



# Increasing Movement and Exercise in Geriatric Patients Through Large-Scaled Creative Occupations

Megan Brooks, OTS<sup>1</sup>, Jason Vice, PhD, OTR/L, SCLV<sup>1</sup>, & Marianne Snyman, OTR/L<sup>2</sup>

<sup>1</sup>Department of Occupational Therapy | University of Alabama at Birmingham, <sup>2</sup>Crowne Health Care of Mobile

## Introduction

There are many benefits to exercise; however, one and four older adults in the U.S. perform the recommended level of daily exercise (CDC, 2019). Between the ages of 30-80, joint motion reduces 10-40% and muscle mass 30-50% (Milanovic et al, 2013). Therefore, it is crucial for older adults to complete daily exercise. Secondary to barriers to exercise, such as, lack of time, social support, energy, motivation, skill, fear of injury, etc. (CDC, 2022), large-scaled painting interventions could serve as a motivating activity to encourage exercise in older adults.

## Methods

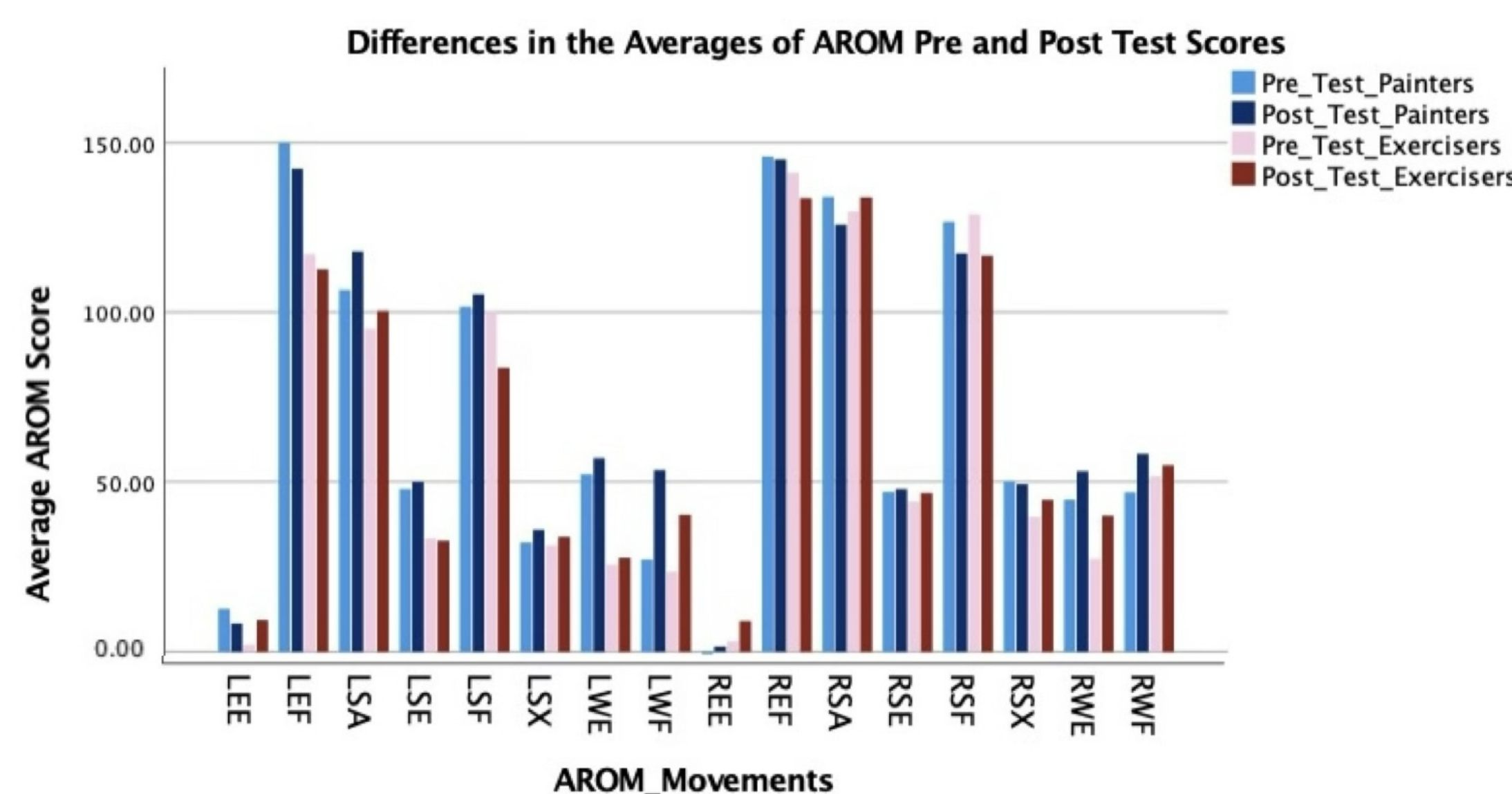
14 participants were randomized into two groups (Group 1: Painting and Group 2: Exercise). Each participant participated in a 30-minute one-on-one session twice a week for 10-weeks correlating to their given activity. Group 1 completed large-scaled painting while standing which required repetitive movements and reaching to cover full canvas, and group 2 completed low impact exercises.

