

YOGA

WHAT IS YOGA?

Some people can remember a time before yoga studios could be found on almost every street corner in the United States, but yoga has been around for millennia. It is an ancient system of contemplative practice that originated in India over 5,000 years ago. Most people associate yoga with hatha yoga and other body-oriented practices (like Bikram, Vinyasa Flow, and Iyengar yoga). These forms of yoga incorporate various asanas, or physical postures. There are many other types of yoga as well, including jnana (knowledge), karma (action), and bhakti (devotion). One of the main purposes of yoga as originally practiced was to foster greater mindful awareness, to help people achieve states of “higher consciousness.”[1] In fact, it is often referred to as a “science of mind.” The word yoga originates from the Sanskrit *yug* which means union; it was intended to effectively connect mind and body.

As of 2017, one out of every seven U.S. adults practiced yoga in the past twelve months. Data from 2007 and 2012 suggests that interest in yoga continues to grow in America.[2] According to the 2012 National Health Interview Survey,[3] 94% of those who practiced yoga reported doing it for wellness reasons. Remarkably, 85% reported reduced stress, 55% reported improved sleep, 25% cut back or quit smoking, and 12% cut back or quit drinking alcohol.

HOW YOGA WORKS

There are many theories about why yoga is beneficial. Of course, it is a form of physical activity, and many of its benefits probably occur through the same means as they do for other forms of physical activity; some studies find comparable benefits for yoga compared to other forms of physical activity.[4] In addition, yoga has some novel effects. It increases mindfulness traits[5] and decreases stress levels (especially, according to current studies, in the workplace).[6] It shifts brain waves to more relaxed, focused patterns[7] and favorably shifts neurotransmitter balance.[8] It also reduces levels of the stress hormone, cortisol,[9] and it acts on the medial pain perception system of the brain to produce analgesia.[10]

HOW TO USE YOGA

For beginners, it is perhaps best to practice yoga in a classroom environment, or to enlist the help of a certified trainer. It can help to start with assistive devices like yoga blocks and straps.

WHO CAN USE YOGA

If keeping in mind a patient’s physical (and mental) health limitations, yoga can be used by most people. There are entire yoga courses designed for people in wheelchairs, for

instance. Classes have also been designed for women during pregnancy and are even adapted for children from a variety of age groups (38)(39). Additionally, while the majority of yoga practitioners studied in the US are Caucasian and above the median income, people from a variety of ethnic and socioeconomic backgrounds have historically practiced yoga.

WHEN TO USE YOGA

It is not easy to summarize findings from yoga studies, because they focus on different forms of yoga and a variety of different asanas (postures). Some styles will integrate breathing and meditation, and is then difficult to determine the relative effects of these different elements. Teachers may also combine different styles. Additionally, some teachers will individualize yoga routines, while others request all participants follow a specific set of asanas in synchrony.

While more research is needed, yoga has been found to have a wide array of benefits, including the following, as summarized by Shah[11] and Field[12] (and others, if noted):

OVERALL WELL-BEING

- Reduces levels of inflammatory biomarkers in multiple different chronic diseases[13]
- Improves spinal mobility, flexibility, and muscle endurance
- Benefits functional status and fall prevention, including for those with a history of traumatic brain injury, stroke, Parkinson's, Alzheimer's, or multiple sclerosis[14]
- Activates the parasympathetic nervous system and improves heart rate variability[15]
- Improves emotional well-being, quality of life, and cognitive function

PHYSICAL CONDITIONS WHERE YOGA RESEARCH HAS FOUND BENEFIT

- Cardiovascular disease, including improvement of cholesterol panels[16]
- Type 2 diabetes[17] and glucose balance.[18] Reduces body mass index (BMI) and emotional eating.
- Hypertension (high blood pressure)[19]
- Nonspecific low back pain. A 2017 Cochrane review noted low to moderate evidence of small to moderate improvements.[20] A 2020 review showed reduction in low back pain which lasted at least 12 months [42].
- Neck pain (intensity, function, range of motion, quality of life, mood)[21]
- Headaches
- Arthritis in general, osteoarthritis of the knee, and other rheumatic diseases [22, 41]
- Sleep
- Menopausal symptoms[23]
- Sexual function
- COPD[24] and asthma
- Adjunctive care for breast cancer

- Neurological problems like multiple sclerosis, epilepsy, Parkinson's disease, Alzheimer's disease, and neuropathy[25]
- Cancer-related adverse events (fatigue, cognitive impairment, distress, sleep problems)[26]

MENTAL HEALTH BENEFITS OF YOGA

We know that physical activity in its many forms is beneficial to mental health. Research indicates that yoga has these benefits, and perhaps others that are linked to something beside the exercise benefit.

