



# Indiana University Health

IU Health Physicians Orthopedics & Sports Medicine

## **OSTEOCHONDRAL ALLOGRAFT TRANSPLANTATION (OAT) TO FEMORAL CONDYLE**

### **PHYSICAL THERAPY PROTOCOL**

**Bryan M. Saltzman, M.D.**

Indiana University Health Physicians

Assistant Professor of Orthopaedic Surgery, Indiana University  
Sports Medicine, Cartilage Restoration, Shoulder/Elbow

IU Health Methodist Hospital – 1801 N Senate Ave, Indianapolis, IN 46202  
IU Health North – 201 Pennsylvania Pkwy #100, Carmel, IN 46280  
317-944-9400

[www.bryansaltzmanmd.com](http://www.bryansaltzmanmd.com)

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

\_\_\_ **Evaluate and Treat**                      \_\_\_ **Provide patient with home program**

**Frequency:** \_\_\_\_\_ x/week x \_\_\_\_\_ weeks

\_\_\_ **Phase I (0-6 wks): *Period of protection.***

- **Weightbearing:** Non weight bearing (NWB)
- **Brace:** Locked in extension at all times except for hygiene and exercises.
  - May discontinue while sleeping at 4 weeks if terminal extension reached.



- **ROM:**
  - CPM: 6-8 hrs/day, 1 cycle/minute, starting with a ROM that is comfortable for the patient. Start POD1.
  - Goals: Advance motion 5-10° each day as tolerated within the following guidelines
    - 0-2 weeks: 0-40°
    - 2-4 weeks: 0-90°
    - 4-6 weeks: 0-120°
  - Goal: full ROM by week 6.
- **Therapeutic exercises (all NWB):**
  - Gentle patellar mobilizations: 5-10minutes daily
  - Electric stimulation for quad control
  - Quad Sets
  - Isometrics for quads and hamstrings
  - Ankle/hip strengthening
  - **0-2 Weeks:**
    - Quad sets, SLR, calf pumps, passive leg hangs to 90° at home
    - Gentle passive, active-assisted and active non-weightbearing (heel slides) ROM, hamstring and gastric stretches, calf pumps, quad sets/SLR, edema and pain control, *full passive extension*
  - **2-6 Weeks:**
    - PROM/AAROM to tolerance, patella and tibiofibular joint mobs, quad, hamstring, and glut sets, SLR, side-lying hip and core
    - Prevent quad inhibition, AA/PROM pain free, towel extension, patella mobilization, quad re-education, SLR in all planes, LE flexibility exercises

\_\_\_ **Phase II (6-12 wks): *Transition phase.***

- **Weight Bearing:** Gradual return to full weight bearing (WBAT). Continue crutch use, but increase weight bearing gradually, (~25% each week). WBAT without crutches by week 12.
- **Brace:** Discontinue once WBAT and able to perform 10 SLR without lag
- **ROM:** Discontinue CPM and progress to full active and passive ROM.
- **Therapeutic Exercises:**
  - As above.
  - Avoid descending stairs reciprocally, avoid painful activities
  - *No running*
  - Begin closed chain strengthening once full weight bearing
  - Gait training, begin closed chain activities: wall sits, shuttle, mini-squats, toe raises
  - Begin unilateral stance activities, balance training

\_\_\_ **Phase III (3-6 months): *Advanced Conditioning.***

- **ROM:** Continue full active ROM.



- **Therapeutic Exercises:**
  - As above with progressive resistance.
  - Begin treadmill walking at a slow pace and progress to balance/proprioception.
  - Light plyometrics initiated at 4 months, once full quadriceps and hamstring strength achieved
  - Isokinetic testing at 4 months
  - Progress squat program, initiate step down program
  - *May advance to elliptical, bike, pool as tolerated*
  - *No running until 5 months:*
    - *At that time, running may begin if strength > 70% contralateral*
    - *No agility training until strength > 90% contralateral*
  - Criteria to start running program: walk with normal gait for 20 minutes, pain free ADLs, ROM > 0-125°, open chain extension to 40°, hamstring and quad strength >70% contralateral side, no pain, no edema, no crepitus, no giving-way
  - Maximize core/glutes, pelvic stability work, eccentric hamstrings

     **Phase IV (6+ months): *Sport-focused conditioning.***

- **ROM:** Continue full active ROM.
- **Goals:** Maximize strength and flexibility to meet sporting demands, no apprehension with sport specific movements
- **Therapeutic Exercises:**
  - Advance functional activity
  - Return to sport-specific activity and impact when cleared by MD after 8 months
  - Criteria to return to sports:
    - Full pain free ROM
    - Normal isokinetic evaluation and function tests
    - Satisfactory performance of sport specific activities without effusion
    - Passes RTP evaluation

     **Other:**

- Modalities                           Electrical Stimulation                           Ultrasound  
     Heat before/after                   Ice before/after exercise  
     May participate in aquatherapy after week three, begin aqua-running week 6

**By signing this referral, I certify that I have examined this patient and physical therapy is medically necessary. This patient      would      would not benefit from social services.**



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

---

**Bryan M. Saltzman, MD**