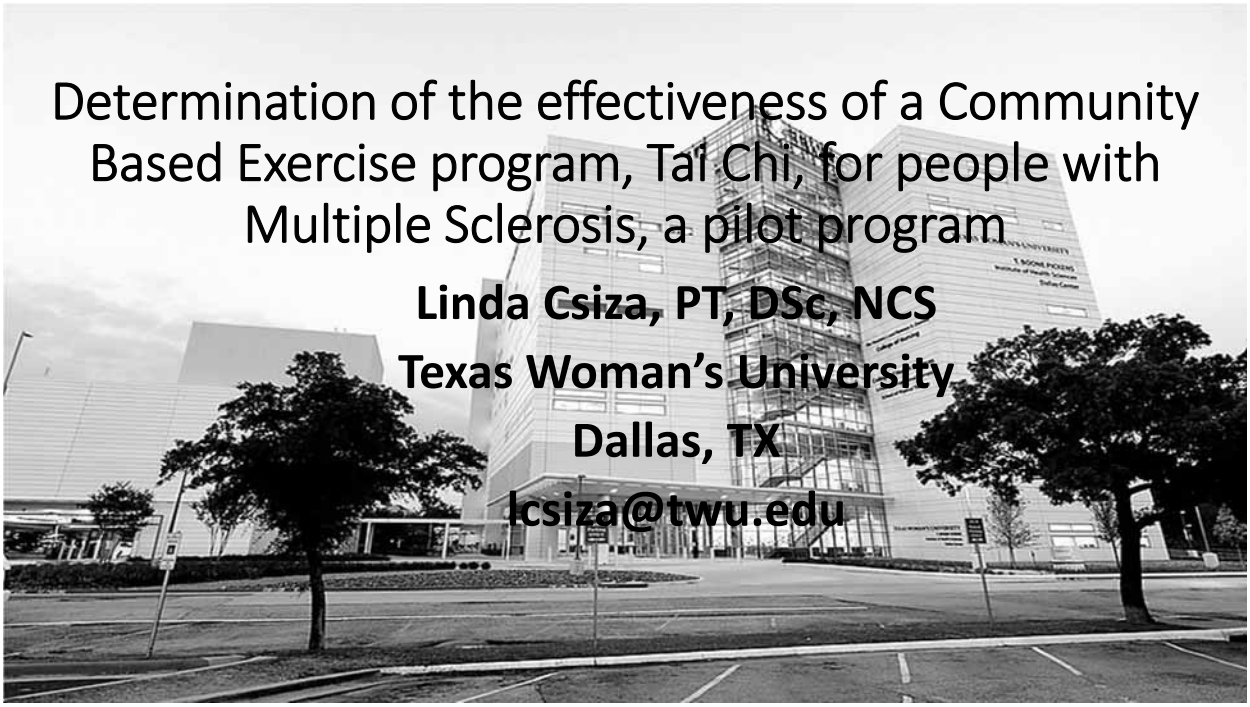

Determination of the effectiveness of a Community Based Exercise program, Tai Chi, for people with Multiple Sclerosis, a pilot program

Linda Csiza, PT, DSc, NCS

Texas Woman's University

Dallas, TX

lcsiza@twu.edu

Objectives

- Integrate rehabilitative strategies into the multidisciplinary management of the sequelae of MS which promote improvements and optimize function and quality of life
- Identify MS-specific screening techniques that facilitate individualized and targeted rehabilitation services
- Discuss outcome measures for determination of balance and strength deficits, and balance confidence
- Discuss the use of Tai Chi for improvement in balance deficits in people with MS

- No disclosures

Introduction

- Balance deficits identified in people with mild MS (Denommé 2014, Gunn 2013)
  - Risk for fall
  - Loss of confidence
  - Impairments associated with increased fall risk
    - Weakness
    - Impaired sensation
    - Fatigue
    - Visual deficits

Core beliefs related to exercise

- Cycle of activity/inactivity
  - Emotional responses associate with past experience with exercise
  - Fatigue
  - Perceived cost of exercise
- Line of benefit and harm
  - Physical activity makes MS worse
  - Physical activity waste of time
  - State of disease versus wellness
  - Knowledge of trained personnel
- Participation in exercise remains low