## Results

Participant ID	Age	Gender	Participant ID	Age	Gender
1	85	Female	8	64	Female
2	59	Female	9	80	Female
3	87	Female	10	89	Male
4	72	Female	11	69	Male
5	66	Female	12	58	Female
6	73	Female	13	80	Female
7	87	Male	14	83	Male

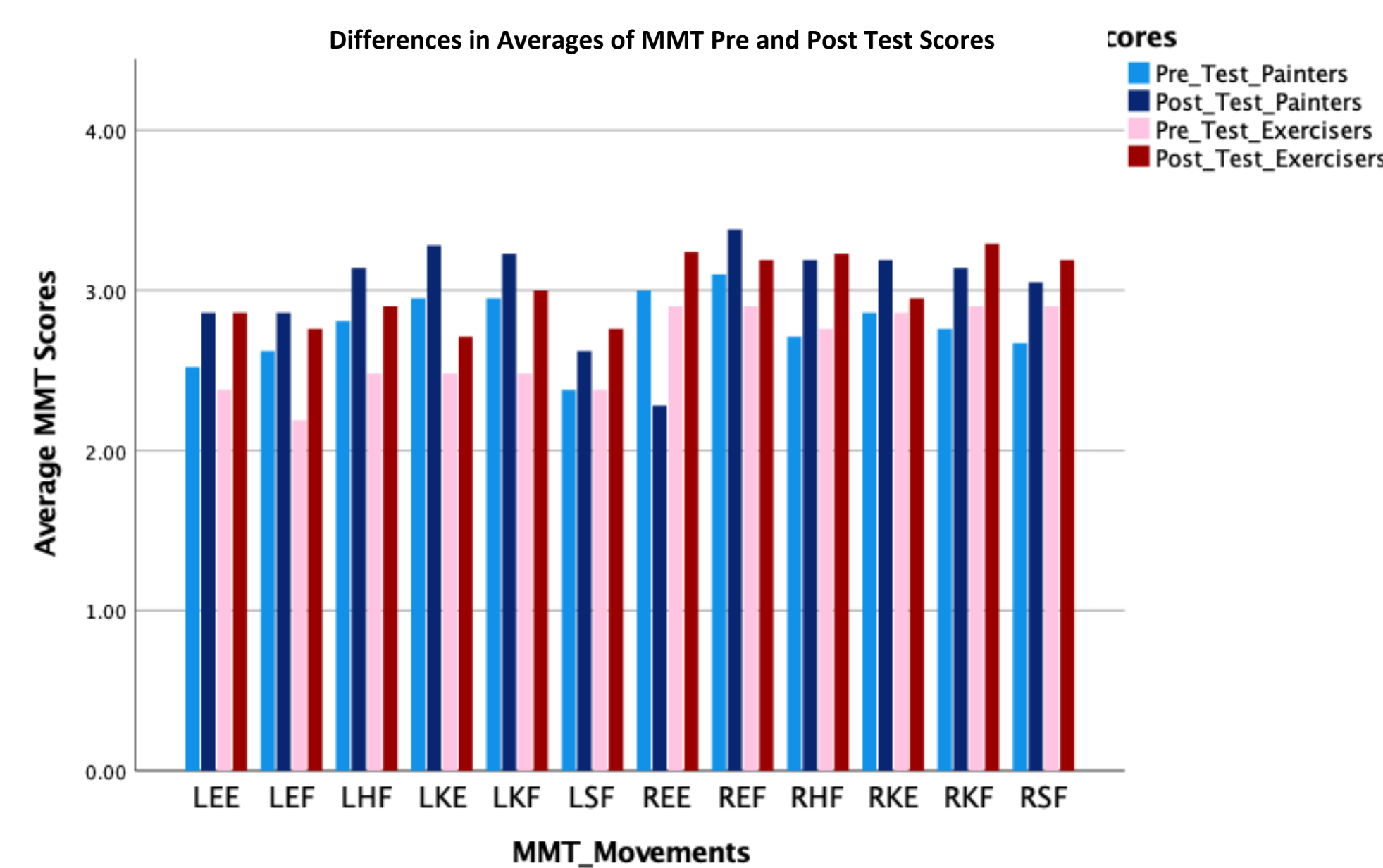
Pre and post-test were taken regarding four areas.

