

Fatigue Management Tracking in Neuro-Rehabilitation Exercise Participants

Endy Flores

INTRODUCTION

- This project was conducted at a neuro-rehabilitation fitness program working with individuals with neurological conditions such as traumatic brain injury (TBI), stroke, and Parkinson's disease.
- Exercise programs are used to improve strength, balance, and functional mobility, but fatigue may limit effectiveness and safety. (A. R. Mayer et al., 2020).
- Neurological conditions can often cause fatigue, low endurance, and reduced exercise tolerance, which may impact participation in exercise programs. (H. S. Levin et al., 2019).
- This project introduced a fatigue tracking system to better understand participant responses to exercise sessions.
 - Excess fatigue can:
 - Reduce participation
 - Increase safety risks
 - Limit progress

RELATED LITERATURE

- Aerobic exercise may improve cognitive function after traumatic brain injury (TBI), including memory and attention, though findings are mixed (Alashram, 2026).
- Combining aerobic exercise + cognitive training shows greater improvements in: Memory, Daily functioning, Quality of life (Zhao et al., 2023)
- Multidisciplinary rehabilitation (physical, cognitive, psychological) improves: Functional outcomes and Independence (Turner-Stokes et al., 2015)
- Community-based exercise programs support recovery by improving: Mobility, Balance, Confidence, Social interaction (Regan et al., 2024)



Materials & Methods

- Participants: Individuals participating in neuro-rehabilitation exercise sessions at the internship site.
- A simple fatigue rating scale from 1–10 was used to measure participant fatigue levels.

Procedure

- Participants will rate their fatigue level before the exercise session begins.
- Participants will rate their fatigue level after the session ends.
- Fatigue scores will be recorded and tracked across multiple sessions.

Data Collection

- Fatigue scores (1–10 scale)
- Exercise activities performed during sessions
- Observed patterns of fatigue across different exercises

Analysis

- Compare pre-session and post-session fatigue levels
- Identify exercises associated with higher fatigue levels
- Evaluate trends in fatigue over time

