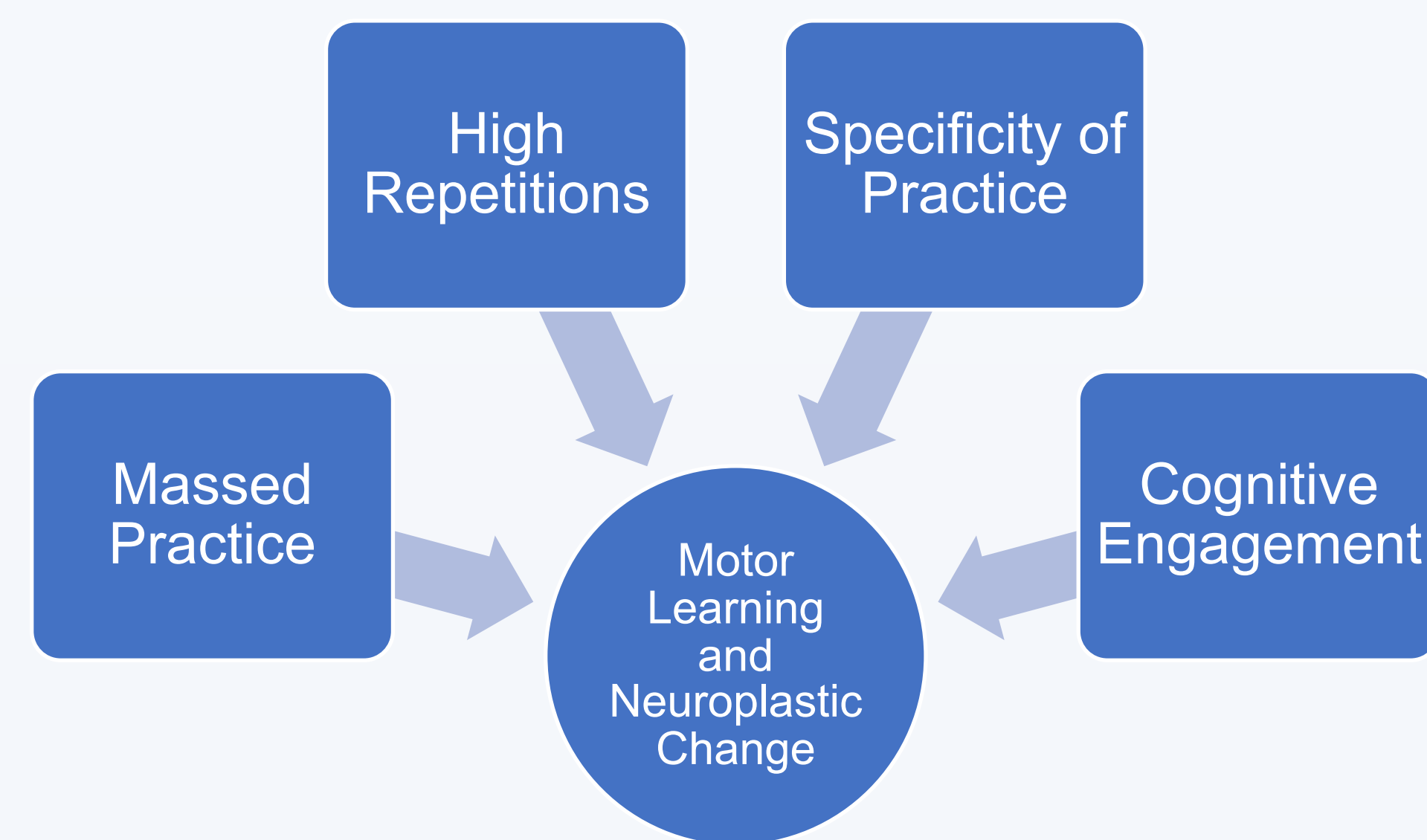


## BACKGROUND

- Pediatric stroke can occur in the prenatal period, immediately post-natal and throughout childhood.
- Approximately 60% of children who experience a stroke have neurological deficits, such as hemiparesis.
- Hemiparesis can contribute to decreased independence in occupational engagement and increased caregiver burden across the lifespan.
- Best practice for this population is rooted in principles of neuromuscular re-education and motor learning theories.



## OBJECTIVES

1. To evaluate the feasibility of a combined intervention approach using robot assisted therapy and cognitive skills training for children with hemiplegia.
2. To understand the preliminary impact of this combined intervention approach on upper extremity motor skills and functional performance for children with hemiparesis caused by stroke.
3. To identify future research directions specific to best evaluation tools and intervention dosage for this population.

## DESIGN

- Single Case Report extrapolated from a larger pilot study for this presentation.
- Pre, Post and One Month follow up data collection and analysis.

