



Osteochondral Grafts

General Principles:

This protocol was designed to provide the rehabilitation professional with a guideline of postoperative care. It should be stressed that this is only a protocol and should not be a substitute for clinical decision making regarding a patient's progression. Actual progression should be individualized based upon your patient's physical examination, progress, and presence of any complications.

This protocol was developed for patients who have had either an osteochondral autograft transfer (OAT), autologous chondrocyte implantation (ACI or Carticel), or microfracture procedure. It is especially important to protect these patients against high weight bearing forces in the early postoperative period as these could dislodge graft tissues. Early knee motion is highly beneficial to enhance cartilage remodeling.

PHASE I: (Immediate)

Week 1 – 2

Orthotics-

1. Elastic bandage at all times for Day 1 and 2, then only as needed for swelling
2. Brace at all times as directed by physician

Weight Bearing-

1. Non-Weight Bearing at all times

Modalities (PRN)-

1. Ice, compression, and elevation as needed
2. Electrical stimulation for pain or muscle re-education
3. Ice for 20 minutes following exercises throughout the protocol

ROM-

1. Active and Passive knee ROM from 0° to 60° of flexion

Exercises-

1. Quad sets / Hamstring Sets
2. Ankle Pumps
3. Calf, Hamstring, and Knee extension stretching
4. May start Heel Slides / Wall Slides within ROM restriction
 - a. Assist with un-involved leg if needed to improve ROM
5. Straight Leg Raises
 - a. flexion only
 - b. NO resistance
6. Neuromuscular Re-Education as needed to improve quality of muscle contraction

PHASE II (Intermediate)

Week 3 – 4

Orthotics-

1. Brace at all times as directed by physician

Weight Bearing-



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1. Non-Weight Bearing at all times

Modalities (PRN)-

1. Continue Phase I modalities as needed

ROM-

1. Active and Passive knee ROM from 0° to 90° of flexion

Exercises-

1. Continue to progress Phase I exercises
2. Ankle strengthening with t-band
3. Patella Mobilizations
4. Isometric Quads
 - a. 30° and 60° of knee flexion
 - b. Short lever arm progressing to long (adjust for pain/swelling)
5. Straight Leg Raises
 - a. May progress to abduction, adduction, and extension
 - b. NO resistance

Week 5 – 6

Orthotics-

1. Brace at all times as directed by physician

Weight Bearing-

1. Non-Weight Bearing at all times

Modalities (PRN)-

1. Continue Phase I modalities as needed

ROM-

1. Active and Passive knee ROM from 0° to 110° of flexion

Exercises-

1. May progress resistance on Straight Leg Raises
2. Isometric Quads
 - a. May progress to 90° joint angle
3. Open Chain Exercises
 - a. Short-arc Quads (0° to 30°)
 - b. Hamstrings (0° to 90°)
 - c. Low resistance, short lever arm
4. Multi-Hip / Standing Hip Strengthening
5. Stationary Bike
 - a. NO resistance, for ROM only

PHASE III (Strengthening)



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Week 7 – 8

Orthotics-

1. May discontinue brace as directed by physician

Weight Bearing-

1. Progress to 33% Weight Bearing at the beginning of **Week 7**
2. Progress to 66% Weight Bearing at the start of **Week 8**

Modalities (PRN)-

1. Continue Phase I modalities as needed

ROM-

1. Progress Active and Passive ROM to full as tolerated

Exercises-

1. Continue to progress Phase II exercises
2. May add resistance to Bicycle
3. Shuttle / Leg Press
 - a. Bilateral only
 - b. Resistance **MUST** stay within weight bearing restriction
4. Open chain strengthening exercises
 - a. Progress to full-arc Quads
 - b. May progress resistance to weight machines as tolerated
 - c. Monitor patella-femoral pain/symptoms
5. Aquatic exercises
 - a. See Aquatic protocol
 - b. Cycling, flutter kicks, walking laps, etc

Week 9 – 15

Orthotics-

1. Brace only if directed by physician

Weight Bearing-

1. Full weight-bearing as tolerated with normal gait

Modalities (PRN)-

1. Continue Phase I modalities as needed

ROM-

1. Maintain full Active and Passive ROM

Exercises-

1. Continue to progress Phase III exercises.
2. Progress to Unilateral on shuttle / Leg Press activities
3. Elliptical runner, progress resistance as tolerated
4. Initiate closed-chain strengthening activities as weight bearing allows
 - a. Step Ups, Lunges, Mini-Squats
5. Standing balance / proprioception activities



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6. Isokinetics
 - a. Full-arc
 - b. 180 to 300 degrees per second
 - c. Monitor patella-femoral pain/symptoms

PHASE IV (Advanced Strengthening)

Week 16 – 17

Exercises-

1. Continue Phase III exercises as tolerated
2. Straight ahead jogging
3. May initiate light jumping, plyometrics, and functional sports/work activities
 - a. Interval Running and Interval Golf programs
4. Progress to Bounding on the Shuttle
5. Progress to aggressive open and closed chain strengthening
 - a. Monitor patella-femoral pain/symptoms

Week 18+

Exercises-

1. Progress intensity of functional exercises
2. Progress to full speed cutting and agility drills
3. Isokinetic Test at 180, 240, and 300 degrees/second for MD review. General goal for full release to sport activity is 85% strength compared to uninvolved limb.