

# Rehabilitation Protocol: Autologous Chondrocyte Implantation (ACI) – Femoral Condyle



NYU Hospital for Joint Diseases  
NYU LANGONE MEDICAL CENTER

**Craig M. Capeci, MD**  
Orthopaedic Surgery & Sports Medicine  
Clinical Assistant Professor

\_\_1095 Park Ave, NY 212-427-7750  
\_\_1056 5<sup>th</sup> Ave, NY 212-348-3636  
\_\_263 7<sup>th</sup> Ave, Bklyn 718-246-8700

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Diagnosis: \_\_\_\_\_

Date of Surgery: \_\_\_\_\_

## Phase I (Weeks 0-12)

- **Weightbearing:**
  - Weeks 0-2: Non-weightbearing
  - Weeks 2-4: Partial weightbearing (30-40 lbs)
  - Weeks 4-6: Continue partial weightbearing, progress to one crutch at week 6
  - Weeks 6-12: Progress to full weightbearing with discontinuation of crutches
- **Bracing:**
  - Hinged knee brace locked in extension – remove for CPM and rehab with PT
  - Weeks 2-4: Gradually open brace in 20° increments as quad control is obtained
  - D/C brace when patient can perform straight leg raise without an extension lag
- **Range of Motion** – Continuous Passive Motion (CPM) Machine for 6-8 hours per day for 6-8 weeks
  - Set CPM to 1 cycle per minute – starting from 0-30° of flexion
  - Advance 5-10° per day until full flexion is achieved (should be at 90° by week 4, 120° at week 6)
  - PROM/AAROM and stretching under guidance of PT
- **Therapeutic Exercises**
  - Weeks 0-2: Straight leg raise/Quad sets, hamstring isometrics
    - Perform exercises in the brace if quad control inadequate
  - Weeks 2-6: Begin progressive isometric closed-chain exercises\*\* **(see comments)**
    - At week 6 can start weight shifting activities with operative leg in extension
  - Weeks 6-10: Progress to bilateral closed chain strengthening, begin open chain knee strengthening
  - Week 10: Begin balance exercises and light resistance stationary bike
  - Weeks 10-12: Begin closed chain exercises using resistance (< than patient's body weight), progress to unilateral closed chain exercises

## Phase II (Weeks 12-24)

- **Weightbearing:** Full weightbearing with a normal gait pattern
- **Range of Motion** – Advance to full/painless ROM
- **Therapeutic Exercises**
  - Advance bilateral and unilateral closed chain exercises
    - Emphasis on concentric/eccentric control
  - Stationary bike, stairmaster, elliptical, treadmill walking
  - Progress balance/proprioception exercises
  - Start sport cord lateral drills

## Phase III (Months 6-9)

- **Therapeutic Exercises**
  - Advance strength training
  - Start light plyometric exercises
  - Start jogging and sport-specific training

## Rehabilitation Protocol: Autologous Chondrocyte Implantation (ACI) – Femoral Condyle



Hospital for Joint Diseases  
NYU LANGONE MEDICAL CENTER

**Craig M. Capeci, MD**  
Orthopaedic Surgery & Sports Medicine  
Clinical Assistant Professor

\_\_1095 Park Ave, NY 212-427-7750  
\_\_1056 5<sup>th</sup> Ave, NY 212-348-3636  
\_\_263 7<sup>th</sup> Ave, Bklyn 718-246-8700

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Diagnosis: \_\_\_\_\_

Date of Surgery: \_\_\_\_\_

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

- **Therapeutic exercise**

- 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 cleared by MD
- Maintenance program for strength and endurance

Comments:

**\*\*Weeks 2-6 – need to respect the repair site: if anterior lesion avoid loading in full extension, if posterior avoid loading in flexion >45°\*\***

Frequency: \_\_\_\_ times per week

Duration: \_\_\_\_ weeks

Signature: \_\_\_\_\_

Date: \_\_\_\_\_