
Osteochondral Autograft Transplant Femoral Condyle Rehabilitation Program

I. PHASE I - PROTECTION PHASE (WEEKS 0-6)

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

Brace: Locked at 0° during weight-bearing activities
Sleep in locked brace for 2-4 weeks

Weight-Bearing: Non weight-bearing for 2-4 weeks (physician direction)
If large lesion (>5cm²) may need to delay WB up to 4 weeks
Toe touch weight-bearing (approx. 20-30 lbs.) weeks 2-4
Partial WB (approx. 25-50% body weight) at week 6

Range of Motion: Immediate motion exercise
Full passive knee extension immediately
Initiate CPM day 1 for 8-12 hours/day (0-40°) for 2-3 weeks
Progress CPM ROM as tolerated 5-10° per day
May continue CPM for 6-8 hours per day for up to 6-8 weeks
Patellar and soft tissue mobilization (4-6x day)
Passive knee flexion ROM 2-3 times daily
Passive knee flexion ROM goal is 90° by 1-2 weeks
Passive knee flexion ROM goal is 105-115° by 4 weeks and 120-125° by week 6
Stretch hamstrings, calf, and quadriceps

Strengthening Program: Ankle pump using rubber tubing
Quad setting
Multi-angle isometrics (co-contractions Q/H)
Active knee extension 90-40° (if no articulation - no resistance)
Straight leg raises (4 directions)
Stationary bicycle when ROM allows
Biofeedback and electrical muscle stimulation, as needed
Isometric leg press at week 4 (multi-angle)
May begin use of pool for gait training & exercises week 6

Functional Activities: Gradual return to daily activities
If symptoms occur, reduce activities to reduce pain and inflammation
Extended standing should be avoided

Swelling Control: Ice, elevation, compression, and edema modalities as needed to decrease swelling

II. PHASE II - TRANSITION PHASE (WEEKS 6-12)

Goals: Gradually increase ROM & WB to full
Gradually improve quadriceps strength/endurance
Gradual increase in functional activities

Criteria to Progress To Phase II:

Full passive knee extension
Knee flexion to 120°
Minimal pain and swelling

Brace: Discontinue brace at 6 weeks

Weight-Bearing: Progress weight-bearing as tolerated

75% body weight with crutches at 8 weeks
Progress to full weight-bearing at 10-12 weeks
May need to delay FWB up to 14 weeks if large lesion
Discontinue crutches at 10-12 weeks

Range of Motion: Gradual increase in ROM

Maintain full passive knee extension
Progress knee flexion to 125-135°
Continue patellar mobilization and soft tissue mobilization, as needed
Continue stretching program

Strengthening Exercises: Initiate weight shifts week 6-8

Initiate mini-squats 0-45° week 8-10
Closed kinetic chain exercises (leg press) week 8-10
Toe-calf raises week 10-12
Open kinetic chain knee extension, 1 lb./week week 10-12
Stationary bicycle (gradually increase time)
Balance and proprioception drills
Initiate front and lateral step-ups
Continue use of biofeedback and electrical muscle stimulation, as needed
Continue use of pool for gait training and exercise
May need to delay KKC exercises up to 14 weeks if large lesion

Functional Activities: As pain and swelling (symptoms) diminish, the

Patient may gradually increase functional activities
Gradually increase standing and walking

III. PHASE III: MATURATION PHASE (WEEKS 12-26)

Goals: Improve muscular strength and endurance
Increase functional activities

Criteria to Progress To Phase III:

Full range of motion
Acceptable strength level
Hamstrings within 10% of contralateral leg
Quadriceps within 10-20% of contralateral leg
Balance testing within 30% of contralateral leg
Able to bike for 30 minutes

Range of Motion: Patient should exhibit 125-135° flexion – no restrictions

Exercise Program: Leg press (0-90°)

Bilateral squats (0-60°)
Unilateral step-ups progressing from 2" to 8"

Forward lunges
Begin walking program on treadmill
Open kinetic chain knee extension (0-90°)
Bicycle
Stairmaster
Swimming
Nordic-Trak/elliptical

Functional Activities: As patient improves, increase walking (distance, cadence, incline, etc.)

Maintenance Program: Initiate at week 16-20
Bicycle – low resistance
Progressive walking program
Pool exercises for entire lower extremity
Straight leg raises into flexion
Leg press
Wall squats
Hip abduction/adduction
Front lunges
Stretch quadriceps, hamstrings, gastroc

IV. PHASE IV - FUNCTIONAL ACTIVITIES PHASE (WEEKS 26-52)

Goals: Gradual return to full unrestricted functional activities

Criteria to Progress to Phase IV: Full non-painful ROM
Strength within 90% of contralateral extremity
Balance and/or stability within 75% of contralateral extremity
No pain, inflammation, or swelling

Exercises: Continue maintenance program progression 3-4x/week
Progress resistance as tolerated
Emphasis on entire lower extremity strength & flexibility
Progress agility and balance drills
Impact loading program should be specialized to the patient's demands
Progress sport programs depending on patient variables

Functional Activities: Patient may return to various sport activities as progression in rehabilitation and cartilage healing allows. Generally, low-impact sports such as skating, rollerblading, and cycling are permitted at about 6-8 months. Higher impact sports such as jogging, running, and aerobics may be performed at 8-10 months. High impact sports such as tennis, basketball, and baseball are allowed at 12-18 months.