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Anterior Cruciate Ligament Reconstruction
Delayed Rehab

This rehabilitation protocol has been designed for patients who have undergone an ACL reconstruction (HS graft/PTG/Allograft) in addition to other surgical issues that may delay the initial time frame of the rehabilitation process. The ACL protocol for Hamstring Tendon Grafts and Allografts is the same as for the Bone Patellar Tendon Bone Grafts with the following exceptions:

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 following may be considered criteria for this protocol:
- Concomitant meniscal repair
- Concomitant ligament reconstruction
- Concomitant patellofemoral realignment procedure
- ACL revision reconstruction

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:Weeks 1-2
Delayed Protocol

WEEK	EXERCISE GOAL
1-2	**ROM** 0-90°
	ROM (passive)
	--meniscus repair, MCL, ACL revision
	0-90°
	--patellar realignment
	0-75°
	Patellar mobs
	Ankle pumps
	Gastroc/soleus stretches
	Heel slides
	Wall slides
	STRENGTH
	Quad sets x 10 minutes
	SLR (flex and abd)
	Heel raise/Toe raise
	Wall squats

WEIGHT BEARING
--meniscus repair – NWB
--MCL – wt bearing as tolerated
--ACL revision – wt bearing as tolerated

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 (see above, depends on procedure)
- Control pain, inflammation, and effusion
- Adequate quad contraction
- NWB to TDWB (depends on procedure)

Phase 2-Weeks 2-4
ACL Delayed

WEEK EXERCISE GOAL

2-4 **ROM** 0-90°
Passive, 0-90°
Patellar mobs
Ankle pumps
Gastoc/soleus stretch
Light hamstring stretch at wk 4
Heel/Wall slides to reach goal

STRENGTH
Multi-angle isometrics (90-60°)
Quad sets with biofeedback
SLR (flex, abd, add)
Wall Squats
Heel raise/Toe raise

BALANCE TRAINING
Weight shifts (side/side, fwd/bkwd)
Single leg balance (dependent upon procedure)

MODALITIES
E-stim/biofeedback as needed
Ice 15-20 minutes
BRACE
I-ROM when walking with crutches

GOALS OF PHASE:
- ROM to 90° flexion and 0° extension
- Diminish pain, inflammation, and effusion
- Quad control
- Initiate weight bearing as permitted

Phase 3-Week 4-6
ACL Delayed

WEEK	EXERCISE GOAL
4-6	**ROM** 0-125°
	Passive, 0-125°
	Gastoc/soleus/hs stretch
	Heel/wall slides to reach goal

STRENGTH
Progressive isometric program
SLR in 4 planes with ankle weight/tubing
Heel raise/Toe raise
Mini-squats/Wall squats
Initiate isolated hamstring curls
Multi-hip machine in 4 planes
Leg Press-double leg eccentric
Initiate bike when 110° flexion
EFX/Retro treadmill
Lateral/Forward step-ups/downs
Lunges

BALANCE TRAINING
Single leg stance
Weight shift
Balance board/two-legged
Cup walking/hesitation walking

WEIGHT BEARING
PWB to FWB as allowed by quad control Discharge crutches
when FWB is
allowed

MODALITIES
Ice 15-20 minutes
BRACE Discharge
Measure for functional brace I-ROM with
issuance of
functional brace

GOALS OF PHASE:
- ROM 0-125°
- Increase lower extremity strength and endurance
- Minimize pain, swelling, and effusion
- Increase weight-bearing status from PWB to FWB

Phase 4-Week 6-12
ACL Delayed

WEEK EXERCISE GOAL

6-10 **ROM** 0-135°
Passive, 0-135°
Gastoc/soleus/hs stretch

STRENGTH
Continue exercises from wk 4-6
Leg Press-single leg eccentric
Lateral lunges

BALANCE TRAINING
Two-legged balance board
Single leg stance with plyotoss
Cup walking
½ Foam roller work

MODALITIES
Ice 15-20 minutes

BRACE
Functional brace as needed

10-12 **ROM** 0-135°
Passive, 0-135°
Gastoc/soleus/hs stretch

STRENGTH
Continue exercises from wk 4-10
Initiate jogging protocol-start on minitramp
as tolerated, progress to treadmill
Progress with proprioception training
Walking program
Bicycle for endurance

MODALITIES
Ice 15-20 minutes

GOALS OF PHASE:
- Full weight bearing, normal gait
- Restore full knee ROM (0-135°)
- Increase strength and endurance
- Enhance proprioception, balance, and neuromuscular control

Phase 5-Week 12-16
ACL Delayed

WEEK EXERCISE

12-16 **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 OF PHASE:

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

Phase 6-Week 16-20
ACL Delayed

WEEK EXERCISE

16-20 **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 OF PHASE:

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

Phase 7-Week 20-36
ACL Delayed

WEEK EXERCISE

20-**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 sport specific drills are advised to maintain a higher level of competition.