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Center on Aging & MAGEC**

**Co-sponsored Webinars**

**USING YOGA FOR MANAGING  
CHRONIC DISEASES IN OLDER ADULTS**

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**USING YOGA FOR MANAGING  
CHRONIC DISEASES IN OLDER ADULTS**

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**Disclosure Information**

MGS Webinar Conference  
November 20th, 2014

- I have no financial relationships to disclose
- I will not discuss off label use and/or investigational use in my presentation

**Objectives**

Upon successful completion of this webinar, participants will be able to:

- Understand the safety and feasibility of using yoga for health management in older adults with chronic health conditions.
- Describe the current evidence on the effects of yoga on chronic diseases in older adults.

## Yoga

- Mind-body practice with an ancient history originally derived from India
- The word "yoga" means "union" in Sanskrit
- Hatha yoga, the physical practices of yoga, is commonly practiced in the U.S.
- Typically combines:
  - physical postures
  - breathing techniques
  - meditation or
  - relaxation



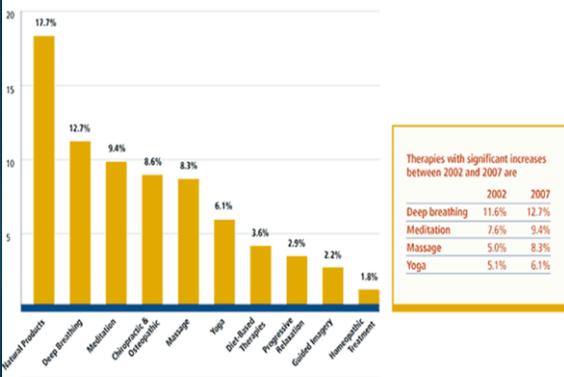
## Yoga

- There are about 1,300 variation of yoga postures documented, 84 of them are classic yoga poses
- Prevalence of yoga showed a significant increase between 2002 – 2007<sup>1</sup>
- 8.7% of U.S. adults (20.4 million people) practiced yoga, and among them, 37.2% were adults ≥ 45 years<sup>2</sup>



1. National Health Statistics Report, 2008  
2. Yoga in America, 2012

### 10 Most Common CAM Therapies Among Adults - 2007



Therapies with significant increases between 2002 and 2007 are

|                | 2002  | 2007  |
|----------------|-------|-------|
| Deep breathing | 11.6% | 12.7% |
| Meditation     | 7.6%  | 9.4%  |
| Massage        | 5.0%  | 8.3%  |
| Yoga           | 5.1%  | 6.1%  |

Source: Barnes, Pitt, Bloom, & Nahri. CDC National Health Statistics Report #12. Complementary and Alternative Medicine Use Among Adults and Children: United States, 2002. November 2008.

## Yoga

- Majority of yoga users identified yoga as being helpful for health maintenance
- Patients with certain medical conditions:
  - Musculoskeletal
  - Mental health
  - Severe sprains
  - Asthma



3 Birdee et al., 2008. Characteristics of yoga users: Results of a national survey. Journal of General Internal Medicine, 23(10): 1653-1658.

## Older Adults with Chronic Health Conditions

- About 80% of older adults have at least one chronic health condition
- Chronic – cure rare, long-term, requires daily management
- Largest consumers of health care
- Pharmacotherapy concerns:
  - Polypharmacy
  - Prone to drug-related adverse effects
- Avoiding side effects from medications is one of the main reasons for seeking complementary therapies



## Older Adults with Chronic Health Conditions

- Regular physical activity and exercise
  - maintain health
  - preserve functional independence
- Older adults, especially those with chronic musculoskeletal pain and disability, do not exercise regularly
- Yoga, body-mind intervention that uses a gentler approach, can potentially be a feasible and effective option for older adults with chronic health problems



## Yoga is Currently Recommended By...



### Yoga and Older Adults

Yoga is a mind and body practice that typically combines physical postures, breathing exercises, and relaxation. Researchers are studying how yoga may help improve health and to learn more about its safe use in older adults.

Recent studies in people in their late 40's have found that yoga is helpful in reducing chronic low-back pain and improving function. However, evidence is not yet available on its effectiveness and safety for older adults. If you're thinking about practicing yoga, keep the following in mind:

**Put safety first.** Yoga is generally safe in healthy people. However, if you have special health considerations such as a joint replacement, arthritis, balance problems, high blood pressure, glaucoma, or other health issues, talk with your health care provider before starting yoga. Start with an appropriate yoga class—such as one called Gentle Yoga or Seniors Yoga—in order to get individualized advice and learn correct form.

