

# Enhancing Mobility, Balance, and Cognitive Function at Neuro-Fit

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## INTRODUCTION

Internship Site: Neuro-Fit Description: Neuro-Fit is a rehabilitation program designed to improve physical and cognitive function in individuals with neurological conditions such as Traumatic Brain Injury (TBI), Stroke, and Parkinson's Disease. The program focuses on structured exercise interventions that target mobility, strength, balance, and cognitive engagement to support patient recovery and independence. Mission: To enhance patient outcomes through individualized exercise programming, helping participants regain functional abilities and confidence in their movements.

## INTERNSHIP PROJECT OBJECTIVE

- To evaluate the effectiveness of Neuro-Fit's exercise-based rehabilitation program in improving mobility and balance in individuals with TBI.
- To assess the impact of exercise on cognitive function in individuals with TBI participating in the Neuro-Fit program.
- To identify the specific exercise modalities and program components that contribute to the greatest improvements in mobility, balance, and cognitive function.
- To explore the experiences and perspectives of individuals with TBI regarding the benefits and challenges of exercise-based rehabilitation.
- To develop recommendations for optimizing exercise-based rehabilitation programs for individuals with TBI at Neuro-Fit.

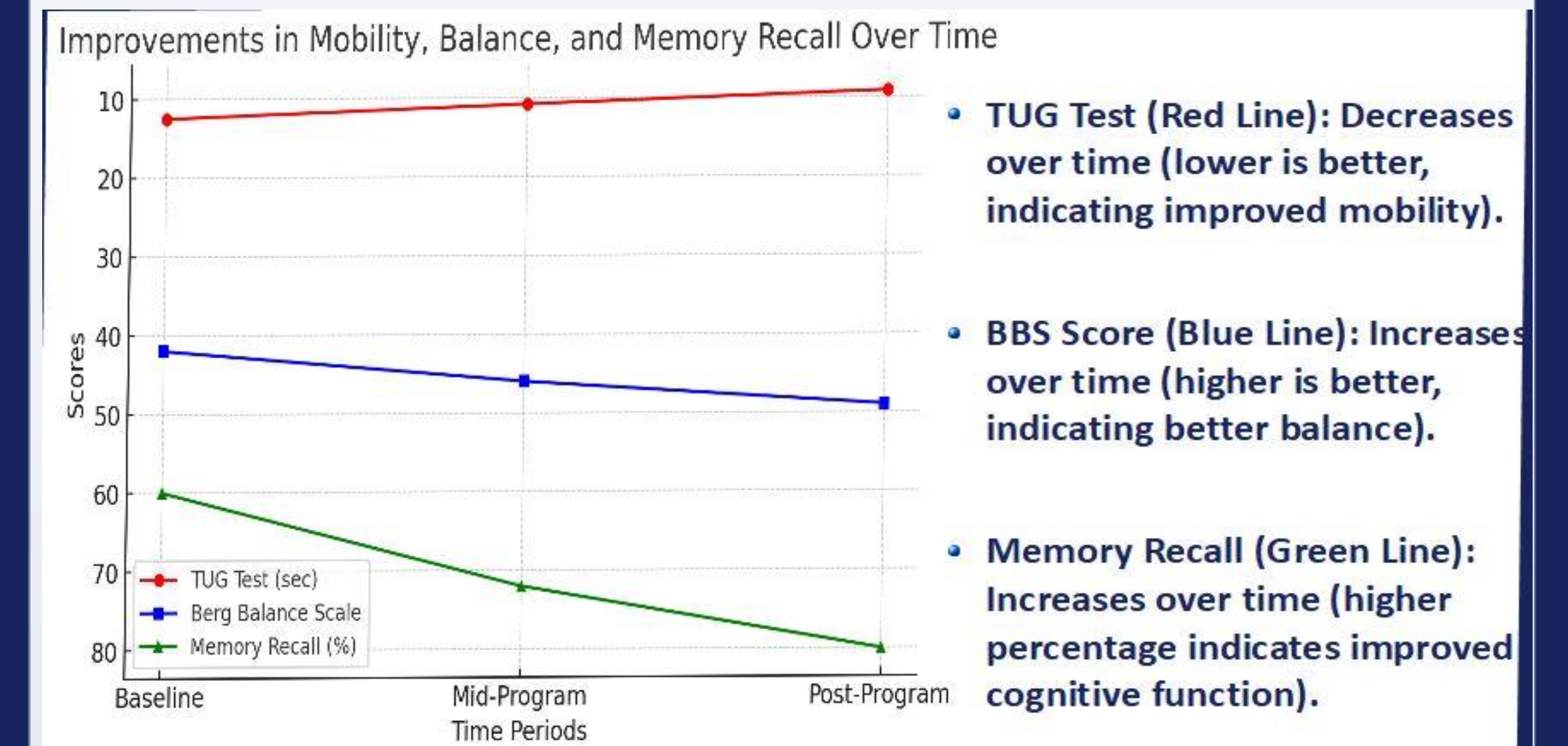
## RELATED LITERATURE

- Exercise plays a critical role in TBI rehabilitation. Studies show that combined exercise improves gait and balance more effectively than single-method approaches (Kim et al., 2023). Even moderate activity enhances physical function and mental well-being (Larun et al., 2021). Ongoing, personalized programs have also led to major improvements in mobility, including restored unassisted walking in some clients (Neuro-Fit – Supportive Living Inc., 2025). Together, these findings highlight the lasting benefits of structured and individualized exercise in post-TBI recovery (Kim et al., 2023; Larun et al., 2021; Neuro-Fit – Supportive Living Inc., 2025).

## MATERIALS & METHODS

- **Study Design:** A mixed-methods approach was employed, combining quantitative and qualitative data collection methods.
- **Participants:** Individuals with TBI who participated in the Neuro-Fit rehabilitation program were recruited for the study.
- **Quantitative Data Collection:**
