

ACL Reconstruction: Rehabilitation Protocol

Rick Hammesfahr, MD

Pre-op: Gait training with crutches; Home exercises (SLR, QS, Ankle pumps, Heel slides, and ice with elevation x 20 minutes). Perform 4 x daily if possible.

Phase I: Week 1 post-op

Goals: Minimize pain and swelling, achieve good ROM, promote muscle activity, maintain good patellar mobility, and adhere to healing constraints of surgical procedure and protect healing tissues.

Plan:

- Schedule first post-op visit 2 days after surgery
- Physical Therapy 3x/week
- PWB with crutches and progress to WBAT
- Aggressive Home Exercise Program: SLR, quad sets, SHC, TR/ankle pumps, heel slides with assist/overpressure, PROM extension (prone hangs or supine heel bolster)
- Home CPM use 6-8 hours/day; 0-70 degrees to start (or as tolerated by patient) and increase by 10 degrees per day. When patient is comfortable at 110- 120 degrees in CPM, it should be discontinued.
- Patient to stay in hinged brace for 5 weeks with ROM blocked per physician order (May remove for CPM and sleeping unless MCL involvement)

Visit 1:

- Change dressing
- Assess ROM. Patient should have TKE PROM and AROM so be aggressive within reason
- Review HEP
- Measure girth: MP, SP, 4" & 7" above patella bilaterally
- NMES to VMO
- Patellar mobilization and instruction in self mobs for home

Visit 2 & 3:

- Progress with procedure from 1st visit
- Stationary Bike ROM (pedal rocking to full revolution as tolerated)
- PRE's: LE isotonic strengthening
 1. Hip Abd/Add
 2. Knee extension
 - 0-30 degrees ECCENTRIC ONLY
 3. Seated Calf Raises
 4. Hip Flexion/Extension
 5. TKE with Theraband (Don Tigney)
 6. Mini-squats to 30 degrees

Phase II/Week 2:

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Goals: Protection of graft, nourish articular cartilage, minimize fibrosis, deter muscle atrophy, stimulate collagen healing, increase weight bearing, and decrease swelling.

Plan:

- Continue to monitor TKE
- FWB (D/C crutches 10-14 days p/o)
- AROM/PROM 0-120 degrees
- D/C CPM unit end of week 2

Procedure:

- A. Scar massage and patient instruction for self treatment
- B. Joint mobs (grade II, III, IV) for flexion/extension as needed
- C. Progress HEP with increased reps and 1 lb weight
- D. Begin isotonic Hamstring Curls (-10 to 90 degrees ROM)
- E. Begin Leg Press (-10 to 45 degrees ROM)
- F. Standing Calf Raises
- G. Isokinetic Device (with anti-shear device only!)
 1. CPM for ROM (30 degrees/sec)
 2. Hamstrings (CON and CON/ECC; 120 degrees/sec)
 3. Quads (**ECC only 1st 6 weeks/0 to 30 degrees only!**)

Phase III/Weeks 3-4:

Goals: Independent ambulation, active TKE with gait, increase VMO strength, and protect graft.

Plan:

- Maintain patellar mobility with mobs and lateral retinacular stretching
- Continue manual joint mobs for ROM as needed
- PROM 0-130 degrees
 - D/C hinged brace except for closed chain exercises at week 4 (unless otherwise ordered by physician)
- Add proprioceptive activity

Procedure:

- A. Begin ¼ wall squats
- B. BAPS Board for proprioception
- C. Mini tramp for stabilization
- D. Stairmaster (constant speed) at week 4 (Earlier if tolerated)
- E. Progress previous exercises as tolerated with reps/sets/weight

Phase IV/Weeks 5-12:

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Goals: Control forces during ambulation, full ROM, and augment quad strength.

Plan:

- AROM/PROM WNL's (Mobs prn)
- Additional closed chain exercises
- Increase knee extension AROM

Procedure:

- A. Begin concentric knee extensions 30 to -10 progressing to 0 degrees
- B. Begin closed chain activities:
 1. step-ups
 2. Water ski squats to 45 degrees (knees not past toes)
- C. Minitramp-double and single leg bounds
- D. Vary stairmaster intensity
- E. Isokinetics - concentric 30 to -5 degrees 240/180/120 degrees per sec

Phase V/Weeks 13-16:

Goals: Progress to functional closed chain PRE's, agility drills, and sport specific drills. Educate patient for complete home/gym program as needed.

Plan:

- Functional activities

Procedure:

- A. Begin jogging at 16 weeks (if involved strength is 80% of non-involved) with CTi brace
- B. Swimming and walking programs
- C. Return to golf with CTi brace
- D. Begin plyometric training and progress accordingly: begin each phase only after previous phase has been mastered

Phase VI/Weeks 17-24:

Goal: Link prior rehab to full functional return by achieving maximal strength and neuromuscular coordination/endurance

Plan:

-Activity augmentation

Procedure:

- A. Increase intensity and progression of PRE's
- B. Increase swimming, jogging, and sport specific activities

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Phase VII/Weeks 24+:

Goal: Return to pre-injury status

Plan:

- Unrestricted activities in CTI brace @ 9 months

Procedure:

- A. Maintenance PRE program 3x weekly
- B. Thigh girth within ½" of uninjured
- C. Normal KSS testing
- D. Isokinetic testing WFL's