



Osteochondral Allograft/Mosaicplasty Rehabilitation Protocol

Date of Surgery: _____

Procedure(s) Performed: _____

Phase	Precautions	Treatment Recommendations	Emphasize
Postoperative Phase 1 Weeks 0-6 <i>Criteria for Advancement:</i> -Normalized Gait pattern -ROM 0°-130° -SLR (supine) without extension lag -Normal patellar mobility	<ul style="list-style-type: none"> ▪ DO NOT PUSH ROM ▪ Control postop swelling ▪ Hinged brace x4 weeks: <ul style="list-style-type: none"> o Locked in extension for WB o May unlock when appropriate quad control o Transition to patellar sleeve at 4 weeks ▪ Weightbearing: <ul style="list-style-type: none"> o TTWB w/ crutches weeks 1-2 o 50% WB weeks 3-4 o Progressive WBAT after 4 weeks <p>Discharge assistive device by end of week 4 (AT PT DISCRETION)</p>	ROM <ul style="list-style-type: none"> ▪ Immediate ROM after surgery <ul style="list-style-type: none"> o Emphasize full knee extension immediately ▪ AROM/AAROM exercises (painfree ROM) 3x/day <ul style="list-style-type: none"> o Seated knee flexion off table o Heel slides against wall o DO NOT PUSH ROM!!! ▪ Heel prop for knee extension (5-minute intervals) 5x/day ▪ Patellar mobilizations in all planes 3-4 times/day <ul style="list-style-type: none"> o **Note to concurrently mobilize infra-patellar soft tissue structures as well ▪ LE stretching (Hip, hamstring, gastroc/soleus) ▪ ROM Goals (USE AS A GUIDELINE!!!) <ul style="list-style-type: none"> o Week 2- 90° flexion o Week 3- 105° flexion o Week 4- 115° flexion o Week 6- 130° flexion SOFT TISSUE <ul style="list-style-type: none"> ▪ Quadriceps, Hamstring, gastroc/soleus soft tissue release ▪ Mobilization to superior patellar pouch and infra-patellar soft tissue structures to provide proper patellar mobility. STRENGTHENING <ul style="list-style-type: none"> ▪ Quadriceps re-education. <ul style="list-style-type: none"> o Quad sets, SLR with EMS ▪ SLR's (all planes) <ul style="list-style-type: none"> o Emphasize no extension lag during exercise o Leg Press (60° → 0° arc, progressing to 90° → 0° arc) ▪ Initiate core stabilization program <ul style="list-style-type: none"> o Developmental progression (supine → prone → kneeling progression → standing) ▪ Ankle PRE's ▪ BFR aided quad strengthening (if available) ▪ Standing bilateral heel raises-Week 2 ▪ Multi-angle quadriceps isometrics ▪ Short Crank Bike → upright bike ▪ Multiplanar glute/Core/hip strengthening <ul style="list-style-type: none"> o Bridges with t-band o SL clamshells o BKFO with abdominal bracing o Lateral/Monster walks o Standing Clamshells o Three-point step ▪ Weight shift exercises with UE support - Week 2 <ul style="list-style-type: none"> o Single leg balance/proprioceptive activities after proper quad control obtained 	<ul style="list-style-type: none"> ▪ Pain/swelling controlled ▪ ROM 0-130° ▪ Prevent quads inhibition ▪ Restore full passive extension ▪ Restore normal gait pattern ▪ Restore proximal strength (glutes/core) ▪ Normalize patellar mobility ▪ Independence in HEP

- Aquatic therapy (if available) when incisions are healed- week 4-6
- Single leg pawing → retrograde treadmill by week 4
- Initiate step-ups at week 4
 - o Start with 4" step, progress with adequate quad strength

