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Anterior Cruciate Ligament Reconstruction Hamstring Graft/PTG-Accelerated Rehab

This rehabilitation protocol has been designed for patients with ACL reconstruction who anticipate returning to a high level of activity early postoperatively. The ACL rehabilitation protocol for all 3 grafts is the same with the following exceptions for hamstring grafts:

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

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, 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 begin 2nd 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 to activity.

Phase 1: Week 1-2 ACL Accelerated Protocol

WEEK EXERCISE GOAL

- 1-2** ROM 0-110°
 Passive, 0-110°
 Patella mobs
 Ankle pumps
 Gastroc-soleus stretches
 Wall slides
 Heel slides with towel

STRENGTH

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

BALANCE TRAINING

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

WEIGHT BEARING

Wt bearing as tolerated with crutches (unless otherwise specified)

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:

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

Phase 2: Week 2-4 ACL Accelerated Protocol

WEEK EXERCISE GOAL

- 2-4** ROM 0-125°
Passive, 0-125°
Patella mobs
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
Leg Press
Mini squat (0-45°)
Front and Side Lunges
Multi-hip machine (4 directions)
Bicycle/EFX

Wall squats

BALANCE TRAINING

Balance board/2 legged

Single leg balance

Plyotoss

WEIGHT BEARING

As tolerated with quad control

Crutches as needed

MODALITIES

E-stim/biofeedback as needed

Ice 15-20 minutes

GOALS OF PHASE:

- 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 3: Week 4-12 ACL Accelerated Protocol

WEEK EXERCISE GOAL

- 4-8 ROM Full ROM
Self-ROM to gain FROM 0-135°
And 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
Mini-squats/Wall squats
Straight-leg dead lifts
Stool crawl

BALANCE TRAINING

Single leg stance with plyotoss
Wobble board balance work-single leg
½ Foam roller work

MODALITIES

Ice 15-20 minutes following activity
Self-ROM as needed 0-135°
Gastroc/Soleus/HS stretch

WEEK EXERCISE

8-10 ROM Full ROM

STRENGTH

Continue exercises from wk 4-6
Progress into jogging program as ROM
Normalizes and pain and 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

10-12 Full ROM

Gastroc/Soleus/HS stretch

STRENGTH

Continue exercises from wk 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:

- Restore full knee ROM (0-135°)
- Increase lower extremity strength and endurance

- Restore functional capability and confidence
- Enhance proprioception, balance, and neuromuscular control

Phase 4: Week 12-16
ACL Accelerated Protocol

WEEK EXERCISE

12-16 ROM Full
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 warm up exercise

MODALITIES

Ice 15-20 minutes as needed

GOALS OF PHASE:

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

Phase 5: Week 16-36
ACL/Accelerated Protocol

WEEK EXERCISE

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:

- Return to unrestricted sporting activity
- Achieve maximal strength and endurance
- Progress independent skill training
- Normalize neuromuscular control drills