

## ***Post-operative Rehabilitation Protocol ACL Reconstruction with Meniscus Repair or Microfracture***

### **Phase I: Immediately postoperative (weeks 0- 4)**

- Goals:
  - Protect graft and graft fixation
  - Minimize effects of immobilization
  - Control inflammation/swelling
- ROM: 0-90 when supine (such as heel slides).
  - **Caution: avoid squatting and flexion for leg press beyond 90 degrees until 4 months post-op.**
- Brace 0-90 degrees for ADLs until 6 weeks post-op
- Educate patient on rehabilitation progression
- Weight bearing Status:
  - 50% until 6 weeks post-op, then advance to full weight bearing.
- Exercises:
  - Patellar mobilization/scar mobilization
  - Hamstring stretches
    - Be gentle for hamstring tendon autograft procedures
  - Hamstring curls – add weight as tolerated
    - **For patellar tendon autograft procedure only**
    - For hamstring tendon autograft procedure: delay hamstring strengthening for 12 weeks
  - Heel slides
    - Only to 90° for hamstring tendon autograft procedure
  - Quad sets (consider NMES for poor quad sets)
  - Gastroc/Soleus stretching
  - Gastroc/Soleus strengthening
    - For patellar tendon autograft procedures
  - SLR, all planes, with brace in full extension until quadriceps strength is sufficient to prevent extension lag – add weight as tolerated to hip abduction, adduction and extension.
  - For patellar tendon autograft procedures only:
    - Closed Kinetic Chain Quadriceps strengthening activities as tolerated (wall sit, step ups, mini squats, leg press 90-30 degrees)
    - Quadriceps isometrics at 60° and 90°
    - Balance/Proprioception

- Stationary Bike – initially for promotion of ROM – progress light resistance as tolerated

**Criteria for advancement to Phase II:**

- Full PROM flexion/extension
- Good quad set, SLR without extension lag
- Minimal swelling/inflammation
- Normal gait on level surfaces

**PHASE II: Post-operative weeks 4 to 10**

- Goals:
  - Restore normal gait with stair climbing after brace is discontinued at 6 weeks
  - Maintain full extension, progress toward full range of motion at 6+ weeks
  - Protect graft and graft fixation
  - Increase hip, quadriceps, hamstring and calf strength
  - Increase proprioception
- Exercises:
  - Continue with range of motion/flexibility exercises as appropriate for the patient
  - Continue closed kinetic chain strengthening as above for patellar tendon autograft procedures, progressing as tolerated – can include one-leg squats, leg press, step ups at increased height, partial lunges, deeper wall sits, lunge walks.
  - Initiate CKC quad strengthening and progress as tolerated for hamstring tendon autograft procedures (wall sits, step-ups, mini-squats, Leg Press , lunge at 90° -30°
  - Stairmaster (begin with short steps, avoid hyperextension)
  - Nordic Trac or elliptical machine for conditioning.
  - Stationary bike- progress time and resistance as tolerated
  - Continue to progress proprioceptive activities for patellar tendon autograft procedures, initiate for hamstring tendon autograft procedures – ball toss, balance beam, mini-tramp balance
  - Continue hamstring, gastroc/soleus stretches
  - Continue to progress hip, hamstring and calf strengthening as tolerated
  - If available, begin running in the pool (waist deep) or on an unweighted treadmill at 8 weeks.

**Criteria to advance to Phase III:**

- No patellofemoral pain
- Minimum of 120 degrees of flexion
- Sufficient strength and proprioception to initiate running.
- Minimal swelling/inflammation

### PHASE III: Post-operative weeks 10 to 16

- Goals:
  - Full range of motion
  - Improve strength, endurance and proprioception of the lower extremity to prepare for sport activities
  - Avoid overstressing the graft, for hamstring tendon autograft progressively increase resistance of hamstring strengthening.
  - Protect the patellofemoral joint
  - Normal running mechanics
  - Strength approximately 70% of the uninvolved lower extremity per isokinetic evaluation (if available)
- Exercises:
  - Continue flexibility and ROM exercises as appropriate for patient
  - Initiate OKC Knee extensions 90°-30°, progress to eccentrics
  - If available, isokinetics (with anti-shear device) – begin with mid-range speeds (120°/sec- 240°/sec)
  - **Progress toward full weight bearing running at 12 weeks for BTB autograft (16 weeks for hamstring tendon autograft procedures).**
  - Begin swimming if desired
  - Recommend isokinetic test with anti-shear device at 12 weeks (14-16 weeks for hamstring tendon autograft procedures) to guide continued strengthening.
  - Progressive hip, quadriceps, hamstring, calf strengthening
  - Cardiovascular/endurance training via Stairmaster, elliptical, bike
  - Advance proprioceptive activities

#### **Criteria for advancement to Phase IV:**

- *No significant swelling/inflammation.*
- *Full, pain-free ROM*
- *No evidence of patellofemoral joint irritation*
- *Strength approximately 70% of uninvolved lower extremity per isokinetic evaluation*
- *Sufficient strength and proprioception to initiate agility activities*
- *Normal running gait*

### PHASE IV: Post-operative months 4 through 6

- Goals:
  - Symmetric performance of basic and sport specific agility drills
  - Single hop and 3 hop tests 85% of uninvolved lower extremity

- Quadriceps and hamstring strength at least 85% of uninjured 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/sprints
    - Agility ladder drills
    - Continue progression of running distance based on patient needs.
    - Initiate sport-specific drills as appropriate for patient
    - Assessment of running on treadmill

**Criteria for advancement to Phase V:**

- *No patellofemoral or soft tissue complaint*
- *Necessary joint ROM, strength, endurance, and proprioception to safely return to work or athletics*

**PHASE V: Begins at 6 months post-op**

- Goals:
  - Safe return to athletics/work
  - Maintenance of strength, endurance, proprioception
  - Patient education with regards to any possible limitations
- Exercises:
  - Gradual return to sports participation
  - Maintenance program for strength, endurance