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**REHABILITATION GUIDELINES: KNEE Postop ACL Reconstruction (Hamstring)**

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**I. IMMEDIATE POST-OPERATIVE PHASE**

**Days 1 to 7**

**Brace** - Brace locked at zero degrees extension for ambulation

**Weight Bearing** - Two crutches as tolerated with brace on locked in extension

**Range of Motion** - Patient out of brace (or unlock) 5 times daily to perform self ROM 0-90 degrees

**Exercises**

- \* Intermittent ROM exercises (0-90 degrees)
- \* Patellar mobilization
- \* Ankle pumps
- \* Straight leg raises (4 directions)
- \* Standing weight shifts and mini squats [(0-30) ROM]
- \* Knee extension 90-40 degrees
- \* Continue quad sets

Muscle Stimulation - Electrical muscle stimulation to quads in rehab or training room

Ice and Elevation - Ice 30-45 minutes every 2-3 hours and elevate with knee in extension

**II. MAXIMUM PROTECTION PHASE (Week 2-8)**

Goals:           Decrease swelling  
                      Prevent quad atrophy  
                      Increase ROM: Maintain full extension and progress flexion  
                      Protect graft / control external forces

**Week Two**

**Brace** - Brace locked at zero degrees for ambulation only, unlocked for self ROM (5 times daily)

**Weight Bearing** - As tolerated (gradually discontinue crutches 14-28 days post op)

**Range of Motion** - Self ROM (5 times daily), emphasize maintaining zero degrees passive extension

**Exercises**

- \* Multi-angle isometrics at 90, 60, 30 degrees
- \* Leg raises (4 planes)
- \* Hamstring curls (isometrics)
- \* Knee extension 90-40 degrees
- \* Mini squats (0-40) and weight shifts
- \* Lunges
- \* Leg Press (0-60)
- \* PROM/AAROM 0-105 degrees
- \* Patellar mobilization
- \* Hamstring and calf stretching
- \* Proprioception training
- \* Well leg exercises
- \* PRE Program - start with 1 lb., progress 1 lb. per week

Swelling control - Ice, compression, elevation

**Week Four**

**Brace** - Brace locked at zero degrees for ambulation only, unlocked for self ROM (5 times daily)

**Range of Motion** - Self ROM (5 times daily) emphasize maintaining zero degrees passive extension

**Exercises**

- \* Same as week two
- \* PROM 0-125 degrees
- \* Bicycle for ROM stimulus and endurance
- \* Pool walking program, swimming

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- \* Initiate eccentric quads 40-100 (isotonic only)
- \* Leg press (0-60)
- \* Emphasize CKC exercise
- \* Stairmaster
- \* Nordic Track

**Week Six**

**Brace – DISCONTINUE BRACE BY 5-6 WEEKS POSTOP**

**Exercises**

- \* Same as week four
- \* Hamstring Curls (light resistance)
- \* Pool Program
- \* AROM 0-115 degrees
- \* PROM 0-125 degrees
- \* Emphasize closed chain exercises
- \* Bicycle/Stairmaster etc.

**Week Eight**

**Brace - Consider use of FUNCTIONAL BRACE NEED TO ORDER FROM REP**

**Exercises - Continue PRE program**

**III. MODERATE PROTECTION PHASE (Week 10-16)**

**Goals:** Maximal strengthening for quads/lower extremity  
Protect patellofemoral joint

**Week 10**

**Exercises**

- \* Knee extension (90-40 degrees)
- \* Leg press (0-60)
- \* Mini squats (0-45)
- \* Lateral step ups
- \* Hamstring curls
- \* Hip Abd/Add
- \* Toe/calf raises
- \* Bicycle
- \* Stairmaster
- \* Wall Squats
- \* Lunges
- \* Pool running
- \* Proprioceptive training
- \* Continue PRE progression (no weight restriction)

**Week 12-14**

Exercise - Continue all above exercises

Maintain/Begin running (if patient fulfills criteria)

**IV. LIGHT ACTIVITY PHASE (Month 4-5)**

**Criteria to Enter Phase IV**

- \* AROM 0-125 degrees >
- \* Quad strength 70% of contralateral side, knee flexor/extensor rated 70-79%
- \* No change in KT scores (+2 or less)
- \* Minimal/no effusion
- \* Satisfactory clinical exam

**Goals:** Development of strength, power, endurance

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Begin gradual return to functional activities

**Week 20-21**

Exercises

- \* Emphasize eccentric quad work
- \* Continue closed chain exercises, step-ups, mini-squats, leg press
- \* Continue knee extension 90-40 degrees
- \* Hip abduction/adduction
- \* Initiate plyometric program
- \* Initiate running program
- \* Initiate agility program
- \* Sport specific training and drills
- \* Hamstring curls and stretches
- \* Calf raises
- \* Bicycle for endurance
- \* Pool running (forward/backward)
- \* Walking program
- \* Stairmaster
- \* High speed isokinetics

Criteria for Running

- Isokinetic Test - 85% > of opposite leg (quads), 90% > of opposite leg (hamstring)
- No Pain/Swelling
- Satisfactory clinical exam

Functional Drills

- \* Straight line running
- \* Jog to run
- \* Walk to run

**V. RETURN TO ACTIVITY PHASE (Month 6 - 7)**

- Goals: Achieve maximal strength & endurance  
Return to sport activities

- \* Continue maintenance endurance / strengthening program for **one year from surgery**

4 Quads

Knee Extensions  
Wall Squats  
Leg Press  
Step Ups

4 Strength

Hamstring Curls  
Calf Raises  
Hip Abduction  
Hip Adduction

4 Endurance

Bicycle  
Stairmaster  
Nordic Trac  
Swimming  
\*Pick On

4 Stability

High Speed Hamstrings  
High Speed Hip Flexion/Extension  
Balance Drills  
Backward running