## CASE INTRODUCTION

### Occupational Profile:

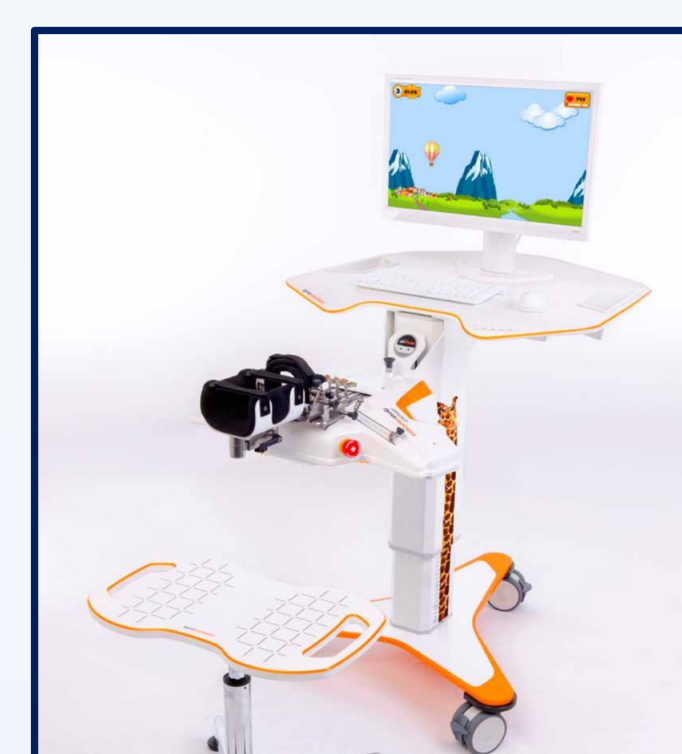
- 13-year-old, female, 8<sup>th</sup> grade
- Well supported by family
- Enjoys swim, dance, and time with cousins

### Medical History:

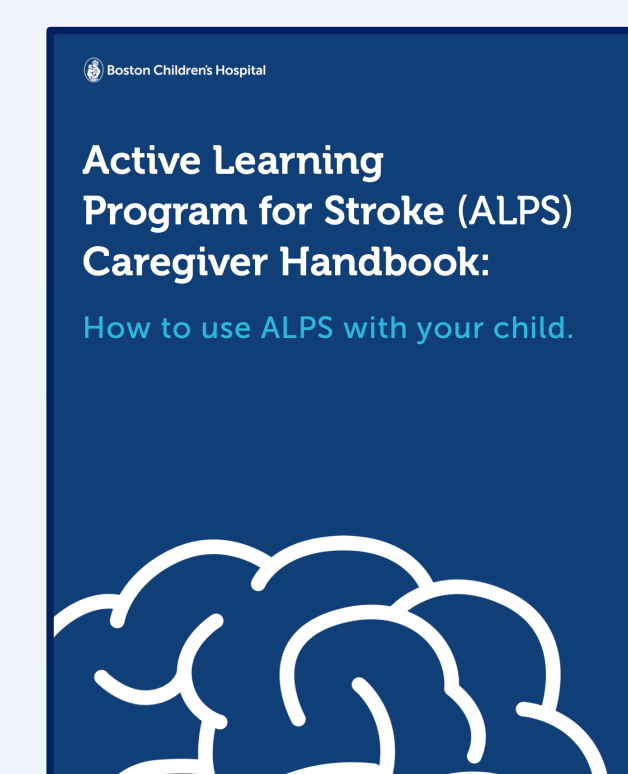
- Born with congenital heart defect, status post heart transplant at age 4 years
- Experienced a left posterior frontal ischemic stroke prior to transplant
- History of perinatal right posterior middle cerebral artery stroke
- Left Hemiparesis, MAC level II

## INTERVENTION

- Intensive 8-week plan of care
- 90-minute sessions, 3 times per week
- Combined intervention model: Robot Assisted Therapy (RAT), Active Learning Program for Stroke (ALPS) and a Home Action Plan (HAP)
- RAT delivered via Tyromotion's Amadeo
- Five Key "Ingredients" of ALPS integrated
- HAP required during non-treatment days



