
Microfracture (Chondral) Physical Therapy Protocol

Phase I: Protection (Weeks 0 to 4)

Goals

- Reduce swelling and inflammation
- Protection of healing articular cartilage
- Restoration of full passive knee extension
- Gradual restoration of knee flexion
- Re-establish voluntary quadriceps control

Weight Bearing

- Toe touch weight bearing for four weeks

Weeks 0 to 2

Exercise

- Full passive knee extension
- Range of motion exercises
- Ankle pumps
- Hamstring and calf stretches
- Quad sets (neuromuscular electrical stimulation as needed)
- Four-way straight leg raises
- Stationary bike
- Proprioception and balance training
- Cryotherapy with elevation for pain and inflammation every hour for 20 minutes

Range of Motion

- No immediate limitation on passive range of motion
- 0 to 90 degrees at week one
- 0 to 115 degrees at week two

Weeks 3 to 4

Range of Motion

- 0 to 125 degrees at week three
- 0 to 135 degrees at week four

Exercise

- Continue exercises as listed above
- Progress knee flexion
- Light hamstring curls
- Short arc quads
- Pool program (once incisions are healed)
- Continue cryotherapy for pain management

Phase II: Intermediate (Weeks 4 to 8)

Goals

- Protect and promote articular cartilage healing
- Gradually increase joint stresses and loading
- Improve lower extremity strength and endurance
- Gradually increase functional activities

Weight Bearing

- 50 percent weight bearing with two crutches at week four
- 75 percent weight bearing with two crutches at week five
- Progress to full weight bearing at week six (wean from crutches as gait normalizes)

Range of Motion

- Progress to full range of motion at week five

Exercises

- Continue exercises as listed above
- Initiate functional rehab exercises
- Mini squats (0 to 60 degrees)
- Leg press
- Step ups
- Terminal knee extensions
- Lateral walks with resistance
- Standing hip exercises
- Running pool program
- Initiate walking program
- Core exercises
- Continue cryotherapy for pain management

Phase III: Light Activity (Weeks 8 to 12)

Criteria to Progress to Phase III

- Full, non-painful range of motion
- Strength to 80 percent of contralateral side
- Minimal pain and swelling
- Able to walk one and a half miles or bike for 20 to 25 minutes without symptoms

Goals

- Improve muscular strength and endurance
- Increase functional activities
- Gradually increase loads applied to joint

Exercises

- Continue exercises as listed above
- Progress resistance as tolerated
- Lateral step downs
- Lunges
- Wall squats
- Elliptical/NordicTrac/StairClimber
- Neuromuscular control drills
- Dr. Kendall will determine when to initiate light running program

Phase IV: Return to Activity (Months 12 to 20)

Goals

- Gradual return to unrestricted functional activities
- Dr. Kendall will determine rate of progression based on extent of injury/surgery

Functional Activities

- Patient may return to various sport activities as progressing in rehabilitation and microfracture healing allows.
 - **4 to 6 Months:** Low impact sports such as golf, swimming, skating, roller-blading and cycling
 - **6 to 8 Months:** Higher impact sports such as running, jogging and aerobics
 - **8 to 12 Months:** High impact sports such as tennis, basketball, football and baseball

Exercises

- Continue maintenance program three to four times a week
- Progress resistance as tolerated
- Progress agility and balance drills
- Impact loading program should be specialized to the patient's demands
- Progress sport programs depending on patient variables