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**NONOPERATIVE REHABILITATION FOLLOWING  
ACL INJURY (3-3-4-4 Program)  
IMMEDIATE INJURY PHASE (Day 1 to Day 7)**

**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
- Post-Injury Day 1- 3
- Brace - brace/Immobilizer applied to knee, locked in full extension during ambulation as directed by physician
- Weight Bearing - Two crutches, weight bearing as tolerated

**Exercises:**

- \*Ankle pumps
- \*Overpressure into full, passive knee extension
- \*Active and Passive knee flexion (90 degree by day 5)
- \*Straight leg raises (Flexion, Abduction, Adduction)
- \*Quadriceps isometric setting
- \*Hamstring stretches/ calf stretches.
- \*Closed kinetic chain exercises: mini squats, weight shifts

Muscle Stimulation - Use muscle stimulation during active muscle exercises (4-6 hours per day)

Ice and Elevation - Ice 20 minutes out of every hour and elevate with knee in full extension, may use e-stim for edema control

Post-Injury Day 3 to 7

Brace - EZ Wrap brace/Immobilizer, 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- Remove brace to perform range of motion exercises 4-6 times per day, knee flexion 90 degrees by day 5, approximately 100 degrees by day 7

**Exercises:**

- \*Multi-angle isometrics at 90 and 60 degrees (knee extension)
- \*Knee Extension. 90-40 degrees
- \*Overpressure into extension
- \*Patellar mobilization
- \* Ankle pumps
- \*Straight leg raises (3 directions)
- \*Mini squats and weight shifts
- \*Standing Hamstring curls
- \*Quadriceps isometric setting
- \*Proprioception and balance activities
- \*Continue Hamstring and calf stretching
- \*Muscle Stimulation - Electrical muscle stimulation (continue 6 hours daily)
- \*Ice and Elevation - Ice 20 minutes of every hour and elevate leg with knee full extension

## **II. INTERMEDIATE REHABILITATION PHASE (Week 2-4)**

Criteria to Progress to 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 joint effusion
- 6) Independent ambulation

Goals:

- Maintain full passive knee extension (at least 5-7 hyperextension)
- Gradually increase knee flexion
- Diminish swelling and pain
- Muscle training
- Restore proprioception
- Patellar mobility

### **Week Two**

Brace - Discontinue brace or immobilizer at 2 to 3 weeks per physician

Weight Bearing - As tolerated (goal is to discontinue crutches 10-14 days post injury)

Range of Motion - Self-ROM stretching (4-5 times daily), emphasis on maintaining full, passive range of motion progress flexion as tolerated

Exercises:

- \*Muscle stimulation to quadriceps exercises
- \*Isometric quadriceps sets
- \*Straight Leg raises (4 planes)
- \*Leg Press (0-60 degrees)
- \*Knee extension 90-40 degrees
- \*Half squats (0-40)
- \*Weight shifts
- \*Gait training with cones
- \*Front and side lunges
- \*Hamstring Curls
- \*Bicycle
- \*Proprioception training
- \*Tilt board squats
- \*Dip walking
- \*Overpressure into extension
- \*Passive range of motion from 0 to 50 degrees
- \*Patellar mobilization
- \*Well leg exercises
- \*Progressive resistance extension program - start with 1 lb., progress 1 lb. per week
- \*Continue stretching program
  - Swelling control - Ice, compression, elevation, e-stim

### **Week Three**

Brace - Discontinue

Range of Motion - PROM should be full or near full ROM

Passive Range of Motion - Continue range of motion stretching and overpressure into extension

Exercises:

- \*Continue all exercises as in week two
- \*Passive Range of Motion as tolerated
- \*Bicycle for range of motion stimulus and endurance
- \*Pool walking program (if incision is closed)
- \*Eccentric quadriceps program 40-100 (isotonic only)
- \*Lateral lunges
- \*Lateral step ups
- \*Lateral cone step overs

- \*Stair-Stepper machine
- \*Progress Proprioception drills, neuromuscular control drills

### **III. ADVANCED STRENGTHENING/NEUROMUSCULAR CONTROL PHASE (Week 4-8)**

Criteria to Enter Phase III

- 1) Full ROM
- 2) Quadriceps strength 60% > contralateral side (isometric test at 60 degree knee flexion)
- 3) Minimal to no full joint effusion
- 4) No joint line or patellofemoral pain

Goals:

- Maintain full knee range of motion (0 to 125 degrees)
- Improve lower extremity strength
- Enhance proprioception, balance, and neuromuscular control
- Improve muscular endurance
- Restore limb confidence and function
- Brace - No immobilizer or brace, may use knee sleeve or fit for function all brace
- Range of Motion- Self-ROM (4-5 times daily using the other leg to provide ROM), emphasis on maintaining full
- ROM

#### **Week4**

Exercises

- \*Progress isometric strengthening program
- \*Leg Press
- \*Knee extension 90 to 40 degrees
- \*Hamstring curls
- \*Hip Abduction and Adduction
- \*Hip Flexion and Extension
- \*Lateral Step-Overs
- \*Lateral Lunges
- \*Lateral step ups
- \*Front step downs
- \*Wall Squats
- \*Vertical squats
- \*Toe Calf Raises
- \*Biodex Stability System (balance, squats, etc.)
- \*Proprioception drills
- \*Bicycle
- \*Stair Stepper machine
- \*Pool program (backward running, hip and leg exercises)

#### **Week6**

Exercises:

- \*Continue all exercises
- \*Pool running (forward) and agility drills, jumping
- \*Progress to balance and tilt board throws, perturbation training
- \*Advanced Neuromuscular control drills:
  - CKC on unstable surfaces
  - Lunges onto foam
  - Step ups on foam
  - Perturbation training
- \*Wall slides/squats
- \*Muscular training for fast reaction times