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Who: 52 year-old female that was wheelchair bound after slip and fall incident in kitchen. Diagnosed with multiple herniated discs C2-3, C5-6, C6-7.

What: Patient started walking program in the AlterG to decrease pain in lower extremities and lumbar spine, increase independence in exercise and daily activities, and improve posture and gait.

Why: Body weight support enabled patient to start standing and closed-kinetic chain activities at easier levels, progressively increase loads to improve lower extremities strength, cardiovascular endurance and to improve functional status.

Introduction

52 year-old female, wheelchair bound in 2008 due to a work related accident during which she slipped in a kitchen and suffered a series of spinal injuries. Her accident resulted in multiple herniated discs: levels C5-C6 (which have since been fused), and levels C2-C3 and C6-C7. In conjunction with these injuries, the patient also suffered from leaking spinal fluid in levels T1-T6. The fluid build up caused the formation of pocket that created immense pressure on the patient's spinal cord. The patient also presented with nerve compression at levels L4-L5. The patient reported that she experiences constant burning and sharp pains, sensations of tingling and numbness, and fatigue. She states that she has noticed decreased strength, balance, stability, and ability to stand and walk. Symptoms interfere with all activities of daily living.

Goals

- Increase lower extremity strength bilaterally to increase independence with transfers and standing balance.
- Increase endurance to allow for extended bouts of exercise without rest and standing without support.
- Ambulate extended distances with rolling walker for safety without loss of balance.
- Increase independence and ability to perform activities of daily living (ADLs).

History

Week 1 (Session 1-3)

These sessions covered the initial evaluation and plan of rehabilitation for the patient. Electrical stimulation and a 10 step craniosacral program was used to alleviate pain. The patient was also educated on therapeutic home exercises to increase strength and stability. When patient had a comfortable understanding of these exercises, she was progressed to transfer training to and from the wheelchair, as well as sit-to-stand exercises with the wheelchair. Initial focus was getting the patient strong enough to start a walking program with the AlterG Anti-Gravity Treadmill™.

Week 2 (Session 4-6)

Session 4 was patient's first experience on the AlterG. With the assistance of the therapist, the patient was able to stand and be zipped into the machine. Observing that she still had lower extremity weakness, she was reduced to 20% weight bearing (WB). The patient was then started at 0.1 mph and 2% grade incline and was able to complete 5 minutes of continuous walking/gait training. She then had to rest at a standing position in the machine for 4 minutes, totaling 9 minutes in the AlterG. This was the longest bout of exercise she completed in a long time. In subsequent sessions, patient increased to 50% WB at 0.1 mph, and then decreased back down to 35% WB due to fatigue, reaching a total time of 10 minutes in the AlterG with minimal rests in between.

Week 3 (Session 7-9)

Patient continued to show signs of improvement: she insists on trying to get in the AlterG with decreased use of UE, and she now continuously walks and stands for longer periods of time. Her total time in the AlterG increased to 23 minutes (12 minutes of walking and 11 minutes of standing/resting), and her WB% increased



AlterG Case Study

to 50% WB. Patient's attitude seemed to be improving; she reports, "The therapy in the treadmill and the exercises are really helping because I have muscles now."

Week 4 (Session 10-12)

The patient is now able to take fewer and shorter rest breaks during the exercise session. The patient has progressed to walking for a total of 12-13 minutes and only resting for 8 minutes. She is using the VMS for biofeedback to correct her posture and gait.

Week 5 (Session 13-16)

Patient is showing great improvements in her gait, strength, balance, and overall independence. She still requires some assistance into the AlterG, but she is able to walk for a total of 17 minutes and be in the machine for a total time of 27 minutes at 35% WB at 0.1 mph. The patient gladly reports that she no longer experiences extreme cramps or pains in her legs. She also reports she is beginning to use a rolling walker for ambulating and is able to do activities around the house.

Results

This patient benefited greatly from her rehab program incorporating the AlterG, showing signs of decreased pain in the lower extremities and lower back, increased independence in exercise and daily activities, and improved posture and gait.

The AlterG Anti-Gravity Treadmill enables the patient to support their body weight:

- Begin standing and start closed-kinetic chain activities at easier levels.
- Progressively increase loads to improve LE strength and cardiovascular endurance.
- Eliminate extreme cramps and leg pain.
- Improve functional status.

She has now discontinued use of the wheelchair and is able to ambulate with SBA with rolling walker. When contacting the patient after discharge, she was on vacation in Florida walking the beach with her walker and said she is "enjoying the weather".

Session	% Body Weight	Speed (mph)	Final WB%	Walking Time (mins.)	AlterG Time (mins.)
4-5	20	0.1	20	5	9
6	20	0.1	35	5	10
7-9	20	0.1	35	12	23
10-12	20	0.1	35	12	20
13-16	35	0.1	35	17	27

