

Palmetto Health USC

ORTHOPEDIC CENTER

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ACL - PCL RECONSTRUCTION

I. Phase One – Immediate Post-Operative Phase (Day 1 – 13)

Goals: Restore full passive knee extension
Diminish joint swelling and pain
Restore patellar mobility
Gradually improve knee flexion
Re-establish quadriceps control
Restore independent ambulation

Day 1 - 4

- Brace
 - Drop lock brace locked at zero degrees extension with compression wrap
 - Sleep in brace
- Weightbearing
 - Two crutches as tolerated (less than 50%)
- Range of Motion
 - Range of motion 0-45/50 degrees
 - CPM 0-60 degrees as tolerated
- Exercises
 - Ankle pumps
 - Quad sets
 - Straight leg raising – flexion, abduction, adduction in brace
 - Muscle stimulation to quadriceps (4 hours per day) during quad sets & straight leg raises
 - Patellar mobilizations 5-6x daily
- Ice and elevation every 20 minutes of each hour with knee in extension

Day 5 – 13

- Brace
 - Continue use of drop lock brace locked at zero degrees extension during ambulation and sleep
- Weightbearing
 - Two crutches: gradually increase WB to 50% by day 7; 75% by day 12
- Range of Motion
 - Day 5: 0-65 degrees
 - Day 7: 0-75 degrees
 - Day 10: 0-85/90 degrees
 - Day 13: 0-90 degrees
 - Gradually increase CPM ROM 0-70 degrees day 7; 0-90 degrees day 12
- Exercises
 - Continue previous exercises
 - Initiate knee extension 60-0 degrees
 - Continue use of muscle stimulation
 - Patellar mobilizations 5-6x daily
- Continue use of ice, elevation and compression

II. Phase Two – Maximum Protection Phase (Week 2 – 6)

Criteria to Enter Phase Two:

- Good quad control (ability to perform good quad set and SLR)
- Full passive knee extension
- PROM 0-90 degrees
- Good patellar mobility
- Minimal joint effusion

Goals: Control deleterious forces to protect grafts
Nourish articular cartilage
Decrease swelling
Decreased fibrosis
Prevent quad atrophy
Initiate proprioceptive exercises

Week 2

- Brace
 - Continue use of brace locked at zero degrees of extension
- Weightbearing

- As tolerated: approximately 75% body weight
- Range of Motion
 - Continue to perform passive ROM 5-6x daily
 - Day 14: 0-90 degrees
- Exercises
 - Continue quad sets & straight leg raises
 - Continue knee extension 60-40 degrees
 - Multi-angle isometrics at 60 and 40 degrees
 - Patellar mobilizations 5-6x daily
 - Well leg bicycle
 - Mini-squats (0-45 degrees)
 - Continue use of muscle stimulation
- Continue use of ice, elevation and compression

Week 3

- Continue above mentioned exercises
- ROM 0-90 degrees
- Continue use of 2 crutches – 75-80% body weight

Week 4

- Brace
 - Continue use of brace locked at zero degrees extension
 - Discontinue sleeping in brace
- Weightbearing
 - Progress to weight bearing as tolerated with 1 crutch
- Range of Motion
 - AAROM, PROM: 0-90/100 degrees
- Exercises
 - Weight shifts
 - Mini-squats (0-45 degrees)
 - Knee extension 90-40 degrees
 - Light pool exercises and walking
 - Initiate bicycle for ROM and endurance
 - Begin leg press 60-0 degrees (light weight)
 - Proprioception/balance drills
- KT-2000 testing performed – 20 pound (at 25 and 70 degrees)

Week 5 - 6

- Discontinue use of crutches week 5-6
- Unlock brace for ambulation week 6
- Fit for functional ACL/PCL brace
- Range of Motion week 5: 0-105 degrees; week 6: 0-115 degrees
- Continue pool exercises
- Initiate lateral lunges
- KT-2000 testing performed – 30 pounds at week 6

III. Phase Three – Moderate Protection Phase (Week 7 – 12)

Criteria to Enter Phase Three:

