NYU Langone Health

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# Post-Operative Instructions
# Fasciotomy for Chronic Exertional Compartment Syndrome

## Day of surgery

**A.** Diet as tolerated
**B.** Icing is important for the first 5-7 days post-op. While the post-op dressing is in place, icing should be done continuously. Once the dressing is removed, ice is applied for 20-minute periods 3-4 times per day. Care must be taken with icing to avoid frostbite.
**C.** Pain medication as needed every 4-6 hours (refer to pain medication sheet).
**D.** Make sure you have a physical therapy post-op appointment scheduled during the first week after surgery.

## First Post-Operative Day

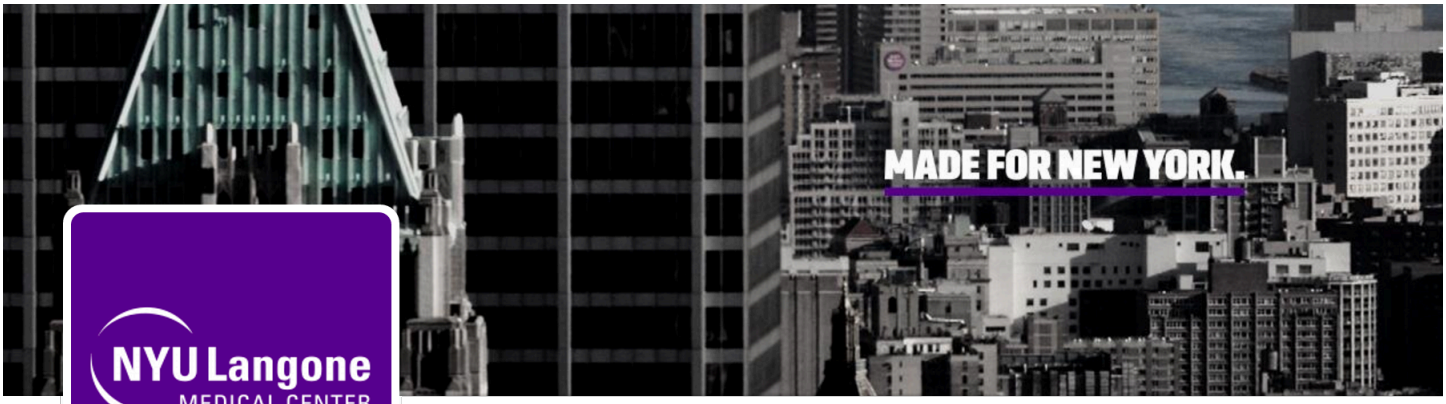
**A.** Continue ice pack every 1-2 hours while awake
**B.** Pain medication as needed.

## Second Post-Operative Day Until Return Visit

**A.** Continue ice pack as needed.
**B.** Unless otherwise noted, you can bear as much weight on the affected leg as you can tolerate. Most patients use crutches or a cane for the first 1-3 days. The amount of pain you experience should be your guide for discontinuing crutch or cane use.
**C.** Call our office @ 646-501-7223 option 4, option 2 to confirm your first postoperative visit, which is usually about 1-2 weeks after surgery. If you are experiencing any problems, please call our office or contact us via the internet at www.newyorkortho.com.

## Third Post-Operative Day

A. You may shower this evening. You MUST keep the extremity dry while showering. After showering, remove surgical bandage and apply fresh 4x4 surgical sponges/gauze to the incision and wrap with and ACE bandage. You will need to follow this routine for 2 weeks after surgery.
B. No baths with leg immersed under water for 1 month after surgery.

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# Rehabilitation Guidelines Following Compartment Syndrome Release With Open Fasciotomy

