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Exertional Compartment Syndrome Release Rehab Protocol

PHASE I Protection and Mobility (surgery to 2-3 weeks after surgery)

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| Appointments | Rehabilitation appointments begin 5-7 days after surgery and continue 1 time every 5-10 days |
| Rehabilitation Goals | <ul style="list-style-type: none"> · Administer Foot and Ankle Ability Measure (FAAM) both ADL and sport subscales · Protection of the post-surgical compartment · Minimize postoperative swelling; lower extremity circumference within 2 cm of uninvolved side at mid-calf · Instruction in safe positioning and limb self-management · Restore normal knee and ankle range of motion · Able to lift leg involved leg in all directions in standing without pain or compensation · Restore ability to control leg in open and closed kinetic chain during gait · Non-antalgic gait |
| Precautions | <ul style="list-style-type: none"> · Use axillary crutches for gait with progressive weight bearing as tolerated · Avoid any activity which causes increased swelling · Avoid any friction on new scar · Avoid any impact activity including running, jumping, or hopping (6-8 weeks) |
| Suggested Therapeutic Exercise | <ul style="list-style-type: none"> · Active range of motion (AROM) of the ankle begins immediately to maintain extensibility of soft tissues as they heal to prevent postoperative contractures; progress to open kinetic chain strengthening with theraband as able · Quadriceps sets · Leg lifts for hip strength |

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| | <ul style="list-style-type: none"> · Elevation, compression, and icing, as needed, for swelling control · Active muscle pumping for swelling control · Gentle distal-to-proximal massage to assist with venous return and swelling |
| Cardiovascular Fitness | <ul style="list-style-type: none"> · Upper body circuit training or upper body ergometer, as able · Begin with 5-10 minutes, 1-2 times/day, and progress as able |
| Progression Criteria | <ul style="list-style-type: none"> · Patient may progress to Phase II after meeting Phase I goals |

PHASE II: Light Strengthening (begin after meeting Phase I criteria, usually 2-3 weeks following surgery)

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| Appointments | <ul style="list-style-type: none"> · Rehabilitation appointments are 1 time per week on average |
| Rehabilitation Goals | <ul style="list-style-type: none"> · Lower extremity circumference within 1 cm of uninvolved side · Incision well healed · Minimize muscle atrophy and flexibility deficits in involved compartment · Single leg stance control with eyes open · Full flexibility/mobility of gastrocnemius/ankle · Maintain motion and strength of uninvolved muscle groups, as well as cardiovascular endurance · Perform active or gentle resisted exercises of the hip of the operated lower extremity and resistance exercises of the upper extremities · Proper lower extremity control and alignment with no pain during functional double leg squats · Non-antalgic gait on level surface with full weight bearing and no assistive device · 8 point (or greater) improvement on ADL portion of the baseline FAAM |
| Precautions | <ul style="list-style-type: none"> · Avoid over-stressing new scar formation by avoiding any friction over tissue (as per Phase I) · Avoid post-activity swelling by limiting prolonged weight bearing activity as appropriate; if swelling occurs, manage with rest, ice, elevation and compression (as per Phase I) · Avoid eccentric loading |
| Suggested Therapeutic Exercise | <ul style="list-style-type: none"> · Scar massage/mobility and desensitization · Gentle stretching and nerve mobilizations to tissue in involved compartment · Progress open kinetic chain ankle strengthening as tolerated · Balance and proprioception exercises: progression of bilateral to unilateral balance activities first on a level, firm surface, then on a soft/unstable surface · Gait drills: begin with sagittal plane and progress to frontal and transverse planes |
| Cardiovascular Fitness | <ul style="list-style-type: none"> · Upper body circuit training, upper body ergometer (as per Phase I) |

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| | <ul style="list-style-type: none"> · May begin stationary biking if wound is healed · Begin treadmill or track walking if wound is healed; progress time and speed as able · May swim or water walk if wound is FULLY healed |
| Progression Criteria | <ul style="list-style-type: none"> · Patient may progress to Phase III if Phase II goals are met |

PHASE III: Progression of Strengthening (begin after meeting Phase II criteria, usually 4-6 weeks after surgery)

