
Osteochondral Allograft Transplantation Femoral Condyle Physical Therapy Protocol

Phase I: Protection (Weeks 0 to 6)

Goals

- Protection of healing tissue from load and shear forces
- Decrease pain and effusion
- Restoration of full passive knee extension
- Gradual improvement of knee flexion
- Regaining quadriceps control

Weight Bearing

- Non weight bearing for two weeks as directed by Dr. Kendall
- Toe touch weight bearing for four weeks with two crutches
- Progress to full weight bearing at week six (wean from crutches as gait normalizes)

Brace

- Brace locked at 0 degrees for functional and weight bearing activities
- Sleep in locked brace for two to four weeks
- Discontinue brace at six weeks

Range of Motion

- No immediate limitation on passive range of motion (below are minimum recommendations)
- 0 to 90 degrees at week two
- 0 to 105 degrees at week four
- 0 to 120 degrees at week six

Exercises

- Initiate continuous passive motion on day one
 - Increase 5 to 10 degrees each day up to 90 degrees by the end of week two
- Full passive knee extension
- Patellar mobilizations
- Range of motion exercises
- Ankle pumps
- Quad sets (neuromuscular electrical stimulation as needed)
- Multi-angle isometrics
- Four-way straight leg raises
- Stationary bike
- Hamstring, quad, calf and hip flexor stretching
- Core exercises
- Isometric leg press (multi-angle) at week four
- Pool therapy for gait training and exercise at week six
- Cryotherapy with elevation for pain and inflammation every hour for 20 minutes

Phase II: Transition (Weeks 6 to 12)

Criteria to Progress to Phase II

- Full passive knee extension
- Knee flexion to 120 degrees
- Minimal pain and swelling
- Voluntary quadriceps activity

Goals

- Gradually increase range of motion and weight bearing to full
- Gradually improve quadriceps strength and endurance
- Gradual increase in functional activities

Range of Motion

- Progress to full range of motion at weeks eight to ten

Exercises

- Continue exercises as listed above
- Open kinetic chain exercises (increase one pound per week)
- Terminal knee extensions
- Balance and proprioception drills
- Lateral walks with resistance
- Core progression
- Weight shifts at week eight
- Step ups at week eight
- Lateral step downs at week eight
- Leg press (0 to 90 degrees) at weeks eight to ten
- Mini squats (0 to 45 degrees) at weeks eight to ten
- Toe/calf raises at week ten
- Continue cryotherapy for pain management

Phase III: Maturation (Weeks 13 to 26)

Criteria to Progress to Phase III

- Full range of motion
- Hamstring strength to within 10 to 20 percent of contralateral limb
- Quadriceps strength to within 20 to 30 percent of contralateral limb
- Balance testing to within 30 percent of contralateral limb
- Able to bike for 30 minutes
- Minimal pain and edema
- Improved functional strength and endurance

Goals

- Improve functional activity
- Improve muscular strength, flexibility and endurance

Exercises

- Continue exercises as listed above
- Wall squats
- Lunges
- Begin walking program
- Swimming
- Elliptical/StairMaster/NordicTrac

Phase IV: Functional Activities (Weeks 26 to 52)

Criteria to Progress to Phase IV

- Full, non-painful range of motion
- Strength within 90 percent of contralateral side
- Good proprioception
- No pain, inflammation or swelling

Goals

- Gradual return to unrestricted functional activities

Functional Activities

- Patient may return to various sport activities as progressing in rehabilitation and osteotomy 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