



# EXERTIONAL COMPARTMENT SYNDROME RELEASE (FASCIOTOMY) Physical Therapy Protocol

Patient Name: \_\_\_\_\_ Date of Surgery: \_\_\_\_\_

\_\_\_\_ Evaluate and Treat      \_\_\_\_ Provide patient with home program

Frequency: \_\_\_\_\_ x/week x \_\_\_\_\_ weeks

## Weightbearing Guidelines

- WBAT immediately following surgery.
- Crutches during first few postoperative days if needed (usually 3-5 days).

## ROM Guidelines

- Progress ROM as tolerated starting within the first few postoperative days.

## Criteria to Discharge Assistive Device

- Pain-free ambulation with normalized gait pattern.

## Criteria to Initiate Running/Jumping

- Ability to tolerate 15-30 minutes of continuous aerobic activity without onset of symptoms/pain.
- 5/5 pain-free ankle strength of involved compartment.
- Ability to complete single leg functional movements (i.e. squats and lunges) with proper mechanics and no pain.
- No increase in swelling 12024 hours following physical activity.
- no pain 1-2 hours following physical activity.

## Criteria to Return to Sport

- Meet criteria to initiate running/jumping.
- Proper neuromuscular control of eccentric and concentric multi-planar activities with absence of pain, instability and swelling.
- At least 90% plantarflexion strength of uninvolved side assessed with unilateral heel raises on leg press or maximum heel raise repetitions with equal heel height.

## Outcome Tools

- FAAM (ADL and Sports subscales).
- LEFS.

## \_\_\_\_ Phase I: 0-3 weeks - Protection and Mobility

### Weightbearing

- WBAT with progression to full, pain-free weight bearing with ambulation.
- Auxillary crutches (or other AD) if needed in the first few postoperative days.
- Discontinue crutches when gait is normalized.

## **Precautions**

- Avoid activities that increase swelling (i.e. extended sitting, tight clothing proximal to site of surgery, and excessive heat such as a hot pack or bath).
- Avoid friction over new scar formation at incision site.
- Avoid high impact activity such as running, jumping, and hopping.

## **Edema Control**

- Gentle distal to proximal massage of lower leg to assist with venous return and reduce swelling.
- Ankle pumps (can perform with lower extremity elevated to assist with swelling reduction).

## **ROM**

- NWB ankle PROM and AROM.
  - PF, DF, inversion, eversion.
  - Alphabet exercise.
  - Seated BAPS.
- Knee PROM and AROM as needed .

## **Strengthening**

- Sub-maximal isometric strengthening.
  - Ankle PF, DF, inversion, eversion.
- Quad sets.
  - Progress to SAQ, LAQ and SL.
- 4-way hip.
  - Progress from non-weight bearing to standing.

## **Goals to Progress to Next Phase**

- Lower let circumference within 2 cm of uninvolved side.
- Knee and ankle AROM equal to uninvolved side.
- Normalized gait mechanics including full pain-free weight bearing on level surface, and equal step length bilaterally.

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## **Phase II: 4-6 weeks - Light Strengthening**

### **Precautions**

- Limit swelling by minimizing prolonged weight bearing activity.
- Continue to avoid friction over new scar formation at site of incision.
- Avoid excessive weight bearing eccentric loading.
- Avoid high impact activity such as running, jumping, and hopping.

### **ROM**

- Initiate scar massage/mobility and desensitization when incision is fully healed.
- Gentle ankle stretching.
  - 30-60 second holds.
- Nerve mobilization in supine.
  - Focus on involved compartment (i.e. ankle PF and inversion to focus on common peroneal nerve).
  - Progress repetitions and range of motion as tolerated.
- BAPS progression (seated → standing).