- Yoga showed promise for improving positive mental health indicators in most of the 14 studies covered by a 2018 systematic review.[1] Indicators included life satisfaction, mindfulness (self-awareness), affect, self-compassion, forgiveness, gratitude, goal setting, optimism, and resilience, among others.
- A 2017 review found potential benefit for yoga for short-term depressive symptoms, but evidence for anxiety and PTSD is inconclusive.[27]
- A 2013 review also found benefit for mood disorders.[28]
- Yoga improves quality of life in people with schizophrenia, possibly through boosting oxytocin levels.[30]
- A 2020 systemic review of yoga in adolescents with anxiety and depression showed benefit for these conditions in a majority of the studies (40). A 2021 study of Kundalini practitioners noted improvement in anxiety scores with yoga, though to a lesser degree than cognitive behavioral therapy (29).

The effects of yoga interventions are typically found to be equal to or superior to other forms of exercise in studies that make comparisons,[31,32] and there may be ways that yoga is superior to usual exercise for particular aspects of health.[31,33] Preliminary data demonstrates that yoga practice is associated with increased mindfulness-related traits[34] and decreased stress levels.[5,35]

In addition to participating in classes where everyone is doing the same asanas (poses), a person may also work with a yoga therapist for a personalized approach. Yoga Therapy, also known as therapeutic yoga, is focused specifically on healing. It first arose within Ayurveda, the traditional medicine of India. Most yoga research does not differentiate between therapeutic yoga and other forms, but it is gaining in popularity. According to VA tracking data, 84% of VA sites are now offering yoga (not including community care).

WHAT TO WATCH OUT FOR (HARMS)

Generally, adverse events due to yoga were found to have a 12-month prevalence of 4.6% and a lifetime prevalence of 21%, but serious events are rare (<2% of injuries).[36] Headstands, shoulder stands, and the lotus position (crossing the legs with both feet resting on top of the thighs) seem to be the most problematic when not done properly. Hot yoga classes, which involve vigorous movement in hot, humid rooms, are linked to more adverse events. The same protocols should be followed with yoga as for engaging in any

new form of physical activity; if there are other health issues that may pose risks, a clinician should sign off prior to someone's starting yoga.

TIPS FROM YOUR WHOLE HEALTH COLLEAGUES

- **Try yoga for yourself** before you make recommendations that others use it.
- **Ask around your community** to learn which yoga teachers are most highly recommended.
- **Seek out teachers certified with the Yoga Alliance.** They will have Registered Yoga Teacher (RYT) as a title after their name.
- It is not advised to learn yoga exclusively through books or recorded media. **An live teacher is preferable.**
- **Consider Yoga Therapy** for sicker or more debilitated patients. Many of the best therapists have a background in health care.
- While it may be classed as a way to "Move the Body," **yoga also aligns with other parts of the Circle of Health.** It cultivates mindful awareness, invokes the power of the mind, can become a spiritual practice, and, because it is often taught in a classroom venue, **it can foster social connections.** If one broadens yoga practice to include other areas beyond the yoga poses, they will be encouraged to eat a healthy diet and explore their overall personal development in new ways as well.
- The VA and other groups are now teaching yoga via **TeleWholeHealth**,^[37] which makes it more accessible to people who are homebound or living in rural areas.