- Range of Motion**
  - There was a mixed result of improvement, regression, and no-change between both groups.
  - Following completion of a paired t-test, the results indicate that there were five of the sixteen movements with a  $p$ -value  $\leq 0.05$  in the painting group, and in the exercise group, there were seven of the sixteen movements with a  $p$ -value  $\leq 0.05$ .

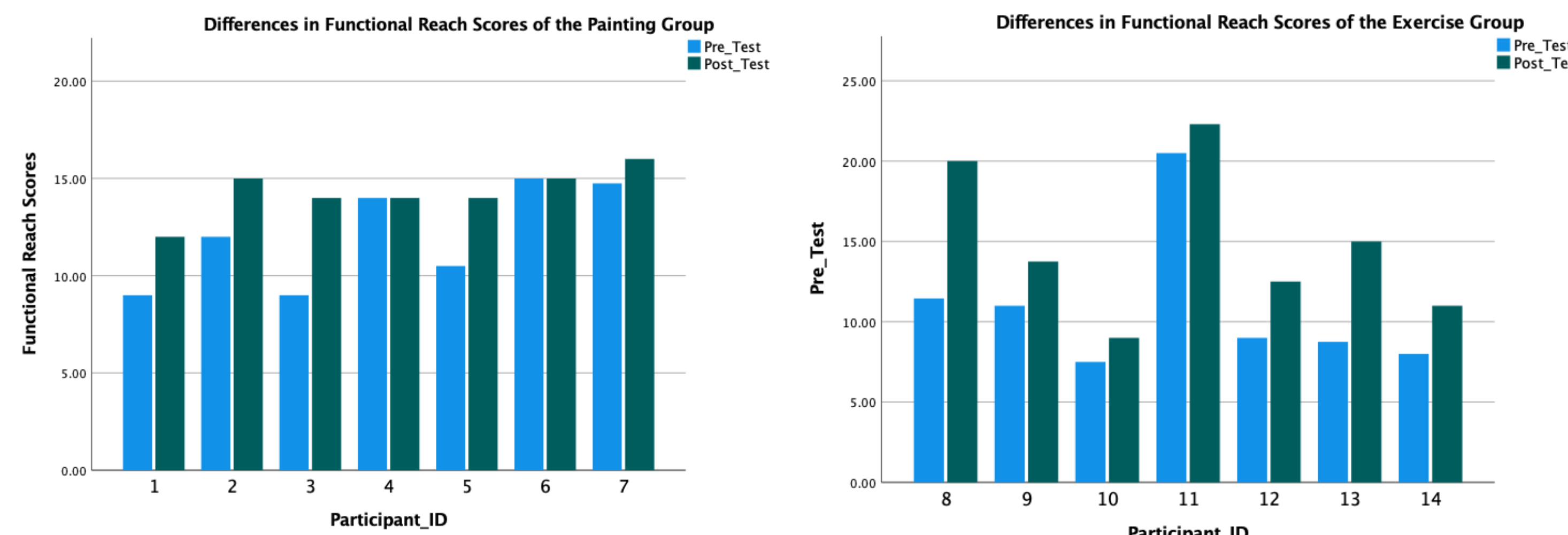


## Results Cont.

- Strength:**
  - There was a mix result of improvement and no change regarding strength.
  - The paired t-test results highlight that ten of the twelve movements were statistically significant within the painting group, and eight of the twelve movements were statistically significant within the exercise group by having a  $p$ -value  $\leq 0.05$ .



