

## Autologous Chondrocyte Implantation (ACI) (Trochlea/Patella)

### PHASE I (Weeks 0-12)

- **Weight Bearing:**
  - Weeks 0-2: Non-weightbearing
  - Weeks 2-4: Partial weightbearing (30-40 lbs)
  - Weeks 4-8: Continue with partial weightbearing (progress to use of one crutch at weeks 6-8)
  - Weeks 8-12: Progress to full weightbearing with discontinuation of crutch use
- **Bracing:**
  - Weeks 0-2: Hinged knee brace locked in extension – remove for CPM and rehab with PT
  - Weeks 2-4: Locked in extension for weightbearing – can open brace for NWB ROM 0-30°
  - Weeks 4-6: Open brace to 30° for ambulation
  - D/C brace at 6 weeks post-op
- **Range of Motion** – Continuous Passive Motion (CPM) Machine for 6-8 hours per day for 8 weeks
  - Set CPM to 1 cycle per minute – set at 0-30° for first 3 weeks
  - Increase flexion 5-10° per day until full flexion is achieved
    - Should be at 90° by week 6 and 120° by week 8
  - PROM/AAROM and stretching under guidance of PT
- **Therapeutic Exercises:**
  - Weeks 0-4: Straight leg raise/quad sets, Hamstring isometrics
    - Perform exercises in the brace if quad control is inadequate
  - Weeks 4-10: Begin isometric closed chain exercises
    - At week 6 can start weight shifting activities with operative leg in extension
  - At week 8 can begin balance exercises and stationary bike with light resistance
  - Weeks 6-10: Progress bilateral closed chain strengthening, begin open chain knee strengthening
  - Weeks 10-12: Hamstring strengthening, theraband resistance exercises 0-30°, light open – chain knee isometrics

### PHASE II (Weeks 12-24)

- **Weight Bearing:** Full weightbearing with normal gait pattern
- **Range of Motion:** Advance to full/painless ROM
- **Therapeutic Exercises:**
  - Gait training/treadmill use at slow-moderate pace
  - Progress balance/proprioception exercises
  - Start sport cord lateral drills

**PHASE III (Months 6-9)**

- **Weight Bearing:** Full weightbearing with normal gait pattern
- **Range of Motion** -- Full/painless ROM
- **Therapeutic Exercises:**
  - Advance closed strengthening/start unilateral closed chain exercises
  - Start light plyometric exercises
  - Progress to fast walking and backward walking on treadmill (add incline at 8 months)
  - Start light plyometric training

**PHASE IV (Months 9-18)**

- **Weight Bearing:** Full weightbearing with normal gait pattern
- **Range of Motion** – Full/ painless ROM
- **Therapeutic Exercises:**
  - Continue closed chain strengthening exercises and proprioception activities
    - Emphasize single leg loading
  - Sport-specific rehabilitation – running/agility training at 9 months
  - Return to impact athletics – 16 months (if pain free)
- Maintenance program for strength and endurance