



Effect of a Community-Based Ballroom Dance and Balance Education Program on Cognition in Older Adults

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BALLROOM BASICS
for BALANCE™

Background

- Damage of the hippocampus is often accompanied with age and is associated with learning and memory problems (Driscoll et. al, 2003)
- Exercise training classes have been shown to improve cognition in older adults (Erickson et. al, 2011)
- It has been observed that individuals that start with the lowest brain health scores benefit the most from an aerobic exercise program (Gregory et. al, 2013)
- Dance classes have been shown to improve cognition in older adults (Coubard et. al, 2011)
- Currently, there is a gap in knowledge about the effect of a community-based balance class using dance on participants with larger cognitive deficits compared to those with smaller or no cognitive deficits.
- Changes in cognition from balance classes using dance can help inform health care providers of their patients current status as well as allow them to recommend it to their other patients with balance and cognitive deficits.



Purpose

The purpose of this prospective review is to evaluate the impact of a community-based balance class using dance on cognition in community-dwelling older adults.

Methods

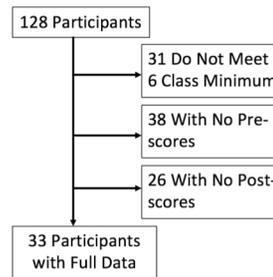
- Older adults volunteered for a community-based balance class involving ballroom dance
- Cognition was assessed using the Trail Making Test (TMT) form A and form B after the first class and prior to the final class
 - TMT is a neuropsychological test of visual attention and task switching
 - Subject connects dots as quickly as possible while still maintaining accuracy

Subject Characteristics

- Sex: 24 females, 9 males
- Age: 73.5 ± 7.0 years
- Attendance: 8.28 ± 1.9 sessions

Inclusion Criteria

1. Attend at least 6 classes
2. Have good health for participation
3. Complete both Pre and Post tests



Data Collection and Statistical Analysis



Figure 1. Trail Making Test A.

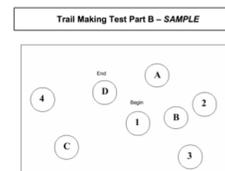


Figure 2. Trail Making Test B.

Statistical Analysis: Paired two sample t-test for means was run for the for pre-program and post-program scores and was compared between the slower 15% of participants and faster 15% of participants ($\alpha < 0.05$)

Results

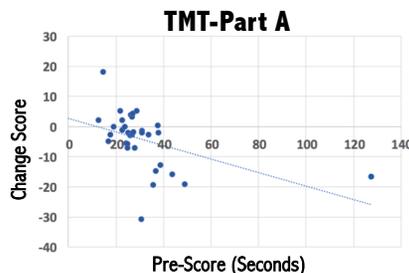


Figure 3. Results of the paired two-sample t-test for TMT Part A. This graph indicates a significant effect ($p < 0.05$) for the Trail Making Test-A for the slower 15% of participants when comparing pre-program scores to post-program scores ($T=4.28, P=0.001$). For the faster 15% of participants, there was no significant improvement in the cognitive tests ($T=0.523, P=0.307$).

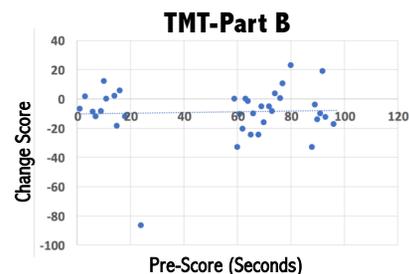


Figure 4. Results of the paired two-sample t-test for TMT Part B. The Trail Making Test-B did not show any significant improvements for participants after the class

Discussion

- The slower 15% of participants significantly improved their TMT-A score when comparing pre-program scores to post-program scores
 - No significant effect for TMT-B
- For the faster 15% of participants, there was no significant effect for either TMT-A or TMT-B
- These results indicate that older adults with the largest cognitive deficits benefited the most from a balance class using dance
- Older adults with large cognitive deficits should not be discouraged from participating in balance classes as they are the individuals that benefit the most
- For this prospective review to be a controlled research study, the class should
 - Track participants' activity outside of the class
 - Collect data in a more precise manner
 - Use a larger sample size

Main Conclusion

- From these preliminary results, it is suggested that those participants with the largest cognitive deficits can improve their cognitive abilities from a community-based balance class using dance
 - Cognitive speed
 - Fluid intelligence
- Clinicians can suggest dance as a method for older adults to not only improve their physical fitness, but also their cognitive abilities

References

1. Driscoll et. al, 2003
2. Erickson et. al, 2011
3. Gregoery et. al, 2013
4. Coubard et. al, 2011