- PROM 0-115 degrees
- Full weight bearing
- Quadriceps strength > 60% contralateral side (isometric test at 60 degrees)
- Unchanged KT test (+1 or less)
- Minimal to no full joint effusion
- No joint line or patellofemoral pain

Goals: Control forces during ambulation
 Progress knee ROM
 Improve lower extremity strength
 Enhance proprioception, balance, and neuromuscular control
 Restore limb confidence and function

- Brace
 - Continue use of unlocked brace for ambulation – discharge week 7-8
- Range of Motion
 - AAROM/PROM: 0-125 degrees
- Exercises
 - Continue previous exercises
 - Initiate swimming
 - Initiate lateral and front step-ups (2” step, gradually increase)
 - Progress closed kinetic chain exercises (squats 0-60 degrees, leg press 90-0 degrees)
 - Progress proprioceptive training

- KT-2000 test – 20 & 30 pounds at week 6 & 8

IV. Phase Four – Controlled Activity Phase (Week 13 – 16)

Criteria to Enter Phase Four:

- AROM 0-125 degrees
- Quadriceps strength > 60-70 contralateral side (isokinetic test)
- No change in KT scores (+2 or less)
- Minimal effusion
- No patellofemoral complaints
- Satisfactory clinical exam

Goals: Protect healing grafts
 Protect patellofemoral joint articular cartilage

Normalize lower extremity strength
 Enhance muscular power and endurance
 Improve neuromuscular control

- Exercises
 - Continue previous exercises
 - Emphasis on eccentric quadriceps strengthening
 - Continue closed kinetic chain mini-squats, step-ups, step-downs, lateral lunges, leg press
 - Continue knee extension 90-40 degrees
 - Hip abduction & adduction
 - Initiate front lunges
 - Calf raises (gastroc and soleus strengthening)
 - Bicycle and stairmaster for endurance
 - Initiate pool running (side shuffle, backward, forward)
 - Initiate walking program
 - Initiate isokinetic exercise 100-40 degrees (120-240 °/s spectrum)
- KT-2000 test at week 12
- Isokinetic testing at week 12 (180° and 300 °/s)

V. Phase Five - Light Activity Phase (Month 4 - 6)

Criteria to Enter Phase Five:

- AROM > 125 degrees
- Quadriceps strength 70% of contralateral side; flexion/extension ratio 70-79%
- No change in KT scores (+2 or less)
- Minimal joint effusion
- Satisfactory clinical exam

Goals: Enhancement of strength, power, and endurance
 Initiate functional and/or sport-specific activity
 Prepare for return to functional activities

- Exercises
 - Continue strengthening exercises – emphasize quadriceps & contraction
 - If appropriate:
 - Initiate plyometric program
 - Initiate running program
 - Initiate agility drills
 - Initiate sport-specific training and drills

Criteria to initiate running program:

- Acute reconstruction may begin at 4-5 months
- Chronic reconstruction may begin at 5-6 months
- Satisfactory clinical exam
- Unchanged KT test
- Satisfactory isokinetic test
 - Quadriceps bilateral comparison (80% or greater)
 - Hamstring bilateral comparison (110% or greater)
 - Quadriceps torque/body weight ratio (55% or greater)
 - Hamstrings/Quadriceps ratio (70% or greater)
- Proprioception testing 100% of contralateral side
- Functional hop test > 75% of contralateral leg

VI. Phase Six – Return to Activity Phase (Month 6 - 9)

Criteria to Return to Activities:

- Satisfactory clinical exam
- Unchanged KT test
- Satisfactory isokinetic test
- Proprioception testing 100% of contralateral side
- Functional hop test > 80% of contralateral leg

Goals: Gradual return to full-unrestricted sports
 Achieve maximal strength and endurance
 Normalize neuromuscular control
 Progress sill training

- Exercises
 - Continue strengthening programs
 - Continue proprioception & neuromuscular control drills
 - Continue plyometric program
 - Continue running and agility program
 - Progress sport specific training and drills

CLINICAL FOLLOW-UPS AT 6,12 & 24 MONTHS POSTOPERATIVE:

- KT-2000 testing
- Isokinetic testing
- Functional testing
- Clinical exam