

Achilles Tendon Repair

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GENERAL PRINCIPLES

This protocol for Achilles tendon repair is designed to provide the rehabilitation professional with a general guideline for patient care with the AlterG Anti-Gravity Treadmill. As such, it should be stressed that this is only a protocol and should not be a substitute for professional clinical decision-making regarding a patient's progression. Progression should be individualized based upon each patient's specific needs, pain level, physical examination, functional progress, and presence of any complications.

PRECAUTIONS AND CONTRAINDICATIONS

- Signs of infection, including increased redness, swelling, pain and temperature
- Neurovascular complications, including DVT
- Increased swelling, redness, pain
- Positive Homans' sign
- Re-rupture
- Excessive laxity in the Achilles tendon and/or excessive dorsiflexion
- No running or jumping until four months post-op

PHASE I (IMMEDIATE)

Week 3 post-op - Week 8 post-op

Self care management if approved by physician

Goals:

- Out of boot when pain free, usually at 8-10 weeks post-op
- No pain at rest
- Dorsiflexion to neutral

Treatment Options:

- In boot at all times except during exercise

Modalities:

- Rest
- Ice
- Compression
- Elevation

Manual Therapy:

- May begin self scar mobilization at 5-6 weeks if approved by primary physician and incision has fully healed

Therapeutic Exercise:

- AROM only – plantarflexion, inversion, eversion
- NWB and with towel
- Stationary bike with no resistance, in boot, if approved by primary physician may begin as early as week 1

PHASE II (EARLY POST-OPERATIVE PHASE)

Week 9 post-op - Week 11 post-op

Initiate outpatient Physical Therapy

PHASE II (EARLY POST-OPERATIVE PHASE) (cont.)

Goals:

- Ankle ROM: dorsiflexion: 10 degrees, plantarflexion: 45 degrees, inversion: 30 degrees, eversion: 15 degrees
- Ankle dorsiflexion and plantar flexion strength to manual muscle testing (MMT): 4/5
- Minimal swelling in foot and ankle
- Full weight bearing in athletic shoes
- Normal gait in the [AlterG Anti-Gravity Treadmill](#)

Treatment Options:

Modalities:

- Ice, elevation and compression
- Pulsed to continuous ultrasound as needed for scar tissue and adhesions
- Electrical stimulation as needed for pain and swelling

Manual Therapy:

- Soft tissue mobilization to decrease edema
- Cross friction massage to scar
- Soft tissue mobilization techniques to plantar fascia and flexor hallucis longus
- Great toe stretching
- Ankle mobilization to subtalar joint and talocrural joint

Therapeutic Exercise:

- Stationary Bike
- Ankle theraband/tubing exercises for dorsiflexion, plantarflexion, inversion and eversion
- Towel curls and towel sweeps – non-weighted initially and progress to weighted as tolerated
- Gentle towel stretch to calf in long sitting
- Single leg balance, static
- Standing bilateral heel raise
- BAPS board seated
- Hip and knee strengthening in open chain and on the leg press
- NOTE: Any closed-kinetic chain therapeutic exercises can be performed in the [AlterG Anti-Gravity Treadmill](#) to decr. pain and decr. difficulty. Starting body weight will allow for painfree performance of the exercise with normal mechanics.

Gait Training:

[AlterG Anti-Gravity Treadmill](#)

- Double leg calf raises at 30-50% body weight
- Single leg calf raises at 30% body weight if able
 - Starting body weight should allow for:
 - Painfree movement
 - Normal gait pattern
 - Full heel height with calf raises (both single and double)
- Gait training/ambulation at 30-50% body weight for 10-15 minutes
 - Increase body weight as tolerated using the guidelines above

PHASE III (INTERMEDIATE PHASE)

Week 12 post-op - Week 14 post-op

Goals:

- Ankle ROM: dorsiflexion: 15 degrees, plantarflexion: equal to non-operative side
- Minimal to no effusion
- Manual muscle testing for ankle dorsiflexion and plantar flexion: 4+/5
- Normal gait pattern at 100% weight bearing

Treatment Options:

Modalities:

- Cryotherapy, ultrasound and electrical stimulation as needed

Manual Therapy:

- Soft tissue mobilization as needed from phase II
- Manual resistance to ankle through range, straight planes and diagonals
- Joint mobilizations as needed for subtalar joint and talocrural joint

