# Stand Tall, Don’t Fall: A Systematic Review on the Effectiveness of Tai Chi for Improving Balance in Healthy Older Adults

**Authors:** Miya Cho, Moira Frain, Courtney Monk, Caitlin O’Neill, & Kathryn Ricciardi  
**Mentor:** Teal Benevides, PhD, MS, OTR/L

Presented in Partial Fulfillment of the Master of Science in Occupational Therapy degree at Thomas Jefferson University

## Objectives
- Identify and describe the need for effective balance related interventions among the healthy older adult population
- Recognize occupational therapy’s role in improving balance to decrease risk of falls
- Discuss the effectiveness of Tai Chi as an intervention for improving balance within this population

## PICO
- Is Tai Chi an effective intervention for improving balance in the healthy older adult population?

## Methods: Systematic Review Process

### 1. Identify Problem & Develop PICO
- 1 out of 3 older adults over the age of 65 experience a fall each year (CDC, 2015).
- Falls are the leading cause of death due to injury in older adults (CDC, 2015)
- Natural aging process can cause physiological changes that increase risk of falls (CDC, 2015)

### 2. Develop & Conduct Search Protocol

#### Databases used:
- PubMed, CINAHL, Cochrane Library, & PEDro

#### Keywords, Modifiers, & Limits:
- **P:** ("Aged"[Mesh]) OR older adult [Title/Abstract]) OR adult) OR elderly[Title/Abstract])
- **I:** (tai chi) OR "Tai Ji"[Mesh]) OR "Exercise Movement Techniques"[Mesh]) OR tai chi*) OR tai chi[Title/Abstract])
- **O:** ("Postural Balance"[Mesh]) OR (Postural Balance) OR balance) OR stability) OR postural stability)) OR balance[Title/Abstract]) AND (INDEPENDENT LIVING OR community dwelling)
- **Limits:** Published Date 2006-2016; Peer Reviewed; Age Groups: older adults (65+)

### 3. Article Screening

#### Inclusion Criteria:
- 50% of sample size ages 65 + and/or mean sample age of at least 65
- Healthy community dwelling older adults
- Article explicitly states Tai Chi in title and/or abstract
- Directly related to improving balance and/or postural control
- Written in English
- Published Jan 2006 -Feb 2016
- Peer-reviewed
- Level I-IV level of evidence

#### Exclusion Criteria:
- Participants ages 21 & under
- Participants with significant cardiovascular, pulmonary, metabolic, or musculoskeletal disease (eg, joint fracture, artificial joint replacement), or neurologic diseases
- Systematic review/meta-analyses
- Qualitative studies
- Published 2005 or earlier

### 5. Critical Appraisal

#### Critique Form:
- Law & MacDermid Effectiveness Study Checklist (Appendix E) Form
- 18 Articles included in synthesis to identify themes
Themes Identified

**Theme 1: In-person Method of Delivery (n=13)**
- 9 studies found statistically significant improvements in balance when compared to a control group with no intervention or pre and post test measures\(^{1,5,7,8,9,12,14,18}\)
- 2 studies reported statistically significant improvements in balance after 12 weeks of intervention, however, at 1 year follow up, scores dropped below baseline \(^{10,13}\)

**Theme 2: Telecommunication as a Method of Delivery**
- 2 studies found telecommunication demonstrated higher adherence and compliance rates when conducted in the community or live stream broadcasting compared to at home videos \(^{2,16}\)
- 4 studies using telecommunication found improvements in balance and fall reduction \(^{2,6,16,17}\)

**Theme 3: Yang style of Tai Chi**
- 7 studies found statistically significant improvements in balance when utilizing the short form Yang style of Tai Chi \(^{2,5,6,8,11,15,16}\)
- Short form of Yang style consists of 24 movements
  - Quicker and easier to learn vs. long form

**Theme 4: Comparisons to Alternatives Exercises**
- 3 studies found Tai Chi to be effective in improving balance \(^{1,3,4}\)
- 4 studies found no statistical differences between Tai Chi and other balance interventions \(^{3,4,13}\)
- 1 study found statistically significant improvements of self-efficacy after a Tai Chi intervention when compared to physiotherapy \(^{13}\)

Results

**Clinical Implications:**
- Short form of Yang style Tai Chi is an effective intervention to use with older adults to improve balance
  - However, found to be equally effective when compared to other balance interventions
- Specialty Certification not required to practice Tai Chi
- Best utilized under the following conditions:
  - Duration: ~1hr
  - Frequency: 2-3x per week
  - Length of intervention: at least 12 weeks
- For improved adherence rates:
  - Use a community group setting for in-person intervention
  - Live streaming at home or in a community instead of using DVDs at home for a telecommunication intervention

**Take Home Message:**
- Tai Chi is effective at improving balance within the healthy older adult population
- Utilize Yang style for best evidence-based practice
- Use outcomes measures related to balance to track progress
- Refer patients to occupational therapy to help implement a custom, meaningful, multifaceted intervention plan

References can be located at the following website: http://group3taichi.wix.com/ottaichi

If you have any questions or feedback, feel free to contact us using the contact information below!

Miya Cho: miya.cho@jefferson.edu
Moira Frain: moira.frain@jefferson.edu
Courtney Monk: courtney.monk@jefferson.edu
Caitlin O’Neill: caitlin.oneill@jefferson.edu
Kathryn Ricciardi: kathryn.ricciardi@jefferson.edu

Thank you for attending our presentation! 😊