

# Case Study

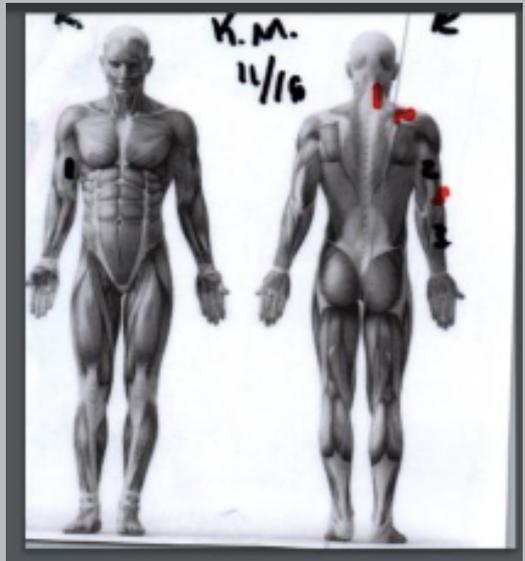
Post Stroke: A Case Report

## PERFORMED AT:

*Performance PT and Wellness*

## DIAGNOSIS:

The patient was a 76 year old male who presented to physical therapy in September 2020 s/p multiple ischemic strokes with the first in September 2008 involving the left internal capsule and thalamus. His initial impairments included R facial droop and generalized weakness.



## TREATMENT AND OUTCOME:

Our initial approach for treatment included using the Neubie to map the patient's R arm for hotspots at 500hz as the patient's main goal was to gain more function of his arm vs. his leg. After finding multiple hotspots, we started with the loosening protocol with therapist assisted movements of his RUE including movements in closed kinetic chain positions to improve proprioceptive input and facilitate motor control. We also completed a hand bath from the distal humerus through the hand at 500hz. In subsequent treatments, we progressed to re-mapping very 3-4 visits, completing fine motor tasks with the Neubie running at 500hz and utilized the strengthening settings at 100hz and 55hz for rhomboids, lower trapezius and other scapular stabilizers as patient did present with a mild to moderate subluxation of R shoulder. In addition, we utilized the already established hotspots on the patient's R arm and following the loosening protocol at 500hz, we completed strengthening at 55hz with the pads in the same spots to the level of fatigue.

We also used the Neubie for his R LE in a similar fashion as we were able to map for hotspots and complete loosening (500hz) and strengthening (100/55hz) while completing functional activities and tasks to simulate ADLs at home (see below). To note, we also completed mapping for "de-sensitized" areas of the RUE and LE and completed loosening at 500hz with generalized movements and exercises for improved neural communication. We also completed the master reset for a few treatment sessions, especially when the patient was very fatigued. Initially we did recommend an AFO for foot drop which the patient used but was not shy in telling us he did not like it and decided to discontinue use after 2-3 weeks.

Some of the movements and exercises we completed with use of the Neubie included: PT assisted and cane assisted ROM of R shoulder for flexion, abduction, IR/ER, elbow and wrist ROM in all directions, sit to stands with use of arms to push up from high table with progression to chair as pt's strength improved, walking with a FWW and then progression to use of SPC in the clinic, UE/LE stationary biking, stairs with use of handrail both with LUE and RUE (patient started with mod-maxA and progressed to SBA), fine motor tasks with marbles, clothespins, putty for grip strength, etc. As the patient progressed through his rehabilitation, he required less and less assist from the therapist for all activities and was even more verbal with his speech during his sessions.

Patient is still a patient at this time so we do not yet know the full extent of his recovery and/or any other treatments from neurologist but he has already made great progress and he has had less than 10 visits.

At the time of discharge, the patient was able to walk in his home without an AD for short distances and was using his SPC for community distances when out with his wife. He was able to complete the stairs into his home from the garage without physical assistance from his wife. He was also completing his upper and lower body dressing independently and was able to get in/out of bed, the car, and his recliner chair on his own. He still had some unsteadiness with gait and balance on uneven surfaces but no falls. However, he was most excited that he could cut his own meat and feed himself with utensils/drink a glass of water independently with his RUE. He and his wife were more comfortable going out to restaurants for meals together.

This case was very unique because it had been 12 years since the patient's first stroke and 2 years since his most recent stroke which had caused the most functional impairments with regards to his mobility, strength, and speech.

The patient was almost completely dependent on his wife as his caregiver and although he had completed PT after his strokes in the past, he was very frustrated that he had not made the progress he had expected. With the use of the Neubie and 7.5 months of dedicated physical therapy from September 2020 to May 2021 (2 times/week for 1 hour each session), we were able to substantially increase his function to meet many of his goals for ADLs and mobility. In the end, both the patient and his wife were happier and felt that they had a better relationship as he was not as dependent on her. The main take-away from this case is that with the use of technology like the Neubie, neuroplasticity can be changed/altered likely long after we suspect that changes can be made.

## **DISCUSSION:**

The strengths of this case report are the progress made by the patient with use of the Neubie for 100% of the patient's therapy sessions. The Neubie was utilized for the entirety of every 60 minute session and patient showed definite gains in RUE/LE ROM and strength as well as reported function both at home and when tested in the clinic. Compared to traditional therapy, we were able to tap in to the nervous system more directly and gain faster results, especially since it had been 2 years since the patient's most recent stroke.

In the future, I would use a similar treatment plan but I would also try to add in FSM to the treatment plan. A challenge of this case was the patient's ability to complete an HEP at home due to cognitive impairments (though wife did try to assist pt at home with exercises). The pt also lived 30 minutes away and with Medicare as primary insurance coverage, he hit his financial cap relatively quickly.

## **PATIENT PERSPECTIVE:**

Patient is no longer being treated but upon a follow-up call with the patient and wife, wife reports that he is more independent at home and is doing much better with ADLs on his own with assistance only as needed. He has also been able to drive a short distance to go to play cards.