Functional Strengthening in a Patient with Chronic Stroke and Low Back Pain: A Case Report

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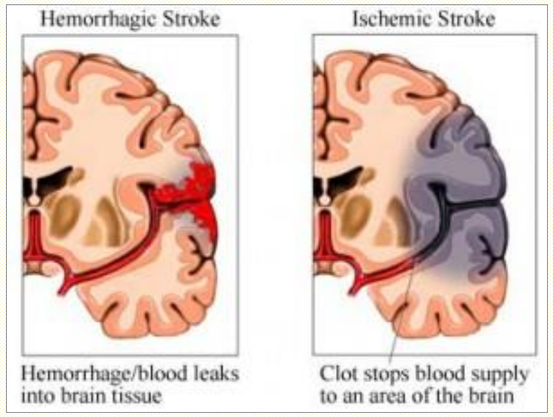
Background and Purpose

Stroke

- In the US, the prevalence of stroke is approximately 795,000 annually and is the fifth most common cause of death.[1]
- Stroke impairments include hemiplegia, sensory loss, dyspraxia, and hemianopsia.[2]
- The chronic phase of stroke is defined as six months and beyond post-stroke.[3]



http://www.ohsu.edu/blogs/brain/2012/11/30/what-is-a-stroke/

Low Back Pain

- Nearly 85% of adults will experience low back pain at some point in their life[4]
- Risk factors for LBP include age, educational status, psychosocial factors, physically demanding occupation, and high body mass index

Purpose

- Low back pain (LBP) adds a confounding variable in recovery of mobility for patients with chronic stroke (CS)
- The purpose of this case report was to create an example of a functional strengthening program for a patient with CS impairments and LBP

Case Description

- 72-year-old male residing in a long-term care facility with CS impairments and LBP
- Complex medical history including a traumatic subdural hematoma with thalamic hemorrhage
- Patient had a recent decline in function leading to a physical therapy (PT) referral
- Impaired cardiopulmonary, musculoskeletal, neuromuscular, and integumentary systems
- Good cognition, high motivation, and strong staff support

Interventions

Gait Training

- High Intensity Interval Training with verbal cues for form

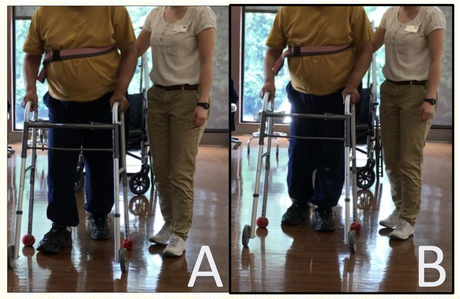


Figure 1. Weight acceptance on the right (A) versus left (B) lower extremity.

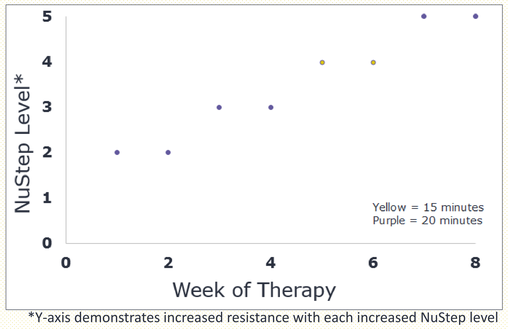
	Session													
	1	2	4	6	8	11	14	16	18	20	21	22	27	33
Distance (Feet)	20[A]	20[A]	20 x 2[A]	20 x 2[A]	30[A]	50[A]	50 x 2[A]	50 x 2[A]	50 x 4[A]	50 x 4[A]	50 x 3[B]	40 x 2[B]	45 x 2[B]	50[C]

A = Limited by General Fatigue **B** = Limited by Low Back Pain **C** = Limited by Right Upper Extremity Pain

*For all gait training patient used a front wheeled walker as his assistive device of choice and had contact guard assistance.

Cardiovascular Endurance

- NuStep (NuStep LLC: Ann Arbor, MI) was used four to five days per week to decrease fatigue during functional transfers and to increase gait distance.



*Y-axis demonstrates increased resistance with each increased NuStep level

Progressive Resistance Exercises

- Performed bilaterally three to four times per week for lower extremity strengthening

Figure 2. Start and end position to complete one repetition for each listed muscle group.

Outcomes

- Outcome measures assessed at week one (initial evaluation) and week 8 (discharge)

Subjective Measures

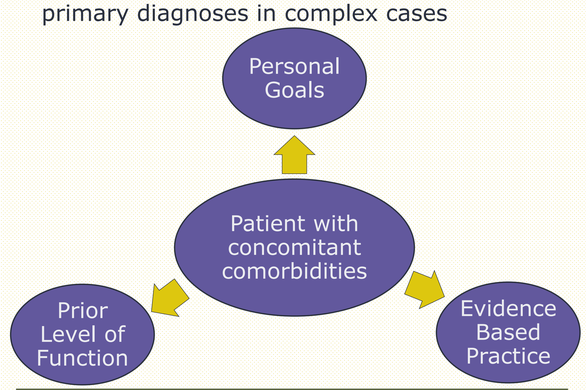
- *Stroke Impact Scale* - overall improved perceived recovery including daily activities, mobility, and hand use
- *Activities Specific Balance Confidence Scale* - improved from 41.88% to 49.38% of self-confidence
- *Oswestry Disability Index* - Improved from 57.8% to 38.0% disability from back pain

Objective Measures

- *Timed Up and Go* - improved from 95.37 seconds to 63.65 seconds
- *Berg Balance Scale* - improved from 40 to 44 points
- *Tinetti Performance Oriented Mobility Assessment* - improved from 16 to 19 points

Conclusion

- A functional strengthening program appears to have been beneficial for patient with multiple comorbidities
- Visit limitations for this patient included fiscal policies and sessions limited to 30 minutes
- In the future, it would be beneficial to consider creating a care map of the best practices or intervention guidelines for primary diagnoses in complex cases



Acknowledgements

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