

# REHABILITATION FOLLOWING ACL-PTG RECONSTRUCTION

## 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
- CPM - PRN, Zero to 90 degrees as tolerated (as directed by physician)
- 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
- Muscle Stimulation - Electrical muscle stimulation to quads (6 hours per day)
- CPM - Zero to 90 degrees
- 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)
- CPM - Zero to 90 degrees PRN

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## II. MAXIMUM PROTECTION PHASE (WEEK 2-3)

### CRITERIA TO ENTER PHASE II

- Quad Control (ability to perform good quad set and SLR)
- Full passive knee extension
- PROM 0-90 degrees
- Good patellar mobility
- Minimal effusion
- Independent ambulation with one or two crutches

### Goals

Absolute control of external forces and protect graft

Nourish articular cartilage

Decrease fibrosis

Stimulate collagen healing

Decrease swelling

Prevent quad atrophy

## 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

### 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

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

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## 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

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## 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

- 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