RESOURCES

VA WHOLE HEALTH AND RELATED SITES

- [Evidence Map of Yoga for High-Impact Conditions Affecting Veterans:](https://www.hsr.dresearch.va.gov/publications/esp/yoga.pdf)
<https://www.hsr.dresearch.va.gov/publications/esp/yoga.pdf>
 - Compilation of systematic review data by VA Health Services Research and Development (HSR&D)
- [Whole Health Veteran Handouts:](https://www.va.gov/WHOLEHEALTH/veteran-handouts/index.asp)
<https://www.va.gov/WHOLEHEALTH/veteran-handouts/index.asp>
 - An Introduction to Yoga for Whole Health
- CIH Listservs. To be added, contact:
 - Yoga listerv: VHAOPCC&CTYoga@va.gov
 - Other listservs: Lana.Frankenfield@va.gov
- National CIH Subject Matter Expert, as of FY 2022:
 - Yoga: Alison.Whitehead@va.gov
- [STAR Well-Kit:](http://www.warrelatedillness.va.gov/education/STAR/) <http://www.warrelatedillness.va.gov/education/STAR/>
Resources from the War-Related Injury and Illness Study Center. Moving the Body materials include people describing their experiences or leading exercises in qi gong, chair yoga, and breathing.

OTHER WEBSITES

- [Arthur's Amazing Transformation:](https://www.youtube.com/watch?v=qX9FSZJu448.%20)
<https://www.youtube.com/watch?v=qX9FSZJu448.%20>
 - Watch how one Veteran reversed his obesity and pain through yoga
- [Integrative Restoration Institute:](http://www.irest.us/projects/veterans) <http://www.irest.us/projects/veterans>
 - Yoga-based practices supporting active-duty military and Veterans
- [International Association of Yoga Therapists:](http://www.iayt.org/) <http://www.iayt.org/>
- [iRest®:](https://www.irest.org/) <https://www.irest.org/>
 - Based on teachings of Yoga Nidra
- [Kula for Karma Yoga for Veterans Video Series:](http://www.kulaforkarma.org/veterans-video-series/)
<http://www.kulaforkarma.org/veterans-video-series/>
 - Yoga for PTSD, including adaptive yoga
- [Laughter Yoga International:](https://laughteryoga.org/) <https://laughteryoga.org/>
- [Mindful Yoga Therapy:](https://www.mindfullyogatherapy.org/) <https://www.mindfullyogatherapy.org/>
 - Resources available to Veterans
- [Veterans Yoga Project:](https://www.veteransyogaproject.org/) <https://www.veteransyogaproject.org/>
 - Check out the Practice Library quick link at the bottom
- [Warriors at Ease:](http://warriorsatease.com/) <http://warriorsatease.com/>
 - Focuses on bringing yoga and meditation to military communities around the world.
- [Yoga Journal:](https://www.yogajournal.com/poses/yogafor/yoga-for-veterans) <https://www.yogajournal.com/poses/yogafor/yoga-for-veterans>
 - Yoga for Veterans articles
- [Yoga for Vets:](http://www.yogaforvets.org/) <http://www.yogaforvets.org/>
 - Nonprofit focused on bringing yoga to Veterans
- [Yoga Warriors International:](https://www.yogawarriors.com/) <https://www.yogawarriors.com/>
 - Veterans can search for a class or learn to be a teacher

BOOKS

- *2,100 Asanas: The Complete Yoga Poses*, Daniel Lacerda (2015)
- *Yoga for Arthritis: The Complete Guide*, Loren Fishman (2008)
- *Yoga for Back Pain*, Loren Fishman (2012)
- *Yoga for Osteoporosis: The Complete Guide*, Loren Fishman (2011)

APPS AND MONITORING SOFTWARE

- **Daily Yoga**
- **Lotus Yoga**
- **Simply Yoga**
- **Yoga for Beginners**
- **5 minute yoga**

AUTHOR(S)

“Yoga” was written by [Surya Pierce](#), MD and updated by [Sagar Shah](#), MD and [J. Adam Rindfleisch](#), Mphil, MD (2014, updated in 2018, 2020, and 2022).

Yoga

This Whole Health tool was made possible through a collaborative effort between the University of Wisconsin Integrative Health Program, VA Office of Patient Centered Care and Cultural Transformation, and Pacific Institute for Research and Evaluation.

