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

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Mentor: Teal Benevides, PhD, MS, OTR/L

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

<p>Objectives</p>	<ul style="list-style-type: none"> • 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 		
<p>PICO</p>	<ul style="list-style-type: none"> • Is Tai Chi an effective intervention for improving balance in the healthy older adult population? 		
<p>Methods: Systematic Review Process</p>			
<p>1. Identify Problem & Develop PICO</p>	<ul style="list-style-type: none"> • 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) 		
<p>2. Develop & Conduct Search Protocol (647 Articles Identified -> 561 after removal of duplicates)</p>	<p>Databases used:</p> <ul style="list-style-type: none"> • PubMed, CINAHL, Cochrane Library, & PEDro <p>Keywords, Modifiers, & Limits:</p> <ul style="list-style-type: none"> • 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])) AND • 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+) 		
<p>3. Article Screening (561 Total Screened -> 509 excluded)</p>	<table border="1"> <tr> <td data-bbox="431 1371 987 1833"> <p>Inclusion Criteria:</p> <ul style="list-style-type: none"> • 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 </td> <td data-bbox="987 1371 1549 1833"> <p>Exclusion Criteria:</p> <ul style="list-style-type: none"> • 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 </td> </tr> </table>	<p>Inclusion Criteria:</p> <ul style="list-style-type: none"> • 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 	<p>Exclusion Criteria:</p> <ul style="list-style-type: none"> • 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
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<p>5. Critical Appraisal (52 Critiqued -> 33 excluded)</p>	<p>Critique Form:</p> <ul style="list-style-type: none"> • 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**^{1,3,4,13}
- 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!



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Thank you for attending our presentation! 😊

