

# Benefits of Tai Chi in Community Dwelling Older Adults: A Pilot Study

Andrea Lee Bevan, Amber Watts  
University of Kansas, Psychology Department

## Introduction

- Previous research has well established the benefits of Tai Chi (TC) on balance among older adults leading to increased functionality, and reduction in falls (Leung, Chan, Tsang, Tsang, & Jones, 2011; Yang et al., 2015).
- TC studies have demonstrated improvements in cognitive performance in areas including memory and attention, but less conclusive are improvements related to areas of language, and learning and memory (Reid-Arndt, Matsuda, & Cox, 2012).
- TC has demonstrated benefits among older adults in sleep (Irwin, Olmstead, & Motivala, 2008), mood and psychological wellbeing (Chou et al., 2004; Frye et al., 2007; Chang et al., 2013) overall wellbeing and quality of life (QoL; Baxter and Francis, 2013).
- The present pilot study investigated the benefits of an 8 week Sun style TC class meeting twice per week.

### Study Objectives

- The primary purpose of this study was to assess the feasibility of data collection for an existing 8-week Tai Chi class in collaboration with Lawrence Memorial Hospital (LMH) in a population of community dwelling older adults.
- The secondary purpose of this study was to evaluate the benefits of Tai Chi in cognitive, mood, psychosocial, and sleep domains among older adults. Balance measures were also evaluated.

## Methods

- Community dwelling older adults were recruited from a beginner level 'Balance for Life' Tai Chi class meeting twice a week for 60 minutes.
- Participants (N = 11) were screened for cognitive impairment with the Montreal Cognitive Assessment (MoCA  $\leq$  24), tested on balance measures, filled out self-report measures, performed a cognitive task, and responded to a brief structured interview about TC before and within 2 weeks at the end of the 8-week TC class.
- Outcome measures included systolic and diastolic blood pressure, trait mindfulness (MM), Rosenberg self-esteem (RSE), self-efficacy (SE), geriatric anxiety scale (GAS), balance confidence (ABC), Beery visuospatial motor test (VMI), and, timed up and go (TUG).

## Results

- The sample was 45.5% female, primarily Caucasian (83.3%), and highly educated (Bachelors = 45.5%; Doctoral = 36.4%).
- Compared to baseline, participants showed trends in the expected direction after the 8-week Tai Chi intervention.
- Wilcoxon Signed-Rank Test showed trends in the expected directions, though no statistically significant differences were found. Demographic characteristics and trends are displayed in Tables 1 and 2.

Table 1.  
Demographics of Community-Dwelling Older Adults

Older Adults' Demographics			
Demographics	N	M(SD)	%
Age	11	71.64 (5.18)	
Female	5		45.5
Ethnicity	11		
White	5		45.5
Missing	6		54.5
Marital Status	11		
Married	8		72.7
Widower	1		9.1
Single	2		18.2
Level of Education	11		
Some college	1		9.1
Bachelors	5		45.5
Masters	1		9.1
Doctoral	4		36.3

Table 2.  
Wilcoxon Signed Rank Test Means and Standard Deviations of Selected Pre and Post Test Study Measures

Older Adults Pre and Post Self-Report and Objective Measures					
	N	M(SD): Pre	M(SD): Post	z	p value
Blood pressure					
Systolic	8	133.43 (6.13)	126.43 (11.10)	-1.68	0.09
Diastolic	8	80.86 (8.97)	77.57 (4.65)	-0.7	0.48
Mindfulness	8	35.63 (3.82)	32.00 (9.64)	-0.98	0.33
Self-Efficacy	8	109.50 (11.25)	106.88 (16.78)	-0.98	0.33
Self-Esteem	8	22.38 (3.96)	23.5 (4.24)	-1.29	0.2
Balance Confidence	8	77.89 (14.96)	83.75 (10.20)	-1.27	0.2
Geriatric Anxiety Scale					
Somatic	8	4.63 (3.20)	5.125 (3.522)	-0.18	0.72
Cognitive	8	1.75 (2.38)	0.88 (0.99)	-0.68	0.5
Affective	8	1.88 (2.30)	1.13 (1.34)	-0.74	0.46
Timed up Go					
Trial 1	8	13.35 (3.83)	11.51 (2.00)	-1.68	0.09
Trial 2	8	15.56 (5.73)	14.16 (4.97)	-1.35	0.18
Trial 3	8	14.03 (3.91)	13.56 (2.66)	-0.14	0.89
Beery VMI (scaled)	8	10.13 (3.40)	11.5 (2.33)	-1.53	0.13

## Discussion

- We successfully achieved our primary aim to collect data and gather information about feasibility among community dwelling older adults.
- No injuries or adverse effects were reported.
- The small sample size and retention of participants for the post intervention likely impacted the statistical power to detect significant changes.
- Reasons for withdrawal included family, personal reasons, and death.
- The secondary purpose of evaluating benefits from Tai Chi for cognition, mood, psychosocial, and balance measures was also achieved.
- Although statistical significance was not achieved on any measures, trends were observed in the data after the 8-week Tai Chi intervention.
- This preliminary study demonstrated potential benefits of Tai Chi on blood pressure, balance confidence, cognitive and affective components of anxiety, speed of getting up and walking 10 feet and return to a seated position (e.g., just walking, performing a cognitive task, and while carrying a cup of water), the visual-spatial measure, and self-esteem.
  - Limitations
- The major limitations of this feasibility study include lack of a control group, a small sample size, and limited biomarker objective measures.
- The 8 week length of the intervention may not have been long enough to produce benefits seen in previous research. Longer practice of Tai Chi has shown differences in improvement compared to short term interventions (Walsh et al., 2015).
- The current sample was also highly educated and mostly White, limiting generalizability.
  - Future Directions
- More robust long-term studies including self-report and objective measures of blood and insulin biomarkers related to mood, cognition, and sleep should be conducted to explore the potential mechanisms of action by which Tai Chi confers benefits among healthy older adults.