



THE INTERNATIONAL ASSOCIATION OF YOGA THERAPISTS

Research Summary for Yoga Therapists: Yoga Therapy for Balance and Mobility in Older Adults

By Pam Jeter and Timothy McCall

Research Summaries for Yoga Therapists are a service provided by IAYT to help yoga therapists navigate the twists and turns of the research landscape. The full reference can be found here:

Youkhana, S., Dean, C. M., Wolfe, M., Sherrington, C., & Tiedemann, A. 2016. Yoga-based exercise improves balance and mobility in people aged 60 and over: A systematic review and meta-analysis. *Age and Ageing*, 45(1), 21–29.

Definition of the condition

Older adults who fall are at greater risk for nonfatal injuries, hospitalization, mortality, reduced quality of life, and decreased independence. This review evaluates balance and physical mobility as a means for reducing fall risk in older adults. Balance was defined as “the ability to maintain the projection of the body’s center of mass within manageable limits of the base of support, as in standing or sitting, or in transit to a new base of support.” Physical mobility was defined as “the ability to walk, move around and change or maintain body position.”

Prevalence (How common is the condition and what is the public health burden?)

According to the U.S. Centers for Disease Control and Prevention, one in four Americans aged 65+ falls each year. Falls are the leading cause of fatal injury and the most common cause of nonfatal trauma-related hospital admissions among older adults. Falls result in more than 2.8 million injuries treated in emergency departments annually, including over 800,000 hospitalizations and more than 27,000 deaths. In 2014, the total cost of fall injuries was \$31 billion.

Etiology (What are the suspected causal factors?)

As people age, they experience increased reaction times and decreases in strength, sensorimotor processing, and postural control.

Treatment options

Treatment or rehabilitation for fall prevention includes improving motor skills, postural control, and strength.

Rationale for yoga

Yoga therapy provides a comprehensive, integrated approach that can address multiple risk factors at once. Yoga therapy is low impact, and when modified to meet the individual’s capacity, yoga can be easily implemented regardless of age or level of experience. The practice has few untoward side-effects and no known interactions with prescription medications.

General methods

The authors conducted a systematic review and meta-analysis of published randomized controlled trials (RCTs) on yoga for balance and physical mobility. The search for relevant trials was conducted in electronic databases. Trials were included if the researchers evaluated the effect of physical yoga (excluding meditation and breathing exercises alone) on balance in people aged 60+ years. Data were extracted for balance and the secondary outcome of physical mobility. This review reports the results of a meta-analysis.



Who was studied?

Participants were 60 years of age or older (age range 63–84 years) with no restriction on the characteristics of that population. Participants in the various studies were diagnosed with such conditions as Parkinson's disease, osteoarthritis of the knee, and stroke, as well as otherwise healthy adults. Five of the six trials recruited participants from the community and one trial recruited participants from residential elder-care settings.

How were the studies in the review conducted?

- Yoga interventions focused on physical aspects of yoga and therefore excluded yoga involving only meditation or breathing exercises. Yoga styles included Iyengar, Hatha, or general yoga techniques (unspecified). Yoga poses were conducted standing, sitting, and lying on the floor. Examples of the types of standing poses included are half knee-squat with feet side by side (chair pose), one-legged stand with arms overhead (tree pose), one-legged stand with trunk flexion and rotation (half-moon pose), and hip abduction with lateral trunk flexion (triangle pose).
- All studies utilized an experienced yoga instructor and used props such as blankets, chairs, blocks, pillows, straps, and mats for support and comfort.
- Each study included progression in the intensity of the yoga intervention over time, from simple postures to more challenging ones.
- Control groups included no intervention, waitlist, or usual care.
- Outcomes were validated, standardized, clinical or laboratory-based measures of balance such as the Berg Balance Scale, One-Leg Stand test, and Short Physical Performance Battery. Secondary outcome measures of physical mobility were also obtained and included any validated methods measuring gait speed, sit-to-stand ability, functional tests, or other mobility scales.
- Samples sizes ranged from 13 to 135, with a total of 307 participants.
- Participants engaged in 60–90 minutes of yoga, one to two times per week, for 8 to 24 weeks in total. The mean number of sessions attended by study participants was high, ranging from 75% to 99%.

What did the researchers find?

Note that this review reports the results of a meta-analysis, which is a combination of the results of the individual studies according to group. Usually, the groups are clustered by defined conditions and similar outcomes. In this case, the groupings for analysis are yoga compared to type of control and by outcomes.

- Three studies used the Berg Balance Scale, two studies used the Short Physical Performance Battery, and one used a One-Leg Stand test. Mobility measures were taken in three studies and included sit-to-stand and gait-speed tests.
- The primary meta-analysis included six eligible RCTs evaluating the effect of yoga on balance outcomes.
- The effect of yoga on balance indicates a small but statistically significant improvement in balance for those in the yoga groups versus control-group participants.
- For the secondary analysis, three trials were pooled together to report on physical mobility outcomes. These trials involved 225 participants.
- The effect yoga on mobility indicates a medium, statistically significant improvement in mobility in the yoga groups versus control-group participants.

Were adverse events reported?

All of the included trials measured adverse events related to the yoga intervention. Two of the trials reported that no adverse events occurred. One of the trials reported that a fall occurred during the yoga intervention but that the participant did not sustain any injuries. The remaining three trials reported minor adverse events as a result of the yoga intervention, ranging from knee and lower-back pain to minor muscle strain.

What were the limitations of the studies?

Conducting RCTs that measure improved balance and physical mobility after a yoga intervention provides some evidence of the preventive nature of yoga for reducing fall risk factors. However, balance and physical mobility outcomes are considered surrogate markers for falls, not measures of a fall itself. Measuring a direct effect of yoga on reducing falls requires a more long-term, prospective study to determine reductions in actual falls and subsequent injury. Samples sizes were small in the included trials, making it difficult to generalize to a broader population of older adults. The balance measures used were able to assess static balance; these provided little information on specific postural control elements that would be important for preventing falls in the older population. A deeper understanding of specific postural elements may inform more individualized yoga therapeutic approaches. Future studies may also consider a longer duration intervention, as fall prevention benefit may be a result of long-term or continued yoga practice.

What is the take-away message from this review?

Yoga-based practices hold promise for fall prevention by improving balance and physical mobility. Yoga was shown to be safe and effective and easily modified for an older population.

Clinical relevance

Yoga appears to benefit older participants at risk of falls by improving balance and mobility. The results of this meta-analysis suggest yoga may lower the risk of falls, which can result in serious injury, loss of function, and even death. The

yoga interventions studied were found to be safe, with only minor musculoskeletal side-effects reported. It would be expected that yoga in this population would also yield other benefits reported in scientific studies including lowered stress, improved mood, better sleep, etc.