

## INTRODUCTION

- Every year, over 2.5 million people are diagnosed with multiple sclerosis (MS) worldwide (Faguy, 2016).
- Fatigue is one of the most common and debilitating symptoms among individuals with MS by restricting individuals from participating in their daily occupations.
- Research has shown that energy conservation techniques can result in lower levels of fatigue in individuals with MS (Tur, 2016).
- The use of assistive technology such as convenient mobile health apps (mHealth) may provide the extra reminders and support required to improve fatigue-related self-management strategies and user retention rates using energy conservation (Silva, Rodrigues, Diez, López-Coronado, Saleem, & 2015)

## STATEMENT OF PURPOSE

The purpose of this study is to investigate whether a mHealth app will result in a decrease in fatigue and an increase in adherence of energy conservation techniques for adults with MS.

## DESIGN AND METHODOLOGY

### Design

Quantitative, Exploratory, pre-test-post design

### Participants

Individuals with multiple sclerosis, ages 36-72

#### Participant Demographic Data

Participant	N = 10	%
Gender, n		
Male	1	10
Female	9	90
Type of MS		
Relapse-remitting	9	90
Primary progressive	1	10

### Recruitment and Data Collection:

- MS society of Northern California
- Email and flyers
- PMD data, Modified Fatigue Impact Scale (MFIS), Canadian Occupational Performance Measure (COPM), post-study questionnaires

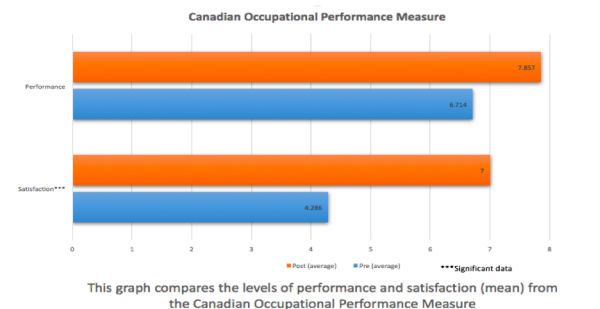
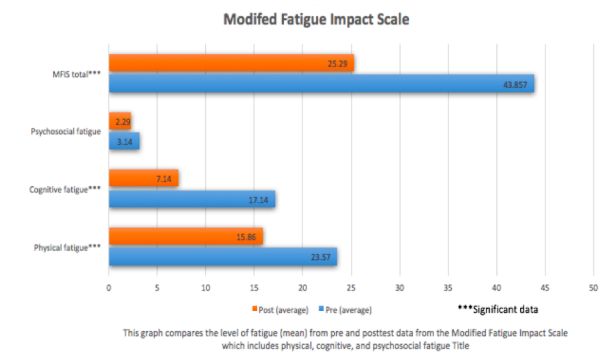
### Data Analysis:

- **Quantitative Data:** Statistical Package Social Sciences Version 22.0
- **Qualitative Data:** Questionnaire regarding use of app and energy conservation management techniques



## RESULTS

A paired sample T test to show comparison of the average differences in fatigue levels and performance and satisfaction before the PMD intervention and after. A two-tailed T-test was used to determine if there was a difference in the average between the pretest and posttest.



During the post-test interview, users were asked to rate the helpfulness and satisfaction of the PMD and ECM on a 10 point Likert scale. 10 being most beneficial

Extremely Unlikely 0 1 2 3 4 5 6 7 8 9 10 Extremely Likely

- **6.14:** average rating for helpfulness for using the PMD.
- **7.24** average rating for recommending PMD to others
- **7.14** average rating of satisfaction for using ECM and handouts.

## DISCUSSION AND IMPLICATIONS

### Discussion

- Two weeks pre-post results revealed a significant reduction in overall fatigue for all 7 participants that utilized energy conservation and PMD app.
- Significant Reduction in the average level of fatigue was indicated among two of the three categories of the MFIS (physical at .02, cognitive at .001) but not so much psychosocial.
- PMD app was more successful in increasing satisfaction in the task than performance based off the COPM. This indicates an increase in participant's self rated ability to complete their chosen task with more satisfaction.

### Suggestions for Future Research

- Conduct longitudinal studies with other populations with different fatigue-related diagnoses to evaluate adherence and use of mHealth apps over a greater time period.
- Create a randomized control trial to compare the effectiveness of PMD app compared to traditional ECM education.

### Suggestions for Occupational Therapy

- Use assistive technology such as a mHealth app as part of interventions to improve occupational performance.
- Occupational therapists can collaborate with app developers to implement energy conservation techniques into self-management/time management applications.
- Promotes adherence to self-management and energy conservation strategies and motivation to track the progression and completion of short and long term goals.

## LIMITATIONS

- Small data sample size (n=7)
- Length of study being only 2 weeks.
- Low external validity factors: one geographic location (Marin County) and Caucasian female.
- Self-reported measures subject to biases.
- Attrition and completion of goals and objectives due to extraneous variables (medication, work, diet).
- Client's difficulty using app and technical complications.

## REFERENCES

- Faguy, K. (2016). Multiple sclerosis: An update. Radiologic Technology, 87(5), 529-553.
- Silva, B. M., Rodrigues, J. J., de la Torre Diez, I., López-Coronado, M., & Saleem, K. (2015). Mobile-health: a review of current state in 2015. Journal of biomedical informatics, 56, 265-272.
- Tur, C. (2016). Fatigue Management in Multiple Sclerosis. Current Treatment Options In Neurology, 18(6), 1. doi:10.1007/s11940-016-0411-8