

Palmetto Health USC

ORTHOPEDIC CENTER

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REHABILITATION FOLLOWING ACL-SEMITENDINOSUS RECONSTRUCTION

I. IMMEDIATE POST-OPERATIVE PHASE

POD 1

Brace - Brace locked at 0° extension for ambulation

Weight Bearing - Two crutches as tolerated

Range of Motion - Full passive extension (0-90°)

Exercises

- * Ankle pumps
- * Passive knee extension to zero
- * Straight leg raise (flexion)
- * Hip Abd/Adduction
- * Knee Extension 90-40°
- * Quad sets
- * Hamstring stretch/calf stretch

Muscle Stimulation - Muscle stimulation to quads during active exercises & ADL's

CPM - 0 to 90 ° (6 hours a day)

Immobilizer for 2 weeks

Sports Brace at 12-15 weeks

Ice and Elevation – Use cold blanket or ice 20 minutes out of every hour and elevate with knee in extension

POD 2 to 7

Brace - Brace locked at 0° extension for ambulation

Weight Bearing - Two crutches as tolerated

Range of Motion - Patient out of brace 4-5 times daily to perform self ROM 0-90/100°

Exercises

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

Muscle Stimulation - Electrical muscle stimulation to quads

CPM - 0 to 90°

Ice and Elevation – Use cold blanket or ice 20 minutes out of every hour and elevate with knee in extension

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II. MAXIMUM PROTECTION PHASE (Week 2-8)

Goals: Absolute control of external forces and protect graft
Nourish articular cartilage
Decrease swelling
Prevent quad atrophy

A: Week Two

Brace – Knee immobilizer for ambulation only. D/C during week 2 if adequate quad control

Weight Bearing - As tolerated (goal to discontinue crutches 7-10 days post op)

Range of Motion - Self ROM (4-5 times daily), emphasis on maintaining 0° passive extension

Exercises

- * Multi-angle isometrics at 90°, 60°, 30° - week 1
- * Wobble board
- * Leg raises (4 planes)
- * Hamstring curls (isometrics)
- * Knee extension 90-40°
- * Mini squats (0-40°) and weight shifts
- * Bilateral Leg Press (0-60°)
- * PROM/AAROM 0-105°
- * Patellar mobilization
- * Hamstring and calf stretching
- * Proprioception training - SLS
- * Well leg exercises
- * Bicycle for ROM stimulus and endurance - @ 90-95 degrees
- * Step up – Forward/Lateral
- * PRE Program - start with 1 lb, progress 1 lb per week
- * CC TKE

Swelling control - Ice, compression, elevation

B: Week Four

Range of Motion - Self ROM (4-5 times daily), emphasis on maintaining 0° passive extension

Exercises

- * Same as week two
- * PROM 0-125°
- * Bicycle for ROM stimulus and endurance
- * Pool walking program, swimming
- * Initiate eccentric quads 40-100° -squats/wall sits 0 - 60 degrees
- * Leg press (0-60°)
- * Emphasize CKC exercise
- * Elliptical
- * Lunges
- * Step Downs – lateral followed by forward

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Phase Two: Continued

C: Week Six

Exercises

- * Same as week four
- * Start hamstring curls (light resistance)
- * AROM 0-115°
- * PROM 0-125°
- * Emphasize closed chain exercises
- * Bicycle/Stairmaster etc.

D. Week Eight

Brace - Consider use of functional brace

Exercises - Continue PRE program

III. MODERATE PROTECTION PHASE (Week 10-16)

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

A. Week 10

Exercises

- * Knee extension (90 to full knee extension)
- * Leg press (0-90°)
- * Mini squats (0-45°)
- * Hamstring curls
- * Hip Abd/Adduction
- * Toe/calf raises – single leg
- * Bicycle
- * Stairmaster
- * Wall squats
- * Lunges
- * Pool running
- * Proprioceptive training
- * Continue PRE progression (no weight restriction)

B. Week 12-14

Exercise - Continue all above exercises, Treadmill, Jumping, ladder drills, box

Maintain/Begin running (if patient fulfills criteria to enter Phase IV)

IV. LIGHT ACTIVITY PHASE (Month 4-5)

Criteria to Enter Phase IV

- * AROM 0-125°>
- * 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
Begin gradual return to functional activities

A: Week 20-21

Exercises

- * Emphasis eccentric quad work
- * Continue closed chain exercises, step-ups, mini-squats, leg press
- * Continue knee extension 90-40°
- * 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

Testing - Isokinetic Test (180-300 degrees/sec, Full ROM, 10/15 reps)
, Manual Maximal Test

Criteria for Running

- Isokinetic Test - 85% > of opposite leg (quads), 90% > of opposite leg (hamstring)
- Isokinetic Test - Quad torque/body weight (180 degrees/sec) (60-65% males)(50-55% females)
- KT 2000 Test - Unchanged
- 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 strengthening program for one year from surgery

4 Quads

Knee Extensions
Wall Squats
Leg Press
Step Ups

4 Endurance

Bicycle
Stairmaster
Nordic Track
Swimming
*Pick One

4 Strength

Hamstring Curls
Calf Raises
Hip Abduction
Hip Adduction

4 Stability

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