

Rehabilitation Following ACL – Hamstring Reconstruction

Phase I – Immediate Post-operative Phase

POD 1

Brace – Brace locked at zero degrees extension for ambulation

Weight Bearing – Two crutches as tolerated (less 50%)

Range of Motion – Full passive extension (0-90 degrees)

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

Muscle stimulation – Muscle stimulation to quads (4-6 hours per day) during active exercises & ADL's

CPM – 0 to 90 degrees

Ice and Elevation – Ice 20 minutes out of every hour and elevate with knee in extension

POD 2 – 7

Brace – Brace locked at zero degrees 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 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)
 Knee extension 90-40 degrees
 Continue quad sets

Muscle stimulation – electrical muscle stimulation to quads (6 hours per day)

CPM – 0 to 90 degrees

Ice and Elevation – Ice 20 minutes out of every hour and 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 degrees

Independent with equipment, i.e. brace, crutches and electrical stimulation

Phase 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 2

Brace – brace locked at zero degrees for ambulation only, unlocked for self ROM (4-5 times daily)

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 zero degrees passive extension

KT 2000 Test (15lb. Anterior-Posterior test only)

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 ob. Per week
Swelling control – Ice, compression, elevation

Week Four

Brace – Brace locked at zero degrees for ambulation only, unlocked for self ROM (4-5 times daily)
Range of Motion – self ROM (4-5 times daily), emphasis on maintaining zero degrees passive extension

Exercises: Same as week two
PROM 0-125 degrees
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
KT 2000 Test – (Week 4, 20 lb. Anterior and posterior test)

Week Six

Brace – Discontinue use of drop locked brace
Exercises: Same as week four
Hamstring curl (light resistance)
Pool program
AROM 0-115 degrees
PROM 0-125 degrees
Emphasize closed chain exercises
Bicycle/Stairmaster
KT 2000 Test – (Week 6, 20 lb. And 30 lb. Anterior and posterior test)

Week Eight

Brace – Consider use of functional brace
Exercises: Continue PRE program
KT 2000 Test (Week 8, 20 lb. And 30 lb. Anterior and posterior test)

Phase 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 degrees)
Mini squats (0-45 degrees)

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
Testing-Isokinetic Test (180/300 degrees/sec, Full ROM 10/15 reps)
KT 2000 Test – Total Displacement at 15 lb., 20 lb. And 30 lb. Manual Maximal Test)
Maintain/Begin Running (if patient fulfills criteria)

Phase 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
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 stretching
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)
KT 2000 Test – Total Displacement at 15 lb, 20 lb, and 30 lb. 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

Phase 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 Endurance

Bicycle
Stairmaster
Nordic Trac
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