Phase	Precautions	Treatment Recommendations	Emphasize
<p>Postoperative Phase II Weeks 6-12</p> <p><i>Criteria for Advancement:</i></p> <ul style="list-style-type: none"> - Full pain-free ROM - Demonstrate ability to ascend/descend 8" step with good control - Bike for 30 minutes without complaints 	<ul style="list-style-type: none"> ▪ Avoid pain with therapeutic exercises and functional activities ▪ Continue to control post-operative swelling ▪ Brace: Gradual weaning of patellar sleeve 	<p>ROM</p> <ul style="list-style-type: none"> ▪ Gradual increase of ROM to full ROM <ul style="list-style-type: none"> o Knee flexion step stretch o Prone knee flexion stretch ▪ Maintain full passive knee extension <ul style="list-style-type: none"> o Heel prop with weight o Prone knee extension hang with weight ▪ Continue patellar mobilization as needed ▪ Continue with LE stretching program (hip, hamstring, gastroc/soleus) ▪ Initiate foam rolling program <p>STRENGTHENING</p> <ul style="list-style-type: none"> ▪ Progress stationary bike time- Gradually increase time to 2 (20min) sessions/day <ul style="list-style-type: none"> o Initiate interval bike program between weeks 8-10 ▪ Progress to elliptical - Week 10 ▪ Underwater TM/Alter-G gait training if gait pattern continues to be abnormal ▪ RDL <ul style="list-style-type: none"> o DL- Week 6 o SL- Week 8 ▪ Continue with EMS as needed ▪ Continue BL Leg Press with progressive weight as tolerated <ul style="list-style-type: none"> o Band around knees to avoid valgus breakdown ▪ Progress to eccentric leg press (2 up/1 down) - Week 6 ▪ Chair Squats - Week 6 <ul style="list-style-type: none"> o Band around knees to promote glute activation o Promote movement through hips and proper form. o Progressively lower seat height per strength gains and pain response ▪ Continued step-up progression (controlled 8" eccentric step down by week 12) <ul style="list-style-type: none"> o Emphasize proper movement pattern (no hip drop, no valgus breakdown) ▪ Front lunges → Traveling lunges- Week 8 ▪ TRX Squats-Week 8 ▪ Progressive glute/hip strengthening <ul style="list-style-type: none"> o Three-point step o Lateral/ monster walks o SL wall push o Windmills o Clamshells in modified side plank o Bridge progression ▪ Progress balance/proprioception <ul style="list-style-type: none"> o Rockerboard o SL rebounder (Progress to Airex/ ½ foam) o Biodex Balance systems ▪ Core progression: Initiate TM walking program 	<ul style="list-style-type: none"> ▪ Gradual increase of ROM 0° → full ▪ Ascend/Descend 8" step with good control and without pain ▪ Gradual increase in functional activities

<u>Phase</u>	<u>Precautions</u>	<u>Treatment Recommendations</u>	<u>Emphasize</u>
Postoperative Phase III Weeks 12-18 <i>Criteria for Advancement:</i> -85% limb symmetry on Isokinetic testing -No pain, inflammation or swelling after activity	<ul style="list-style-type: none"> ▪ Avoid pain with therapeutic exercises and functional activities ▪ Continue to control post-operative swelling ▪ Progress with running ONLY if adequate quad control and strength is present 	ROM <ul style="list-style-type: none"> ▪ Patient shoulder demonstrate full ROM without limitations STRENGTHENING <ul style="list-style-type: none"> ▪ Continue to progress with squat program <ul style="list-style-type: none"> o Add weight as needed ▪ Continue to progress with eccentric leg press ▪ Progress with TRX squats <ul style="list-style-type: none"> o Eccentric DL squats o SL squats focusing on control and technique ▪ Progress with interval biking for endurance ▪ Progress with Step-ups <ul style="list-style-type: none"> o Progress to 12-18" step o Progress to add weight along with overhead presses with control ▪ Advanced proprioception training (perturbations) ▪ Begin agility training ▪ Continue to progress with Aquatic program if available ▪ Stairmaster ▪ Continue with core progression ▪ Continue with LE stretching Alter-G running progression <ul style="list-style-type: none"> o Progress to interval TM running program (be cautious of overloading knee) 	<ul style="list-style-type: none"> ▪ Return to normal ADLs ▪ 85% limb symmetry on Isokinetic testing ▪ Improve muscular strength and endurance
Postoperative Phase IV Weeks 18+ <i>Criteria for Return to Sport:</i> -Hop testing 90% limb symmetry -Isokinetic test \geq 85% limb symmetry -20min TM running pain free -Y-balance test 90% limb symmetry -Independent with gym strengthening and maintenance program	<ul style="list-style-type: none"> ▪ Be cautious of patellofemoral overload with increased activity level ▪ Avoid pain with progression of sports specific activity or with running 	<ul style="list-style-type: none"> ▪ Strength Maintenance program 3-4 times/week <ul style="list-style-type: none"> o Bike/Eliptical lower resistance o Glute Activation exercises o Chair/Box Squats o Leg press o Multiplanar hip strengthening o Front/Side/Back lunges o SL RDL o LE stretching ▪ Alter-G running progression (5-6 mos post op) <ul style="list-style-type: none"> o Must have good control and alignment with 8" eccentric step down o Progress to interval TM running program (be cautious of overloading knee) ▪ Plyometric program <ul style="list-style-type: none"> o Individualized per sport and patient need ▪ Progress strength and flexibility through entire kinetic chain (hips, knees, ankle) ▪ Progress with agility and balance drills ▪ Progress with sport specific programs 	<ul style="list-style-type: none"> ▪ No apprehension with sport specific movements ▪ Maximize overall lower extremity strength and flexibility to meet demands of sport and activity ▪ Hop testing \geq 90% limb symmetry ▪ Isokinetic test \geq 85-90% limb symmetry

Protocol adapted from Riley J. Williams, MD postoperative osteochondral allograft/mosaicplasty guidelines