



Dr. Justin Strickland

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OSTEOCHONDRAL AUTOGRAFT TRANSPLANTATION (OATS) PROTOCOL

Day 1-41 Post-op

- PT removes bandages on POD #3, keep steri-strips intact until Doctor can remove them.
- No ointments, betadine etc should be used on the incisions or portals.
- If any drainage/oozing is present, recover with 4x4's, and notify Doctor (may need antibiotics).
- **NO ice bags** on any oozing or open wounds without being covered first with a bandage.
- If any wounds are oozing delay range of motion until wounds are closed and healed.
- **NO water on wounds** for 3 days (including showers) even if covered, no submersion of wounds in water (baths) until wounds are scars.
- **Brace:**
 - Locked at 0 deg during weight-bearing activities
 - Sleep in locked brace for 2-4 weeks until improved quad control
- **Weightbearing:** status varies based on lesion location & size
 - **For femoral condyle lesions:**
 - Day 1-13 Post-op: NWB
 - Large lesions (>5cm) may need to delay WB up to 4 wks Post-op
 - Day 14-27 Post-op: Progress to TTWB (approx 20-30lbs.)
 - Day 28-41: Progress to 25-50% body weight
 - **For Patellofemoral lesions:**
 - Immediate WBAT 100% of body weight with brace locked in full extension
- **Range of Motion:**
 - Immediate motion exercises day 1
 - Full **passive** knee extension immediately
 - Patellar mobilization (4-6 times per day)
 - Motion exercises throughout the day
 - **Passive** knee flexion ROM at least 2-3 times daily
 - **PROM** as tolerated
 - **Femoral condyle lesions:**
 - Day 1-13 Post-op: 0-90 deg
 - Day 14-20 Post-op: 0-105 deg

- Day 21-27 Post-op: 0-115 deg
 - Day 28-41 Post-op: 0-125 deg
- **Patellofemoral lesions:**
 - Day 1-13 Post-op: 0-90 deg
 - Day 14-27 Post-op: 0-105 deg
 - Day 28-41 Post-op: 0-120 deg
- Stretch hamstrings & calf
- **Strengthening:**
 - Ankle pump using rubber tubing
 - Quad sets
 - Multi-angle isometrics (co-contractions Q/H)
 - SLR's 4 directions
 - Active knee extension 90-40 deg for femoral condyle lesions if not articulation Week 4 (no resistance)
 - Electrical muscle stimulation &/or biofeedback during quadriceps exercises
 - Stationary bicycle when ROM allows - low resistance
 - Isometric leg press at Week 4 (multi-angle)
 - May begin use of pool for gait training & exercises at Week 6
 - Initiate weight shifting exercises with knee in extension Week 3-4 for patellofemoral lesions
 - **NO active knee extension for patellofemoral lesions**
 - **NO closed kinetic chain exercises for femoral condyle lesions**
- **Functional Activities:**
 - Gradual return to daily activities
 - If symptoms occur, reduce activities to reduce pain & inflammation
 - Extended standing should be avoided
- **Swelling Control:**
 - Ice, elevation, compression, & edema modalities as needed to decrease swelling

6-12 Weeks Post-op

- **Brace:**
 - Discontinue brace at 6 weeks, consider unloading brace for femoral condyle lesions
- **Weight Bearing:**
 - Progress WB as tolerated
 - **Femoral condyle lesions:**
 - Weeks 6-7 Post-op: 75% body weight with crutches
 - Weeks 8-10 Post-op: Progress to Full WB & D/C crutches
 - *May need to delay FWB up to 14 weeks Post-op if large lesion*
 - **Patellofemoral lesions:**
 - Weeks 6-8 Post-op: Progress gait to be able to D/C crutches
- **Range of Motion:**
 - Gradual increase in ROM
 - Maintain full passive knee extension
 - Progress knee flexion to 125-135 deg by Weeks 8-10 Post-op
 - Continue patellar mobilization & soft tissue mobilization as needed

- Continue stretching
- **Strengthening:**
 - Initiate weight shifts Week 6-8 Post-op for femoral condyle lesions
 - Initiate mini-squats 0-45 deg Week 6-8 Post-op for patellofemoral lesions
 - Closed kinetic chain exercises Week 8-10 Post-op for femoral condyle lesions:
 - *May need to delay CKC up to 14 weeks Post-op if large lesions*
 - Mini squats 0-45 deg
 - Lunges (sagittal plane)
 - Step ups
 - Wall squats
 - Leg press (0-90 deg for femoral condyle, 0-60 deg for patellofemoral, progressing to 0-90 as tolerated)
 - Toe-calf raises Week 10-12 Post-op
 - Progress active knee extension: begin resistance with femoral condyle lesions progressing 1lb every 10-14 days; for patellofemoral lesion begin with 0-30 deg at Week 12 Post-op & progress to deeper angles as tolerated
 - Stationary bike (gradually increase time)
 - Balance & proprioception drills
 - Continue electrical muscle stimulation &/or biofeedback as needed
 - Continue use of pool for gait training & exercise
- **Functional Activities:**
 - Gradual increase functional activities as pain & swelling diminish
 - Gradually increase standing & walking

3-6 Months Post-op

- **Range of Motion:**
 - 0-135 deg - no restrictions
- **Strengthening:**
 - Continue progressing exercises
 - Leg press 0-90 deg
 - Bilateral squats (0-60 deg)
 - Unilateral step-ups progressing from 2" to 8"
 - Lunges
 - Begin walking program on treadmill
 - Open kinetic chain knee extension (0-90 deg) as tolerated, do not progress to heavy resistance with patellofemoral lesions - must monitor symptoms of pain & crepitation
 - Bicycle
 - Stairmaster
 - Elliptical
- **Functional Activities:**
 - As patient improves, increase walking distance, cadence, incline, etc.
- **Maintenance Program:**
 - Initiate at Weeks 16-20 Post-op
 - Bicycle - low resistance
 - Progress walking program
 - Pool exercises for entire lower extremity
 - SLR 4 ways

- Leg press
- Wall squats
- Lunges
- Stretch quadriceps, hamstrings, gastroc

6 Months- 1 Year Post-op

- **Exercises:**
 - Continue maintenance program progression 3-4x/week
 - Progress resistance as tolerated
 - Emphasis on entire lower extremity strength & flexibility
 - Progress agility & balance drills
 - Impact loading program should be specialized to the patient's demands
 - Progress sports programs depending on patient variables
- **Functional Activities:**
 - Patient may return to various sport activities as progression in rehabilitation & cartilage healing allows. Generally, low-impact sports such as skating, rollerblading, & cycling are permitted at about 6-8 months. Higher impact sports such as jogging, running, & aerobics may be performed at 8-10 months. High impact sports such as tennis, basketball, & baseball are allowed at 12-18 months.

Patient progression during the time frames along with general modality and exercise choice is left up to the discretion of the treating therapist. If you have any questions regarding this protocol, please contact (316) 219-8299.