- Balance:**
  - All participants' balance was improved.
  - Both the painting and exercise groups' results were statistically significant following completion of a paired t-test with a  $p$ -value  $\leq 0.05$ . The painting group had a  $p$ -value of 0.01, while the exercise group had a  $p$ -value of 0.003.



- Motivation:**
  - All participants reported increased motivation and likeliness to exercise following participation.
  - During the pre-test 99% of the participants (n=13) were intrinsically motivated while 1% of the participants (n=1) were extrinsically motivated. Following completion of the program, 100% of the participants were intrinsically motivated.
  - All participants reported yes to the following questions: "Were you excited and motivated to participate in the activity most weeks?" and "After participating in this program are you more likely to participate in physical activity?"
  - Within the open-ended question, "What are your thoughts on the program following participation?", most of the responses were positive excluding one comment reporting difficulties with reaching to paint and experience of muscle fatigue and soreness.

## Discussion

- Range of motion:** Throughout the project participants discovered ways to fully cover the canvases in order to complete their projects; however, many reported increased difficulty secondary to muscle fatigue/soreness. The increased muscle fatigue and soreness could be related to the results in decreased AROM at the end of the 10-week program.
- Strength:** Throughout the 10-week program both groups' participants had reports of muscle fatigue and soreness. These reports alone proved effectiveness of the activities secondary to increased movement and exercise, as compared to the participants' usual daily activity.
- Balance:** Balance was notably increased following participation in the 10-week program. This could be a result of many things, one being that the participants' confidence increased overtime following increased use and movement. With reaching and repetitive movement to cover the full canvas, participants were required to stretch their limits of comfort with the stand by assistance. It was noted by the participants that they were able to complete these movements with ease which resulted in increased functional reach scores.
- Motivation:** All participants reported enjoyment of the activities and effectiveness regarding increased motivation. A notable report from staff was made that many residents who do not participate in many activities were demonstrating increased motivation and engagement, and that they were pleased to see these residents willing and excited to participate in more activities throughout the day.

Although there were notable changes within the participants' pre and post-test scores, following completion of a paired samples t-test, there were little statistical significance of the presented data. This could be secondary to a small sample size. Several participants also reported increased muscle soreness at the point of post-testing, which could have negatively affected post-test scores.

## Conclusion

This study showed that a large-scale painting activity approach to increasing movement in geriatric patients can be effective in increasing motivation, range of motion, strength, and balance. Not only did participants express enjoyment and effectiveness of the program related to increasing physical activity, but many results indicated that painting large-scaled pictures could be just as, if not more beneficial than exercise alone in geriatric patients. With the current findings within this study, this enhanced our understanding of the relationship between painting and physical activity. It is hoped that the current research will stimulate further investigation of this important area.

## References

- Centers for Disease Control and Prevention. (2019, September 25). *Lack of physical activity*. Centers for Disease Control and Prevention. Retrieved April 28, 2022, from <https://www.cdc.gov/chronicdisease/resources/publications/factsheets/physical-activity.htm>
- Centers for Disease Control and Prevention. (2022, June 3). *Overcoming barriers to physical activity*. Centers for Disease Control and Prevention. Retrieved June 28, 2022, from <https://www.cdc.gov/physicalactivity/basics/adding-pa/barriers/html>
- Milanovic, Z., Jorgic, B., Trajkovic, N., Sporis G., Patelic, S., & James, N. (2013). Age-related decrease in physical activity and functional fitness among elderly men and women. *Clinical Interventions in Aging*, 549.

## Acknowledgement & Contact Information

I would like to thank Jason Vice for his guidance in this research. Also, Marianne Snyman, Restore Therapy, & Crowne Health Care for site mentorship throughout implementation. Contact Information: Megan Brooks email: [mcbrooks@uab.edu](mailto:mcbrooks@uab.edu)