Cartilage Restoration Postoperative Protocol:

I) **Weeks 0-6 (Healing Phase):**

- **Restrictions:**
  1) Knee immobilizer as needed
  2) Touch weight bearing with crutches

- **Goals:**
  1) Reduce swelling
  2) Reduce muscle atrophy
  3) Gradual full range of motion

- **Anti-edema**
  1) Ice/Cryotherapy multiple times during the day
  2) Compression with TubiGrip/TEDS

- **CPM 8 hours/day x 6 weeks, start 0-60 degrees post-op, progress to specified maximum flexion depending on the lesion location.**

- **Therapy/Exercise examples:**
  1) Quad sets, SLR
  2) Hamstring sets
  3) Gluteal sets
  4) Hip belt abduction isometrics
  5) Pillow adductor squeezes
  6) Crunches
  7) Ankle dorsiflexion/plantar flexion isometrics or Theraband strengthening
  8) Weight shifts
  9) Alter-G Treadmill walking
  10) Multi-directional patella mobilization
  11) Stationary bicycle with no resistance once knee flexion greater than 90 degrees

II) **Weeks 6 to 12 (Transitional Phase):**
• **Restrictions:**
  1) Weight-bearing status: use bathroom scale to progress as follows:
     - **Week 7:** Partial weight bearing (PWB) 1/3 body weight
     - **Week 8:** PWB 2/3 body weight
     - **Week 9:** Full weight bearing with crutches/crutch/cane
     - **Week 10+:** Discontinue ambulatory aids

• **Goals:**
  1) Reduce effusion
  2) Full weight bearing by ten weeks without crutches
  3) Continue full ROM
  4) Reduce pain
     a. Electrical stimulation
     b. Soft tissue mobilizations and myofascial release
  5) Minimize hip, core and lower extremity atrophy

• **Therapy/Exercise examples:**
  1) Low weight (max 10-20lbs.) open-chain leg extension and curl
  2) Stationary bicycle with gradual increased tension per level of comfort
  3) Continue quad sets, SLR, leg curl and heel slides
  4) Strengthen quads, hamstrings, and hip abductors/extensors using ankle weights and/or elastic band resistance through full ROM as tolerated
  5) Gentle closed-chain terminal knee extension 0-40 degrees (TKE) permitted starting at 9-10 weeks as tolerated per weight bearing restriction.
  6) Body weight partial squats and leg press 60- to 0- degree arc.
  7) Alter-G Treadmill walking
  8) Multi-directional patella mobilization
  9) Core training:
     a. Begin with mat-based exercises paying attention to weight-bearing status.
     b. Advance to physio ball exercises as able.
     c. Incorporate multi-planar training as able and restrictions permit.

### III) **Weeks 13+ (Remodeling Phase):**

• **Restrictions:**
  1) Return to impact loading activities and clearance for return to sports as determined by surgeon
  2) No pivoting sports should be started without surgeon clearance

• **Goals:**
  1) Full active range of motion of the involved knee
  2) No effusion
  3) Improved quad strength and endurance
• Outcome measures at final evaluation:
  1) LEFS: Lower extremity functional scale.
  2) PSFS: Patient specific functional scale.

• Weight bearing:
  1) Normal walking

• Therapy/Exercise examples:
  1) Resisted open-chain exercise with ≤ 20lbs to be progressed as tolerated after 6mos
  2) Closed-chain exercise to promote knee stability and proprioception through full ROM as tolerated. Progress mini-squats to squats. Leg press 90- to 0- degree arc.
  3) Cycling on level surfaces permitted with gradual increase in tension per level of comfort
  4) Treadmill walking/reverse treadmill walking encouraged
  5) Core training:
     a. Advance to weight-bearing multi-planar training as able.