



**COLUMBIA UNIVERSITY
CENTER FOR SHOULDER,
ELBOW AND SPORTS
MEDICINE**

**MICROFRACTURE PROCEDURE
of the KNEE**

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Post-op Phase I (Week 0-6)

GOALS:

Control post-op pain/swelling

ROM 0-120 degrees

Prevent quadriceps inhibition

Normalize proximal musculature muscle strength

Independence in HEP

PRECAUTIONS:

Maintain WB restrictions: post-op brace locked at 0 degrees; 0-20 degrees
for patello-femoral 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 degrees, 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**

CRITERIA FOR ADVANCEMENT:

MD direction for progressive WB (week 6)

ROM 0-120 degrees

Proximal muscle strength
5/5
SLR (supine) without
extension lag

Post-op Phase II (Weeks 6-12)

GOALS:

ROM 0to 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 degree 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 degrees (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

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 degrees (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 ADVANCE MENT:

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