

# **Anterior Cruciate Ligament Reconstruction**

## **Standard Rehabilitation Protocol**

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### **Introduction:**

- This rehabilitation protocol has been designed for patients who have undergone an ACL reconstruction and due to other issues require a more conservative time frame for the rehabilitation process. These issues include:
  - Revision ACL reconstruction
  - Concomitant meniscal repair
  - Concomitant ligament repair or reconstruction
  - Concomitant Patellofemoral realignment procedure

### **Goals of rehabilitation are to:**

- Control joint pain, swelling, hemarthrosis
- Regain normal knee range of motion
- Regain a normal gait pattern
- Regain normal lower extremity strength
- Regain normal proprioception, balance, and coordination

The physical therapy is to begin post-op day #2. It is extremely important for the supervised rehabilitation to be supplemented by a home fitness program.

### **Important post-op signs to monitor:**

- Swelling of the knee or surrounding soft tissue
- Abnormal pain response, hypersensitive
- Abnormal gait pattern, with or without assistive device
- Limited range of motion
- Weakness in the lower extremity musculature

### **Return to activity:**

- It requires both time and regular clinic evaluation to safely and efficiently return to functional activity.
- Adequate strength, flexibility, and endurance are all necessary to return to high level function, all of which are addressed in this program.
- Isokinetic testing and functional evaluation are required to assess a patient's readiness to return to sport.

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### **Phase 1: Week 1-2**

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#### **Range of Motion:**

- Passive ROM, 90 degrees
- Aggressive Patella mobility
- Ankle pumps
- Gastroc-soleus stretches
- Wall slides
- Heel slides with towel

#### **Strength:**

- Quad sets x 10 minutes
- SLR (flex, abd, add)
- Wall Squats
- Calf Raises

#### **Balance Training:**

- Weight shifts (side/side, fwd/bkwd)
- Single leg balance

#### **Weight Bearing:**

- Wt bearing as tolerated with crutches
- Crutches until quad control is gained, then discontinued
- Meniscal Repair wt bearing as tolerated in full extension
- MCL repair wt bearing as tolerated

#### **Modalities:**

- E-stim/biofeedback as needed
- Ice 15-20 minutes with knee at 0 ° ext

#### **Brace:**

- Wear post-op brace at all times with the following exceptions:
  - Remove brace to perform ROM activities
  - Brace not required in bed
- Will measure for functional brace post-op day #1

#### **Hygiene:**

- OK to shower post-op day #1; Keep nonarthroscopic incisions dry
- No pools, ponds or hot tubs until 2 weeks post-op (do not submerge incision)

#### **Goals for Phase 1:**

- ROM 0-90 °
- Adequate quad contraction
- Control pain, inflammation, and effusion

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### **Phase 2: Week 2-4**



#### **Range of Motion:**

- Passive ROM, 0-100 degrees
- Aggressive Patella mobility
- Ankle pumps
- Gastroc-soleus stretch
- Light hamstring stretch at wk 4
- Wall, heel slides to reach goal

#### **Strength:**

- Quad sets with biofeedback
- SLR in 4 planes (add ext at wk 4)
- Heel raise/Toe raise
- Wall squats
- Multi-angle isometrics (60-90 degrees)

#### **Balance Training:**

- Weight shifts (side/side, fwd/bkwd)
- Single leg balance

#### **Weight Bearing:**

- As tolerated with quad control

#### **Modalities:**

- E-stim/biofeedback as needed
- Ice 15-20 minutes

#### **Brace:**

- We will switch to a functional brace at the start of Phase 2
- With meniscal repair we will remain in the post-op brace and gradually increase ROM 30 degrees every 2 weeks beginning at post-op week #2. The patient then should, at the start of week #6, have the brace set at 90 degrees of flexion. The brace should be used at all times to protect the repair.
- Wear functional brace at all times with the following exceptions:
  - Remove brace to perform ROM activities
  - Brace not required in bed

#### **Goals for Phase 2:**

- Maintain full passive knee extension
- Increase knee flexion to 100 °
- Diminish pain, inflammation, and effusion
- Increase muscle strength and endurance

- Maintain Patellar mobility

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### **Phase 3: Week 4-6**

#### **Range of Motion:**

- Passive ROM, 0-120 degrees
- Gastroc/soleus stretching
- Hamstring stretching

#### **Strength:**

- Progress isometric program
- SLR with ankle weight/tubing
- Leg Press-double leg eccentric
- Initiate isolated hamstring curls
- Multi-hip in 4 planes
- Lateral/Forward step-ups/downs
- Lunges
- Wall Squats
- Heel raise/Toe raise
- Bicycle/EFX
- Retro Treadmill
- Mini-squats/Wall squats

#### **Balance Training:**

- Weight shift
- Single leg stance
- Wobble board balance work-double leg

#### **Modalities:**

- Ice 15-20 minutes following activity

#### **Brace:**

- Functional brace as needed

#### **Goals for Phase 3:**

- ROM 120 degrees
- Increase muscle strength and endurance.
- Enhance proprioception, balance, and neuromuscular control.
- Diminish pain, inflammation, and effusion

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### **Phase 4: Week 6-12**

#### **Range of Motion:**

- ROM, unlimited
- Continue all stretching activities

#### **Strength:**

- Continue all exercises from previous phases
- Leg press – single leg
- Lateral lunges

#### **Balance Training:**

- Cup walking
- ½ foam roller work
- Single leg stance with plyotoss
- Wobble board balance work-double leg

#### **Modalities:**

- Ice 15-20 minutes as needed

#### **Brace:**

- Functional brace as needed

#### **Goals for Phase 4:**

- ROM full
- Increase muscle strength and endurance.
- Enhance proprioception, balance, and neuromuscular control.
- Normal gait

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**Phase 5-Week 12-16**

**Range of Motion:**

- Full ROM
- Continue all stretching activities

**Strength:**

- Continue exercises from wk 4-12
- Initiate plyometric training drills
- Progress jogging/running program
- Initiate isokinetic training (90-30 °), (120-240 °/sec)

**Modalities:**

- Ice 15-20 minutes

**Goals for Phase 5:**

- Restore functional capability and confidence
- Restore full knee ROM (0-135 °)
- Enhance lower extremity strength and endurance.

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**Phase 6-Week 16-20**

**Range of Motion:**

- Full ROM
- Continue all stretching activities

**Strength:**

- Continue all exercises from previous phases
- Progress plyometric program
- Increase jogging/running program
- Swimming (kicking)
- Backward running

**Functional Program:**

- Sport specific drills

**Cutting Program:**

- Lateral movement
- Carioca, figure 8's

**Modalities:**

- Ice 15-20 minutes as needed

**Goals for Phase 6:**

- Maintain muscular strength and endurance
- Perform selected sport-specific activity
- Progress skill training
- Enhance neuromuscular control

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**Phase 7-Week 20-36**

**Range of Motion:**

- Full ROM

**Strength:**

- Continue advanced strengthening

**Functional Program:**

- Progress running/swimming program
- Progress plyometric program
- Progress sport training program
- Progress neuromuscular program

**Modalities:**

- Ice 15-20 minutes as needed

**Goals for Phase 7:**

- Return to unrestricted sporting activity
- Achieve maximal strength and endurance
- Progress independent skill training
- Normalize neuromuscular control drills
- At six and twelve months a follow-up Isokinetic test is suggested to guarantee maintenance of strength and endurance.

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