



**Roger Chams, MD**

**ACL Reconstruction with Quad Tendon, Allograft,  
or Hamstring Autograft: Rehab Protocol**

*This protocol is intended to be a general outline only. The physician reserves the right to either advance or delay this protocol as deemed necessary. If so, this should be done by direct communication with the therapist, or in writing on the therapy referral form given to the patient on the day of surgery.*

*The patient's ability to progress to exercises in the next phase will depend on the patient's pre-surgery functional level and individual healing variations. Patient should not be progressed to more difficult exercises until competent and pain-free with lower level exercises. Patient should be given a customized home exercise program and advanced regularly.*

**FOR ACL RECONSTRUCTION WITH MENSICUS REPAIR PROTOCOL,  
PLEASE SEE: [www.rogerchamsmd.com](http://www.rogerchamsmd.com)**

**Guidelines for Crutches and TROM Brace**

- Bilateral axillary crutches to be used immediately post-op, WBAT unless otherwise specified. Patient will gradually reduce use of crutches once able to recruit quad and perform SLR independently.
- TROM brace usage:
  - To be fitted at first post-op visit and worn with all ADL's for first 2-4 weeks, initially locked at 0° extension for all weight-bearing activities.
  - To be removed only for sleeping, bathing, exercises, and use of cold therapy while NWB'ing.
  - Unlock brace for ambulation when able to perform quad set without lag and independent SLR.
  - Discharge TROM for everyday use when patient has normal gait pattern, can perform SLR without quad lag, and maintains 0° knee extension at rest – usually within first four weeks.
  - Continue use of TROM for first 6-8 weeks when on unstable surfaces or in large crowds, or when on feet for extended period of time.

### **Initial goals/precautions:**

- Achieve full flexion ROM by 8-10 weeks post-op
- Achieve full extension of knee but avoid hyperextension
- Do not remove TROM until patient can perform SLR without lag

### **Guidelines for Wound Care**

- Place gauze and occlusive dressing over steri-strips at wound sites at first visit. Change gauze and occlusive dressing every other day (or as needed if wet), leaving steri-strips in place. Cover old steri-strips with new ones if needed.
- Wrap knee with Press'nSeal plastic wrap for showering.
- Keep wound sites covered with occlusive dressing until 3 days after stitches are removed.

### **Frequency of Physical Therapy Visits**

Schedule physical therapy visits 3x/week for the first four weeks, or until full passive ROM extension is achieved **and** there is no quad lag with SLR.

Then decrease to 2x/week and continue as appropriate based on patient status and compliance with HEP.

### **Day 1 Post-Op**

- Remove bulky dressings. Leave steri-strips on; place occlusive dressing over all portals and incisions.
- Discard post-op immobilizer. Issue TROM brace (adjust fit as needed)
- PROM knee flexion
- PROM knee extension to zero degrees, no forced hyperextension
- Patellar mobilization
- Quad sets, SLR's, ankle pumps, resisted PF/DF ankle exercises with band
- Frequent icing with cold packs, or Game Ready / Cryocuff x2 weeks if available

### **Week 1-4: Patient to be seen 3x/week as needed.**

**If ROM and quad strength are progressing well, consider decreasing to 2x/week.**

**ROM Goal: 100° flexion in prone by Week 2, 120° by Week 4.**

- Continue above exercises
- Apply NMES to the quadriceps for muscle recruitment with open and closed chain exercises per therapist discretion. Issue home NMES unit if needed.
- Open chain hip abduction, adduction, and extension AROM
- Standing weight shifts with focus on quad recruitment, heel raises, and standing resisted TKE's, quad sets in weightbearing with focus on normalizing gait

- At Week 2, add stationary bike without resistance
- At Week 2, add seated LAQ's with no resistance, progressing ankle weight resistance as tolerated.
- At Week 2 (once stitches are removed), initiate BFR training for open and closed chain exercises if available.
- When patient has adequate quad control, add closed-chain exercises: soleus reaches, mini squats, step ups, tilt board weight shifting, cone taps, hurdle stepovers, dead lift, etc.
- Initiate single leg stance with reaching activities, ball toss, etc. on stable surfaces
- Prone TKEs
- Retro-walking on treadmill or with pulley resistance to emphasize quad recruitment

