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**Who:** 39-year-old male with history of chronic B hip dysplasia and progressive OA, elected to undergo B hip resurfacing.

**What:** 2 weeks post-op a walking program was initiated on the AlterG Anti-Gravity Treadmill™.

**Why:** Body weight support was used to help normalize gait mechanics and wean patient from B axillary crutches. There was carryover in gait mechanics learned in the AlterG to overground situations.

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## Introduction

The patient is a 39 year-old male with a life long history of bilateral hip dysplasia with progressive OA bilateral hips. The patient underwent elective bilateral hip resurfacing utilizing a posterior approach. Prior to surgery the patient was unable to walk greater than 200 yards without significant increase in pain. The patient is active in walking, biking, swimming, and surfing.

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## Goals

- Restore normal gait mechanics
  - Restore normal mechanics with ascending/descending stairs
  - Increase hip/core strengthening and hip ROM with respect to post-operative precautions
  - Return to previous level of exercise including walking, biking, swimming, and surfing
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## History

### Plan

- The patient has a life long history of bilateral hip dysplasia, which resulted in OA of bilateral hips
- After multiple surgical consultations, the patient decided to undergo elective bilateral hip resurfacing utilizing a posterior approach
- X-rays showed significant arthritic and degenerative changes in bilateral hips
- Patient spent two days in inpatient care following the surgery. In acute care he was seen three times daily for 10-15 minutes by a physical therapist with focus on gait and stair training with bilateral axillary crutches. Patient self-administered anticoagulation therapy via injection for 3 weeks post-op. Outpatient physical therapy began six days post-operatively.
- Patient initially had significant soreness at bilateral incisions and bilateral hip flexors
- Patient initially demonstrated an antalgic four-point gait pattern with stiff knees and circumduction of hips. Patient ambulated with decreased stance time, step length, step width, and speed.
- Patient initiated a walking program on the AlterG Anti-Gravity Treadmill at 50% of his body weight at 1.5 mph and no incline 2 weeks post-op
- The rehabilitation protocol included gait training on the AlterG Anti-Gravity Treadmill and level ground, hip/core strengthening, hip ROM and flexibility, aquatic based strength/endurance training, and balance training
- The patient will be progressed with return to sport drills as tolerated

## Considerations

Pain, soreness, and gait deviations were considered when progressing ambulation on the AlterG. Speed, incline, and body weight percentage were increased to patient tolerance.

## Results

The patient was seen 3x a week for 3 weeks, then 2x a week for 6 weeks. Patient will continue therapy 2x a week with AlterG Anti-Gravity Treadmill training until gait mechanics have normalized. During training with the AlterG, a warm up and cool down involving walking in reverse was incorporated secondary to hip flexor tightness and

pain. The AlterG was utilized in the rehabilitation program in order to restore normal gait mechanics and wean patient from bilateral axillary crutches. While in the AlterG, the patient was able to ambulate with normal gait pattern with carry over to level ground ambulation. Speed and body weight percentage were increased over the course of the rehabilitation program to patient tolerance, with respect to gait mechanics. Patient continues to make progress towards functional goals and will continue to increase speed, body weight percentage, and incline on AlterG Anti-Gravity Treadmill as tolerated.

**Progression Table 1 (weeks are post-op)**

Weeks (post op)	Program	Speed(mph)	Incline	Time (min-utes)	Frequency
<i>Week 3</i>	Walking at 50% of BW	1.5 mph		20 minutes	3x/wk
<i>Week 3 (day 3)</i>	Walking at 50-55% of BW	1.5 mph	0%	5 min reverse 20 min forward 5 min reverse	
<i>Week 4</i>	Walking at 60-65% of BW	2.0 mph (reverse) 2.5 mph (forward)	0%	5 min reverse 20 min forward 5 min reverse	3x/wk
<i>Week 4 (Day 3)</i>	Walking at 70% of BW	2.0 mph (reverse) 2.5 mph (forward)	0%	5 min reverse 25 min forward 5 min reverse	
<i>Week 6</i>	Walking at 70% of BW	2.0 mph (reverse) 2.5 mph (forward)	0%	5 min reverse 25 min forward 5 min reverse	1 x/wk
<i>Week 8- 11</i>	Walking at 70% of BW	3 mph	0%	5 min reverse 25 min forward 5 min reverse	2x/wk