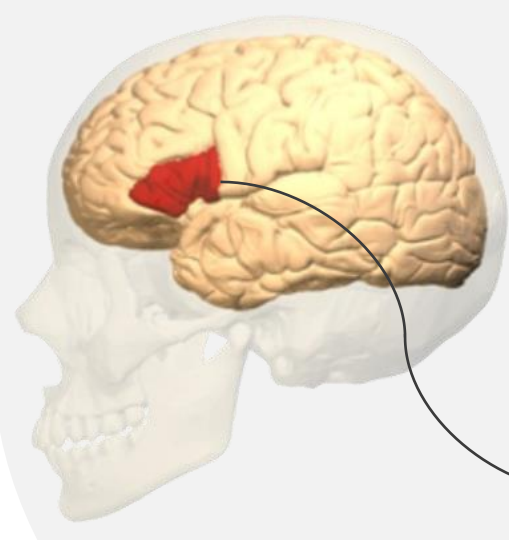


# Exercise Effects on Consolidation of Speech Training in Post Stroke Aphasia: A Case Series Study



## Introduction

- Aerobic exercise has shown positive effects on cognitive processes like learning and memory (1).
- Limited research has applied those findings to language disorders.
- Broca's aphasia is a language disorder that affects expressive speech, leading to difficulties in language production (2).



Damage to this part of the brain (Broca's Area) can cause Broca's aphasia (2).

## Purpose

To explore the effects of integrating aerobic exercise with speech training on speech performance in people experiencing Broca's aphasia following a stroke.

To investigate any potential effects on the participants' quality of life, focusing on daily functioning and wellbeing.

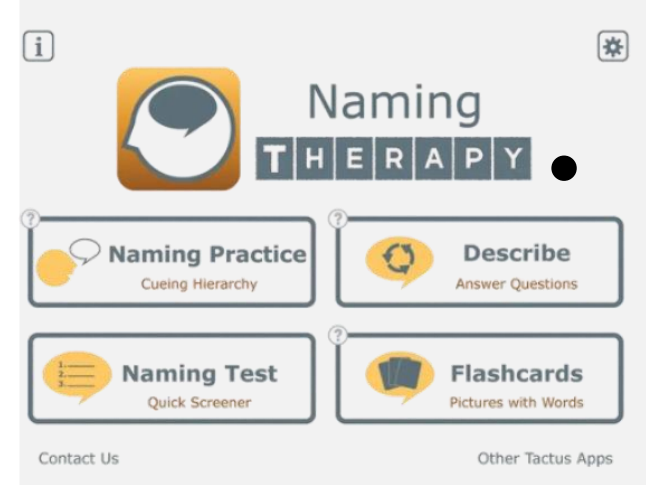


## Hypothesis

We hypothesize that performing exercise immediately after speech and language therapy will enhance day to day consolidation of speech performance gains.

## Study Overview

- Four-week intervention period with repeated assessments.
- Exercise Protocol (NuStep Recumbent Stepper)
  - Exercise Test: VO2 peak protocol designed for people with chronic stroke (3) will be used to determine peak power output.
  - HIIE: 25 minutes of high-intensity interval exercise (HIIE) (4). Performed immediately following speech therapy 2x/week.
- Speech Therapy Protocol
  - Western Aphasia Battery (WAB): A diagnostic tool used to assess linguistic skills of individuals with aphasia (5).
  - Speech Therapy: Delivered through the Tactus Therapy Solutions Naming app. Daily pre- and post- assessments flanked by a speech therapy session.
- Exit Interviews
  - Following the four-week period, participants will be asked questions related to the perceived benefits and challenges of combining speech therapy and exercise training as well as effects on quality of life.