REFERENCES

1. Domingues RB. Modern postural yoga as a mental health promoting tool: A systematic review. *Complement Ther Clin Pract*. 2018;31:248-255.
2. Clarke TC, Barnes PM, Black LI, Stussman BJ, Nahin RL. [Use of yoga, meditation, and chiropractors among U.S. adults aged 18 and older](#). NCHS Data Brief, no 325. Hyattsville, MD: National Center for Health Statistics. 2018.
3. Stussman BJ, Black LI, Barnes PM, Clarke TC, Nahin RL. Wellness-related use of common complementary health approaches among adults: United States, 2012. *Natl Health Stat Report*. 2015(85):1-12.
4. Hendriks T, de Jong J, Cramer H. The effects of yoga on positive mental health among healthy adults: a systematic review and meta-analysis. *J Altern Complement Med*. 2017;23(7):505-517.
5. Brisbon NM, Lowery GA. Mindfulness and levels of stress: a comparison of beginner and advanced Hatha Yoga practitioners. *J Relig Health*. 2011;50(4):931-941.
6. Hartfiel N, Havenhand J, Khalsa SB, Clarke G, Krayner A. The effectiveness of yoga for the improvement of well-being and resilience to stress in the workplace. *Scand J Work Environ Health*. 2011;37(1):70-76.
7. Desai R, Tailor A, Bhatt T. Effects of yoga on brain waves and structural activation: A review. *Complement Ther Clin Pract*. 2015;21(2):112-118.
8. Mehta UM, Gangadhar BN. Yoga: Balancing the excitation-inhibition equilibrium in psychiatric disorders. *Prog Brain Res*. 2019;244:387-413.
9. Kamei T, Toriumi Y, Kimura H, Ohno S, Kumano H, Kimura K. Decrease in serum cortisol during yoga exercise is correlated with alpha wave activation. *Percept Mot Skills*. 2000;90(3 Pt 1):1027-1032.
10. Jurisic P, Salm DC, Vieira C, Cidral-Filho FJ, Mazzardo-Martins L, Martins DF. Pain-related encephalic regions influenced by yoga meditation: An integrative review. *Complement Ther Clin Pract*. 2018;31:320-324.
11. Shah S. Moving the Body. 2018; Whole Health Library website. Available at: <https://www.va.gov/WHOLEHEALTHLIBRARY/self-care/moving-your-body.asp>. Accessed July 17, 2019.
12. Field T. Yoga research review. *Complement Ther Clin Pract*. 2016;24:145-161.
13. Djalilova DM, Schulz PS, Berger AM, Case AJ, Kupzyk KA, Ross AC. Impact of yoga on inflammatory biomarkers: a systematic review. *Biol Res Nurs*. 2019;21(2):198-209.
14. Green E, Huynh A, Broussard L, et al. Systematic review of yoga and balance: effect on adults with neuromuscular impairment. *Am J Occup Ther*. 2019;73(1):7301205150p7301205151-7301205150p7301205111.
15. Hernando D, Laguna P, Brophy C, et al. Effect of yoga on pulse rate variability measured from a venous pressure waveform. *Conf Proc IEEE Eng Med Biol Soc*. 2019;2019:372-375.
16. Kuehn BM. Emerging data support benefits of yoga for patients with heart disease. *Circulation*. 2017;135(4):398-399.
17. Jayawardena R, Ranasinghe P, Chathuranga T, Atapattu PM, Misra A. The benefits of yoga practice compared to physical exercise in the management of type 2 Diabetes Mellitus: A systematic review and meta-analysis. *Diabetes Metab Syndr*. 2018;12(5):795-805.

