

## **Rehabilitation Protocol: Autologous Chondrocyte Implantation (ACI)/DeNovo NT Implantation (Trochlea/Patella)**

**Name:** \_\_\_\_\_  
**Date:** \_\_\_\_\_ **Date of Surgery:** \_\_\_\_\_  
**Diagnosis:** \_\_\_\_\_

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

- **Weightbearing:**
  - 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 weight bearing – 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
  - Starting at week 3 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 10-12: hamstring strengthening, theraband resistance exercises 0-30°, light open-chain knee isometrics

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

- **Weightbearing:** Full weightbearing with a 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)**

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

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

- **Weightbearing:** Full weightbearing with a 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 – jogging/agility training at 9 months
  - Return to impact athletics – 16 months (if pain free)
- Maintenance program for strength and endurance

**Comments:**

Frequency: \_\_\_\_\_ times per week    Duration: \_\_\_\_\_ weeks  
 Signature: \_\_\_\_\_ Date: \_\_\_\_\_