



# REHABILITATION PROTOCOL: KNEE MICROFRACTURE AND CARTILAGE REPAIR

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## Post-op Phase I (Week 0-6)

### GOALS:

- Control post-op pain/swelling
- ROM 0-120°
- Prevent quadriceps inhibition
- Normalize proximal musculature muscle strength
- Independence in HEP

### PRECAUTIONS:

- Maintain WB restrictions: post-op brace locked at 0°; 0-20° for patellofemoral lesion
- Avoid neglect of ROM exercises

### TREATMENT STRATEGIES:

- CPM
- AAROM exercises (pain-free)
- Towel extensions
- Patellar mobilization
- Toe-touch WB with brace locked at 0°, with crutches
- Partial WB progressing to WBAT; brace 0-20 degrees for PF lesion
- Quad re-education (quad sets with e-stim)
- Multiple angle quad isometrics (B/L to submaximal)
- Short crank ergometry to standard ergometry
- SLRs (all planes)
- Hip progressive resisted exercises
- Pool exercises
- Plantar flexion Thera-band
- LE flexibility exercises
- UE cardio exercises, as tolerated
- Cryotherapy
- HEP, emphasize compliance with HEP and WB restrictions\*\*

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**CRITERIA FOR ADVANCEMENT:**

- MD direction for progressive WB (week 6) ROM 0-120°
- Proximal muscle strength 5/5
- SLR (supine) without extension lag

**Post-op Phase II (Weeks 6-12)**

**GOALS:**

- ROM 0 to WNL
- Normal patellar mobility
- Restore normal gait
- Ascend stairs with good control without pain

**PRECAUTIONS:**

- Avoid descending stairs reciprocally until adequate quad control and LE alignment is demonstrated Avoid pain with therapeutic exercise and functional activities

**TREATMENT STRATEGIES:**

- Progressive WB/gait training with crutches
- DC crutches when gait is non-antalgic
- Post-op brace DC'd as good quad control (ability to SLR without lag or pain) is demonstrated Unloader brace/patella sleeve
- Computerized forceplate (NeuroCom) for WB progression/patient Ed
- Underwater treadmill system (gait training) if incision benign
- Gait unloader device
- AAROM exercises
- Leg press (60°-90° arc)
- Mini-squats/weight shifts
- Retrograde treadmill ambulation
- Proprioception/balance training
- Initiate forward step-up program Stairmaster
- SLRs (progressive resistance)
- LE flexibility exercises
- OKC knee extension 0-40° (tibiofemoral lesions)—CKC exercises preferred HEP

**CRITERIA FOR ADVANCEMENT:**

- ROM 0-WNL
- Normal gait pattern
- Demonstrate ability to ascend 8-inch step
- Normal patellar mobility

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## **Post-op Phase III (Weeks 12-18)**

### **GOALS:**

- Demonstrate ability to descend 8-inch stairs with good leg control and without pain
- 85% limb symmetry on isokinetic testing (tibiofemoral lesions) and forward step-down test
- Return to normal ADL
- Improve LE flexibility

### **PRECAUTIONS:**

- Avoid pain with therapeutic exercise and functional activities
- Avoid running until adequate strength development and MD clearance

### **TREATMENT STRATEGIES:**

- Progress squat program
- Initiate step-down program
- Leg press (emphasizing eccentrics)
- OKC knee extensions 90°-40° (CKC exercises preferred) Advanced proprioception training (perturbations)
- Agility exercises (sport cord)
- Elliptical trainer
- Retrograde treadmill ambulation/running
- Hamstring curls/proximal strengthening
- LE stretching
- Forward step-down test (NeuroCom) at 4 months Isokinetic test at 4 months
- HEP

### **CRITERIA FOR ADVANCEMENT:**

- Ability to descend 8-inch stairs with good leg control and without pain
- 85% limb symmetry on isokinetic testing (tibiofemoral lesions) and forward step-down test

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