## Strengthening

- Start open kinetic chain ankle strengthening.
  - 4 way ankle with theraband resistance.
- Balance and Proprioception exercises.
  - Bilateral → unilateral.
  - Level, firm surface → soft/unstable surface (foam or BOSU) → balance board.
  - Eyes open → head turns → eyes closed.
- Double leg squats: mini-squats → full squats.
- Gait drills.
  - Sagittal plane → frontal and transverse planes.
  - Forward and retro marching (sagittal plane), side-stepping (frontal plane), and corioca/grapevine walking (transverse plane).

## Cardiovascular

Only initiate the following when incision is fully healed:

- Stationary bicycle starting with 5-10 minutes at a low resistance and speed.
- Treadmill walking starting with 5-10 minutes at 2-3 mph and progress time and speed as able.
- If desired, may begin aquatic activities/swimming starting with 10-15 minutes and progressing time/amount as able.

## Goals to Progress to Next Phase

- Lower extremity circumference within 1 cm of uninvolved side.
- Ability to maintain single leg stance with eyes open on unstable surface for 30-60 seconds.
- Ankle DF ROM equivalent to uninvolved side measured in weight bearing lunge position.
- Proper lower extremity mechanics with no pain during functional double leg squats.

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## Phase III: 6-8 weeks - Progression of Strength/ Return to Jogging

### Precautions

- Continue to limit activities which increase swelling.
- Limit friction over scar tissue.
- No strenuous or painful activities.

### ROM

- Continue stretching and nerve mobilizations as needed.
- Lower extremity soft tissue mobilization to improve flexibility and soft tissue mobility of the lower leg.
  - Instrument assisted, foam roller, massage stick roller.

### Strengthening

- Progression of closed chain functional strengthening.
  - Lunges, step-ups, single leg squats.
  - Double leg heel raise → single leg raise.
- Can combine with gait drills such as marching, or heel/toe walking.
- Initiate plyometric exercises at 6 weeks.
  - Plyometric shuttle (DL → SL jumping).
  - DL → SL jump to contralateral foot (leaping) → SL jump to same foot (hopping).
    - Progress repetitions, and height/distance as able.

### Cardiovascular

- Initiate or progress aquatic activities/swimming in wounds are fully healed.
- Progressive treadmill walking time and speed.

- Light jogging can be initiated on level surface.
  - 6-8 weeks for 1-2 compartment release.
  - 8-10 weeks for 4 compartment release.
  - Progressive walk-jog interval training.

### Goals to Progress to Next Phase

- Complete 15-30 minutes of continuous aerobic activity without symptoms or pain.
- 5/5 pain-free ankle strength or muscles in involved compartment.
- Ability to complete SL functional movements (such as SL squats and lunges) without pain, and with proper mechanics.
- No residual swelling 12-24 hours following physical activity.
- No pain 1-2 hours after physical activity.

## Phase IV: 8-12+ weeks - Return to Sport/Impact Training

### Precautions

- Continue to avoid pain and increased swelling during and following activity.

### ROM

- Continue knee and ankle stretching and ROM exercises as appropriate.

### Strengthening

- Progression strengthening exercises to promote stability and neuromuscular control with increased loads and speeds.
  - Low velocity, single plane activities → higher velocity, multi-plane activities.
  - Forward and backward → side-to-side and transverse plane movements.
- Sport-specific training beginning at a low-intensity.
- Instruct patient on gradual return to sport/activity progression.
- Biomechanical assessment of specific sport activity with video analysis as needed.
  - Running gait: Forefoot strike running pattern reduces intracompartmental pressure.

### Goals to Progress to Return to Sport/Work

- Meet criteria to initiate running/jumping.
- Proper neuromuscular control of eccentric and concentric multi-planar activities with absence of pain, instability, and swelling.
- At least 90% plantarflexion strength of uninvolved side assessed with unilateral heel raises on leg press or maximum heel raise repetitions with equal heel height.

*Reference: wexnermedical.osu.edu*

By signing this referral, I certify that I have examined this patient and physical therapy is medically necessary.

This patient \_\_\_\_\_ would \_\_\_\_\_ would not benefit from social services.

Physician Name: \_\_\_\_\_

Date: \_\_\_\_\_