

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"> Locked in extension for WB May unlock when appropriate quad control Transition to patellar sleeve at 4 weeks Weightbearing: <ul style="list-style-type: none"> TTWB w/ crutches weeks 1-2 50% WB weeks 3-4 Progressive WBAT after 4 weeks Discharge assistive device by end of week 4 (AT PT DISCRETION) 	<p>ROM</p> <ul style="list-style-type: none"> Immediate ROM after surgery <ul style="list-style-type: none"> Emphasize full knee extension immediately AROM/AAROM exercises (painfree ROM) 3x/day <ul style="list-style-type: none"> Seated knee flexion off table Heel slides against wall 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"> **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"> Week 2- 90° flexion Week 3- 105° flexion Week 4- 115° flexion Week 6- 130° flexion <p>SOFT TISSUE</p> <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. <p>STRENGTHENING</p> <ul style="list-style-type: none"> Quadriceps re-education. <ul style="list-style-type: none"> Quad sets, SLR with EMS SLR's (all planes) <ul style="list-style-type: none"> Emphasize no extension lag during exercise Leg Press (60°→0° arc, progressing to 90°→0° arc) Initiate core stabilization program <ul style="list-style-type: none"> 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"> Bridges with t-band SL clamshells BKFO with abdominal bracing Lateral/Monster walks Standing Clamshells Three-point step Weight shift exercises with UE support - Week 2 <ul style="list-style-type: none"> 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

<u>Phase</u>	<u>Precautions</u>	<u>Treatment Recommendations</u>	<u>Emphasize</u>
Postoperative Phase II Weeks 6-12 <i>Criteria for Advancement:</i> - 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

Phase	Precautions	Treatment Recommendations	Emphasize
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 should demonstrate full ROM without limitations STRENGTHENING <ul style="list-style-type: none"> Continue to progress with squat program <ul style="list-style-type: none"> Add weight as needed Continue to progress with eccentric leg press Progress with TRX squats <ul style="list-style-type: none"> Eccentric DL squats SL squats focusing on control and technique Progress with interval biking for endurance Progress with Step-ups <ul style="list-style-type: none"> Progress to 12-18" step 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"> 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"> Bike/Eliptical lower resistance Glute Activation exercises Chair/Box Squats Leg press Multiplanar hip strengthening Front/Side/Back lunges SL RDL LE stretching Alter-G running progression (5-6 mos post op) <ul style="list-style-type: none"> Must have good control and alignment with 8" eccentric step down Progress to interval TM running program (be cautious of overloading knee) Plyometric program <ul style="list-style-type: none"> 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