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**Who:** 66-year-old female with history of OA in R hip elected to undergo THA with post approach.

**What:** 8 weeks post-op a walking program was initiated on the AlterG Anti-Gravity Treadmill

**Why:** Body weight support was used to restore normal gait mechanics and increase endurance. The AlterG allowed for cardiovascular activity while respecting Total Hip precautions.

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## Introduction

The patient is 66 year-old female with long history of DJD and scoliosis of the lumbar spine with two failed laminectomies at L4 and L5 in 2004 and 2005. Patient also has history of OA in the right hip and underwent an elective right total hip arthroplasty. A posterior approach was used during the procedure. The patient is active and enjoys walking, hiking, swimming, and water aerobics.

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## Goals

- Restore normal gait mechanics
- Restore normal stair ascend/descend mechanics
- Increase hip and core strengthening with respect for THA post-operative ROM precautions
- Return to previous level of walking and swimming program without increased R hip symptoms
- Decrease or eliminate left lower extremity neurological symptoms with activity

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## History

### Plan

- The patient has a long history of severe back pain with left lower extremity radicular symptoms into L4 and L5 dermatomes that are aggravated by increased activity
- After consultation with the orthopedic surgeon the patient decided to undergo a right total hip arthroplasty utilizing a posterior approach. X-rays showed osteoarthritis and degenerative changes in the right hip
- Patient spent 4 days in inpatient care, followed by 3 weeks of home physical therapy, 4 weeks of home occupational therapy, and 2 weeks of in home nursing for anticoagulation therapy via injections to prevent blood clots. Outpatient rehabilitation started at postoperative week 4
- Patient initially had soreness and pain at the posterior lateral incision site on the right hip
- Patient demonstrates altered gait mechanics with decreased stance time, step length, and weight shift to the right
- The patient initiated a walking program on the AlterG Anti-Gravity Treadmill at 50% of her body weight at 1.0 mph and no incline at 8 weeks post-op
- Program was initiated at 8 weeks post-op secondary to pending arrival of AlterG Anti-Gravity Treadmill
- The protocol included gait training on the AlterG Anti-Gravity Treadmill and level ground, hip and core strengthening, and balance training
- Program duration was 13 weeks

# AlterG Case Study

## Considerations

Pain and soreness to right lower extremity, left lower extremity radicular symptoms, 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 2x a week for 6 weeks, then patient was on vacation for 3 1/2 weeks. Physical therapy resumed upon return at 2x a week, then once more prior to discharge.

The patient began with minimal symptoms in right hip, however the limiting factor was left lower extremity radicular symptoms into the L4 and L5 dermatome. During training with the AlterG Anti-Gravity Treadmill, body weight percentage was decreased when radicular symptoms in left LE increased. The AlterG was incorporated at 8 weeks post-op secondary to pending arrival of equipment.

The AlterG was utilized in the rehabilitation

program in order to restore normal gait mechanics and increase endurance. The AlterG allowed for normalizing gait pattern and endurance training, while maintaining postoperative total hip precautions. Speed, overall duration, and duration spent at higher body weight percentages increased over the course of the rehabilitation program. The patient was able to achieve all of her goals and was able to return to water aerobics class, aquatic strength/endurance training.

At discharge, the patient was able to walk 3 blocks with no right hip symptoms and without increased left lower extremity radicular symptoms on level ground with no assistive device. The patient's ambulation was limited to 3 blocks secondary to increased left lower extremity radicular symptoms at greater distances. The patient will be following up with orthopedist and will return to therapy for evaluation for her lower back.

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

Weeks (post op)	Program	Speed(mph)	Incline	Time (minutes)	Frequency
<i>Week 8 (Day 1)</i>	<ul style="list-style-type: none"> <li>Walking at 50% of BW</li> <li>Decreased to 40% BW (secondary to L LE symptoms)</li> </ul>	1mph	0%	<ul style="list-style-type: none"> <li>2min</li> <li>5min Total: 7 min</li> </ul>	2 x/wk
<i>Week 8 (Day 2)</i>	<ul style="list-style-type: none"> <li>Walking at 50% of BW</li> <li>Decreased to 40% of BW</li> <li>Decreased to 30% of BW</li> <li>Decreased to 20% of BW</li> </ul>	1.1mph	0%	<ul style="list-style-type: none"> <li>5min</li> <li>5min</li> <li>1.5 min</li> <li>1min</li> <li>Total: 12.5 min</li> </ul>	
<i>Week 9 (Day 1)</i>	<ul style="list-style-type: none"> <li>Walking at 50% of BW</li> <li>Decreased to 40% of BW</li> <li>Decreased to 30% of BW</li> <li>Decreased to 20% of BW</li> </ul>	<ul style="list-style-type: none"> <li>1.3 mph</li> <li>1.1-1.2 mph</li> <li>1.1 mph</li> <li>1.1 mph</li> </ul>	0%	<ul style="list-style-type: none"> <li>5min</li> <li>5min</li> <li>3min</li> <li>1min Total: 14 min</li> </ul>	2 x/wk
<i>Week 9 (Day 2)</i>	<ul style="list-style-type: none"> <li>Walking at 50% of BW</li> <li>Decreased to 40% of BW</li> <li>Decreased to 35% of BW</li> </ul>	<ul style="list-style-type: none"> <li>1.2 mph</li> <li>1.2 mph</li> <li>.2mph</li> </ul>	<ul style="list-style-type: none"> <li>0</li> <li>0</li> <li>4</li> </ul>	<ul style="list-style-type: none"> <li>5min</li> <li>5min</li> <li>3min</li> <li>1min Total: 14 min</li> </ul>	
<i>Week 13</i>	<ul style="list-style-type: none"> <li>Walking at 50% of BW</li> <li>Decreased to 40% of BW</li> <li>Decreased to 35% of BW</li> </ul>	<ul style="list-style-type: none"> <li>1.3 mph</li> <li>1.3 mph</li> <li>1.0 mph</li> </ul>	0%	<ul style="list-style-type: none"> <li>6.5 min</li> <li>6min</li> <li>2min Total: 14.5min</li> </ul>	2 x/wk