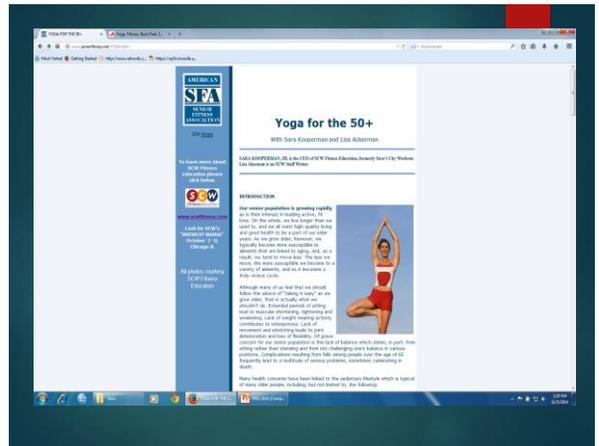
**Look for a well-trained instructor who's attentive to your needs.** Ask about the teacher's experience and training. Standards for teacher training and certification differ

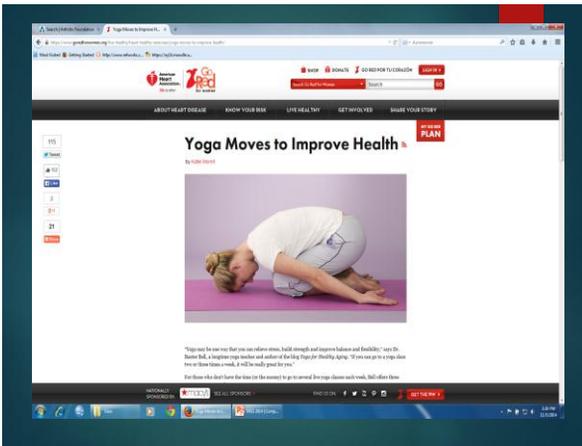
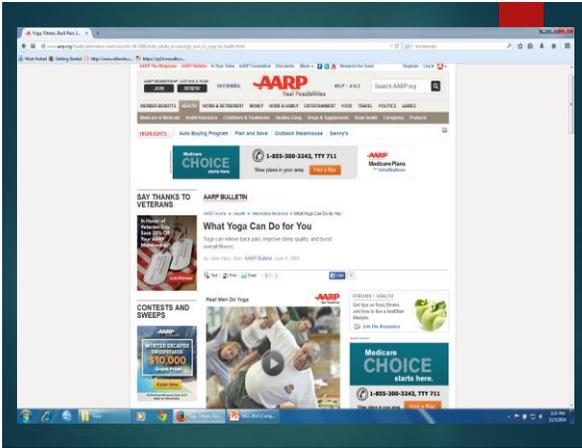
#### Quick Tip

For more on yoga for seniors, including help finding a yoga teacher who has specialized training in working with older adults, go to [www.yoga4seniors.com](http://www.yoga4seniors.com).

#### VISIT

[www.nia.nih.gov/Go4Life](http://www.nia.nih.gov/Go4Life)  
Read more tips for adding physical activity to your day.  
[www.nccam.nih.gov](http://www.nccam.nih.gov)  
Watch a video about the scientific results of yoga for health and well-being.





## Literature Review

- Yoga intervention research – focus on chronic health issues related to
  - Musculoskeletal
  - Psychiatric
  - Cardiovascular
  - Respiratory
- Meta-analyses – low back pain 4, 5
  - Recent practice guideline, published jointly by the American College of Physicians and the American Pain Society, suggests yoga as a therapeutic options for patients with low back pain

4. Cramer H, Lauche R, Haller H, Dobos G. (2013). A systematic review and meta-analysis of yoga for low back pain. *Clinical Journal of Pain*, 29(5):450-60.  
 5. Hultzman S, Beggs RT. (2013). Yoga for chronic low back pain: a meta-analysis of randomized controlled trials. *Pain Research Management*, 18(5):267-72

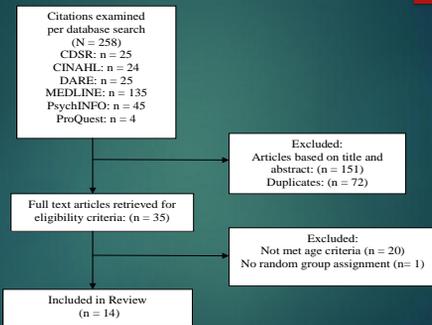
## Literature Review

- A number of systematic literature reviews and meta-analyses indicate that yoga is a safe and effective intervention for chronic health problems
  - low back pain
  - anxiety and depression
  - Cancer (quality of life)
  - Hypertension
  - Immune response
- Focused mostly on younger adults or wide age range
- Results may not necessary be transferrable to the needs of older populations

