

### **ACL Reconstruction Rehab Protocol**

The intent of this protocol is to provide a general framework for ACL rehabilitation. Within this framework are guidelines for activity progression that will vary depending on a given individual's rate of recovery and associated injuries.

#### **Preoperative**

##### **Goals:**

1. *Full Active Range of Motion (Flexion and Extension)*
2. *Restore Quadriceps Strength*
3. *No (or minimal) swelling*
4. *Normalized Walking (gait) pattern*

##### **Treatment:**

1. Modalities to reduce inflammation and pain
2. Compression bandaging as needed
3. ROM, Stretching, Grade 2-3 joint mob involved knee, PF mobilization
4. General LE stretching for ankle and hip
5. Progress from PROM to A/A ROM to AROM
6. Quad Sets, SLR, Leg Press with minimal resistance (then progress), wall squats, stationary bike when patient has enough ROM
7. Other Exercises: Resisted plantar and dorsi flexion, bridging, hip abduction, hip flexion, adductor squeezing, heel slides, hamstring sets, resisted knee flexion
8. Gait train: normalized gait with assistive device(s), progressing to normalized gait pattern and fair balance without assistive device

#### **Postoperative**

##### **General Principles:**

1. Organized progression through phases
2. Closed chain exercises
3. Edema and Inflammation control
4. Goal to begin sport specific activity at 6 months depending on progress

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

##### **\*\*\* Modifications for Meniscal Repair:**

- ROM: 0-90° for first 2 weeks, then advance as tolerated
- Weight bearing restrictions per post op orders, then advance as tolerated per protocol
- Gradually wean from two crutches to one crutch to no crutches as long as there is no increase in pain or swelling
- No weight bearing in > 90° flexion for 2 months

## **Phase I: Weeks 1-3 (Range of Motion) Clinic Visits: 2x/week**

### **WEIGHTBEARING**

- Crutches: progression
  - FWB as tolerated using crutches
  - Wean off crutches once able to fully extend knee while WB and walk without limp
- 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
- Flexion exercises: Heel slides, pull ankle toward buttock
- Regain/maintain full knee extension.
  - Extension exercises: Heel Props with Quad Sets, Towel stretches
- May use ice and compression dressing during this phase to address soft tissue swelling and effusion.

### **HOME EXERCISE ROM:**

- Patellar mobilizations and ROM flexion/extension exercises with goal flexion of 120°. 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:**

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

**PHASE II: Weeks 3-6 (Strength) Clinic Visits: 1x/week**

**WEIGHTBEARING**

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

**ROM**

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

**STRENGTHENING: (Closed Chain)**

- Begin functional closed chain strengthening, proceed with AROM exercises

**CONDITIONING:**

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

**Progression Criteria:**

1. ROM: full hyperextension and 130° of flexion
2. Confident, smooth gait pattern
3. Begin functional strengthening

### **PHASE III: Weeks 6-12 (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
- Initiate elliptical training at 8 weeks if adequate strength is present

#### **MODALITIES:**

- Ice after exercises (20-30 minutes)
- Proprioception: progress from level planes, 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:**

1. Attain full ROM
2. Advance functional strengthening
3. Walk up and down stairs using both legs easily
4. Must be able to land with flexed knees and no valgus deviation at the knee

### **PHASE IV: Weeks 12 + (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
  - Initiate jump rope at Week 12 (Autograft) or Week 16 (Allograft or Revision), then light plyometrics
  - **Running: Week 12+ (Autograft) or 16+ (Weeks Allograft or Revision)**
    - Running Program: start basic running program at 12 weeks, after obtaining full leg strength and knee ROM and no/trace swelling is present.
    - Begin with walk/jog progression
    - 2 weeks on treadmill, then progress to outdoor running on even surface

- Emphasis on gait: normal with full knee extension.

### **Functional Training: 16 weeks (Autograft) or 20 weeks (Allograft or Revision)**

- **Stage 1:** Start with both feet and progress to involved leg
  - Unsupported linear hopping
  - 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 on both feet
  - Resisted jogging – elastic band at waist – jog backwards, then forwards; progress to forward shuffles, carioca.
- **Stage 3:** Progress to Running Agility Program

### **Sport Specific Functional Activities**

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

### **MODALITIES:**

- Ice after exercises (20-30 minutes)

### **Progression Criteria:**

1. Advance agility and power training
2. Achieve normal activities on uneven surfaces

### **RETURN TO SPORT CRITERIA**

1. Full ROM
2. > 80% of strength compared to uninvolved side on Isokinetic testing at 60°, 80°, and 300° or > 85% of strength compared to uninvolved side with triple hop for distance and hop for time.
3. Able demonstrate all sport-related functions at full speed, with normal balance and proprioception, and without evidence of compensation.
4. Clearance by Dr. Driscoll.