

**REHABILITATION PROTOCOL: AUTOLOGOUS CHONDROCYTE IMPLANTATION (ACI)/  
 DeNovoNT IMPLANTATION (FEMORAL CONDYLE)**

**Phase I (Weeks 0-12)**

• **Weightbearing:**

- o Weeks 0-2: Non-weightbearing
- o Weeks 2-4: Partial weightbearing (30-40 lbs)
- o Weeks 4-6: Continue with partial weightbearing (progress to use of one crutch at weeks 6-8)
- o Weeks 6-12: Progress to full weightbearing with discontinuation of crutch use

• **Bracing:**

- o Weeks 0-2: Hinged knee brace locked in extension– remove for CPM and rehab with PT
- o Weeks 2-4: Gradually open brace at 20° intervals as quad control is obtained
- o 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 weeks

- o Set CPM to 1 cycle per minute – set initially at 0-30°
- o Increase flexion 5-10° per day until full flexion is achieved
  - Should be at 90° by week 4 and 120° by week 6
- o PROM/AAROM and stretching under guidance of PT

• **Therapeutic Exercises**

- o Weeks 0-2: Straight leg raise/Quad sets, Hamstring isometrics
  - Perform exercises in the brace if quad control is inadequate
- o Weeks 2-6: Begin progressive isometric closed chain exercises\*\* (see comments)
  - At week 6 can start weight shifting activities with operative leg in extension
- o Weeks 6-10: Progress bilateral closed chain strengthening, begin open chain knee strengthening
- o Weeks 10-12: Begin closed chain exercises using resistance (less than patient’s body weight), progress to unilateral closed chain exercises
- o At week 10 can begin balance exercises and stationary bike with light resistance

\_\_\_\_\_  
**Name**

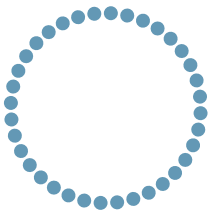
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**Date**

\_\_\_\_\_  
**Diagnosis**

\_\_\_\_\_  
**Date of Surgery**

**Phase II (Weeks 12-24)**

- **Weightbearing:** Full weightbearing with a normal gait pattern
- **Range of Motion** – Advance to full/painless ROM



- **Therapeutic Exercises**

- o Advance bilateral and unilateral closed chain exercises
  - Emphasis on concentric/eccentric control
- o Stationary bike/Treadmill/Stairmaster/Elliptical
- o Progress balance/proprioception exercises
- o Start sport cord lateral drills

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

- **Weightbearing:** Full weightbearing with a normal gait pattern
- **Range of Motion** – Advance to full/painless ROM
- **Therapeutic Exercises**
  - o Advance strength training
  - o Start light plyometric exercises
  - o Start jogging and sport-specific training at 6 months

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

- **Weightbearing:** Full weightbearing with a normal gait pattern
- **Range of Motion** – Full/Painless ROM
- **Therapeutic Exercises**
  - o Continue closed chain strengthening exercises and proprioception activities
    - Emphasize single leg loading
  - o Sport-specific rehabilitation – running/agility training at 9 months
  - o Return to impact athletics – 16 months (if pain free)
- 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 lesion avoid loading in flexion > 45°\*\***

**Frequency:** \_\_\_\_\_ **times per week**      **Duration:** \_\_\_\_\_ **weeks**

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_