Anterior Cruciate Ligament Reconstruction
Rehab Protocol

This rehabilitation protocol has been designed for patients following ACL reconstruction who anticipate returning to a high level of activity as soon as possible.

This protocol may be modified if the following concomitant procedures are performed:
- Meniscal repair
- Associated MCL or PCL reconstruction
- ACL reconstruction revision
- Articular cartilage damage or Microfracture

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

Physical therapy is to begin day 1 post-op. It is extremely important for the supervised rehabilitation to be supplemented by a home exercise 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, hypersensitivity
- Abnormal gait pattern, with or without assistive device
- Limited range of motion
- Weakness in the lower extremity musculature (quadriceps, hamstring)
- Extreme pain, tenderness and/or swelling in the calf

Return to activity requires both time and clinical 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 evaluations are both methods of determining a patient’s readiness to return to activity.

PHASE I: WEEK 1-2
ROM: 0-110° (minimum)

Flexibility:
- Patellar mobs
- CPM (as directed by MD)
- Hamstring stretch (avoid with HS graft)
- Gastoc-soleus stretch
- Heel slides with towel/Wall slides
May begin stationary bicycle when 105° flexion is reached
(Do not use bike/force to increase flexion; OK to force extension)

Strength:
- Quad sets with Biofeedback 10 min (10” holds, 30 reps, 10x daily)
- SLR flexion (may add weight if no quad lag present)
- Sidelying hip abd/adduction
- Multi-hip machine (flex, abd, add)
- Bilateral/Single leg press (120-20°) (90-20° if meniscus involved)
- Chair squats (0-90°)
- Step-ups
- Calf Raises
Notes: SLR: Perform quad set and lift 12 in off table, do not progress to functional activity until patient can perform 5’ with 5 lbs w/out lag.

Balance/Proprioception:
- Weight shifts (side/side, fwd/bkwd)
- Single leg balance on various surfaces, ie. air disc, foam pad
- Double leg balance on tilt board, wobble board

Gait:
- Cone walk (forward only)
- WBAT with crutches until quad control is gained
- One crutch before FWB with no crutches
- Eliminate quad avoidance pattern

Modalities:
- Electrical stimulation as needed (NMES, TENS)
- Ultrasound/Soft tissue mobs to portals (once incisions are closed)
- Ice 15-20 minutes with knee at 0° ext

Brace:
- Will be progressively unlocked per MD orders
- Remove brace to perform ROM activities at home
- I-ROM when walking with crutches outside of clinic

Goals of Phase I:
- ROM 0-110°
- Restore voluntary muscle activation
- Control pain, inflammation, and effusion
- PWB TO FWB as tolerated
- Restore full patellar mobility

Phase II: WEEK 2-4

For patients with lack of extension
10 mins; monitor HS activity with BFB

Tighten Quad & force knee straight

Hands flat on table, do not use to pull up; initiate with dropping hips back; do not let knees migrate beyond toes
ROM: 0-125° (minimum)

**Flexibility:**
Continue previous
*Foam roller for ITB/Quad*
Prone quad stretch
Light hamstring stretch at wk 4 (HS graft only)

**Strength:**
Continue previous
*Prone hip extension*
Bilateral leg press (no ROM restrictions)
Single leg press
Side lying clams
Front and Side Lunges
Bicycle/EFX

**Balance/Proprioception:**
Continue previous
Progress difficulty from Phase I

**Gait:**
Discharge crutches as tolerated by 10 days post-op

**Modalities:**
Continue as needed

**Brace:**
Discharge by week 3-4
Will measure for functional week 4

**Goals of Phase II:**
* ROM 0-125°
* Eliminate pain, inflammation, and effusion
* Improve muscular strength and endurance
* Restore proprioception

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**PHASE III: WEEK 4-12**

Do not roll over boney prominences; perform slowly and target trigger points

Do not let knees migrate beyond toes
ROM: Full ROM by week 8

Flexibility:
Continue previous
May add dynamic stretching program at week 8

Strength:
Continue previous
Glute/ham drops
Slide board reverse lunge
Split squats
Walking lunges
Single leg eccentric leg press
Hamstring curls
Lateral step-downs
Lateral lunges
Monster walks
Vertical Squats
Straight-leg dead lifts
Stool crawl
Plyometric leg press/shuttle at week 8

Balance:
Continue previous
Single leg stance with plyotoss
Wobble board balance work-single leg
½ Foam roller work

Aerobic:
EFX
Bicycle for endurance
Progress into jogging program at week 8
(must achieve full ROM, no pain or effusion)

Modalities:
Ice 15-20 minutes following activity

Brace:
Functional brace as needed

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

PHASE IV: WEEK 12-16
**Flexibility:**
Continue previous

**Strength:**
Continue all exercises from previous phases
Progress plyometric drills

**Functional Training:**
Sport-specific drills
Cutting/agility program
Agility Ladder: 1, 2, 3, 4, 5, 6, 7, 8, 9
Cone Drills: 1, 2, 3, 4, 5, 6
Lateral movement
Carioca, figure 8 drills

**Aerobic:**
Progress jogging/running program
Swimming
Backwards running

**Modalities:**
As needed

**Brace:**
Functional brace as needed

**Goals of Phase IV:**
- Progress strength and endurance
- Enhance neuromuscular control
- Progress skill training
- Perform selected sport-specific activity
PHASE V: WEEK 16-36

Strength:
Continue advanced strengthening

Functional Program:
Initiate Sports Metrics
Progress running/swimming program
Progress plyometric program
Progress sport training program
Progress neuromuscular program

Modalities:
Ice 15-20 minutes as needed

Goals of Phase V:
• Return to unrestricted sporting activity
• Achieve maximal strength and endurance
• Progress independent skill training
• Normalize neuromuscular control drills

At six month follow-up visit, a battery of functional tests may be performed to determine level of function. These will include single leg hop for distance, 40 yard figure 8 obstacle run, and isokinetic test at 60, 180, and 300°/sec.