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Anterior Cruciate Ligament Reconstruction
Accelerated Rehabilitation Protocol

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 grafts is the same with the following exceptions:

If a hamstring autograft was used:

a. when performing heel slides, make sure that a towel/sheet is used to avoid actively contracting the hamstrings.

b. do not perform isolated hamstring exercises until the 4th week post-op.

The following are exclusionary criteria for this protocol:
Concomitant meniscal repair
Concomitant reconstruction of another ligament
Concomitant patellofemoral realignment procedure
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, 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 mobilizations
- Ankle pumps
- Gastoc-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°)
- Calf Raises

**BALANCE TRAINING**

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

**WEIGHT BEARING**

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

Phase 2: Week 2-4

WEEK EXERCISE GOAL
2-4 ROM 0-125°

Passive, 0-125°
Patella mobilizations
Ankle pumps
Gastoc-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 in 4 directions
Bicycle/recumbent bicycle
Wall squats

BALANCE TRAINING
Balance board/2 legged
Cup walking/hesitation walk
Single leg balance
Plyotoss
WEIGHT BEARING
As tolerated with quad control
Discontinue crutches 10 days post-op
MODALITIES
E-stim/biofeedback as needed
Ice 15-20 minutes
BRACE
Discontinue post-op brace week 4
Will measure for functional brace

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
WEEK EXERCISE GOAL
4-8 ROM Full ROM
Self-ROM to gain Full ROM 0-135°
And maintain 0° extension
Gastoc/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/recumbent bicycle
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
½ Foam roller work

**MODALITIES**
Ice 15-20 minutes following activity

**BRACE**
Functional brace as needed

8-10 ROM Full ROM

- Self-ROM as needed 0-135°
- Gastroc/Soleus/HS stretch

**STRENGTH**
Continue exercises from wk 4-6
Progress into jogging program as ROM normalizes, 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 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
WEEK EXERCISE
12-16 ROM
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:
• Maintain muscular strength and endurance
• Enhance neuromuscular control
• Progress skill training
• Perform selected sport-specific activity

Phase 5: Week 16-36
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

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 higher level of competition.