Department of Orthopaedic Surgery
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Chronic Exertional Compartment Syndrome Release Protocol

Weight bearing recommendations

- WBAT w/ crutches 0-2 weeks with progression to FWB as tolerated off crutches after that.

Phase 1:

Approximate Timeline	Goals	Precautions	Therex	Modalities	Cardio Exercises Allowed
0-4 weeks	Protection of post-surgical compartment Minimize swelling Restore functional knee and ankle ROM Increase strength of hip Normalize gait	WBAT w/ crutches 0-2 weeks No activity that increases swelling or causes friction on scar	RICE PROM of ankle Quad sets Hip Abduction, extension flexion Ankle pumps for swelling control	Cryotherapy/ Elevation for swelling management Gentle distal to proximal STM for venous return and swelling management.	Upper body only (UBE) 5-10 minutes 1-2x/day Once wounds healed completely and tolerated, can begin gentle stationary bike

Criteria to progress to phase 2

- Normalize gait
- Full hip/knee/ankle ROM
- Fully healed incisions

Phase 2:

Approximate Timeline	**Goals**	**Precautions**	**Therex**	**Modalities**	**Cardio Exercises Allowed**
4-6 weeks	Control swelling, involved limb circumference (measured at proximal/distal incision) within 1 cm of uninvolved limb	Avoid overstressing new scar (limit friction)	Scar massage & desensitization Nerve mobilizations in involved compartment Gentle passive stretching of involved	Cryotherapy as needed for swelling management Elevation	UBE Stationary bike, increase intensity as tolerated

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	Allow time for incision to heal Minimize atrophy Regain proprioception/balance Maintain motion/flexibility Active or low resistance exercises of hip on involved limb	Avoid post exercise swelling No eccentric loading	compartment, gradual progression to independent stretching -Gastroc/soleus -Quad -Hamstrings OKC ankle strengthening -4 way ankle w/ TB -PNF pattern -Foot Intrinsics Balance/proprioceptive exercises (bilateral>unilateral) -balance board -one-leg balance -ball toss Gait Training	Gentle distal to proximal STM for venous return and swelling management.	when wound has healed Leisure pace walking Swimming once wound fully healed Elliptical as tolerated

Criteria to progress to phase 3

- Single leg stance with eyes open for 1 minute
- Full flexibility/mobility of gastroc/ankle
- Functional Double leg squats without compensatory movements or pain.
- Non antalgic gait on level surface, no AD

Phase 3:

Approximate Timeline	**Goals**	**Precautions**	**Therex**	**Modalities**	**Cardio Exercises Allowed**
6-8 weeks post-op	Prevent post-op recurrence Normalize ankle strength (5/5)	Avoid friction over scar tissue/post-activity swelling No strenuous activity until wound healed	Stretching/nerve glides LE CKC -Lunges -Step backs -Squats (DL>SL) -Heel raise (DL>Eccentric >SL) Gait drills	Cryotherapy as needed Elevation for swelling management	Swimming/water walking Increase walking time/speed Elliptical as tolerated 6 weeks – light jogging trial -avoiding hills/speed work

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		No running until 8 weeks post-op	7 weeks- initiate plyometrics -if no swelling can initiate agility ladder gradual progression		

Criteria to progress to phase 4

- Tolerate 15-30 min of continuous aerobic activity w/o the onset of symptoms/pain
- No pain/symptom recurrence with single leg functional movements
- No swelling 12-24 hours after physical activity
- No pain 1-2 hours following physical activity

Phase 4:

Approximate Timeline	**Goals**	**Precautions**	**Therex**	**Modalities**	**Cardio Exercises Allowed**
8-12 weeks post-op	Neuromuscular control with eccentric and concentric multi-plane activities (including impact) for return to sport/work, without pain, instability or swelling Within 90% of pain free plantarflexion and dorsiflexion strength	Avoid post activity swelling/pain	Sport Specific Drills with gradual progression of activity Agility/plyometrics -starting with single plane and progress to change of direction/velocity drills	Cryotherapy for swelling as needed.	Sport specific cardio activities Advance running speed/duration as tolerated

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Cardio Exercises Initiation Recommendation per Lightsey et al.