## Literature Review

- The purpose of this literature review was to:
  - critically examine relevant studies on the efficacy and safety of yoga for older adults with chronic health conditions
  - synthesize the findings to determine the evidence on whether the practice of yoga is safe and beneficial in older adults with chronic health conditions
- Peer-reviewed articles: January 2000 – December 2013
- Keywords: *yoga, older adults, senior, elderly, and aged*

## Methods



## Results – 13 Randomized Controlled Trials

| Author, year, country            | Design/Quality score | Total sample size (% women) | Mean age, years (SD)                        | Type of health condition | Participant accrual  | Intervention and control groups  | Drop out Rate (%)(Reason)                             |
|----------------------------------|----------------------|-----------------------------|---|--------------------------|--|--|---|
| Chan et al. 2012 South Australia | RCT                  | N = 14 (14.2)               | Yoga: 67.1 (13.4)<br>Exercise: 71.7 (12.7)  | Stroke                   | Center for Physical Activity in Ageing's database of stroke patients | Hatha yoga (postures, breathing and Satyananda meditation), weekly 90-min group classes plus 40-min 4 sessions/week of home practice for 6 weeks<br><br>Exercise: weekly 50-min exercise classes, 6 weeks  | 18% (injury, unavailable caregiver, personal reasons) |
| Chen et al. 2010 Taiwan          | RCT                  | N = 55 (52.7)               | 75.40 (6.7)                                 | Fruity                   | Two assisted living facilities                                       | Silver Yoga (warm up, Hatha yoga, relaxation and guided-imagery meditation), 70 minutes, 3 sessions/week for 24 weeks<br><br>Wait-list control group   | 0%  |
| Ehnezar et al. 2011 & 2012 India | RCT                  | N = 250 (69.6)              | Yoga: 59.56 (9.5)<br>Control: 59.42 (10.66) | Knee OA                  | Outpatient department of an orthopedic center                        | The first two weeks both groups received TENS and Ultrasound followed by supervised practices:<br>Integrated yoga: 40 min 6 day/week<br>Non-yogic exercises: 40 min 6 day/week (control)<br>Both groups were then instructed to practice only the supervised practices 40 min daily at home for 3 months | 6% (not identified)                                   |
| Donesky-Cunco et al. 2009 USA    | RCT                  | N = 41 (72)                 | 69.9 (9.5)                                  | COPD                     | American Lung Association Better Breathers Clubs                     | Youngee Yoga twice weekly 60 minute session for 12 weeks (yoga poses and timed breathing).<br>Daily home practice<br><br>Control: Usual Care pamphlet for COPD management  | 29% (death, illness and transportation)               |

| Author, year, country        | Design/Quality score | Total sample size (% women) | Mean age, years (SD) | Type of health condition                    | Participant accrual                            | Intervention and control groups   | Drop Rate (%)(Reason)                    |
|------------------------------|----------------------|-----------------------------|----------------------|---|--|---|--|
| Gordon et al. 2008 Cuba      | RCT                  | N = 231 (80.5)              | 64                   | Type II DM                                  | Hospital                                       | Hatha yoga: weekly 2 hours yoga session x 6 months plus 1 hour 3-4 x /week home practice<br>Conventional PT: weekly 2 hours session x 6 months plus 1 hour 3-4 x /week home practice<br>Control: Usual care | 0%                                       |
| Greendale et al. 2009 USA    | RCT                  | N = 118 (81.4)              | 75.5 (7.9)           | Kyphosis                                    | Community                                      | Hatha yoga: hour-long yoga classes 3 days/week for 24 weeks<br>Control intervention: provided social environment similar to yoga  | 1.7% (2 dropped (reason not identified)) |
| Littman et al. 2010 USA      | RCT                  | N = 63 (100)                | 60.7                 | Overweight and obese Breast cancer survivor | Community                                      | Hatha yoga: 75 minute weekly class session and four 20-30 minute home practices for 6 months<br>Wait-list control   | 14 % (stroke, surgery, and unknown)      |
| Manjmath & Telles 2005 India | RCT                  | N = 69 (74)                 | 70.1 (8.3)           | Sleep problems                              | Residential home for the aged                  | Yoga: 60 minute yoga session daily plus devotional songs, yoga theory/philosophy lectures, and meditation in the evening six days a week.<br>Ayurveda: herbal preparation twice a day<br>Wait-list control  | Not reported                             |
| Schmid et al. 2012 USA       | RCT                  | N = 47 (19)                 | 63.9 (8.7)           | Chronic stroke                              | VA Medical Center, local stroke support groups | Group yoga: bi-weekly hour long sessions for 8 weeks<br>Yoga + plus: group yoga plus at-home yoga and relaxation audio recording<br>Wait-list usual care control  | 0%                                       |