  - Quantitative data were collected to evaluate changes in participants' mobility, balance, and cognitive function over time.
  - Mobility and balance were assessed using standardized tools, including the **Timed Up and Go (TUG)** test and the **Berg Balance Scale (BBS)**.
  - Cognitive function was evaluated using neuropsychological tests measuring **attention, memory, and processing speed**.
  - These assessments were administered at three time points: baseline (pre-program), mid-program, and post-program.
- **Qualitative Data Collection:**
  - Semi-structured interviews were conducted with participants to explore their experiences with the exercise-based rehabilitation program.
  - Thematic analysis was used to identify key themes and patterns in the qualitative data.
- **Data Analysis:**
  - Quantitative data were analyzed using descriptive statistics and appropriate statistical tests to determine the effectiveness of the exercise program.
  - Qualitative data were analyzed using thematic analysis to identify key themes and patterns in the participants' experiences.
- **Ethical Considerations:** The study was conducted in accordance with ethical guidelines, and informed consent was obtained from all participants.

## RESULTS



## CONCLUSIONS

- The **Neuro-Fit rehabilitation program** demonstrated **statistically significant improvements in mobility, balance, and cognitive function** among individuals with TBI.
- Participants **reported increased confidence, motivation, and perceived cognitive benefits**, highlighting the importance of structured exercise in TBI recovery.
- These findings suggest that **exercise-based rehabilitation can be a valuable approach for enhancing physical and cognitive function** in TBI patients.

## REFERENCES

- Kim, Y., Kim, K., Park, S., & Lee, H. J. (2023). Effects of combined exercise on balance and gait function in patients with traumatic brain injury: A systematic review and meta-analysis. *Journal of Neurotrauma*, 40(5–6), 456–470. <https://doi.org/10.1089/neu.2022.0195>
- Larun, L., Nordheim, L. V., Ekland, T., & Lundqvist, C. B. (2021). Exercise therapy for individuals with traumatic brain injury: A systematic review. *Disability and Rehabilitation*, 43(2), 149–163. <https://doi.org/10.1080/09638288.2019.1628339>
- Supportive Living Inc. (2025). Neuro-Fit. <https://www.supportivelivinginc.org/neuro-fit/>

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