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| Appointments | <ul style="list-style-type: none"> · Rehabilitation appointments are once every 7-10 days |
| Rehabilitation Goals | <ul style="list-style-type: none"> · Prevent post-operative recurrence of symptoms with all activity · Tolerate 15-30 minutes of continuous aerobic activity without the onset of symptoms/pain · Reinforce self-monitoring and review signs of recurrence and complications · Normal (rated 5/5) ankle strength and pain free · Proper lower extremity control and alignment and no pain with single leg functional movements including squats and lunges · No residual swelling 12-24 hours following all physical activity (including impact exercises) · No pain 1-2 hours following physical activity (including impact exercises) |
| Precautions | <ul style="list-style-type: none"> · Avoid friction over scar tissue (as per Phases I and II) · Avoid post-activity swelling (as per Phases I and II) · No strenuous activity until wound is fully healed · No running until 6-8 weeks postoperatively (patient should be advised by sports rehabilitation provider or physician prior to initiation of any running) · Avoid pain with any exertional activity |
| Suggested Therapeutic Exercise | <ul style="list-style-type: none"> · Lower extremity stretching and nerve mobilizations as appropriate (as per Phase II) · Lower extremity myofascial stretching/foam rolling · Progression of lower extremity closed chain functional strengthening including lunges, step-backs, and single leg squats · Progress heel rise to single leg · Progress gait drills · Initiate plyometric exercises (with focus on lower extremity control and alignment at hip, knee, and ankle) at 6 weeks; begin with 2 feet to 2 feet (jumping) progressing from 1 foot to other (leaping) and then 1 foot to same foot (hopping); and focus on proper landing/deceleration mechanics |
| Cardiovascular Fitness | <ul style="list-style-type: none"> · Initiate or progress swimming or water walking if wound is fully healed (as per Phase II) · Progress walking time and speed (as per Phase II) |

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| | <ul style="list-style-type: none"> · May begin elliptical trainer as tolerated · Light jogging can be initiated at 6-8 weeks; initially begin on level surface while avoiding hills and speed work; runners should consider interval training involving walking; progress jog interval times, incline, and speed as appropriate for return to sport/activity goals; and for those returning to multi-planar sport, consider progression of multiplanar activity |
| Progression Criteria | <ul style="list-style-type: none"> · Patient may progress to Phase IV after meeting Phase III goals |

PHASE IV: Impact/Sport Training (begin after meeting Phase III criteria, approximately 8-12 weeks following surgery)

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| Appointments | <ul style="list-style-type: none"> · Rehabilitation appointments are 1 time every 1-2 weeks |
| Rehabilitation Goals | <ul style="list-style-type: none"> · Administer ADL and sport subscales on the FAAM prior to discontinuation of rehabilitation · 9 point (or greater) improvement on the sport subscale portion of the baseline FAAM · Proper dynamic neuromuscular control and alignment with eccentric and concentric multi-plane activities (including impact) for return to work/sports, without pain, instability or swelling · Within 90% of pain free plantarflexion and dorsiflexion strength |
| Precautions | <ul style="list-style-type: none"> · Avoid pain with any exertional activity · Avoid post-activity swelling (as per phases I through III) |
| Suggested Therapeutic Exercise | <ul style="list-style-type: none"> · Biomechanical assessment of specific sport activity with video analysis as needed (running, biking, etc.) · Instruct in proper return to activity progression (incremental running, biking, etc.) · Progressive strengthening exercises using higher stability, and neuromuscular control with increased loads and speeds and combined movement patterns; begin with low velocity, single plane activities and progress to higher velocity, multi-plane activities; and begin with forward and backward, progress to side-to-side, diagonals and transverse plane movements · Integrate movements and positions into exercises that simulate functional activities; and initiate sport-specific training with low-intensity simulated movements |
| Cardiovascular Fitness | <ul style="list-style-type: none"> · Replicate sport or work specific energy demands |
| Progression Criteria | <ul style="list-style-type: none"> · Patient may return to sport/work if they have met the above stated goals and have approval from the sports rehabilitation provider or physician · Precautions to reduce the risk of re-injury when returning to sports or high-demand activities as appropriate; if collision/contact sport, may consider protective padding over area of scar tissue |

***** Please note protocol adapted from the University of Wisconsin Protocol.**