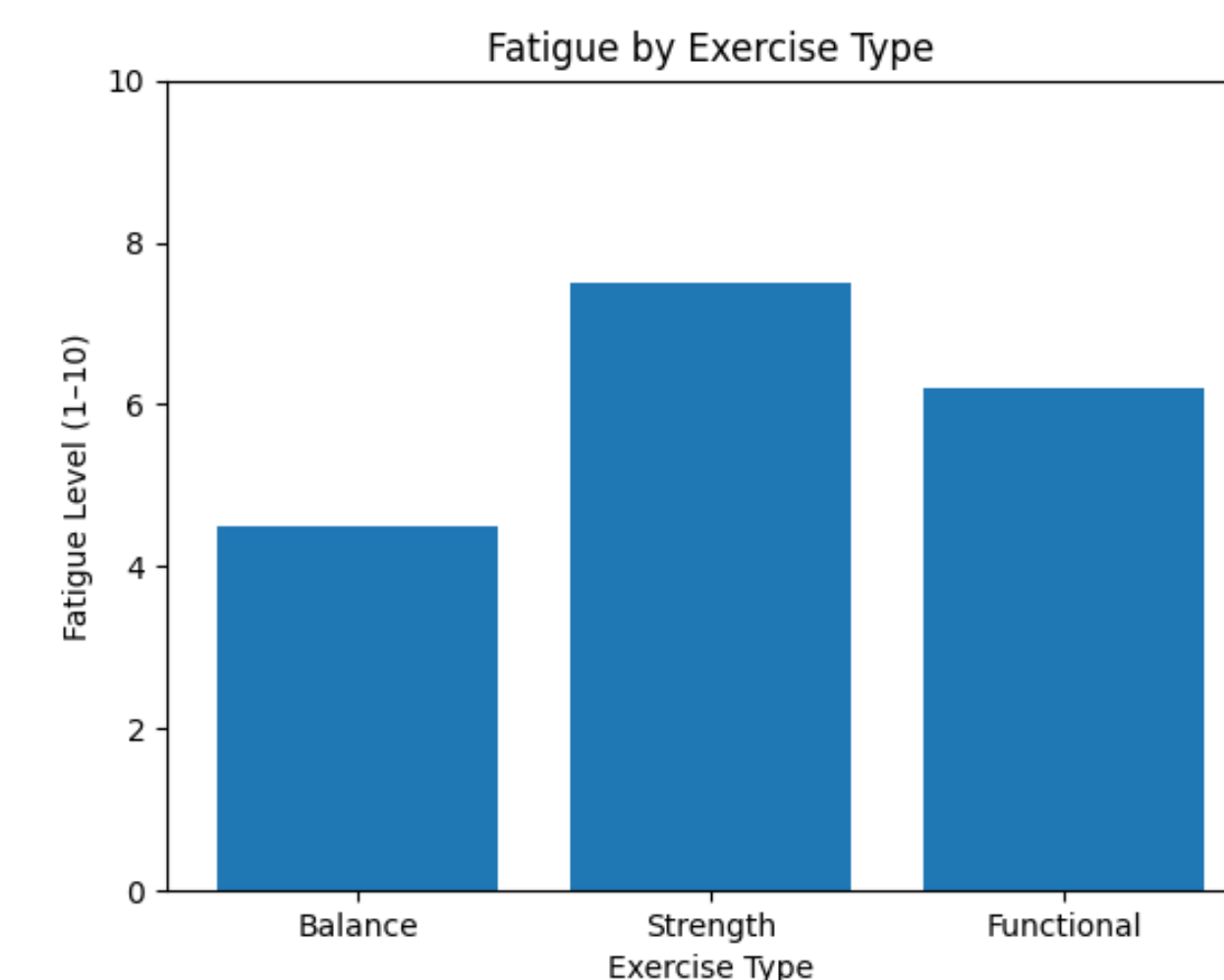
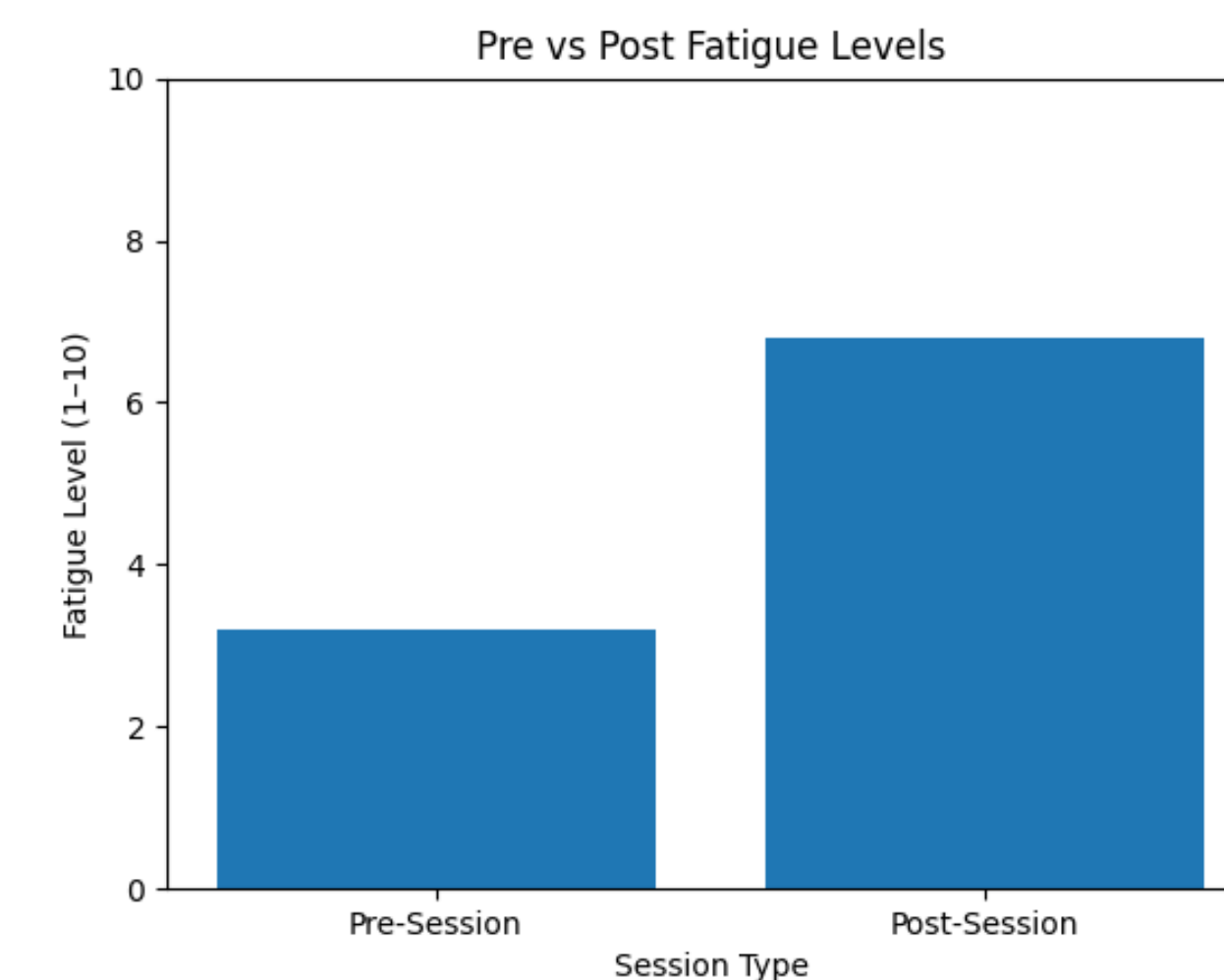
Fatigue Scale (1-10)

1 = No Fatigue 2 3 4 5 6 7 8 9 10 = Extreme Fatigue



Results

- Participants reported increased fatigue after certain high-intensity exercises.
- Some exercises showed lower fatigue levels while still maintaining engagement.
- Fatigue patterns varied based on individual participant conditions and endurance levels.
- Structured fatigue tracking provided clearer insight into participant tolerance to exercise sessions.



CONCLUSIONS

- Participants experienced increased fatigue following exercise sessions, confirming that fatigue is a significant factor in neuro-rehabilitation programs.
- Strength-based exercises produced the highest fatigue levels, while balance activities resulted in lower fatigue.
- Fatigue levels decreased slightly over time, suggesting participants were able to adapt and build tolerance to the exercise program.
- Implementing a simple fatigue scale provided clear, measurable data that can improve how exercise sessions are structured.
- Monitoring fatigue can help staff adjust intensity, pacing, and rest periods to improve safety and effectiveness.
- Overall, structured fatigue tracking is a practical and valuable tool for improving neuro-rehabilitation outcomes.

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