Therapeutic Exercise:

- Continue to progress exercises in Phase II as tolerated
- Progress to a standing calf stretch
- Progress balance/proprioception exercises to more dynamic activities and use of unstable surfaces, i.e. foam pads, BOSU
- Continue to progress gluteus, hip and knee strengthening
 - Use Swiss ball
 - Side stepping exercises with elastic tubing
- Calf raises on leg press
- Standing single leg heel raises
- May begin outdoor cycling at 3 months post-op
- NOTE: Any closed-kinetic chain therapeutic exercises can be performed in the [AlterG Anti-Gravity Treadmill](#) to decr. pain and decr. difficulty. Starting body weight will allow for painfree performance of the exercise with normal mechanics

Gait Training:

- [AlterG Anti-Gravity Treadmill](#)
 - Double leg calf raises at 50-85% body weight
 - Single leg calf raises at 50-85% body weight
 - Progress AlterG body weight by 1-5% at each visit as tolerated maintaining guidelines
 - Painfree movement
 - Normal gait pattern
 - Full heel height with calf raises
 - Gait training/ambulation at 50-85% body weight 15-20 min

PHASE IV (ADVANCED PHASE)

Week 15 post-op - Week 16+ post-op

Goals:

- Normal ankle ROM
- Ankle strength to manual muscle testing (MMT): 5/5
- No swelling in foot and ankle
- Able to run in AlterG at 85% body weight painfree with a normal gait pattern

Treatment Options:

Modalities:

- Ice as needed post exercise

Manual Therapy:

- Continue with phase III manual therapy as needed

Therapeutic Exercise:

- Progress to functional exercises
 - Step downs
 - Lunges
 - Eccentrics
 - Walk/jog progression outdoors once able to jog in [AlterG Anti-Gravity Treadmill](#) at 85% body weight
 - Hopping, jumping, plyometrics after 16 weeks post-op
 - NOTE: Any closed-kinetic chain therapeutic exercises can be performed in the [AlterG Anti-Gravity Treadmill](#) to decr. pain and decr. difficulty. Starting body weight will allow for painfree performance of the exercise with normal mechanics.

Gait Training:

- [AlterG Anti-Gravity Treadmill](#)
 - Single leg calf raises at 75-85 or 90% body weight
 - Begin a walk/jog progression at 75% body weight and progress to 85-90%
 - Start with 2 minutes of walking, 30-60 seconds of running for 10 minutes total
 - Decrease walking time by 15-30 seconds and increase running time by 15-30 seconds as tolerated by patient at 75%
 - Once able to run at 75% body weight for 10-15 min, start increasing body weight only to 85-90% then increase speed at given body weight
 - In summary, work on speed and running time, before increasing body weight (according to above parameters).
- Full body weight running on treadmill or soft surfaces outdoors for 10 min and progress as tolerated

AlterG Progression Table

Week	Program	Speed	Incline	Time	Sets/Reps
Weeks 9-11	Bilat Calf Raises (30-50% BW)	0 mph	0 %		3 Sets
	Unilat Calf Raises (30-50% BW)	0 mph	0 %		3 Sets
Weeks 12-14	Walking (30-50% BW)	1.5 – 2.5 mph	0%	10-15 min	
	Bilat Calf Raises (50-85% BW)	0 mph	0 %		3 Sets
	Unilat Calf Raises (40-70% BW)	0 mph	0 %		3 Sets
Weeks 15-16	Walking (50-75% BW)	2.0 - 3.0 mph	0%	15-20 min	
	Unilat Calf Raises (75-90% BW)	0 mph	0%		3 Sets
	Walking (75-90% BW)	2.5 – 3.5 mph	0 %	20-30 min	
	Walk/Jog (75-90% BW)	3.5-4.0 mph/ 5.0-6.0 mph	0%	10 min	2 min walk/ 0.5-1 min jog

Walk/Jog Progression

- Decrease walk time by 15-30 sec and incr. jog time as tolerated.
- Once running is tolerated for 10-15 min at 75% BW, incr. weight to 85-90% BW.
- Once 10-15 min at 85-90% is tolerated, incr. running speed to desired level.
- If patient is able to run at 85% BW painfree and with normal mechanics, may be ready for returning to overground running.