| Author, year, country       | Design/Quality score | Total sample size (% women) | Mean age, years (SD)                    | Type of health condition         | Participant accrual                                  | Intervention and control groups  | Drop Rate (%)(Reason)                  |
|-----------------------------|----------------------|-----------------------------|---|----------------------------------|--|--|--|
| Shahidi et al. 2011 Iran    | RCT                  | N = 60 (100)                | 66.56                                   | Depression                       | Cultural community center for older women            | Laughter Yoga (laughter, yogic breathing): 30-45 min, 10 sessions<br>Exercise Therapy: 30 min, 10 sessions (aerobic group exercise program of jogging, stretching)<br>Control: No intervention | 15% (reason not identified)            |
| Skoro-Kozdza et al. 2009 UK | RCT                  | N = 59 (61)                 | 60 (10)                                 | Type II DM                       | Communities in two different regions                 | Yoga: 90 minute yoga classes twice weekly over 12 weeks<br>Wait-list Control   | Not reported                           |
| Tuzun et al. 2010 Turkey    | RCT                  | N = 26 (100)                | 60.62 (8.43)                            | Osteoporosis                     | Participants of a drug trial                         | Hatha Yoga: 1 hour twice/week, 12 weeks<br>Exercise strengthening and stretching exercises 1 hour twice weekly for 12 weeks  | Not reported                           |
| Vaishali et al. 2012 India  | RCT                  | N = 57 (75)                 | Yoga: 65.8 (3.2)<br>Control: 64.4 (3.8) | Chronic Type 2 Diabetes Mellitus | Outpatients of a university hospital Diabetic clinic | Yoga: 45-60 min daily, 6 days/week, 12 weeks<br>Control: Education: 45-60 min daily, 6 days/week, 12 weeks   | < 1% (comorbid diabetic complications) |

## Results

- Studies included 1,078 participants, mean age 66.3 ± 8.6 year, 75% female
- A variety of chronic health conditions, types of yoga interventions and doses were used across studies
- The overall quality of these studies is moderate to high using the Jadad Scale – quality evaluation tool
- Majority of studies did not justify the sample size and included small numbers of participants

## Findings - Diabetes

- Fasting blood glucose in the yoga and exercise groups ↓ significantly by 29.48% and 27.43% respectively \*
- Significant ↓ in serum total cholesterol in both groups\*
- Lipid peroxidation significantly ↓ by 19.9% and 18.1% in both yoga and exercise groups respectively
- Significantly improving oxidative status in both groups:
  - Superoxide dismutase ↑ 24.1% and 20.2% respectively
  - Catalase ↑ 13.7% and 13.2% respectively
- No significant changes in diabetes related quality of life and self-efficacy

\* similar findings across three studies

## Stroke

- Fear of falling decreased significantly
- Static balance increased significantly
- Significant improved in quality of life and balance self-efficacy
- Changes in depression and anxiety were not significant

## COPD

- Significant ↓ in dyspnea related distress in the yoga group and ↑ in 6 minutes walk distance and self-reported physical performance compared to usual care control
- No significant changes within or differences between the yoga and usual care groups in all psychological measures

## Kyphosis

- Participants in the yoga had a 4.4% improvement in flexicurve kyphosis angle and a 5% improvement in kyphosis index
- No significant improvement in kyphometer angle or quality of life

## Osteoarthritis

- Significantly improved in between and within group analyses
  - resting pain
  - stiffness
  - state and trait anxiety scores
  - blood pressure and pulse
  - quality of life at two weeks and three months

## Osteoporosis

- Levels of pain and household activities significantly improved in both yoga and exercise groups
- Functional activity, one-leg stance, mobility, social activities, general health, and mental health were significantly improved only in the yoga group

## Fatigue and Overweight

- For fatigue and quality of life, those who attended at least 24 yoga classes had significant improvements
- ↓ in waist circumference with no difference in weight change among participants in the yoga group compared with the control group

