

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 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/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