



Anterior Cruciate Ligament (ACL) Reconstruction Protocol

Christopher M. Larson, MD

Please see the IMPORTANT NOTE for STRETCHING / KNEE EXTENSION on page 5

The intent of this protocol is to provide a general framework for ACL rehabilitation. Within this framework there are specific guidelines for activity progression which directly relate to tissue tolerance and directional preference of movement. TCO staff will provide special instructions in the case that specific individual restrictions exist. Please fax initial assessment and subsequent progress notes directly to TCO at 952-944-0460.

GENERAL PRINCIPLES

- Progression of rehabilitation
- Closed chain exercises
- Post-operative soft tissue swelling and effusions
- Splinting and Bracing
- Goal return to sport specific activity at 4-6 months depending on progress

Patient can progress more quickly in the first two phases if appropriate and meet specific requirements.

PHASE I: WEEKS 1-3 (RANGE OF MOTION)

CLINIC VISITS: 2x/week

- If suture meniscus repair: No weight bearing flexion > 70° for 2 months
- Full Passive and Active flexion without weight bearing allowed with meniscus repair as tolerated.

WEIGHTBEARING

- Use immobilizer while sleeping, until 0° extension has been reached and can perform straight leg raises.
- Crutches: progress
 - FWB in immobilizer using crutches
 - FWB with crutches without immobilizer (ok to use immobilizer at night)
 - Patient may use crutches until they develop enough strength to keep the knee fully extended while WB.
- Walk with a smooth, even paced heel-toe lift off gait: DO NOT LIMP. Do not walk on toes or with a bent knee. Establishing a normal gait early is important.

ROM

- Flexion as tolerated.
- Regain/maintain full knee extension.
- At the end of 3 weeks: ROM goal is 120° - full ROM with full extension.

- May use ice, cryocuff and compression boot during this phase to address soft tissue swelling and effusion.

HOME EXERCISE

ROM

- Patellar mobilizations, other methods of ROM to attain full extension (compared contralaterally) and 120° of flexion. May use stationary bike for ROM.

STRENGTHENING

- 30-40 repetitions, 1-2 times daily: quad sets along with Progressive Resistance Exercises (PREs) (3-way straight leg raises and prone knee flexion)

MODALITIES

- Ice: post exercise.

PROGRESSION CRITERIA

- Gain and maintain full extension (do not force hyperextension)
- Minimum flexion to 100 degrees
- Decrease post-operative swelling
- Progress toward independent walking
- Initiate strengthening program

PHASE II: WEEKS 3-6 (STRENGTH)

CLINIC VISITS: 1x/week

WEIGHTBEARING

- Full WB without crutches, smooth normal gait pattern, no limping.
- Can begin backwards walking on a treadmill once FWB without the immobilizer.

ROM

- Continue with Phase I exercises as needed.
- Continue flexion as tolerated and attain/maintain full extension.

STRENGTHENING (Closed Chain)

- Begin functional strengthening, proceed with AROM exercises

CONDITIONING

- 3x/week for 20 minutes on an exercise bike- pedaling normal.

PROGRESSION CRITERIA

- ROM: full hyperextension and 130° of flexion
- Confident, smooth gait pattern
- Begin functional strengthening

PHASE III: WEEKS 6-10 (POWER)

THERAPY VISITS: 2x/month

WEIGHTBEARING

- Independent with a heel toe gait pattern, equal strides, no limping.

ROM

- Full ROM in flexion and extension; continue ROM exercises in Phase I and Phase II as needed. (These can be discontinued when ROM is equal on both sides).

STRENGTHENING

- Continue previous exercises as needed and add advanced closed chain activities as function dictates

CONDITIONING

- 3x/week for 20 minutes on an exercise bike- pedaling normal.
- Initiate elliptical training at 8 weeks if adequate strength is present

MODALITIES

- Ice after exercises (20-30 minutes)
- Proprioception: progress from level plans, incline and mini tramp surfaces

FUNCTIONAL TRAINING: Beginning at 10 weeks depending on function

- Initiate landing progression:
 - Unsupported Landing 2 legs 10-12 weeks
 - Unsupported landing 1 leg at 12-14 weeks

PROGRESSION CRITERIA

- Attain full ROM
- Advance functional strengthening
- Walk up and down stairs using both legs easily
- Most be able to land with flexed knees and no valgus deviation at the knee

PHASE IV: WEEKS 10+ (FUNCTION)

CLINIC VISITS: 1x/month

EXERCISES

- Exercise daily to maintain ROM and advance strength and function to return to regular activities
 - ROM- daily
 - Strengthening- 3x/week

RUNNING WEEK: Week 12+ (Autograft) 16+ (Weeks Allograft or Revision)

- Running Program: start basic running program at 12 weeks status post when leg strength, full knee ROM and no-trace swelling are present. Emphasis on gait: normal with full knee extension.

FUNCTIONAL TESTING: Greater than 4 months

- Outcomes Testing: Single leg hop to determine function. Patient should have completed stage 1 of functional training. Perform between status post weeks 12 to 16. This must be completed prior to progressing the patient to functional training and sport specific training

FUNCTIONAL TRAINING: 4 - 6 months or greater depending on function

Start only after stage 1 in phase III is complete. Complete each stage prior to proceeding.

- Stage 1: start with both feet and progress to involved leg
 - Unsupported linear
 - Unsupported hopping in a box pattern
 - Diagonal hopping
 - Straight line hopping – 4 hops forward, then backward
 - Zigzag hopping
- Stage 2: Hopping and running
 - Single leg hop
 - Landings – jump off 2” height forward, backward and to each side – weight evenly distributed
 - Resisted jogging – elastic band at waist – jog backwards, then forwards; progress to forward shuffles, carioca.
- Stage 3: Progress to Running Agility Program (3x/week)

SPORT SPECIFIC FUNCTIONAL ACTIVITIES

- Initiate after the completion of **Functional Training Stage 2**

MODALITIES

- Ice after exercises (20-30 minutes)

PROGRESSION CRITERIA

- Advance agility and power training
- Achieve normal activities on uneven surfaces

IMPORTANT NOTE FOR ACL RECONSTRUCTION PATIENTS
STRETCHING / KNEE EXTENSION

During the first 4 weeks after surgery, a primary goal is to get back your full knee extension (straightening) motion. The longer you wait, the harder it is to get the motion back. It is important to work on it multiple times per day at home and with your physical therapist. Expect to have soreness when you're stretching, but don't push to the point of sharp pain.

Contact your physical therapist if you're having problems with the exercises.



- Rest your foot on a step stool or chair and let it stretch
- 5 minutes x 3 times per day
- Can use hands to push down on thigh (as shown) to stretch knee



- Lie on stomach and allow lower leg to hang off edge of bed
- Try to really allow your muscles to relax
- 5 minutes x 3 times per day
- May have to wait 3-5 days post-op to start this exercise