Chronic Exertional Compartment Syndrome (CECS) is a painful condition of the lower leg that affects many runners and other athletes involved in repetitive impact activities. The pain associated with this condition is thought to be abnormal pressure in the compartments of the lower leg. The lower leg is comprised of four universally described compartments— anterior, lateral, superficial posterior, and deep posterior (Figure 1). Bone and connective tissue structures define the various compartments in the lower leg. The compartments have relatively fixed volumes and surround muscles, arteries, veins and nerves. Compartment syndrome occurs when increased pressure impedes blood flow thereby impairing function of tissues within the lower leg.1 Unlike acute compartment syndrome, CECS is non-emergent. CECS is a reversible form of abnormally increased pressure in the compartment that occurs during exercise/exertion of tissues that are noncompliant with increased muscle volume during exercise.1,2 The exact physiological cause of CECS remains unclear but it is thought to be multi-factorial. Contributors to CECS may include: increased muscle size, connective tissue thickness or stiffness, decreased blood flow, and microtraumatic injuries.3 Factors inherent to the individual may include leg length differences and malalignment of the lower leg. Other factors may include: muscle imbalances or weakness, lack of endurance, decreased flexibility, incorrect movement control patterns, and training intensity or frequency.4 The incidence of CECS in those with chronic exercise-induced leg pain ranges from 14-27%.5 Seventy percent of patients with CECS in the anterior compartment are runners.1,6,7 The condition is nearly evenly split between males and females.7 CECS has been reported in the forearm, thigh, hand and foot however 95% of cases occur in the lower leg.7 Symptoms in both of the legs occur in 85-95% of those affected.8 Those affected with CECS often complain of dull, aching, or cramping pain localized to the compartment affected in the lower extremity at the same duration of time (minutes) following the initiation of each episode of exercise.9 Confirmation of the diagnosis is made with needle compartmental pressure testing at rest and following exercise.5,7,8,9 If rehabilitation is unsuccessful, surgical management may be the treatment choice for CECS in the active population. Specifics of surgical decompression vary, but many include: open fasciotomies or fasciotomies with partial fasciectomies.9 An open fasciotomy typically involves 1-2 large incisions where connective/fascial tissue is cut. A partial fasciectomy describes a procedure in which a portion of the connective tissue/fascia is removed. Surgical treatment can be performed as an outpatient procedure under local anesthesia.10 A carefully planned and implemented rehabilitation program is important for a patient to achieve optimal functional outcomes postoperatively.11

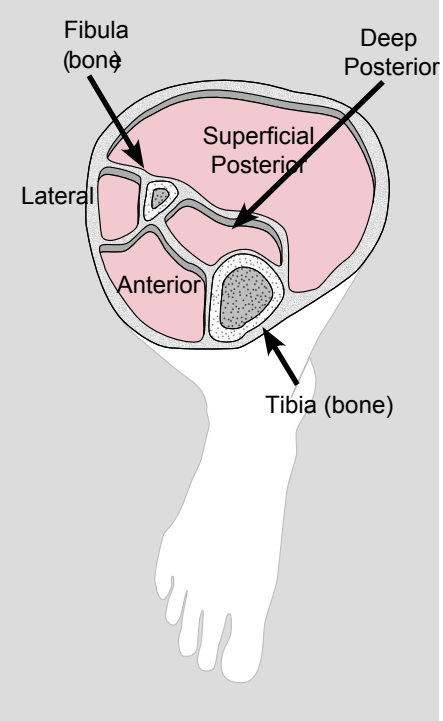


***Figure 1. Lower leg compartments***

# Rehabilitation Guidelines Following Compartment Syndrome Release With Open Fasciotomy

## Phase I (Day 1 to Day 14 after surgery)

| | |
|---|---|
| Goals | ○ Pain Management<br>○ Prevent Swelling |
| Precautions | ○ Crutches and PWB x 2 weeks |
| Range of Motion Exercises | ○ AROM hip and knee<br>○ Wiggle toes, gentle ankle AROM DF/PF as tolerated |
| Therapeutic Exercises | ○ Straight leg raises (SLR) x 4<br>○ Upper body exercises (seated or bench only – no pushups)<br>○ LE stretches – hamstring, quads, ITB, hip flexors |
| Other Suggestions | ○ Ice and elevation |

## Phase II (2 weeks to 4 weeks following surgery)

| | |
|---|---|
| Goals | ○ DF/PF<br>○ AROM WNL |
| Precautions | ○ Progress to WBAT (d/c crutches) |
| Range of Motion Exercises | ○ Continue appropriate previous exercises |
| Therapeutic Exercises | ○ Calf pumping, alphabet, rotations<br>○ Gentle DF stretch w/ towel<br>○ Light Theraband exercises x 4<br>○ Towel crunches and side-to-side<br>○ Seated BAPS • Stationary bike (no resistance)<br>○ Leg press < 25% body weight and pain-free<br>○ Calf press < 25% body weight and pain-free |
| Other Suggestions | ○ Compression stocking if persistent swelling<br>○ Ice as needed |

# Rehabilitation Guidelines Following Compartment Syndrome Release With Open Fasciotomy

## Phase III (4 weeks to 6 weeks following surgery)

| | |
|---|---|
| Goals | ○ 10 single leg hell raises<br>○ Normal walking gait x 1 mile |
| Precautions | ○ WBAT |
| Range of Motion Exercises | ○ Scar massage (if incision well healed)<br>○ Continue appropriate previous exercises |
| Therapeutic Exercises | ○ Steamboats (Theraband x 4 while standing on involved LE)<br>○ Mini-squats, wall squats, total gym<br>○ Double leg heel raises – progress to single leg heel raises<br>○ Double to single leg BAPS , ball toss, and body blade<br>○ Treadmill – walking forwards and backwards<br>○ Elliptical trainer<br>○ Pool therapy – chest or shoulder deep water running (optional) |

