

## **ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION Hamstring Graft/PTG-Accelerated Rehab**

The rehabilitation protocol has been designed for patients with ACL reconstruction who anticipate returning early to a high level of activity postoperatively. The ACL Rehabilitation protocol for all three grafts is the same with the following exceptions:

- When performing heel slides, make sure that a towel/sheet is used to avoid actively contracting the hamstrings.
- Do not perform isolated hamstring exercises until the 4th week post-op.

The following are **exclusionary criteria** for this protocol:

- Concomitant meniscal repair
- Concomitant ligament reconstruction
- ACL revision reconstruction
- MRI evidence of severe bone bruising or articular cartilage damage noted

The protocol is divided into several phases according to postoperative weeks and each phase has anticipated goals for the individual patient to reach. The **overall goals** of the reconstruction and the rehabilitation are to:

- Control joint pain, swelling, and hemarthrosis
- Regain normal knee range of motion
- Regain a normal gait pattern and neuromuscular stability for ambulation
- Regain normal lower extremity strength
- Regain normal proprioception, balance, and coordination for daily activities
- Achieve the level of function based on the orthopedic and patient goals

The physical therapy is to be begun on the second day post-op. It is extremely important for the supervised rehabilitation to be supplemented by a home fitness program where the patient performs the given exercises at home or at a gym facility.

### **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 (quadriceps, hamstring)
- Insufficient lower extremity flexibility

**Return to activity** requires both time and clinic evaluation. To safely and most efficiently return to normal or high level functional activity, the patient requires adequate strength, flexibility, and endurance. Isokinetic testing and functional evaluation are both methods of evaluating a patient's readiness to return activity.

## **ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION Hamstring Graft/PTG-Accelerated Rehab**

### **WEEKLY EXERCISE GOALS**

#### **PHASE ONE: WEEK 1-2**

RANGE OF MOTION (ROM) 0-110°

- Passive, 0-110°
- Patella mobs
- Ankle pumps
- Gastrocnemius stretches
- Wall slides
- Heel slides with towel

#### **STRENGTH**

- Quad sets x 10 minutes
- SLR (Flex, abd, add)
- Leg press (90-20°)-bilateral
- Mini squats (0-45°)
- Multi-angle isometrics (90-60°)
- Calf raises

#### **BALANCE TRAINING**

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

#### **WEIGHT BEARING**

- Weight bearing as tolerated with crutches
- Crutches until quad control is gained
- One crutch before FWB with no crutches

#### **BICYCLE**

- May begin when 110° flex is reached
- DO NOT use bike to increase flexion

#### **MODALITIES**

- Electrical stimulation as needed
- Ice 15-20 minutes with knee at 0° ext

#### **BRACE**

- Remove brace to perform ROM activities
- I-ROM when walking with crutches

#### **GOALS OF PHASE ONE:**

- ROM 0-110°
- Adequate quad contraction
- Control pain, inflammation, and effusion
- PBW to FWB as capable

## **ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION Hamstring Graft/PTG-Accelerated Rehab**

### **WEEKLY EXERCISE GOALS**

#### **PHASE TWO: WEEKS 2-4**

RANGE OF MOTION (ROM) 0-125°

- Passive, 0-125°
- Patella mobs
- Ankle pumps
- Gastoc-soleus stretches
- Light hamstring stretch at week 4
- Wall slides/Heel Slides to reach goal

#### **STRENGTH**

- Quad sets with biofeedback
- SLR in 4 planes (add ext at week 4)
- Heel raise/Toe raise
- Leg press
- Mini squats (0-45°)
- Front and Side Lunges
- Multi-hip machine in 4 directions
- Bicycle/EFX
- Wall squats

#### **BALANCE TRAINING**

- Balance board/2 legged
- Cup walking/hesitation walk
- Single leg balance
- Plytoss

#### **WEIGHT BEARING**

- Weight bearing as tolerated with quad control Discharge
- Crutches until quad control is gained
- 10 days post-op

#### **MODALITIES**

- Electrical stimulation/Biofeedback as needed
- Ice 15-20 minutes

#### **BRACE Discharge**

- Will measure for functional at week 4
- Brace week 3-4

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### **WEEKLY EXERCISE GOALS**

#### **PHASE TWO: WEEKS 2-4 (cont'd)**

##### **GOALS OF PHASE TWO:**

- Maintain full passive knee extension
- Gradually increase knee flexion to 125°
- Diminish pain, inflammation, and effusion
- Muscular strengthening and endurance
- Restore proprioception
- Patellar mobility

#### **PHASE THREE: WEEKS 4-12**

##### **RANGE OF MOTION**

- Full ROM
- Self-ROM to gain from 0-135°
- Maintain 0° extension
- Gastroc/soleus stretching
- Hamstring stretching

##### **STRENGTH**

- Progress isometric program
- SLR with ankle weight/tubing
- Leg press—single leg eccentric
- Initiate isolated hamstring curls
- Multi-hip in 4 planes
- Lateral/Forward step-ups/downs
- Lateral lunges
- Wall squats
- Vertical Squats
- Heel raise/Toe raise
- Bicycle/EFX
- Retro treadmill
- Mini-squats/Wall squats
- Straight-leg dead lifts
- Stool crawl

##### **BALANCE TRAINING**

- Steam boats in 4 planes
- Single leg stance with Plyotoss
- Wobble board balance work—single leg
- 1/2 foam roller work



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### **WEEKLY EXERCISE GOALS**

#### **PHASE THREE: WEEKS 4-12 (cont'd)**

##### MODALITIES

- Ice 15-20 minutes following activity

##### BRACE

- Functional brace as needed

##### RANGE OF MOTION—**Weeks 8-10**

- Full Range of Motion
- Self ROM as needed 0-135°
- Gastroc/Soleus/HS stretch

##### STRENGTH

- Continue exercises from weeks 4-6
- Progress into jogging program as ROM normalizes, pain & swelling are minimal
- Begin on mini-tramp, progress to treadmill as tolerated, then hard surface when tolerated
- Progress with proprioception training
- Isokinetic work (90-40°)(120-240°/sec)
- Walking program
- Bicycle for endurance
- Plyometric leg press/shuttle work

##### RANGE OF MOTION—**Weeks 10-12**

- Gastroc/Soleus/HS stretch

##### STRENGTH

- Continue exercises from weeks 4-10
- Isokinetic test at 180° and 300°/sec
- Plyometric training drills
- Continue with stretching

##### MODALITIES

- Ice 15-20 minutes as needed

#### **GOALS OF PHASE THREE:**

- Restore full knee ROM (0-135°)
- Increase lower extremity strength and endurance
- Restore functional capability and confidence
- Enhance proprioception, balance, and neuromuscular control

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WEEKLY EXERCISE GOALS**

**PHASE FOUR: WEEKS 12-16**

**RANGE OF MOTION**

- Continue all stretching activities

**STRENGTH**

- Continue all exercises from previous phases
- Progress plyometric drills
- 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 OF PHASE FOUR:**

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

**PHASE FIVE: WEEKS 16-36**

**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 OF PHASE FIVE:**

- 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. Advanced weight training and sports specific drills are advised to maintain a high level of competition.*