

Supportive Living, Inc.

Benefits of Strength Training for Stroke Survivors

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INTRODUCTION

- Supportive Living, Inc. is a non-profit healthcare organization with a mission to improve the quality of life of people affected by brain injury and other neurological disorders.
- Neuro-Fit Assisted Exercise is an evidence-based exercise class designed for people living with functional limitations caused by a brain injury or other neurological disorder.
- The benefits of Neuro-Fit classes include, but are not limited to, cardiovascular, flexibility, sleep, strength, socialization, weight, memory, and balance.



OBJECTIVES

To research exercises that are beneficial to stroke survivors and implement new exercises based on their personal goals.

RELATED LITERATURE

“Stroke involves the disruption of blood flow to brain tissue, leading to significant functional deterioration, such as paralysis, as well as emotional disturbances, including depression and agitation.” (Su, 2024, p. 346)

“Approximately 40% of patients suffer from functional impairment after stroke onset, and 15–30% experience severe motor, sensory, cognitive, perceptual, and/or language impairments. In particular, more than 85% of patients with stroke experience hemiplegia, which results in impaired upper limb function and decreased motor ability” (Lee et al., 2022, p. 12739)

“Rehabilitation is vital for minimizing sequelae after stroke, and patients who undergo continuous professional and systematic rehabilitation following the acute phase tend to recover rapidly.” (Lee et al., 2022, p. 12739)

“There are two main causes of stroke. An ischemic stroke is caused by a blocked artery in the brain. A hemorrhagic stroke is caused by leaking or bursting of a blood vessel in the brain. Some people may have only a temporary disruption of blood flow to the brain, known as a transient ischemic attack (TIA).” (Mayo Clinic Staff, 2024)

METHODS & TASKS

- Complete research on the benefits of strength training exercises for stroke survivors.
- Compare two participants' winter session exercise plan to the summer session to see progress made.
- Conduct participants' goals for the end of the summer session
- Add 5 new exercises to two of my participants' workout plans based on their goals.
- Interview my participants on how they feel about the new exercises and assess if they feel they have made progress.

Participant 1 goals:

- Strengthen the left side of the body
- Stand without holding anything for 2 minutes
- Build confidence in standing workouts
- Improve balance and posture

Participant 2 (Right Hemiplegia) goals:

- Increase mobility in right arm and leg
- Strengthen the right side of the body as well as core
- Strengthen neck
- Improve posture

RESULTS

Participant 1 (Left side affected): Exercises added to workout plan from 7/8 through 8/16

Tandem Stances	Lateral Steps	Pull Aparts	Step Ups	Hip Marches
3x1 min	1-2 laps w/ yellow band	3x15	3x10 each leg	2x10 holding railing 1x5 no holding
Progress: 7/8: struggled, only able to stand for 5 secs 7/31: stood for 15/30 secs without holding railing	Progress: 7/8: started with 1 lap no band 7/29: 2 laps with yellow band	Progress: 7/8: started with green (x-light) band 7/24: increased to yellow band 7/31: increased to blue band	Progress: 7/8: started with just board 7/15: added one level under board	Progress: 7/8: 3 sets holding on, unable to do without holding 7/31: able to do 2 without holding

Participant 2 (Right side affected): Exercises added to workout plan from 7/8 through 8/16

Shoulder shrugs	Hip marches into leg extension	Pull Aparts	Neck stretch	Sit-ups in wheelchair
3x10 forward and backward	3x10 (focus on moving right leg)	3x10	Left & Right Up & Down	3x12
Progress: 7/8: trouble doing backward shrugs 7/22: improving backwards shrugs	Progress: 7/8: started with no ankle weights, needed help lifting right leg 7/22: added ankle weights, able to lift right leg inch higher	Progress: 7/8: started at x-light band 7/24: increased to light band	Progress: 7/8: started with 3x10 7/29: increased to 3x15	Progress: 7/8: trouble balancing, did 3x10 7/22: used 3lb weight, 3x15 7/31: used 5lb weight, 3x15

CONCLUSIONS

Based on the results from both participants, it can be concluded that the exercises added to the participants' programs can benefit stroke survivors.

- Participant 1 progress: This participant had a hard time when first starting the exercises. Her balance and posture has been a struggle. As she continued doing these exercises, she slowly started improving. For tandem stances, she started off barely being able to stand for 5 seconds without holding on, now she is halfway to 30 seconds. Step ups have been a struggle because she tends to go fast and not watch her posture, causing her to drag her feet and nearly fall backwards. Constantly reminding her to take big steps on and off the board has helped her progress tremendously.
- Participant 2 progress: This participant started light and easy with all new exercises. She rapidly started challenging herself to see the progress she hoped for. One of her main goals is to strengthen her core, and she has progressed the most during her sit-ups in her wheelchair. She started having trouble balancing and using no weights, now she is up to 5lbs.

III. Participant interviews:

- Participant 1:

“These exercises have been a bit hard, but I like them.”

“I'd say my balance has improved a little since starting these new exercises and I have gotten better at picking my feet up during step ups.”

“These exercises will definitely help me achieve my goals, especially balance and posture.”

- Participant 2:

“I feel challenged in a good way with these exercises.

“Even if the numbers of reps or the amount of weight has only increased a little, it's a lot of progress to me.”

“I believe these exercises will help me reach my goals, I already feel one step closer to achieving each one.”

REFERENCES

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