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**Who:** 31-year-old male triathlete/marathoner s/p Lateral Ankle Reconstruction.

**What:** Post-operative application of the AlterG Anti-Gravity Treadmill™ for Right Anterior Talofibular and Calcaneofibular Reconstruction, Peroneus Longus Repair, and Anterior Talocrural Joint Debridement.

**Why:** The AlterG Anti-Gravity Treadmill was integrated as an adjunct to run training to increase total training volume and speed training volume during patient's return to racing conditions.

### Introduction

A 31 y/o male endurance athlete (triathlete/ marathoner) was treated post-operatively for right ATF and CF reconstruction, peroneus longus repair, anterior TCJ debridement and removal of a loose body in the medial gutter.

### Goals

- Following surgical correction, incorporate de-weighting into rehabilitation protocol
- Develop a progressive return to activity
- Maintain fitness and function during rehabilitation

### History

#### Plan and Considerations

- Immobilized 3 weeks
- Three weeks post operatively the patient initiated a walking program on the AlterG Anti-Gravity Treadmill at 60% body weight (BW), 1.5 mph, and no incline.
- The protocol criteria included: lower extremity loading, a consistent heel strike, loading phase, and toe off bilaterally without lateral shifting or premature termination of any one phase.
- Additionally the patient was required to have a pain scale of 2 or less (scale of 0-10) with no reported Sx.
- Program duration was for 10 weeks

### Progression

Week (post-op)	Program on AlterG Anti-Gravity Treadmill	Speed	Time	Frequency
<i>Four (4)</i>	Initiated Walking @ 60% BW	1.5 mph	15 min	3x / week
<i>Five (5)</i>	Walking @ 60% BW + 5% increments upon verification of intact gait, symmetrical, pain below 2/10	2.5 - 3.0 mph	15 min	3x / week
<i>Six (6) - Early</i>	Walking @ 90% BW	3.0 mph	20 min	3x / week
<i>Six (6) - Late</i>	Running @ 70% BW	4.5 mph	20 min	7 3x / week
<i>Seven (7)</i>	Running @ 90% BW with interval training	6.0 mph / 8.0mph	30 min	7
<i>Eight (8)</i>	Running @ 100% BW	n/a	15 min	10

## Results

For the first week (4 weeks post-op) frequency and duration were: 3 days per week for 15 minutes.

The second week (5 weeks post-op) training volume, and speed were increased to 20 minutes and 2.5-3.0 mph; frequency was again 3/week. Upon verification that all phases of gait were intact, symmetrical and reported pain was below 2/10, the BW was increased in increments of 5%.

Beginning the third week (6 weeks post-op), the patient was ambulating at 3.0 mph, and 90% BW for 20 minutes. The patient was reduced to 70% BW and speed was advanced to 4.5 mph to initiate running gait. To achieve running, BW was reduced to 70% and he was allowed to run at this pace for 20 minutes without reports of increased Sx. The patient successfully achieved and maintained a normal running gait at this level and was advanced to 90% BW for the 3rd training session of the week. His Sx did not increase and pain was less than 2/10.

Throughout the fourth training week (7 week post-op), the patient was allowed to modify his speed and increase his exertion as tolerated.

The patient increased speed to 6.0 mph at 90% BW and completed intervals with 2 minute bouts at 8.0 mph and 70% BW in an effort to increase motor unit recruitment and foot turnover rate. At this point he trained specific aspects of gait and form to achieve a more efficient and powerful foot strike. He was able to tolerate interval training for 20-30 minute without increases in pain or any observable changes in gait patterns. The interval training protocol was completed three times without any adverse issues.

By the fifth training week (8 weeks post operatively), the patient was now running at full weight independently, without any assistance, reports of pain, or deviations in his gait. His cardiovascular and muscular endurance allowed him to run 30 minutes without issues. The AlterG, Anti-Gravity Treadmill was integrated as an adjunct into his run training in order to increase total training volume and speed training volume during his return to racing.

Four months postoperatively the patient is injury free and training and racing competitively.