18. Ramamoorthi R, Gahreman D, Skinner T, Moss S. The effect of yoga practice on glycemic control and other health parameters in the prediabetic state: A systematic review and meta-analysis. *PLoS One*. 2019;14(10):e0221067.
19. Park SH, Han KS. Blood pressure response to meditation and yoga: a systematic review and meta-analysis. *J Altern Complement Med*. 2017;23(9):685-695.
20. Wieland LS, Skoetz N, Pilkington K, Vempati R, D'Adamo CR, Berman BM. Yoga treatment for chronic non-specific low back pain. *Cochrane Database Syst Rev*. 2017;1:Cd010671.
21. Li Y, Li S, Jiang J, Yuan S. Effects of yoga on patients with chronic nonspecific neck pain: A PRISMA systematic review and meta-analysis. *Medicine*. 2019;98(8):e14649.
22. Siczekowska SM, Casagrande PO, Coimbra DR, Vilarino GT, Andreato LV, Andrade A. Effect of yoga on the quality of life of patients with rheumatic diseases: Systematic review with meta-analysis. *Complement Ther Med*. 2019;46:9-18.
23. Cramer H, Peng W, Lauche R. Yoga for menopausal symptoms-a systematic review and meta-analysis. *Maturitas*. 2018;109:13-25.
24. Li C, Liu Y, Ji Y, Xie L, Hou Z. Efficacy of yoga training in chronic obstructive pulmonary disease patients: A systematic review and meta-analysis. *Complement Ther Clin Pract*. 2018;30:33-37.
25. Mooventhan A, Nivethitha L. Evidence based effects of yoga in neurological disorders. *J Clin Neurosci*. 2017;43:61-67.
26. Lin PJ, Peppone LJ, Janelins MC, et al. Yoga for the management of cancer treatment-related toxicities. *Curr Oncol Rep*. 2018;20(1):5.
27. Duan-Porter W, Coeytaux RR, McDuffie JR, et al. Evidence map of yoga for depression, anxiety, and posttraumatic stress disorder. *J Phys Act Health*. 2016;13(3):281-288.
28. Cramer H, Anheyer D, Lauche R, Dobos G. A systematic review of yoga for major depressive disorder. *J Affect Disord*. 2017;213:70-77.
29. A 2021 study of Kundalini yoga for generalized anxiety disorder (226 participants, 155 of whom completed the study), supported by NCCIH, found that Kundalini yoga improved symptoms but was less helpful than cognitive behavioral therapy, an established first-line treatment for this condition.
30. Mehta UM, Keshavan MS, Gangadhar BN. Bridging the schism of schizophrenia through yoga-Review of putative mechanisms. *Int Rev Psychiatry*. 2016;28(3):254-264.
31. Ross A, Thomas S. The health benefits of yoga and exercise: a review of comparison studies. *J Altern Complement Med*. 2010;16(1):3-12.
32. Govindaraj R, Karmani S, Varambally S, Gangadhar BN. Yoga and physical exercise – a review and comparison. *Int Rev Psychiatry*. 2016;28(3):242-253.
33. Patel NK, Newstead AH, Ferrer RL. The effects of yoga on physical functioning and health related quality of life in older adults: a systematic review and meta-analysis. *J Altern Complement Med*. 2012;18(10):902-917.
34. Shelov DV, Suchday S, Friedberg JP. A pilot study measuring the impact of yoga on the trait of mindfulness. *Behav Cogn Psychother*. 2009;37(5):595-598.
35. Physical Activity Guidelines. Office of Disease Prevention and Health Promotion, U.S. Department of Health and Human Services website. Available at: <https://health.gov/paguidelines/>. Accessed October 26, 2016.

36. Cramer H, Ostermann T, Dobos G. Injuries and other adverse events associated with yoga practice: A systematic review of epidemiological studies. *J Sci Med Sport*. 2018;21(2):147-154.
37. Mathersul DC, Mahoney LA, Bayley PJ. Tele-yoga for chronic pain: current status and future directions. *Glob Adv Health Med*. 2018;7:2164956118766011.
38. American Academy of Pediatrics Section on Integrative Medicine. [Mind-body therapies in children and youth](#). *Pediatrics*. 2016;138(3):e20161896.
39. Kwon R, Kasper K, London S, et al. [A systematic review: the effects of yoga on pregnancy](#). *European Journal of Obstetrics & Gynecology and Reproductive Biology*. 2020;250:171-177.
40. James-Palmer A, Anderson EZ, Zucker L, et al. [Yoga as an intervention for the reduction of symptoms of anxiety and depression in children and adolescents: a systematic review](#). *Frontiers in Pediatrics*. 2020;8:78.
41. Kolasinski SL, Neogi T, Hochberg MC, et al. [2019 American College of Rheumatology/Arthritis Foundation guideline for the management of osteoarthritis of the hand, hip, and knee](#). *Arthritis and Rheumatology*. 2020;72(2):220-233.
42. Skelly AC, Chou R, Dettori JR, et al. [Noninvasive Nonpharmacological Treatment for Chronic Pain: A Systematic Review Update](#). Comparative Effectiveness Review no. 227. Rockville, MD: Agency for Healthcare Research and Quality; 2020. AHRQ publication no. 20-EHC009.