### **Week 5-6**

- Progress closed chain flexion activity depth as tolerated, maximum of 75 degrees flexion (squats, step ups, lateral lunges)
- Single leg RDL
- Progress from bilateral to unilateral leg proprioceptive drills on unstable surfaces (Airex pad, BOSU ball etc.)
- Resisted sidestepping and monster walks
- Leg press from 0-75° of flexion, bilateral legs progressing to single leg
- Forward / reverse lunges, lunge walk
- Wall squats (progress to heels up, band around hips for abduction isometric)
- Begin use of Blaze Pods or equivalent for neuromuscular reaction training and dual tasking drills (for small-range drills only, no cutting/pivoting)

### **Weeks 7-11**

- Star excursion drills, sled push/pull
- Step downs (forward and lateral), sit to stand progressing to single leg version
- Supine hip extensions (LE pulldowns) with resistance from above
- Slider quad burner with opposite foot on 4" box (slider front to back)
- Incorporate total-body strengthening, focusing on core control:
  - Front and side planks, Pallof press, hip flexor strengthening, bird dog, standing diagonal chops, Russian twists, bear crawl, etc.
- Add resistance to above exercises as tolerated (dumbbells, kettlebells) when balance and strength permit
- Use Pilates Reformer if available for resisted quad/hamstring/gluteal work

## **Week 12 - 15**

- At Week 12, perform baseline Y Balance test, timed single leg squat test, and quad strength assessment as measured by handheld dynamometer.
- At Week 12, **begin jogging if the following criteria are met:**
  - Full flex/ext knee ROM, no edema, pain <2/10
  - Single leg squat x10 reps within 70% depth of nonsurgical leg with good form
- Add lateral shuffles and crossover (karaoke) shuffles
- Ladder/agility drills for speed/coordination/reaction training
- Add perturbation training and advanced Blaze Pod/dual tasking drills (add theraband pulls to single leg RDL for varus/valgus stress)

## **Week 16 - 20**

- Band accelerated drills skater sticks
- Progress double leg and single leg plyo drills.
- Progress to cutting/pivoting drills and sports-specific drills.

**AFTER Week 16 (when therapist deems appropriate), perform Biodex test. Goal of 70% strength of quads and hamstrings compared to nonsurgical leg to enter Phase IV program. If Biodex test not passed on first attempt, re-test 4-6 weeks later depending on individual progress.**

### **Other qualifications for entry to Phase IV class/program:**

- Measured quad girth (measured at 6" above knee) circumference within one inch of non-operative LE
- Full knee ROM
- Proper form with single leg step down on 8" box
- Timed single leg squat >80%
- Y Balance Test >80% compared to nonsurgical leg
- Biodex test at or above >80% compared to nonsurgical leg
- Single Leg, Triple, and Triple Crossover Hop Tests at or above >80% of nonsurgical leg
- Six Meter Timed Hop at or above >80% of nonsurgical leg
- Consider psychological readiness assessment

### **Phase IV Rehab With or Without Class Option:**

Around Week 20 post-op (or when deemed appropriate by therapist and surgeon), patient should be tested to enter Phase IV group class. If Phase IV class is not available, treatment may continue in traditional PT with focus on functional, sports-specific progressive loading and plyometric activity.

### **Examples of Phase IV activity:**

- Bilateral and unilateral plyometric drills
- High-intensity running, cutting, reaction, and pivoting drills
- Distraction/perturbation/dual tasking drills
- Speed/acceleration/deceleration drills
- Sport-specific drills

### **Contact Sports:**

Prior to return to sport, patient should achieve 90% or better test results on Biodex, handheld dynamometry for quad, and all hop testing. Patient should show no asymmetry in single leg loading, with proper trunk alignment. Patient should also demonstrate psychological readiness for contact activity.

Begin return to sport transition with full contact drills, then progress to game play as appropriate in collaboration with MD, ATC staff, and coaches. Expected return to competitive play at 7-9 months post-op with the above parameters met.

For all questions and concerns, contact Dr. Chams' team at [chamspa@ibji.com](mailto:chamspa@ibji.com).