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Exertional Compartment Syndrome Release Rehab Protocol

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

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 <ul style="list-style-type: none">· Quadiceps sets· Leg lifts for hip strength· 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)

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) · 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)

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) · 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)

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.**