

Exertional Compartment Release Protocol (Non-traumatic)

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PHASE 1 Protection and Mobility (surgery to 2-3 weeks postop)
Appointments: Rehabilitation appointments begin 5-7 days after surgery, continue every 5-10 days

Rehabilitation Goals

- 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

- 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

- 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
- 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

- 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

- Patient may progress to Phase II after meeting Phase I goals

PHASE 2: Light Strengthening (begin after meeting phase 1 criteria, usually 2-3 weeks following surgery)

Appointments: Rehabilitation appointments are 1 time per week on average

Rehabilitation Goals

- 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

- 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

- 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

- 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

- Patient may progress to Phase III if Phase II goals are met

PHASE 3: Progression of Strengthening (begin after meeting phase ii criteria, usually 4-6 weeks after surgery)

Appointments

- Rehabilitation appointments are once every 7-10 days

Rehabilitation Goals

- 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

- 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

- 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

- 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

- Patient may progress to Phase IV after meeting Phase III goals

PHASE 4: Impact/Sport training (begin after meeting phase 3 criteria, approximately 8-12 weeks following surgery)

Appointments

- Rehabilitation appointments are 1 time every 2-3 weeks

Rehabilitation Goals

- 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

- Avoid pain with any exertional activity
- Avoid post-activity swelling (as per phases I through III)

Suggested Therapeutic Exercise

- 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

- Replicate sport or work specific energy demands

Progression Criteria

- 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