## Phase IV (6 weeks to 12 weeks following surgery)

| | |
|---|---|
| Goals | ○ Strength via weight machines 90% of non-involved<br>○ 45 minutes low impact cardio 5/week<br>○ Walk 2 miles at 15min/mile pace with minimum symptoms |
| Range of Motion Exercises | ○ Continue appropriate previous exercises |
| Therapeutic Exercises | ○ Progressive strengthening program<br>o Leg press and hip weight<br>o Knee extension and HS curl weight machine<br>o Fitter, slide board<br>o Push-up progression<br>o Sit-up progression<br>○ Progressive low-impact cardio program<br>o Stairmaster<br>o Pool therapy- unrestricted |

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# Rehabilitation Guidelines Following Compartment Syndrome Release With Open Fasciotomy

## Phase V (12 weeks to 16 weeks following surgery)

| | |
|---|---|
| Goals | ○ Pass APFT at 4 months post-op<br>○ Run 1 mile at 12 min/mile pace with min symptoms at 3 months |
| Range of Motion Exercises | ○ Continue appropriate previous exercises |
| Therapeutic Exercises | ○ Running progression program when following criteria met:<br>o Pain-free 2 mile walk at 15min/mile pace<br>o No post-exercise swelling<br>○ Transition to home/gym program 2x per week<br>○ Agility Drills/ Plyometrics |

# Rehabilitation Guidelines Following Compartment Syndrome Release With Open Fasciotomy

## References


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# Post-Operative Rehabilitation Protocol: Fasciotomy for Chronic Exertional Compartment Syndrome

**Patient Name:** _____ **Date:** _____

**Days 1-14:**

- Crutches and PWB x 2 weeks
- AROM hip and knee
- Wiggle toes, gentle ankle AROM DF/PF as tolerated
- Straight leg raises (SLR) x 4
- Upper body exercises (seated or bench only – no pushups)
- LE stretches – hamstring, quads, ITB, hip flexors
- Ice and elevation

***Goals:***
- Pain management
- Prevent swelling

**Weeks 2-4:**

- Progress to WBAT (d/c crutches)
- Continue appropriate previous exercises
- Calf pumping, alphabet, rotations
- Gentle DF stretch w/ towel
- Light Theraband exercises x 4
- Towel crunches and side-to-side
- Seated BAPS
- Stationary bike (no resistance)
- Leg press < 25% body weight and pain-free
- Calf press < 25% body weight and pain-free
- Ice as needed
- Compression stocking if persistent swelling

***Goals:***
- DF/PF
- AROM WNL

**Weeks 4-6:**

- WBAT
- Continue appropriate previous exercises
- Scar massage (if incision well healed)
- Theraband exercises x 4 – gradually increase resistance
- Steamboats (Theraband x 4 while standing on involved LE)
- Mini-squats, wall squats, total gym
- Double leg heel raises – progress to single leg heel raises
- Double to single leg BAPS , ball toss, and body blade
- Treadmill – walking forwards and backwards
- Elliptical trainer
- Pool therapy – chest or shoulder deep water running (optional)

***Goals:***
- 10 single leg heel raises
- Normal walking gait x 1 mile

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**Weeks 6-12:**

***Goals:***

- Continue appropriate previous exercises
- Progressive strengthening program
  - Leg press and hip weight machine
  - Knee extension and HS curl weight machine
  - Fitter, slide board
  - Push-up progression
  - Sit-up progression
- Progressive low-impact cardio program
  - Treadmill – walking progression program
  - Stairmaster
  - Pool therapy - unrestricted

- 45 min low-impact cardio 5/week
- Strength via weight machines 90% of non-involved
- Walk 2 miles at 15min/mile pace with minimum symptoms

**Weeks 12-16:**

***Goals:***

- Continue appropriate previous exercises
- Running progression program when following criteria met:
  - 3 x 20 heel raises with LE strength 90% of uninvolved
  - Pain-free 2 mile walk at 15min/mile pace
  - No post-exercise swelling
- Agility drills/plyometrics
- Transition to home/gym program 2x per week

- Run 1 mile at 12min/mile pace with min symptoms at 3 months
- Pass APFT at 4 months post-op

**Comments:**

**Signature:** _____ **Date:** _____