Machine/Activity	**Recommended week span (avg)**
Stationary Bike (low resistance)	0-4 weeks
Stationary Bike (mod resistance)	4 weeks
Jogging	6 weeks
Stair Climber	4 weeks
Treadmill (walk, jog, run progression)	2-16 weeks
Normal Gait Training	2 weeks
Aquatic Exercises	3 weeks
Elliptical	6 weeks
Swimming	4 weeks
Backwards walking	4 weeks
Backwards Running	12 weeks

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- Initiate toe-raising exercises using the unaffected leg to support injured leg
- Once able to perform toe-raises with the injured leg unsupported, may begin Achilles stretching, strengthening and proprioception exercises

WEEKS 12+:

- Progress balance with dynamic activities
- Initiate retro walking if patient has appropriate dorsiflexion ROM (5-10 degrees active)
- Continue to progress ROM, strength, and proprioception
- Retrain strength, power, and endurance
- Increase dynamic weight-bearing exercise, including plyometric training
- Sport-specific retraining
- Patient required to wear the boot while sleeping for first 6 weeks
- Patients can remove the boot for bathing and dressing, but are required to adhere to the weight bearing restrictions according to the rehabilitation protocol

PHASE 3: RETRAIN (12 TO 24 WEEKS)

GOALS:

- Improve functional mobility with stairs.
- Improve tolerance for ambulation
- Strength to WNL
- ROM to WNL
- Progress to return to prior level of activity/ sport

MONTHS 3-6:

- Progress progressive resistance exercises (PRE) as tolerated with focus on eccentric control with plantar flexion
- Progress closed chain activities
- Progress walking program, may progress to walk/ jog when able to perform minimum 15- 20 single leg toe raises with good control
- Non-athletic patients may be discharged to HEP/ Gym program

DRIVING:

- Right foot-begin at 8 weeks if surgery as long as off narcotics
- Left foot-may drive when off pain meds if automatic transmission vehicle

BIKING/SWIMMING: May begin at 8 weeks post-op

RUNNING/HIGH IMPACT: May begin 4-6 months after surgery

FULL ACTIVITY: Return to sports may begin when you can come up and down on your toes (single heel rise) or hop (single leg hop) on the surgical side. This may take 6 months to a year. There is no guarantee on outcome. All conservative management options have risk of worsening pain, progressive irreversible deformity, and failing to provide substantial pain relief. All surgical management options have risk of infection, skin or bone healing issues, and/or worsening pain. Our promise is that we will not stop working with you until we maximize your return to function, gainful work, and minimize pain.

SHOWERING: You may shower with soap and water 1 day after surgery. Avoid lotions, creams, or antibiotic ointments on surgical site until directed by your orthopaedic surgeon. No baths or submerging operative site under water until incision has completely healed.

SKIN CARE: incisions may become sensitive. Some surgical incisions based on their location and patient factors are more

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likely to require postoperative scar desensitization with physical therapy. You may use Mederma or other skin protectant lotion once incisions have completely healed and approved by your orthopaedic surgeon. Do not placed cortisone or other steroid on your incision unless directed by your orthopaedic surgeon. Incisions and surgical site scars are more prone to burn by ultraviolet radiation when out in the sun. Always apply sun screen onto the healed incision once fully healed.

STOOL SOFTENERS: While on narcotic pain medication (e.g. Norco/hydrocodone or Percocet/oxycodone) especially within first 72 hours of surgery, you should take stool softener (e.g. Miralax, docusate, senna). Discontinue if you develop loose stool or diarrhea.

REFERENCES:

1. Westin et al. Acute Ultrasonographic Investigation to Predict Rerupture and Outcomes in Patients with an Achilles Tendon Rupture. OJSM 2016

2. Lantto et al. A Prospective Randomized Trial Comparing Surgical and Nonsurgical Treatments of Acute Achilles Tendon Ruptures. AJSM 2016