

ANTERIOR CRUCIATE LIGAMENT AND POSTERIOR CRUCIATE LIGAMENT COMBINED RECONSTRUCTION SURGERY REHABILITATION PROGRAM

I. IMMEDIATE POSTOPERATIVE 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

POSTOPERATIVE 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°
CPM 0 - 60° 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

POSTOPERATIVE DAY 5 – 13

Brace:

Continue use of drop lock brace locked at zero degrees extension during ambulation & sleep

Weightbearing:

Two crutches: gradually increase WB to 50% by day 7; 75% by day 12

Range of motion:

Day 5: 0 - 65°
Day 7: 0 - 75°
Day 10: 0 - 85/90°
Day 13: 0 - 90°
Gradually increase CPM ROM 0 - 70° day 7; 0 - 90° day 12

Exercises:

Continue previous exercises
Initiate knee extension 60 - 0°
Continue use of muscle stimulation
Patellar mobilizations 5-6x daily

Continue use of ice, elevation, and compression

II. **MAXIMUM PROTECTION PHASE (Week 2 to 6)**

Criteria to Enter Phase II:

- 1) Good quad control (ability to perform good quad set and SLR)
- 2) Full passive knee extension
- 3) PROM 0-90 degrees
- 4) Good patellar mobility
- 5) 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°

Exercises:

Continue quad sets & straight leg raises

Continue knee extension 60 - 0°

Multi-angle isometrics at 80°, 60° and 40°

Patellar mobilizations 5-6x daily

Well leg bicycle

Weight shifts

Mini-squats (0 - 45°)

Continue use of muscle stimulation

Continue ice, elevation, and compression

WEEK 3

Continue above mentioned exercises

ROM: 0 - 90°

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°

Exercises:

Weight shifts

Mini-squats (0 - 45°)

Knee extension 90 - 40° (therapist discretion)

Light pool exercises and walking
Initiate bicycle for ROM & endurance
Begin leg press 60 - 0° (light weight)
Proprioception/balance drills

KT-2000 testing performed – 20 pound (at 25° and 70°)

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°; week 6: 0 - 115°
Continue pool exercises
Initiate lateral lunges
Hip abduction and adduction

KT-2000 testing performed – 30 pounds at week 6

III. MODERATE PROTECTION PHASE (Week 7 – 12)

Criteria to Enter Phase III:

- 1) PROM 0 – 115 degrees
- 2) Full weightbearing
- 3) Quadriceps strength > 60% contralateral side (isometric test at 60°)
- 4) Unchanged KT test (+1 or less)
- 5) Minimal to no full joint effusion
- 6) No joint line or patellofemoral pain

Goals: Control forces during ambulation
Progress knee range of motion
Improve lower extremity strength
Enhance proprioception, balance, and neuromuscular control
Improve muscular endurance
Restore limb confidence and function

Brace:

Continue use of unlocked brace for ambulation – discharge week 7 – 8

Range of Motion:

AAROM/PROM 0 - 125°

Exercises:

Continue previous exercises

Initiate swimming

Initiate lateral and front step-ups (2" step, gradually increase)

Progress closed kinetic chain exercises (squats 0 - 60°, leg press 90 - 0°)

May begin light hamstring isotonic week 8

Progress proprioceptive training

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

IV. **CONTROLLED ACTIVITY PHASE (Week 13 – 16)**

Criteria to Enter Phase IV:

- 1) AROM 0 - 125°
- 2) Quadriceps strength > 60-70 contralateral side (isokinetic test)
- 3) No change in KT scores (+2 or less)
- 4) Minimal effusion
- 5) No patellofemoral complaints
- 6) 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°
 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° (120-240 °/s spectrum)

KT-2000 test at week 12
 Isokinetic testing at week 12 (180° and 300°/s)

V. **LIGHT ACTIVITY PHASE (Month 4 – 6)**

Criteria to enter Phase V:

- 1) AROM > 125 degrees
- 2) Quadriceps strength 70% of contralateral side; flexion/extension ratio 70-79%
- 3) No change in KT scores (+2 or less)
- 4) Minimal joint effusion
- 5) 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 & co-contraction
 Initiate plyometric program month 4-5
 Initiate running program month 4-6
 Initiate agility drills month 5-6
 Initiate sport-specific training and drills month 5-6

Isokinetic strength test at week 16 & week 18

} If appropriate

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. RETURN TO ACTIVITY PHASE (Month 6 – 9)**Criteria to return to activities:**

- 1) Satisfactory clinical exam
- 2) Unchanged KT test
- 3) Satisfactory isokinetic test
- 4) Proprioception testing 100% of contralateral side
- 5) Functional hop test > 80% of contralateral leg

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