

## PHYSICAL THERAPY PROTOCOLS

### ACL RECONSTRUCTION WITH PATELLAR TENDON GRAFT

#### I. IMMEDIATE POST-OPERATIVE PHASE (FIRST POST-OPERATIVE WEEK)

##### REHABILITATION GOALS

- Decrease knee pain and swelling
- Maintain full passive extension (straightening)
- Restore voluntary quadriceps contraction (independent leg lift)

Patient is seen 2 days post-operative to remove surgical dressing and pain catheter.

*Brace Use:* During the first week, brace locked at 0 degrees and worn 24 hrs./day except when performing exercises.

*Weight bearing:* 2 crutches with weight bearing as tolerated. Progress to 1 crutch and then to full weight bearing per quad control, and balance.

##### EXERCISES

Initial 3 days post-operative:

- Ankle pumps: 30x hourly
- Quadriceps setting: 10x hourly
- Gluteal setting: 10x hourly
- Straight leg raise: 10 repetitions, 4x/day (initially flexion, progress to all 4 directions)
- Heel slides: 10 repetitions, 4x/day
- Passive knee extension – during icing – no towel roll under knee

Days 4-7: Add the following per patient tolerance and quadriceps control

- Patellar mobilization
- Hamstring curls: 10 repetitions, 4x/day
- Weight shifting: 10 repetitions, 4x/day
- Mini-squats: 10 repetitions, 4x/day
- Prone hangs for knee extensions
- Active knee extension 90-45 degrees: 10 repetitions, 4x/day

##### MODALITIES

- Cryotherapy: Ice pack to surgical knee 20 minutes/hour for first 3 days, then 4-6x/day
- Biofeedback: To encourage quadriceps contraction during quadriceps exercises
- Muscle stimulation: Use as needed based on voluntary quadriceps control

## II. MAXIMUM PROTECTION PHASE (WEEK 2)

### REHABILITATION GOALS

- Maintain full passive extension (straightening)
- Decrease knee swelling
- Knee flexion to 90 degrees
- Restore voluntary quadriceps contraction (voluntary SLR w/o lag)
- Ambulation without crutches on floor (no antalgic, quadriceps avoidance gait)

*Brace Use:* Brace locked at 0 degrees at night, unlocked for ambulation if quad control allows.

*Weight bearing:* Progress to 1 crutch and then to full weight bearing without crutches. Criteria for FWB without crutches is active flexion to 100 degrees, no extensor lag with SLR, single leg stand x 30 sec., and no pain with weight bearing. Gait training to avoid development of abnormal gait patterns.

### EXERCISES: WEEK 2

- Patellar mobilization
- Quadriceps setting with SLR in all 4 directions
- Prone hamstring curls (0-90 degrees)
- Active knee extension (90-45 degrees)
- Mini-squats (25 degrees knee flexion)
- Single leg stands

### MODALITIES

- Cryotherapy: Ice pack after exercise for 15 minutes, PRN based on effusion/pain
- Biofeedback: To encourage quadriceps contraction during quadriceps exercise
- Muscle stimulation: Use as needed based on voluntary quad control

## III. CONTROLLED AMBULATION PHASE (WEEKS 3-6)

### REHABILITATION GOALS

- Symmetric mid-patellar and supra-patellar girth measures
- Knee flexion to 125 degrees
- Symmetric quad recruitment per surface EMG
- Symmetric static proprioception
- Ambulation without crutches and without limp on floor and stairs

### EXERCISES: WEEKS 3-6

- Stationary cycling for ROM during Weeks 3-4
- Standing hamstring curl
- Resisted OKC knee extension 90-45 degrees
- Partial squats (0-45 degrees)
- Step-up progression (begin with 2" step)
- Leg press
- Calf raises
- Hamstring curls
- Single leg stand: progress from level surface to ½ roll with UE movement

### CARDIO

- UBE, Elliptical Trainer, StairMaster
- Pool: walking, deep water jogging, swimming at Week 4

### MODALITIES

- Cryotherapy: Ice pack after exercise for 15 minutes, PRN based on effusion/pain
- Muscle stimulation: Use as needed during ground based exercise

#### **IV. MODERATE PROTECTION PHASE (WEEKS 7-12)**

##### REHABILITATION GOALS

- Isokinetic scores within 30% for concentric knee extension and flexion
- Symptom free jogging with normal gait pattern for up to 1 mile

##### EXERCISES

- Resisted cycling
- Partial squats: add unweighted PVC pipe to focus on form
- Step-ups with sport-cord
- Leg press
- Hamstring curls
- Box drills with elastic resistance
- Lunges with step
- Rebounder exercise with Single Leg Stand

##### MODALITIES

- Cryotherapy: Ice pack to surgical knee 15 minutes after exercise

#### **V. LIGHT ACTIVITY PHASE (MONTHS 3-4)**

##### REHABILITATION GOALS

- Isokinetic and closed chain functional measures with 15% of non-surgical limb

##### EXERCISES: MONTHS 3-4

- Resistance exercises should be completed 3x/week; cardio exercises 4-5x/week
- Activities to avoid:
  - No cutting or pivoting
  - No participation in competitive sport activities
  - Avoid slippery surfaces

##### CARDIOVASCULAR

- Stationary cycling
- Elliptical trainer
- Deep water running
- Jogging: Preferably treadmill, avoid running on concrete

##### STRENGTHENING

- Leg press
- Calf raises
- Tubing kicks (all 4 directions)
- Step down with elastic resistance
- Lunge on floor
- Rope jumping: Double leg, progress to single leg

##### PROPRIOCEPTIVE/AGILITY

- Jump training
- Agility drills: Ladders, cone jumping, functional grid training

#### **VI. FUNCTIONAL PROGRESSION PHASE (MONTH 5)**

Completion of sport specific functional progression