ILLINOIS BONE & JOINT INSTITUTE

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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, REFER TO 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
- No deep squats or lunges past 75 degrees of knee flexion until 16 weeks post-op
- No running until 16 weeks post op
- No torsion or cutting drills until 20 weeks post op as determined by phase IV testing
- No full contact sport participation until 8-9 months post-op or as determined by return to play assessment

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 flexion and 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 hyperextension.
- Patellar mobilization
- Quad sets, SLR's, ankle pumps, resisted PF/DF ankle exercises with band
- Frequent icing using "Game Ready" machine or Cryocuff for two weeks if available; cold packs if not.

<u>Week 1-4: Patient to be seen 3x/week as needed.</u>
If ROM and quad strength are progressing well, consider decreasing to 2x/week with home e-stim unit if needed.
ROM Goal: 100° flexion in prone by Week 2, 120° by Week 4.

- Continue above exercises.
- Apply e-stim to the quadriceps for muscle recruitment with open and closed chain exercises per therapist discretion
- Open chain hip abduction, adduction, and extension AROM
- Standing weight shifts, heel raises, and standing resisted TKE's
- 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

<u>Week 5-6</u>

- Progress closed chain flexion activity depth as tolerated, maximum of 75 degrees flexion (squats, step ups, lateral lunges)
- Single leg RDL
- Retro-walking on treadmill or with pulley resistance to emphasize quad recruitment
- 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
- Begin use of Blaze Pods or equivalent for neuromuscular reaction training and dual tasking drills (for small-range drills only, no cutting/pivoting)

<u>Weeks 7-11</u>

- Star excursion drills, sled push/pull
- Step downs (forward and lateral), sit to stand progressing to single leg verison
- 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

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

Week 16 - 24

- Around Week 16, perform baseline Biodex test. Goal of 70% strength of quads and hamstrings compared to nonsurgical leg to progress to Phase IV program.
- If Biodex test not passed on first attempt, re-test 4-6 weeks later depending on individual progress.
- Perform timed single leg sit to stand test.
- Perform hop testing (single leg hop forward/medial/lateral, triple hop, triple crossover hop).
- Progress double leg and single leg plyo drills.
- Progress to cutting/pivoting drills and sports-specific drills.

Phase IV Rehab With Class Option:

At some point after Week 20 post-op or when deemed appropriate by therapist and surgeon, patient may be evaluated to enter Phase IV group class. If Phase IV class is not available, treatment may continue in PT with focus on functional, sports-specific progressive loading and plyometric activity.

Qualifications for entry to Phase IV class/program: Proper form with single leg step down on 8” box, full knee ROM, & single leg hop, timed single leg squat, and Biodex test at or above 70% compared to nonsurgical leg.

Phase IV assessment: Include Single Leg, Triple, and Triple Crossover Hop Tests; Timed Single Leg Squat; Six Meter Timed Hop; and psychological readiness assessment. Measure Quad Girth (measured at 6” above knee) with goal of circumference within one inch of non-operative LE.

Once patient has excellent eccentric control of LE, progress Phase IV activity intensity:

- Bilateral and unilateral plyometric drills
- High-intensity running, cutting, reaction, and pivoting drills
- Distraction/perturbation/dual tasking 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 demo psychological readiness for contact and explosive 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.