



**ACL-PTG RECONSTRUCTION
REHABILITATION PROTOCOL**

Chase D. Smith, MD

I. IMMEDIATE POST-OPERATIVE PHASE

POD 1

Brace - EZ Wrap brace locked at zero degrees extension
or Protonics Rehab System (PRS) as directed by physician

Weight Bearing - Two crutches as tolerated

Exercises

- * Ankle pumps
- * Passive knee extension to zero
- * Straight leg raises
- * Quad sets, glut sets
- * Hamstring stretch

Muscle Stimulation - Muscle stimulation to quads (4 hours per day) during quad sets

Ice and Evaluation - Ice 20 minutes out of every hour and elevate with knee in extension

POD 2 to 3

Brace - EZ Wrap brace locked at zero degrees extension for ambulation and unlocked for sitting, etc., or Protonics Rehab System (PRS) as directed by physician

Weight Bearing - Two crutches, weight bearing as tolerated

Range of Motion - Patient out of brace 4-5 times daily to perform self ROM

Exercises

- * Multi-angle isometrics at 90 and 60 degrees (for quads)
- * Knee Extension 90-40 degrees
- * Intermittent ROM exercises continued
- * Patellar mobilization
- * Ankle pumps
- * Straight leg raises (multi-plane)
- * Standing weight shifts and mini squats [(0-30) ROM]
- * Hamstring curls
- * Continue quad sets/glut sets

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Muscle Stimulation - Electrical muscle stimulation to quads (6 hours per day)

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

POD 4 to 7

Brace - EZ Wrap brace locked at zero degrees extension for ambulation and unlocked for sitting, etc., or Protonics Rehab System (PRS) as directed by physician

Weight Bearing - Two Crutches weight bearing as tolerated

Range of Motion - Patient out of brace or in PRS to perform ROM 4-5 times daily

Exercises

- * Knee Extension 90-40 degrees
- * Intermittent PROM exercises
- * Patellar mobilization
- * Ankle pumps
- * Straight leg raises (multi-plane)
- * Standing weight shift and mini squats (0-30)
- * Passive knee extension to 0 degrees
- * Hamstrings curls
- * Proprioceptive and balance activities

Muscle Stimulation - Electrical muscle stimulation (continue 6 hours daily)

II. MAXIMUM PROTECTION PHASE (Week 2-3)**Criteria to Enter Phase II**

- 1) 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 effusion
- 6) Independent ambulation with one or two crutches

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

A: Week Two

Goals: Prepare patient for ambulation without crutches

Brace - EZ Wrap locked at zero degrees for ambulation only, unlocked for self ROM (4-5 times daily), or PRS program as indicated.

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 - (15 lb anterior-posterior test only)

Exercises

- * Muscle stimulation to quadriceps during quadriceps exercises
- * Multi-angle isometrics at 90, 60, 30 degrees
- * Leg raises (4 planes)
- * Hamstring curls
- * Knee extension 90-40 degrees
- * Mini squats (0-40) and weight shifts
- * PROM 0-105 degrees
- * 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

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B: Week Three

Brace - Discontinue locked brace. Brace opened 0-125 degrees for ambulation.

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

Full weight bearing - No crutches

Exercises

- * Same as week two
- * PROM 0-115 degrees
- * Bicycle for ROM stimulus and endurance
- * Pool walking program
- * Initiate eccentric quads 40-100 (isotonic only)
- * Leg press (0-60)
- * Stairmaster
- * Nordic Track

III. CONTROLLED AMBULATION PHASE (Week 4-7)

Criteria to Enter Phase III

- * AROM 0-115 degrees
- * Quad strength 60 % > contralateral side (isometric test) (60 degree knee flexion angle)
- * Unchanged KT Test (+1 or less)
- * Minimal effusion

Goals: Control Forces during walking

Brace - Discontinue Brace

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

KT 2000 Test - (Week 4, 20 lb anterior and posterior test)
(Week 6, 20 and 30 lb anterior and posterior test)

Exercises

- * Same as week three
- * PROM 0 - 130 degrees
- * Initiate swimming program

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- * Initiate step-ups (start with 2" and gradually increase)
- * Increase closed kinetic chain rehab
- * Increase proprioception training

IV. MODERATE PROTECTION PHASE (Week 7-12)Criteria to Enter Phase IV

- * AROM 0-125 degrees
- * Quad strength 60 % of contralateral leg (isokinetic test)
- * No change in KT scores (+2 or less)
- * Minimal effusion
- * No patellofemoral complaints
- * Satisfactory clinical exam

Goals: Protect patellofemoral joint's articular cartilage
 Maximal strengthening for quads, lower extremity

KT 2000 Test - (Week 10) Total Displacement at 15 lb, 20 lb and 30 lb, Manual
Maximal Test

Isokinetic Test - (Week 10)

Exercises

- * Emphasize eccentric quad work
- * Continue closed chain exercises, step-ups, mini-squats, leg press
- * Continue knee extension 90-40 degrees
- * Hip abduction/adduction
- * Hamstring curls and stretches
- * Calf raises
- * Bicycle for endurance
- * Pool running (forward/backward)
- * Walking program
- * Stairmaster
- * Initiate isokinetic work 100-40 degrees

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V. LIGHT ACTIVITY PHASE (Month 2 1/2 - 3 1/2)

Criteria to Enter Phase V

- * 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, and endurance
 Begin to prepare for return to functional activities

Tests - Isokinetic test (week 10-12 and 16-18)

Exercises

- * Continue strengthening exercises
- * Initiate plyometric program
- * Initiate running program
- * Initiate agility drills
- * Sport specific training and drills

Criteria to initiate running program

- * Satisfactory isokinetic test
- * Unchanged KT results
- * Functional test 70% > contralateral leg
- * Satisfactory clinical exam

VI. RETURN TO ACTIVITY PHASE (Month 3 1/2 - 4 1/2)

Criteria to return to activities

- * Isokinetic test that fulfills criteria
- * KT 2000 Test unchanged
- * Functional test 85% > contralateral leg
- * Proprioceptive test 100% of contralateral leg
- * Satisfactory clinical exam

Goals: Achieve maximal strength and further enhance neuromuscular coordination and endurance



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Tests - Isokinetic test prior to return, KT 2000 test, functional test

Exercises

- * Continue strengthening program
- * Continue closed chain strengthening program
- * Continue plyometric program
- * Continue running and agility program
- * Accelerate sport specific training and drills

6 MONTH FOLLOW-UP

Isokinetic test
KT 2000 test
Functional test

12 MONTH FOLLOW-UP

Isokinetic test
KT 2000 test
Functional test