

Rehabilitation Following ACL Semitendinous Reconstruction

I. IMMEDIATE POSTOPERATIVE PHASE

Postop day 1

Brace

- Brace locked at 0° extension for ambulation

Weightbearing

- Two crutches as tolerated (less than 50%)

Range of Motion

- Full passive extension (0°-90°)

Exercises

- Ankle pumps
- Passive knee extension to zero
- Straight leg raise (flexion)
- Hip abduction/adduction
- Knee extension 90°-40°
- Quad sets
- Hamstring stretch

Muscle Stimulation

- Muscle stimulation to quads (4-6 hours per day) during active exercises and ADLs

Ice and Elevation

- Ice for 20 minutes out of every hour
- Elevate with knee in extension

Postop day 2

Brace

- Brace locked at 0° extension for ambulation

Weightbearing

- 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
- 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 (6 hours per day)

Ice and Elevation

- Ice for 20 minutes out of every hour
- Elevate with knee in extension

Criteria for discharge from hospital

- Independent with ambulation with crutches including up/down stairs
- Independent with home exercise program
- PROM 0°-90°
- Independent with equipment; i.e., brace, crutches, and electrical muscle stimulation

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

Goals

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



Week Two

Brace

- Brace locked at 0° for ambulation only, unlocked for self ROM (4-5 times daily)

Weightbearing

- As tolerated (goal to discontinue crutches 7-10 days postop)

Range of Motion

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

Exercises

- Multi-angle isometrics at 90°, 60°, 30°
- Leg raises (4 lanes)
- Hamstring curls (isometrics)
- Knee extension 90°-40°
- Mini squats (0-40) and weight shifts
- Lunges
- Leg press (0-60)
- PROM/AAROM (0-105°)
- 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

- Locked at 0° for ambulation only. Unlocked for self ROM (4-5 times daily)

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 (isotonic only)
- Leg press (0-60)
- Emphasize CKC exercise
- Stairmaster
- Nordic Track

Week Six

Brace

- Discontinue use of drop locked brace

Exercises

- Same as week four
- Hamstring curls (light resistance)
- Pool program
- AROM 0-115°
- PROM 0-125°
- Emphasize closed chain exercises
- Bicycle, Stairmaster, etc.

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

Week Ten

Exercises

- Knee extension (90°-40°)



- Leg press (0-60)
- Mini squats (0-45)
- Lateral step ups
- Hamstring curls
- Hip abduction/adduction
- 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)

Criteria to Enter Phase IV

- AROM 0-125°>
- Quad strength 70% of contralateral side, knee flexor/extensor rated 70-79%
- Minimal/no effusion
- Satisfactory clinical exam

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

Goals

- Development of strength, power, endurance
- 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°



- 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 °/second, full ROM, 10/15 reps)

Criteria for Running

- Isokinetic Test – 85% of opposite leg (quads), 90% of opposite leg (hamstring)
- Isokinetic Test – Quad torque/body weight (180°/second) (60-65% males, 50-55% females)
- 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 and endurance
- Return to sport activities

***Continue 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 Track
 - Swimming
- *Pick one

4 Stability

- High speed hamstrings
- High speed hip flexion/extension
- Balance drills
- Backward running