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**Who:** 71-year-old active female with posterolateral meniscus tear L knee, B chondromalacia patellae, and B osteoarthritis.

**What:** Body weight support allowed patient to decrease loads at the tibiofemoral joint and walk without pain. This allowed her to focus on gait mechanics and walking speed, to get back to her prior level of function. At discharge, patient no longer had knee pain and was able to avoid surgical intervention (which the doctor was ready to perform prior to PT with the AlterG).

**Why:** The AlterG Anti-Gravity Treadmill™ helps patients to select proper loads on the lower extremities from Full Body Weight to as little as 20% Body Weight (in as precise as 1% increments). The result is a safe, controlled progression for patients with joint pain to return to Full Weight Bearing activities with decreased symptoms.

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## Introduction

71 year old active female with posterior-lateral meniscal tear left knee, bilateral chondromalacia patella, and bilateral osteoarthritis. She presented with 5/10 pain with daily activities and significant impairments with getting up from low chairs, ascending and descending stairs, squatting for lifting, and descending an incline. Her major form of exercise is hiking and she was unable to hike for the past 6 weeks.

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## Goals

- Initiate walking without joint irritation for weight reduction and cardiovascular fitness
- Improve hip and core strength to improve knee mechanics with steps, squats, and gait
- Get up from low chairs and squat for lifting without knee pain
- Return to hiking as soon as possible

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## History

Patient has had increasing knee pain over the past 2 months and can no longer hike. She hikes for weight control, cardiovascular fitness, and osteoporosis prevention. She is frustrated that she has gained weight lately.

She consulted with her orthopedist who ordered an MRI and has suggested surgery to debride bilateral knees, but has agreed that she can

try physical therapy for strengthening and gait training on the AlterG first.

At the initial evaluation the following problems were noted: Weak quad, hip abductors, and hip extensors; swelling in both knees; poor patellar tracking; hip IR/ADD pattern with descending stairs and squatting; poor control of subtalar joint neutral with gait; tight gastroc-soleus and anterior

hips; weak core; poor balance with single leg stance.

The treatment plan included: patellar mobilization; quad, hip, and core strengthening; lower extremity stretching; proprioceptive training; closed chain functional strengthening; gait training in the AlterG; interferential and ice prn.

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The patient is a Physical Therapy Assistant in a hospital and is on her feet 8 hours a day. She helps to mobilize people out of bed and was considered when progressing ambulation on the AlterG. Speed and time were increased as patient's pain level improved. See table on back for progression.

## Results

The patient was initially seen 2x/week for 6 weeks for PT, and then 1X/week for PT with an additional 1x/week for independent training on the AlterG for the next 6 weeks. The AlterG Anti-Gravity Treadmill was initiated on the first day of therapy for this patient. She was able to walk 30 minutes at 2.3 miles per hour and no incline. The amount of body weight support was based upon the patient's comfort level. The AlterG's unloading technology enabled the patient to comfortably walk for fitness at partial body weight as she could not walk without symptoms with full body weight. The speed and the incline were increased over the course of her PT as her knee irritability level decreased. In addition to walking in the AlterG, this patient did squats, step downs, and balance drills in the AlterG. She was able to progress her squats and step downs safely with controlled, modified weight-bearing. She was able to work on balance activities as well while walking, such as turning her head and walking with her eyes closed. At discharge, she was able to return to hiking hills for greater than 90 minutes and she no longer had knee pain. No surgical intervention was needed.

### Progression Table

Time (6 week intervals)	Program (% Body Weight )	Speed (mph)	Incline (%)	Time (Min)	Frequency	Other AlterG Activity
<i>Week 1</i>	Walking at 65% BW	2.3	0%	30 mins	2x/wk	
<i>Week 2</i>	Walking at 65% BW	2.5	0%	30 mins	2x/wk	Single leg stance balance
<i>Week 3 - 4</i>	Walking at 65% BW	2.7	3%	30 mins	2x/wk	Head turns and eyes closed
<i>Week 5 - 6</i>	Walking at 65% BW	3.0	5%	30 mins	2x/wk	Squats/step downs 50% BW
<i>Week 7 - 8</i>	Walking at 65% BW	3.2	3 - 7%	30 mins	1x in PT, 1x independent	Squats/step downs 65%
<i>Week 9 - 10</i>	Walking at 65% BW	3.2	5 - 10%	30 mins	1x in PT, 1x independent	Squats/step downs 75%
<i>Week 11</i>	Walking at 65% BW	3.2	10%	30 mins	1x in PT, 1x independent	Squats 85% BW
<i>Week 12</i>	Walking at 65% BW	3.2	10%	40 mins	1x in PT, 1x independent	