Amadeo x 30 minutes



ALPS x 30 minutes

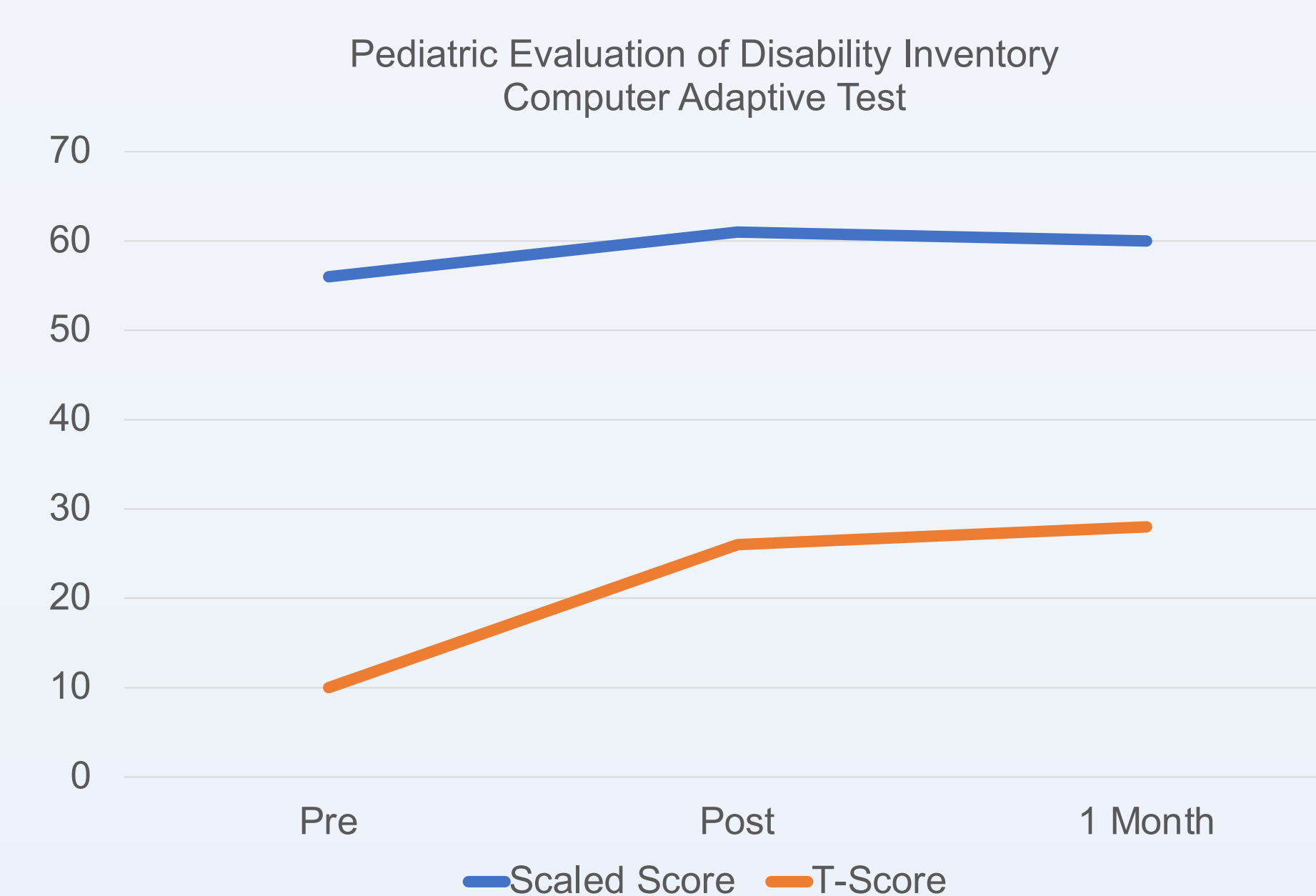
Activity to Practice	Checking Points	Number of repetitions or minutes	Did you feel better?	How many repetitions or minutes did you do today?	Challenges and Successes
1. Lifting weights on the floor			Yes/No		
2. Moving stool from one side of the room to the other			Yes/No		
3. Reaching for things on high clothing racks			Yes/No		
4. Reaching for things on lower shelves			Yes/No		
5. Turning on the lights			Yes/No		

HAP x 30 minutes

## OUTCOMES: Upper Extremity Skills



## OUTCOMES: Functional Performance



## OUTCOMES



## CONCLUSION

The primary (feasibility) and secondary (motor skills and functional performance) outcomes of this case study show that this intensive and combined approach to intervention for children with hemiparesis has the potential to be both feasible and functionally impactful.

## DISCUSSION

1. Pediatric stroke and resultant hemiparesis can lead to developmental impairment, decreased independence and increased caregiver burden across a person's lifespan.
2. Occupational Therapists have the capacity to play a significant role in supporting the (re)habilitation of children with hemiparesis.
3. Combined RAT & ALPS training is a unique and promising intervention approach for improving function for children with hemiparesis.
4. Future research is needed to understand the feasibility and efficacy of using this approach within a larger sample size and to compare this model with a control. Exploration of ways to best scaffold RAT for the pediatric population is also needed.

## CONTACT

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SCAN ME