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 rehab process. Dependent upon the particular procedure, this protocol also may be slightly deviated secondary to Dr. Stewart’s medical decision. The ACL protocol for Hamstring Tendon Grafts and Allografts is the same as for the Bone Patellar Tendon Bone Grafts with the following exceptions:

- When performing heel slides, make sure that a towel/sheet is used to avoid actively contracting the hamstrings.
- Do no 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 ONE: Weeks 1-2 Delayed Protocol**

**EXERCISE GOAL**

**RANGE OF MOTION**

- 0-90°
- ROM (passive)

- Meniscus repair, MCL, ACL revision: 0-90°
- Patellar realignment: 0-75°
- Ankle pumps
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PHASE ONE: Weeks 1-2 (cont’d)

EXERCISE GOAL

- 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—weight bearing as tolerated on a case by case basis, per Dr. Stewart
- ACL revision—weight 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 ONE:

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

PHASE TWO: Weeks 2-4

EXERCISE GOAL

RANGE OF MOTION:

- 0-90°
- Passive, 0-90°
- Patellar mobs
- Ankle pumps
- Gastroc/soleus stretch
- Light hamstring stretch at Week 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)
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PHASE TWO: Weeks 2-4 (cont’d)
MODALITIES
E-stim/biofeedback as needed
Ice 15-20 minutes
BRACE
I-ROM when walking with crutches

GOALS OF PHASE TWO:
• ROM to 90° flexion and 0° extension
• Diminish pain, inflammation, and effusion
• Quad control
• Initiate weight bearing as permitted by Dr. Stewart

PHASE THREE: Weeks 4-6
RANGE OF MOTION:
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 THREE:
• ROM 0-125°
• Increase lower extremity strength and endurance
• Minimize pain, swelling, and effusion
• Increase weight bearing status from PWB to FWB
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PHASE FOUR - Weeks 6-12
Weeks 6-10
RANGE OF MOTION:
0-135°
Passive, 0-135°
Gastoc/soleus/hs stretch
STRENGTH
Continue exercises from weeks 4-6
Leg press—single leg eccentric
Lateral lunges
BALANCE TRAINING
Two-legged balance board
Single leg stance with Plyotoss
Cup walking
1/2 foam roller work
MODALITIES
Ice 15-20 minutes
BRACE
Functional brace as needed
Weeks 10-12
RANGE OF MOTION:
0-135°
Passive, 0-135°
Gastoc/soleus/hs stretch
STRENGTH
Continue exercises from weeks 4-10
Initiate jogging protocol - start on mini-tramp as tolerated, progress to treadmill
Progress with proprioception training
Walking program
Bicycle for endurance
MODALITIES
Ice 15-20 minutes
GOALS OF PHASE FOUR:
• Full weight bearing, normal gait
• Restore full knee ROM (0-135°)
• Increase strength and endurance
• Enhance proprioception, balance, and neuromuscular control

PHASE FIVE—Weeks 12-16
RANGE OF MOTION
Continue all stretching activities
STRENGTH
Continue exercises from weeks 4-12
Initiate plyometric training drills
Progress jogging/running program
Initiate Isokinetic training (90-30°) (120-240°/sec)
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PHASE FIVE - Weeks 12-16 (cont’d)

MODALITIES
Ice 15-20 minutes

GOALS OF PHASE FIVE:
- Restore functional capability and confidence
- Restore full knee ROM (0-135°)
- Enhance lower extremity strength and endurance

PHASE SIX - Weeks 16-20

EXERCISE GOAL
RANGE OF MOTION
Continue all stretching activities

STRENGTH
Continue all exercises from previous phases
Progress plyometric 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 SIX:
- Maintain muscular strength and endurance
- Perform selected sport-specific activity
- Progress skill training
- Enhance neuromuscular control

PHASE SEVEN—Weeks 20-36

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 SEVEN:
- 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.