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Who: 31-year-old male triathlete/marathon runner 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-year-old male endurance athlete (triathlete/marathon runner) 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

- Immobilised 3 weeks.
- Three weeks post-operatively, the patient initiated a walking program on the AlterG Anti-Gravity Treadmill at 60% body weight, 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 symptoms.
- Program duration was for 10 weeks.

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 times per week. Upon verification that all phases of gait were intact, symmetrical and reported pain was below 2/10, the body weight was increased in increments of 5%.

Week (post-op)	Program	Speed (mph)	Time (mins.)	Frequency
4	Initiated Walking @ 60% body weight	1.5	15	3 times per week
5	Walking @ 60% body weight + 5% increments upon verification of intact gait, symmetrical, pain below 2/10	2.5 - 3.0	15	3 times per week
6 (early)	Walking @ 90% body weight	3.0	20	3 times per week
6 (late)	Running @ 70% body weight	4.5	20	3 times per week
7	Running @ 90% body weight with interval training	6.0 - 8.0	30	Daily
8	Running @ 100% body weight	N/A	15	Daily



AlterG Case Study

Beginning the third week (6 weeks post-op), the patient was ambulating at 3.0 mph, and 90% body weight for 20 minutes. The patient was reduced to 70% body weight and speed was advanced to 4.5 mph to initiate running gait. To achieve running, body weight was reduced to 70% and he was allowed to run at this pace for 20 minutes without reports of increased symptoms. The patient successfully achieved and maintained a normal running gait at this level and was advanced to 90% body weight for the 3rd training session of the week. His symptoms 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% body weight and completed intervals with 2 minute bouts at 8.0 mph and 70% body weight 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.

