operative exercises
- Schedule post-operative therapy to begin two to three days after ACL surgery

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