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## ACL Reconstruction (patellar tendon, hamstring, or allografts)

### Precautions:

The patient will ambulate with crutches (and immobilizer / hinged brace if prescribed) with weight-bearing as tolerated unless instructed otherwise by physician. The patient may discontinue crutches when he/she can ambulate securely, has no evidence of instability, has appropriate quad strength, and can perform a normal gait pattern.

### Phase I (1 – 5 days post-op) Change to 1-7 Days

- Wound care: Observe for signs of infection
  - Modalities: prn for pain and inflammation (ice, IFC)
  - Brace: Immobilizer or brace if prescribed (hinged brace locked in full extension)
  - ROM: Goal: Minimum 0 – 90 degrees, not more than 120 degrees
    - Passive positional stretches for extension and flexion
    - ~~CPM if prescribed by physician~~
    - Ankle AROM
- To be worn at all times including when sleeping.

7 Days

### Phase II (5 days – 4 weeks post-op)

- Wound care: Observe for signs of infection and begin scar management techniques when incision is closed
  - Brace: ~~Immobilizer if prescribed until quad control is sufficient to be safe with gait.~~ Hinged brace set 0 – 120 on at all times except in PT clinic
  - ROM:
    - Goal: Minimum 0 – 90 degrees, not more than 120 degrees until 3 weeks, then gradually to full AROM
    - Passive positional stretches and AROM for extension and flexion
    - Half revolutions on stationary bike and progress to full revolutions
    - Increase / maintain patellar mobility with emphasis on superior glide
  - Strengthening:
    - No resisted open chain strengthening
    - Quad sets (open and closed chain multi angle)
    - SLR (eliminate extensor lag)
    - Emphasize closed chain activities for strengthening (step ups, light leg press etc.)
    - Proprioceptive activities added as soon as quad control allows
  - Modalities:
    - NMES to quads if unable to perform quad sets and extensor lag with SLR
    - IFC and ice for pain and edema prn
    - sEMG neuromuscular re-education for quad sets
  - Conditioning
    - Upper Body Cycle
    - Stationary bike with the well leg
- Discontinue brace use at night.

### Phase III (4 – 10 weeks post-op)

- Wound care: Continue scar mobs
  - Brace: ~~D/C immobilizer no later than 6 weeks. Wean from hinged brace at 6 – 8 weeks~~
- Gradually discontinue brace from week 4 to 6



- ROM:
  - Emphasize full extension
  - Full flexion by end of 8 weeks
  - Patellar mobility
  - Rectus femoris/ hip flexor stretches
- Strengthening:
  - Continue Phase II, adding resistance as tolerated
  - Initiate light plyometrics
    - Allograft not until 10 – 12 weeks
- Modalities:
  - Continue E-stim for re-ed or edema
  - sEMG to continue (for balance of VL to VMO or overall contraction)
  - Continue ice and IFC prn
- Conditioning:
  - Stepper (retro and / or forward)
  - Stationary bike
  - UBC
  - Pool if available
  - Treadmill forward and retro (walking speed only until 8 weeks) Jogging initiated at 8 weeks unless painful. Attempt a trial each week until no pain occurs. (Allograft not until 10 – 12 weeks)
- Gait: Normalize gait pattern on level surfaces and progress to step-over-step pattern on stairs
- Testing: Initial Functional Test prior to 6 – 8 week MD follow-up appt.

#### **Phase IV (10 + weeks post-op)**

- Wound care: Continue scar mobs
- ROM: Full ROM
- Strengthening: Increase weights and reps of previous exercises
- Modalities: continue prn
- Conditioning and Agility:
  - Step up or Step-over drills
  - Double leg jumps progressing to single to double then single to single
  - Line drills
  - Jumping drills
- Testing: Final Functional tests greater than 25% deficit for non-athletes, greater than 20% for athletes

#### **Over 12+ weeks post-op**

Initiate work conditioning for job related injuries. Gradually initiate sport specific drills and exercises including slow cutting and jumping (wait until 14 weeks for allograft). Follow up with school athletic trainer to continue sport specific training and skills.

Adapted from:

- 1) Brotzman SB, Wilk KE. Clinical Orthopedic Rehabilitation. 2<sup>nd</sup> Ed. Philadelphia: Mosby; 2003
- 2) Rehabilitation Guide: Anterior Cruciate Ligament Reconstruction. Madison, WI: UW Health: University of Wisconsin Sports Medicine; 2000