Purpose

- The use of community based Tai Chi program to improve
  - Balance
  - Gait
  - Reduce fall risk
  - Community setting chosen for ease of continuation of the program
  - Setting Mind Set Assisted Physical Training
    - Personal training program for people with MS
    - No cost /supported by NMSS

Methods

- 25 people recruited from support groups, neurologists, Mind Set Assisted Physical Training gym
- 15 people returned for post-testing
- Inclusion criteria
  - Definite diagnosis of MS
  - Ages 18-75
  - Able to read and sign consent to participate form
  - Attend pre and post-testing
  - Complete 2 x per week x 6 week Tai Chi

Pre/Post-Testing

- Berg Balance Scale (BBS) static balance
- Fatigue Severity Scale (FSS) self report measure of fatigue
- Timed Up and Go (TUG) dynamic timed balance
- Dynamic Gait Index (DGI) dynamic balance measure during gait
- Activities Specific Balance Scale (ABC) self report balance confidence
- Two Minute Walk Test (2MWT) endurance gait measure
- Five Times Sit to Stand (5TSTS) LE strength

Results

Table 3: Test Statistics[a]

	Z	Asymp. Sig. (2-tailed)
BBS post - BBS pre	-2.940[b]	.003
FSS post - FSS pre	-2.279[c]	.023
TUG post - TUG pre	-2.375[c]	.018
DGI post - DGI pre	-.943[b]	.345
ABC post - ABC pre	-.422[b]	.673
2 min walk post - 2 min walk pre	-2.366[b]	.018
5TST post - 5TST pre	-2.950[c]	.003

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

c. Based on positive ranks.

Discussion

- Demographics
  - Mean age 59.3
  - 73% woman
  - 66% used assisted device
  - 3 people had progressive forms of MS
  - Average length of MS 21 years

Benefit of Tai Chi

Improvements

- BBS: p=0.003
- FSS: p=0.023
  - Mean:43.7 pre and 35.8 post
  - > 36 indicates severe
- TUG: p=0.018
- 5TSTS: p=0.003
  - Strength LE
- 2 MWT:p=0.018
  - Endurance gait

No Change

- DGI: p=0.345
  - Dynamic balance during gait
  - Variety of tasks
  - No walking in Tai Chi
- ABC: p=0.673
  - Confidence in balance

Fall Risk

Pre-test

- BBS: 37.00 Risk for falls
  - MCD=6 (Godi, 2012)
- TUG: 13.5 Risk for falls
  - 48.51
  - MCD=24%
- 5TSTS: 32.93 secs Risk for falls
  - Cut off > 16 secs risk for falls
- 2MWT: 212.60 ft
  - MDC=63.02 feet

Post-test

- BBS: 40.73
  - 3.73 change
- TUG
  - 46.24
  - 4.8% change
- 5TSTS: 24.40 (8.53 secs)
  - Risk for falls
- 2MWT: 238.13
  - 25.53 feet

Identified benefit

- All levels of MS allowed in study
- Began in a chair, end of 6 weeks, all were standing during Tai Chi class
- 5TSTS improved which probably led to improvement in TUG
  - Both have sit to stand
  - LE strength improved
- BBS improved, improvement in static balance but not in dynamic balance (DGI)
  - Tai Chi is balance in standing and weight shifting

Identified benefit

- FSS improved and mean post-testing was 35.8
  - Just barely below severe ranking
  - Fatigue continues to be challenge
- 2MWT
  - Did not meet 63 feet MDC
  - Balance confidence didn't improve
  - Tai Chi does not have a gait component
  - Training is task specific (Nadeau, 2013)

Suggestions/Limitations

- Limitations
  - Small cohort
  - Short time frame (6 weeks)
  - No control group
  - No long term follow up
- Suggestions
  - Longer length of intervention: 12 weeks
  - Control group
  - Long term follow up

Thanks to

- Travis Ehrhardt at Mind Set Assisted Physical Training
  - Space, Support, Encouragement
- National Multiple Sclerosis Society
  - Assistance with recruiting
- All of the people with MS who are willing to try new activities

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