## Participants

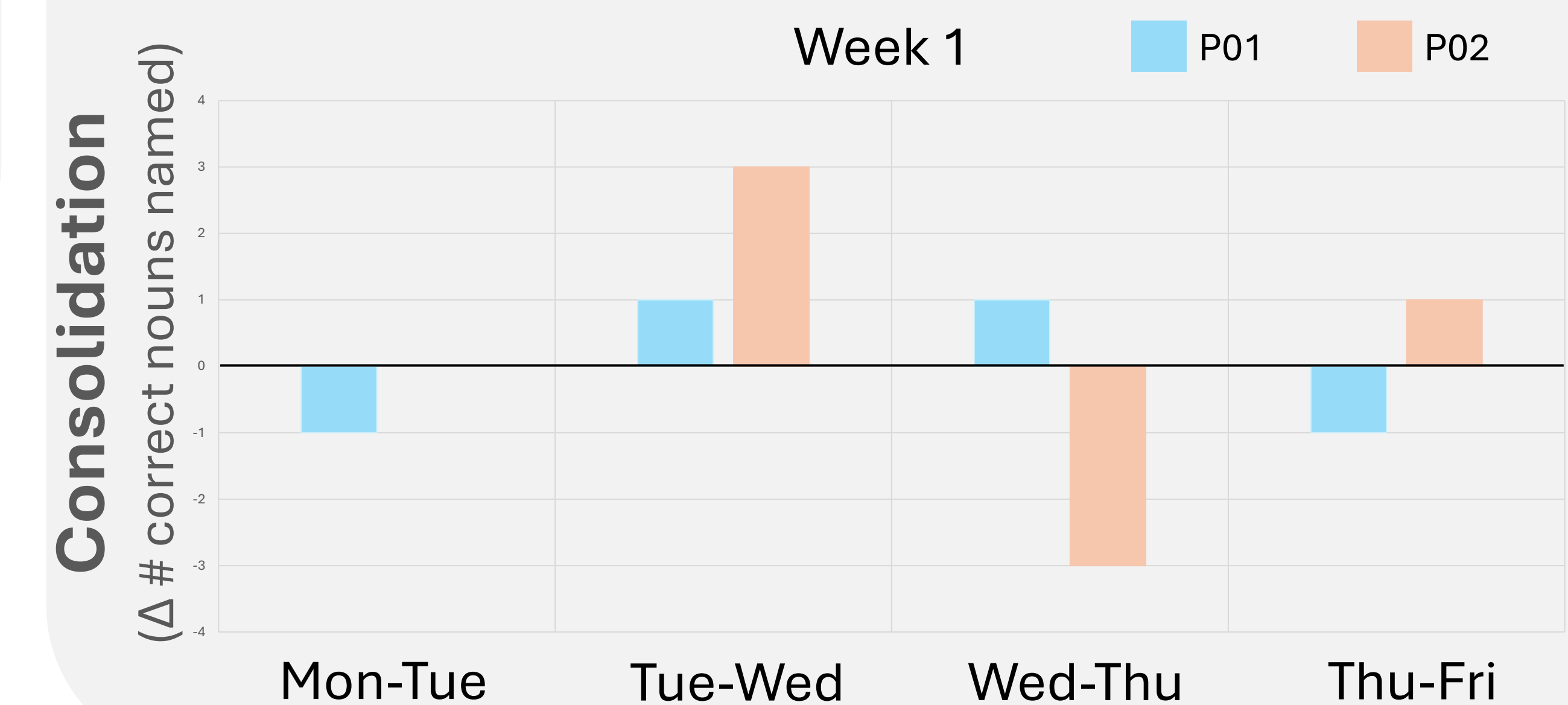
- Clients of the Enrich Neurorehab program at the University of Regina, have been recruited to the study.