## Sleep

- Yoga group:
  - Significant ↓ in the time taken to fall asleep (-10 min)
  - ↑ in the total number of hours slept (+60 min)
  - Feeling of being rested in the morning after six months

## Depression

- Significant difference in depression scores by Laughter Yoga and exercise therapy group when compared to control group
- ↑ in life satisfaction by Laughter Yoga group showed a significant difference in comparison to control group

## Frailty

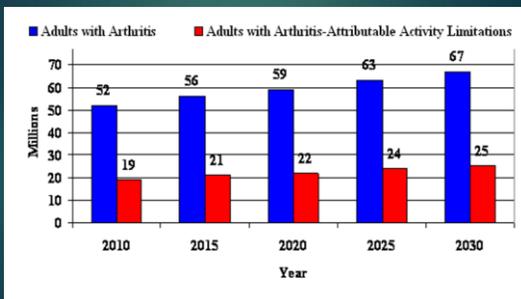
- Yoga group significantly ↓ body fat percentage, ↓ respiration rate, and ↑ right shoulder abduction
- Yoga group had better lower body flexibility, right shoulder flexion/abduction than the wait-list control group at 12 weeks (mid-point)
- Significant differences between the two groups in all physical fitness indicators at 24 weeks (end of program)

## Conclusions

- Low quantity and a wide variability in yoga programs and outcome measures
- Majority of studies reported yoga was safe and effective in improving physical symptoms associated with chronic health conditions in older adults
- More research using vigorous methodology and reporting is warranted



## Yoga for Osteoarthritis



## Osteoarthritis

- Osteoarthritis (OA), the most prevalent chronic joint disorder that causes disability and pain in older adults
- Practice guidelines recognize that different self-care and exercise programs are essential elements of any OA treatment program to help keep individuals with OA to remain active
- Limited scientific evidence to support the use of yoga as an effective option for OA
- Currently one of the fitness programs recommended by the Arthritis Foundation

## Pilot Study

- Conducted a feasibility, safety, acceptability study: Using yoga for managing knee OA in older women
- Randomized controlled trial with two arms: immediate treatment and wait-list control
- Data were collected at multiple time points - baseline, 4 weeks, 8 weeks, and 3 months follow-up
- All classes were taught by the same registered yoga teacher/doctor in physical therapy



## Pilot Study

- 8 weekly yoga intervention
  - developed by a group of 5 registered/certified yoga teachers and reviewed by 3 yoga masters/researchers
- 60 minute/week group session at a yoga center
- 4 additional 30 minute/week of home yoga practice – handout provided
- A total of 36, four groups of nine participants

## Results

- Outcome variables:
  - OA symptoms, physical function of the lower extremities, sleep quality, and quality of life
- No adverse events were reported during the intervention period or home practice
- OA symptoms started to improve at 4 weeks of yoga and continued to improve at 8 weeks
- Physical function improved at 8 weeks
- Sleep quality and quality of life did not improve at any time points
- Yoga is feasible, safe and acceptable for managing knee OA in older women

## Comparative Studies

- To compare the effects of yoga and aerobic/strengthening exercises on OA related symptoms
- Randomized controlled trials with three arms:
  - yoga group, aerobic/strengthening exercises group, education/attention control
- Data are collected at multiple time points
  - baseline, 4 weeks, 8 weeks, quarterly for one year
- 8 weekly intervention classes: 45 minute/week group session and home practice
- 28 participants completed the intervention classes
- Another 25 consented and began intervention classes

## Challenges - Recruitment and Retention

- Community-dwelling seniors
- Snow birds
- Eligible criteria
- Health issues
- Convenience/distance
- Weather and road condition
- Trust factor/affiliation
- Level of interest and motivation



## Conclusions

- Older adults' use of yoga remains under researched
- The nature of yoga and mismatch of research method are often the underlying causes for inconclusive findings
- Because there are many different styles of yoga and yoga classes, choosing the right type/class is crucial
- While many people including older adults are using yoga for health purposes, the lack of scientific consensus from inconclusive research findings leaves many healthcare providers unsure of whether to recommend yoga for health management

**Minnesota Gerontological Society  
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Questions?

Contact [info@mngero.org](mailto:info@mngero.org)

Next Webinar – December 9 at noon  
**Aging: The Good, The Bad, and The Ugly**  
with Robert L. Kane, MD  
Director, UMN Center on Aging & MAGEC