OVERVIEW

- Focus on protection of graft and fixation in primary phases (Weeks 0-12)
- For ACL reconstruction with meniscal repair, defer to precautions in meniscal repair protocol.
- The physician may alter time frames of brace-wear and use of crutches
- Supervised Physical Therapy for 4-6 months
- Use caution with hamstring stretching/strengthening based on donor site morbidity

GENERAL GUIDELINES

- Ok to shower on post-op day 3. NO bathing/soaking knee until cleared by physician
- Sleep with brace locked in extension x 1 week
- Brace guidelines: Locked in full extension for 1st week (when walking and during sleep). As quad function improves, begin unlocking brace gradually from Week 1 - Week 6 (15°-20° per week, fully unlocked at week 6). Discontinue brace after Week 6
- Weight-bearing as tolerated by end of Week 1/start of Week 2

PHASE 1: Post-Op Through Week 6

Goals:

- Protect graft and graft fixation with use of brace and specific exercises
- Minimize effects of immobilization
- Control inflammation and swelling (cryocuff/ice machine for first 2 weeks)
- Full active and passive extension/hyperextension range of motion. Caution: avoid hyperextension > 10°
- Restore normal gait on level surfaces
- No flexion past 90° until after Week 4 to protect graft fixation

Brace (Total Length = 6 weeks):

- Week 1: Brace locked in full extension for ambulation and sleeping
- Weeks 2-4: Unlock brace (goal of 90°) as quad function returns. Ok to d/c brace when sleeping after first post-op visit (Day 10-14)
- Week 5-6: Unlock brace completely from Week 5 to Week 6. Wean from brace after Week 6, as patient demonstrates good quad control + normal gait mechanics
- At Week 7-8: Brace on only in vulnerable situations (e.g. crowds, uneven terrain)

Weight-Bearing:

- Week 1: Partial weight-bearing with crutches to assist with balance
- Weeks 2 - 6: Progress to full weight-bearing with normal gait mechanics
- Wean from crutches by 2 weeks and brace by 6 weeks as patient demonstrates normal gait mechanics and good quad control (defined as lack of quadriceps lag)
ACL HAMSTRING PROTOCOL

Exercises:
- Week 1: Maintain extension and work on passive and active-assisted flexion and leg curls (progress to active leg curls as tolerated in Week 2)

  ![Extension (straightening knee)](image1)

  ![Flexion (bending knee)](image2)

- Heel slides (limit to 90°)
- Quad sets

  ![Quad Sets](image3)

- Gastroc/Soleus stretching
- Very gentle hamstring stretching at 1 week
- Quad isometrics as 60° and 90°
ACL RECONSTRUCTION - HAMSTRING
Dr Elrashidy – Tri-Valley Orthopedics

- SLR all planes: Brace on in full extension until quad strength sufficient to prevent extension lag. Add weight as tolerated to hip abduction, adduction and extension.

- If available, aquatic therapy (once sutures removed) to normalize gait, WB, and strength. Deep-water aqua-jogging for ROM and swelling.
ACL HAMSTRING PROTOCOL

PHASE 2: Weeks 7-12

Criteria for advancing to Phase 2:
- Full Extension and Flexion to 90°
- Good quad set, SLR without extension lag
- Minimal swelling/inflammation
- Normal gait on level surfaces

Goals:
- Restore normal gait with stair climbing
- Maintain full extension, progress towards full flexion
- Increase hip, quadriceps, and calf strength
- Increase proprioception

Exercises:
- Continue with range of motion/flexibility exercises as appropriate for the patient
- Initiate CKC quad strengthening and progress as tolerated (Wall sits, Step-ups, Mini-squats, Leg press 90° – 30°, Lunges)
• Progressive hip, hamstring, calf strengthening (gradually add resistance to open
closed hamstring exercises at week 12)

• Continue Hamstring, Gastroc/Soleus stretches
• Stairmaster (begin with short steps, avoid hyperextension)
• Nordic Trac, Elliptical for conditioning
• Stationary Bike (progressive time and resistance)
• Single leg balance/proprionception (ball toss, balance beam, mini-tramp)
ACL HAMSTRING PROTOCOL

- If available, pool-running (waist deep) or on unweighted treadmill @10-12 weeks

**PHASE 3: Weeks 13 Through 18-20**

**Criteria for advancing to Phase 3:**
- No patellofemoral pain
- Minimum of 120° of flexion
- Sufficient strength + proprioception to initiate running (unweighted in pool)
- Minimal swelling/inflammation

**Goals:**
- Full range of motion
- Improve strength, endurance + proprioception of extremity to prepare for sports
- Avoid overstressing graft. Progressively increase resistance and hamstring strengthening
- Protect the patellofemoral joint
- Normalize running mechanics
- Strength 70% of uninvolved lower extremity per isokinetic evaluation

**Exercises:**
- Continue flexibility and ROM exercises as appropriate for patient
- Isokinetics (with anti-shear device). Begin with mid range speeds (120/sec-240/sec)
- Progress toward full weight-bearing running at about 16 weeks
- Begin swimming if desired
- Recommend isokinetic test with anti-shear device at 14-16 weeks to guide continued strengthening
- Progressive hip, quad, hamstring, calf strengthening
- Cardiovascular/endurance training via stairmaster, elliptical, bike
- Advance proprioceptive activities

**PHASE 4: Month 5 Through Month 6**

**Criteria for advancing to Phase 4:**
- No significant swelling or inflammation
- Full, pain-free ROM
- No evidence of patellofemoral joint irritation
- Strength 70% of uninvolved lower extremity per isokinetic evaluation
- Sufficient strength and proprioception to initiate agility activities
- Normal running gait
ACL RECONSTRUCTION - Hamstring
Dr Elrashidy – Tri-Valley Orthopedics

Goals:

- Symmetric performance of basic and sport specific agility drills
- Single hop and three hop tests 85% of uninvolved leg
- Quadriceps and hamstring strength at least 85% of uninvolved lower extremity per isokinetic strength test

Exercises:

- Continue and progress flexibility and strengthening program based on individual needs and deficits
- Initiate plyometric program as appropriate for patient’s athletic goals
- Agility progression including, but not limited to:
  - Side steps
  - Crossovers
  - Figure 8 running
  - Shuttle running
  - One leg and two leg jumping Cutting Acceleration/deceleration/springs Agility ladder drills
- Continue progression of running distance based on patient needs
- Initiate sport-specific drills as appropriate for patient

Phase 5: Post-op Months 6-7 = RETURN TO SPORT

Hany Elrashidy, MD
Sports Medicine, Arthroscopy
Department of Orthopedic Surgery
Tri-Valley Orthopedic Specialists