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Does Yoga Practice Improve Balance in Older Adults?

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Background

- Each year, nearly one-third of adults aged 65 years and older have an unexpected fall resulting in disability, decreased independence, and reduced quality of life.^{1,2}
- Evidence suggests that exercise programs which specifically challenge balance are the most effective at preventing falls.¹
- Participation in yoga as an alternative intervention strategy has become an emerging trend over the last several years, with an estimated 1 million older adults currently participating in the United States.^{2,3}
- Yoga has positive effects on balance, muscle strength, endurance, flexibility and gait, and it can also contribute to improvements in self-awareness, self-esteem, proprioception, and overall health.^{4,5,6}
- Yoga has the potential to improve balance, prevent falls, and reduce the fear of falling in the older adult population.^{1,7}
- Although there has been growing interest in yoga as an alternative therapy for improving balance and reducing fall risk in the older adult population, more research is needed to specifically link yoga to a reduction in fall risk.⁸

Purpose & Hypothesis

The purpose of this systematic review was to determine the effects of a regular yoga program on balance in older adults. We hypothesized that a regular yoga program would improve balance and consequently reduce fall risk in the older adult population.

Methods

Review protocol

- Based on Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines

Literature search of Ovid, Scopus, PubMed, and CINAHL in July 2015
Total: 669 articles

635 excluded based on removal of duplicates, lack of relevance to research question, and only inclusion of one of the search terms

Search terms

- Yoga
- Older adults
- Balance

Total: 34 articles

22 excluded based on title and abstract

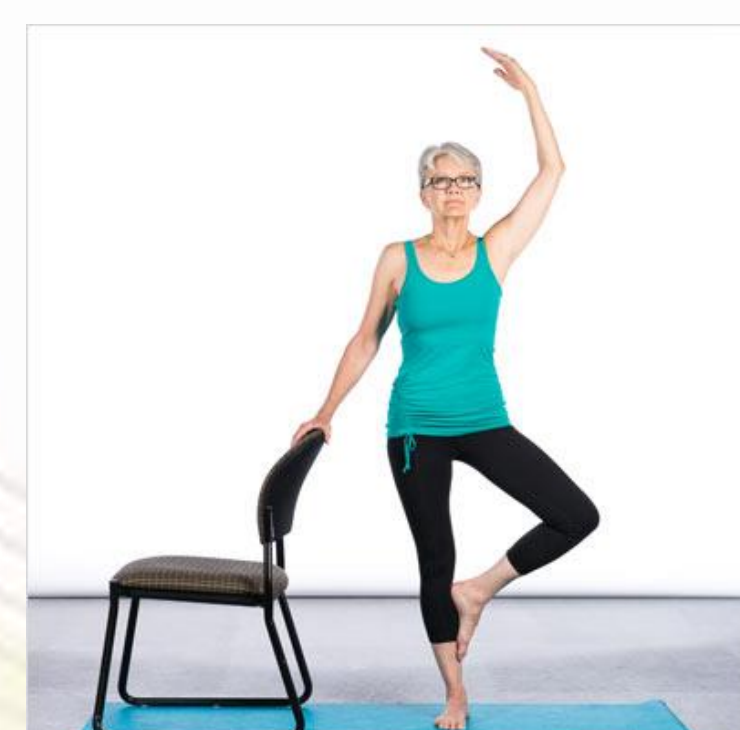
Grading the evidence

- Sackett Scale
- Consultation between all four researchers and the faculty advisor to resolve discrepancies
- Risk of bias include lack of blinding and self reporting measures

Total: 12 articles

1 excluded because it was only a poster presentation

Total: 11 articles



<https://www.acefitness.org/acefit/healthy-living/article/60/5478/7-chair-yoga-poses-for-better-balance/>



<https://soundscapemusictherapy.files.wordpress.com/2013/02/warrior-ii-pose1.jpg>



