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**Who:** 19-year old NCAA Div I college field athlete with 1-2 year h/o B hip pain s/p B hip arthroscopy and labral repair.

**What:** 4-weeks post-op the AlterG Anti-Gravity Treadmill™ was introduced to supplement cardiovascular training and to prepare the athlete for overground running and sport specific exercise.

**Why:** The AlterG was better tolerated by this patient than biking or elliptical trainer, both of which produced occasional hip flexor pain. Pt. contd. to use AlterG as an alternative to conditioning in order to decrease total stress to the hip joint.

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## Introduction

19-year-old female college field athlete with a 1-2 year history of bilateral hip pain, not resolved with conservative treatment. Left hip arthroscopy approximately 6 weeks after right hip arthroscopy, each with labral repair.

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## Goals

- Progressive strengthening of lower extremity musculature, especially hip joints
- Normal, pain-free hip range of motion
- Strengthen core and pelvic stabilizers
- Improve tolerance for loading to prepare for jogging on ground
- Develop cardiovascular endurance to prepare for return to sport progression

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## History

### Plan

- History of osteitis pubis and bilateral hip flexor tendinitis
- Unable to play sport at desired level with conservative care
- Diagnosed with bilateral hip FAI, including bilateral labral tear, and scheduled consecutive arthroscopies with goal of return to sport in 1 year
- Rehabilitation after right hip arthroscopy focused on leg strength, core strength, and normalizing gait to prepare for left hip arthroscopy
- Rehabilitation after left hip arthroscopy focused on range of motion, strengthening both legs, normalizing gait pattern, and strengthening core

- Patient had complaints of hip flexor tendon pain during progression, resolved with rest and core strengthening
- Post-op protocol to allow for ground running around 4 months and AlterG running at 50% body weight at 4 weeks.
- Patient returned to pre-season sport competition at 9 months post left hip arthroscopy

### Considerations

Pain and latent soreness were considered when progressing running on the AlterG. Monitor and avoid hip flexor and piriformis tendinitis. Body weight and duration were the primary variables manipulated at each workout, while speed and incline were maintained at a constant level. See table on back for progression.

# AlterG Case Study

Progression Table 1 (weeks are post-op)

Postop Week #	Monday	Tuesday	Wednesday	Thursday	Friday
4	40% body weight (BW), 4% incline, 3 sets of (1min jog and 1min walk)	Non-impact cross training	Non-impact cross training	40% BW, 3% incline, 4 sets of (2min jog and 1min walk)	Non-impact cross training
5	50% BW, 3% incline, 5 sets of (2min jog and 1min walk)	Non-impact cross training	50% BW, 3% incline, 3 sets of (5min jog and 1min walk)	Non-impact cross training	50% BW, 3% incline, 10min jog, 2min walk, 5min jog
6	50% BW, 3% incline, 15min jog	Non-impact cross training	50% BW, 3% incline, 17min jog	Non-impact cross training	50% BW, 3% incline, 17min jog
7	50% BW, 3% incline, 20min jog	Non-impact cross training	50% BW 3% incline, 17min jog	Non-impact cross training	55% BW, 3% incline, 20min jog
8	60% BW, 3% incline, 10min jog, 1min walk, 10min jog	Non-impact cross training	60% BW, 3% incline, 20min jog	Non-impact cross training	65% BW, 3% incline, 20min jog
9	65% BW, 3% incline, 20min	Non-impact cross training.	65% BW for 10min jog, 70% BW for 10min jog; 3% incline	Non-impact cross training	65% BW for 10min jog, 70% BW for 10min jog; 3% incline
10	Non-impact cross training.	Non-impact cross training.	Non-impact cross training.	Non-impact cross training	Non-impact cross training.
11	60% BW x3min jog, 50% BW 2 sets of (5min jog and 1min walk); 3% incline	Non-impact cross training	60% BW 2x (3min jog and 1 min walk), 50% BW x3min jog; 3% incline	Non-impact cross training	60% BW 2x (3min jog and 1 min walk), 65%BWx 3min jog; 3% incline
12	65% BW, 3% incline, 3 sets of (5min jog and 1min walk)	Non-impact cross training	70% BW, 3% incline, 3 sets of (5min jog and 1min walk)	Non-impact cross training	75% body weight, 3% incline, 10min jog, 1min walk, 5min jog
13	75% BW 2 sets of (5min jog and 1min walk), 80% BW x5min jog	Non-impact cross training	80% BW x5min jog, 85% BW 2x (5min jog and 1min walk)	Non-impact cross training	85% BW, 3 sets of (5min jog and 1 min walk)
14	85% BW, 10min jog, 1min walk, 5min jog	Non-impact cross training	90% BW, 10min jog, 1min walk, 5min jog	Non-impact cross training	90% BW, 15min jog
15	95% BW, 15min jog	Non-impact cross training	95% BW, 20min jog	Non-impact cross training	Ground Running; 3x (5min jog and 1 min walk)

## Results

The patient was seen in physical therapy 3x/week except for holidays or during final examinations. She had some anterior hip pain with the initial stages of rehabilitation due to hip flexor tendon weakness and irritation. This was resolved with resting the hip flexor and then resuming a gradual strengthening program. Initial rehabilitation focused on range of motion (especially extension and FABER) and gait training, while later stages focused on higher level strengthening and single leg stance stability. The AlterG was introduced early in rehabilitation (week 4) as a way to supplement cardiovascular training and to prepare the athlete for overground running and sport-specific exercise. Body weight and duration were the primary variables manipulated throughout

the progression. A slight incline of 3-4% was used while at lower body weights in order to reduce the sensation of running “on your toes.” The running progression was slowed around weeks 7-8 due to a mild flare up of “groin pain,” which was resolved with NSAID’s and relative rest. The AlterG was better tolerated by this patient than biking or elliptical training due to occasional hip flexor pain with the latter activities. When she progressed to ground running and was cleared for cutting activities, a progression of agility skills was created and followed. The patient was able to return to sport competition the following season. She continued to use to AlterG as an alternative to conditioning in order to decrease total stress to the hip joint.