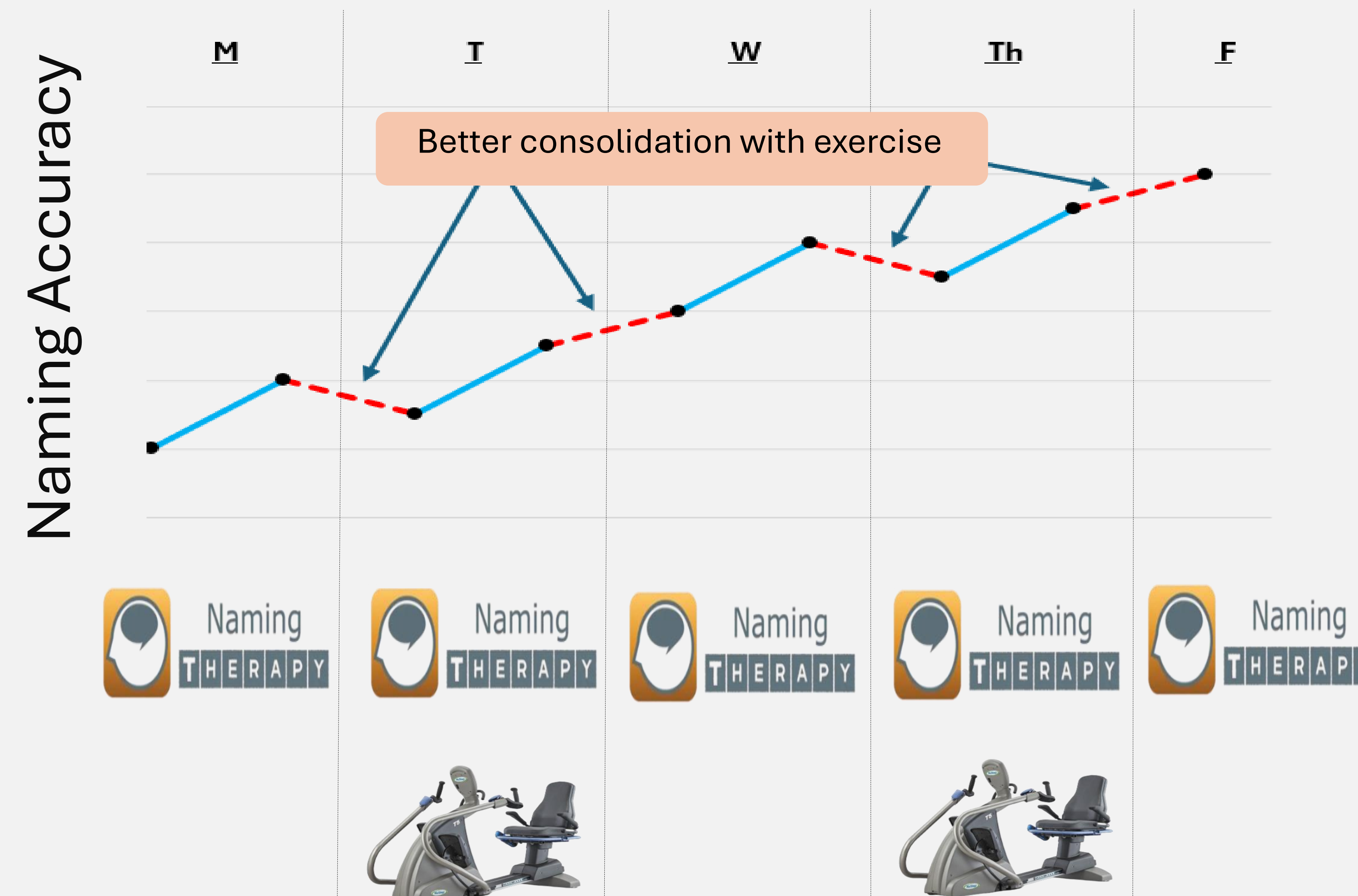
ENRICH neurorehab  
University of Regina

	P01	P02
Age	56	55
Sex	Male	Female
AQ	83	91.4
Peak VO2	10.0ml/kg/min	12.4ml/kg/min

## Preliminary Results



## Expected Results



## Implications

This research will offer preliminary insights into the potential benefits and practical challenges of combining aerobic exercise with speech therapy.

## References

(1) Ferrer-Uris et al. (2022). *AIMS Neuroscience*, 9(2), 150–174.  
 (2) Acharya & Wroten (2023). *StatPearls - NCBI Bookshelf*.  
 (3) Billinger et al. (2008). *Physical Therapy*, 88(10), 1188–1195.  
 (4) Hsu et al. (2021). *Annals of Physical and Rehabilitation Medicine*, 64(4), 101385.  
 (5) Kertesz (n.d.). *WAB-R | Pearson Clinical Assessment Canada Pictures*.  
<https://www.canva.com/>  
[https://en.wikipedia.org/wiki/Broca%27s\\_area](https://en.wikipedia.org/wiki/Broca%27s_area)  
<https://www.totalfitnessequipment.com/product/ustep-t5-cross-trainer/>  
<https://tactustherapy.com/app/naming/>