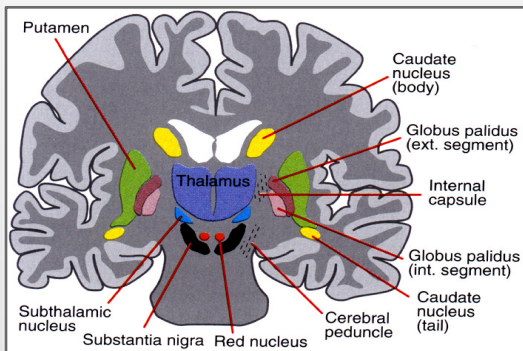


Utilization of Postural Control Training to Improve Gait Symmetry and Walking Ability in a Patient Following a Lacunar Stroke: A Case Report

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Unique

With consideration of the many unique factors contributing to the patient as a whole, physical therapy interventions addressed the patient's own mobility goals to allow him to participate more fully in his environment and have a greater overall quality of life.



<http://www.intechopen.com/source/html/41746/media/image1.jpeg>

Purpose

To outline physical therapy rehabilitation that utilized postural control training, task-oriented training, and visual feedback to improve walking ability and functional capacity in a patient following a lacunar stroke affecting the internal capsule, basal ganglia, and cerebellum.

Foundation

- Alterations in gait is one of the most noted impairments following stroke¹
- Improving walking ability is one of the most common goals amongst patients with stroke undergoing rehabilitation¹
- Current literature describes visual and proprioceptive feedback and task-oriented training as effective in improving gait speed, mechanics, strength, and balance following stroke.^{2,3}
- Based on the research, postural control training may improve walking ability following stroke.⁴



Description

- 67-year-old male
- Apple orchard owner
- Past medical history of atrial fibrillation
- Co-morbidities:
 - Intermittent claudication, chronic left (L) shoulder subluxation, and right (R) shoulder impingement syndrome
- Referred to outpatient PT three months post a lacunar ischemic stroke affecting the posterior limb of the internal capsule, the basal ganglia, and part of the cerebellum
- Hemiparesis of his dominant side L upper and lower extremities
- Resultant activity limitations and participation restrictions
- Physical therapy goals
 - Improve mobility and endurance
 - Increase functional independent with gait
 - Return to work-related activities such as caring for his apple orchard.

Interventions

- Gait Training**
 - Verbal and visual cuing to increase speed, step length, and step width
 - Swing phase facilitation with band wrap
 - Ambulation with decreasing support over increasing distance
- Neuromuscular Re-Education**
 - Break up lower extremity extensor spastic pattern with positioning and active movement
 - Improve weight bearing ability through left upper and lower extremities
- Therapeutic Exercise**
 - Hamstring and hip abduction strengthening to improve gait mechanics and reduce lower extremity extensor spasticity
 - Bilateral shoulder strengthening to prevent further injury
- Patient/Family Education**
 - Proper transfer mechanics
 - Recommendation for right heel lift and left AFO adjustments
 - Home exercise program

Observations

PT interventions primarily focused on improving the patient's functional mobility, ambulation in particular, through postural control training and task-oriented training. After ten outpatient visits, the patient demonstrated improvements in gait and postural symmetry on observation. With continued PT intervention over the next eight visits, the patient's improvements in gait allowed him to safely access his yard and orchards at home, advancing him from a limited household ambulation ability, to an unlimited household ambulation ability.⁵



Figure 1: Use of resistance band as a walking aid to assist with control at the left ankle, knee, and hip
A: active hip extension to initiate the swing phase of gait B: use of tape for visual cue of step width

Conclusion

Following ten visits of outpatient PT, the patient demonstrated improvements in mobility and function. Based on his self-reports, he perceived a greater ability to negotiate stairs and access his tractor to mow his apple orchard. This plan of care may be beneficial when applied to other patients with a similar presentation; however, further investigation is warranted.

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