

An Orthopedic Solution to a Neurological Problem - Core Stabilization Post Stroke: A Case Report

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BACKGROUND PURPOSE

In the United States strokes have been the leading cause for serious long-term disability.¹ Two impairments that are responsible for this trend of long term disability are the loss of standing balance and impaired mobility.² Common interventions used to treat these impairments and limitations usually involve high repetition task-oriented training, balance/proprioceptive training in standing and sitting, gait training, treadmill training, constraint-induced movement therapy, cardiovascular and strength training.^{3,4}

The connection between traditional neurological rehabilitation techniques and core stabilization and their efficacy has been well documented, however, articles on the combination of core stabilization and spinal mobilization techniques with traditional neurological physical therapy interventions is sparse.

The purpose of this case report is to report the outcomes of combining manual therapy techniques for spinal mobility and stability with traditional neurological approaches to stroke rehabilitation

CASE DESCRIPTION

Body Structure/Function

- General Weakness, right lower extremity greater than right upper extremity
- Decreased Endurance
- Limited lower extremity flexibility
- Limited Lumbar spine mobility
- Weakness/decreased ability to recruit core stabilizers

Activity Limitations

- Balance
- Walking up and down stairs
- Walking on uneven/unstable surfaces

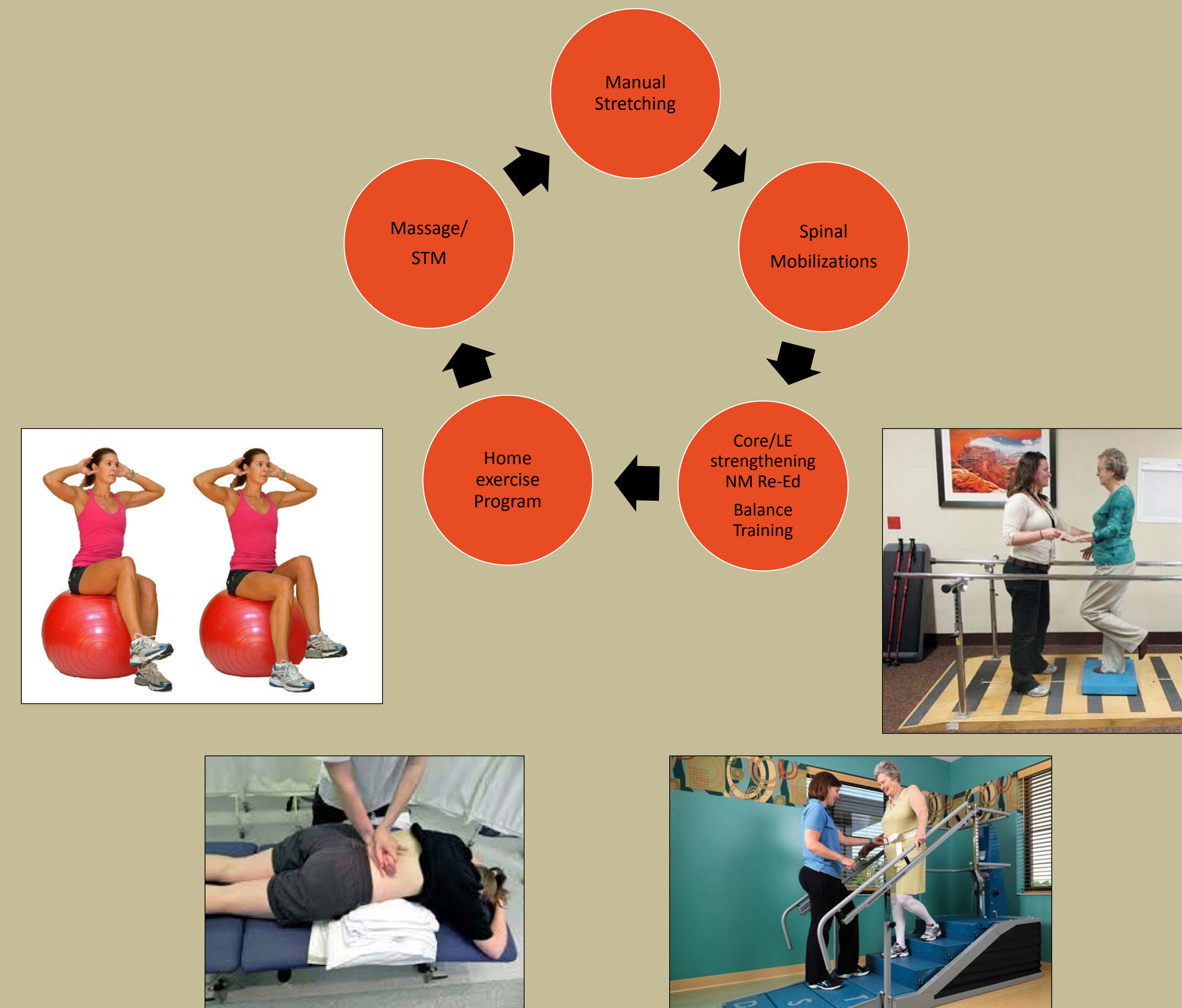
Participation Restrictions

- Fear of falling
- Unable to go shopping with children/walk in crowded settings

Personal Factors

- Supportive family
- High previous level of function
- Stairs into home

METHODS



RESULTS

	Measurements	Initial Evaluation	7 Weeks Discharge
Activity	Berg Balance Scale	35/56	48/56 MDC of 4.9 met5
	Timed Up and Go	19 Seconds	11 Seconds MDC 3.53 sec. met6
Body Structure and Function	Lumbar Intervertebral Mobility	2/6 on PIVM Scale	3/6 on PIVM Scale
	LE muscle length	56 deg. Hamstring Length Bilaterally, + Thomas test	76 deg. Hamstring Length Bilaterally, - Thomas Tests
	Core Strength/ LE Strength	Unable to perform/hold Neutral Spine/Pelvic Tilt 4-/5 MMT RLE	Patient able to hold Neutral Spine for 10-20 seconds 4+/5 MMT RLE

DISCUSSION

- The patient demonstrated improved lower extremity and core strength, endurance, improved lower extremity, low back mobility and flexibility.
- Impairment based improvements may have improved performance of Berg balance scale and Timed Up and Go test.
- Evidence supports increased core strength, spinal mobility and lower extremity strength coincide with improvements in functional standing balance and mobility, which correlate with this patient's' outcomes.

CLINICAL RELEVANCE

These findings illustrate that the combination of traditional orthopedic approaches to traditional neuromuscular approaches could be very helpful when treating a patient post CVA. The findings also illustrate the significance of the relationship of the core musculature and lumbar spine to the lower kinetic chain and how the proper biomechanics of each are dependent on each other.

REFERENCES