<https://www.pinterest.com/pin/441634307181259303/>

Results

Author/year	Type of Yoga	Duration/Frequency of Yoga	Balance Outcome Measure(s)	Impact of Yoga on Balance
Nick et al., 2015	Hatha with emphasis on Pavanamuktasana and balance movements	1 hour classes 2x/week for 8 weeks	Berg Balance Scale (BBS)	Significant (p<0.05) improvement in BBS scores as compared to control
Saravanakumar et al., 2014	Asanas, pranayama, yoga nidra	30 min classes 2x/week for 14 weeks	BBS, fall incidence	Improved BBS and decrease in fall incidence after yoga, but not significant (p=0.456)
Meng et al., 2014	Vinyasa style	1 hour classes 2x/week for 12 weeks	Functional Reach Test (FRT), single leg stance (SLS), postural sway/dynamic posturography	Significant improvement in all outcome measures (p<0.005)
Hakim et al., 2010	Not mentioned	8 weeks	SLS, Activities-Specific Balance Confidence Scale (ABC), Fullerton Advanced Balance scale (FAB), Multidirectional Reach Test (MDRT)	Significant improvements in FAB (p<0.001), MDRT to the right (p<0.008) and left (p<0.004). No significant improvement in SLS or ABC
Tiedeman et al., 2013	Iyengar	1 hour 2x/week and HEP 10 - 20 min poses 2x/week for 12 weeks	Standing balance portion of Short Physical Performance Battery (SPPB) and SLS	Significant improvement in balance scores for yoga group (p=.04) and one leg stance eyes closed (p=.02)
Tatum et al., 2011	Glenmore Ageless Therapeutic Yoga Program	90 min 1x/week and HEP 30 min 5x/week yoga DVD for 13 weeks	BBS	Statistically significant improvement (p<.001) for the Berg
Zettergren et al., 2011	Kripalu	80 min 2x/week for 8 weeks	BBS, ABC	Significant improvement for yoga group in Berg (p<.003)
Schmid et al., 2010	Focus on balance postures	75 min 2x/week for 12 weeks	BBS, fall incidence	Static balance increased significantly (p=.045) but no change in dynamic balance. No significant change in fall incidence.
Chen et al., 2008	Silver yoga	3x/week, 70 minutes per session, for 4 weeks	SLS	SLS duration improved significantly by an average of 2.8s (p<0.015)
Chen et al., 2010	Silver yoga	3x/week for 24 weeks; 70 minutes per session	SLS	Balance did not significantly improve (p>0.05)
Carroll et al., 2011	Anusara yoga	Participants who regularly participate in yoga (start date could have been recent or years)	Questionnaire of subjective improvement of balance and posture	Mean improvement: 88.8%; between 90-95% of participants reported improved balance

Discussion

Key points

- Yoga programs can be used to improve balance in older adults
- Participation in yoga programs led to improvements in quality of life, functional strength, and performance of ADLs.

Why did yoga improve balance?

- EMG studies showed poses such as down dog, plank, chair and mountain with arms up engage key trunk musculature which assist with balance and ADL performance.^{9,10}
- Yoga has been shown to increase body awareness, which contributes to improved balance in older adults.

Fear of falling

- Fear of falling efficacy scale scores improved in three of the studies. However FOF remained in the majority of participants.
- We hypothesize that yoga programs that are longer in duration may be needed to improve FOF, especially in those who have experienced a fall in the past.

Clinical Relevance

Evidence shows

- Exercise programs that include endurance, balance, and strengthening components are recommended to reduce fall risk.
- Yoga programs can improve balance in older adults, which can reduce risk of falling.

How clinicians can use the results

- Incorporate yoga poses in their treatment plans.
- Educate patients on how to utilize local yoga programs to maintain and improve balance once formal physical therapy treatment is completed.
- Clinician should only recommend yoga programs that are safe and appropriate for the older adult population.

Future Research

Yoga is an emerging alternative therapy which has been proven to have several physiological benefits. Future research is recommended in order to determine the following:

- Appropriate duration and length of a yoga program to achieve significant improvements on balance measures
- Effects of seated versus standing yoga on balance in the older adult population
- Effects of balance on a novice yoga practitioner compared to an expert practitioner
- Impact of yoga on strength, flexibility, cardiovascular and pulmonary health, mental health, and neurological conditions (e.g. multiple sclerosis, Alzheimer's, Parkinson's)

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