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Who: 42-year-old runner and college tennis coach s/p 2 brainstem Cerebrovascular accidents (CVA's)

What: Closed kinetic chain exercises and gait training performed in the AlterG Anti-Gravity Treadmill helped carryover to overground situations and functional activities, allowing patient to discontinue use of assistive devices, normalize gait pattern, and return to job as a tennis coach.

Why: Weightbearing exercises caused medial tibiofemoral joint line pain and swelling. Patient was unsuccessful with stationary bike and elliptical trainer. AlterG allowed for more controlled loading progression for returning to Full Weight Bearing.

Introduction

Patient is a 42 y.o. male presenting s/p two brainstem cerebrovascular accidents (CVA). His first CVA occurred on 3/1/13 causing right sided weakness and significant balance deficits. His second CVA occurred on 3/21/13. His second CVA was more significant and he suffered almost complete paralysis on his L side for the 8 days following his CVA. His right side is slightly weaker than it was prior to his first CVA but it does not limit him and his balance greatly improved after his second CVA. He received 4 weeks of inpatient therapy where he was receiving 3 hours of therapy daily including speech, OT, and PT. He was discharged on 4/17/13. Since then he has been receiving PT and OT 3X a week and speech 1X a week. Prior to his CVA he was an avid runner and a college tennis coach.

Goals

In 4 weeks:

- Pt. will ambulate 500 ft with AD with no rest breaks
- Pt. will demo 3/5 strength in L hamstring and 4/5 strength in L hip extor
- Pt. will be able to ambulate on uneven surfaces with AD with no LOB

In 8 weeks:

- Pt. will ambulate 30 minutes without an AD with no rest breaks
- Pt. will demo 4-/5 strength in L hamstring and 4+/5 strength in L hip extor
- Pt. will be able to ambulate on uneven surfaces without an AD with no LOB
- Pt. will be able to stand and hit a tennis ball with no LOB
- Pt. will be able to look around while ambulating with no LOB
- Pt. will score 21/24 on DGI to reduce risk of falling

History

Prior to AlterG Anti-Gravity Treadmill Training:

- Ambulating wearing AFO on L ankle due to weakness in peroneals and using SPC
- Wide BOS with decreased stride length
- Circumduction of L LE during swing phase
- Ambulates 30 feet before requiring rest break of 15 seconds before he can resume ambulating
- Pt. has fallen 3X since returning home from hospital
- Dynamic Gait Index – 11/24
- Initiated used of AlterG Anti-Gravity Treadmill 13 weeks

after second CVA. See progression table for details

- Physical Therapy treatment for this pt. also included gait training, dynamic balance activities, and other therapeutic exercises for B LE's and core

Results

After AlterG Anti-Gravity Treadmill Training:

- Patient is able to ambulate independently without an AD on even and uneven surfaces, continues to wear AFO
- Normal BOS with ambulation and steps are symmetrical
- Minimal circumduction of L LE during swing phase due to increased strength in hip exors and increased hamstring activation
- No limitations with distance patient is able to walk, no longer limited by fatigue
- Patient is now able to step over objects, change direction quickly, and turn head with no LOB or change in gait speed
- Score of Dynamic Gait Index improved from 11/24 to 21/24

The AlterG Anti-Gravity Treadmill Training was an excellent rehabilitation tool for this patient and patient was extremely motivated to progress during each visit. He has benefited greatly from the addition of the AlterG to his rehabilitation program. At discharge he is able to ambulate without an assistive device with a normalized gait pattern. His endurance

is also significantly increased. He showed improvements in his dynamic balance and he has not fallen since initiating treatment and is able to navigate uneven

Progression Table

Days	Initial WBing%	Speed/Time	Incline	Frequency
Week 13	60%, 55%, 55%	2.0 X 10, 10, 5	None	1 x weekly
Week 14	55%,55%,57% 55%,57%,60%	2.0 X 15, 10, 10 2-2.2X 15,10,15	None	1 x weekly
Week 16	57%, 60%, 65% 55-60%, 60-65%, 65-70%	2.0 X 14, 14, 13 2-2.2 X 14, 14, 12	None	1 x weekly
Week 17	45-50%*, 65-70%, 70-75%	1.2-1.5 X 14* 2.0-2.3 X 13, 13	None* 3%	1 x weekly
Week 18	55-58%*, 65-70%, 70-75%	1.0-1.5 X 12* 2.0-2.6 X 13, 15	None* 3%	1 x weekly
Week 20	60-65%*, 68-73%, 73-80%	1.2-1.5 X 12* 2.5-3.0 X 13, 8	None* 3%	1 x weekly

surfaces with no difficulty. He was able to return to his job as a tennis coach and is able to stand and hit a tennis ball with no LOB. In addition, ambulating in the Alter G also allowed him to ambulate without his AFO and still achieve toe clearance and maintain a normal gait pattern. In summary, the addition of the AlterG, combined with conventional physical therapy methods, allowed the patient to improve his endurance, normalize his gait pattern, and improve his balance.