SCHOOL OF MEDICINE
DEPARTMENT OF ORTHOPAEDICS & REHABILITATION

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Post-operative Rehabilitation Protocol

ACL Repair

To start 3-10 days post-op

1-2 x wk for 12+ weeks

Phase I – Acute Phase: 0-2 Weeks

Goals:

- Diminish pain, edema
- Brace locked in extension
- Reestablish quadriceps muscle activity/re-education (goal of no quad lag during SLR)
- May perform quad work out of brace
- Educate the patient regarding weight bearing as tolerated, use of crutches, icing, elevation and the rehabilitation process

Weight bearing:

- Weight bearing as tolerated with brace locked in extension. Discontinue crutch use as swelling and quadriceps recruitment dictates.

Modalities:

- Cryotherapy for 15 min 4 times a day
- Electrical stimulation to quadriceps for functional retraining as appropriate
- Electrical stimulation for edema control- high volt galvanic or interferential stimulation as needed

Therapeutic Exercise:

- Quadriceps sets
- SLR
- Hip adduction, abduction and extension
- Ankle pumps
- Gluteal sets
- Hamstring and gastroc/soleus and quadriceps stretches

Phase II: 2-6 weeks

Goals:

- Restore and improve muscular strength and endurance
- Begin knee ROM 0- 45 deg. Increase flexion 15 deg per week with goal 0-90 deg by week 6.

- Open brace to 0- 45 deg and increase 15 deg per week to correspond with knee ROM above with goal of 90 deg flexion at week 6.
- Work toward normal gait
- Improve balance and proprioception

Weight bearing status:

- Patients may progress to full weight bearing as tolerated with brace set at flexion noted above. Patients may require one crutch or cane to normalize gait before ambulating without assistive device.

Therapeutic exercise:

- Continue all exercises as needed from phase one
- Heel slides
- Active knee extension exercises
- Lateral step ups, step downs, and front step ups
- Closed kinetic chain exercise terminal knee extension
- Four way hip exercise in standing
- Proprioceptive and balance training
- Stretching exercises- as above, may need to add ITB and/or hip flexor stretches

Phase III: Post-operative weeks 4 to 10

Goals:

- Restore normal gait with stair climbing
- Maintain full extension, progress toward full flexion range of motion
- 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, progressing as tolerated – can include one-leg squats, leg press, step ups at increased height, partial lunges, deeper wall sits, lunge walks.
- 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 include:

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

Phase IV: 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.
- 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 (120o/sec- 240o/sec)
- **Progress toward full weight bearing running at 12 weeks**
- Begin swimming if desired
- Recommend isokinetic test with anti-shear device at 12 weeks 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 V: 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 VI: 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
- Ok to return to practice with team with gradual reintegration to practice scrimmaging
- Maintenance program for strength, endurance

Assessment for full return to activity by treating surgeon