Yoga

A Fad, Evidence-Based, or New Age Distraction?

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Use of Yoga in the U.S. grew by over 50% in adults and more than doubled in children from 2012 to 2017

The CDC’s 2012 National Health Interview Survey reported:

- 94% of adults practiced yoga for general wellness/disease prevention or to improve energy
- 18% used yoga to treat a specific health condition
- A large proportion of adults who practiced yoga perceived benefits from its use
  - 86% said it reduced stress
  - 59% said it improved their sleep
  - 67% said they felt better emotionally
  - 39% said yoga made it easier to cope with health problems
  - 82% said it improved their overall health and made them feel better
  - 63% said it motivated them to exercise more regularly
  - 43% said it motivated them to eat healthier
NIH Yoga Research Overview

Conditions that have been studied include:

- Wellness - stress management, well-being, balance
- Asthma
- Cancer Symptom Management
- Cardiovascular Disease Risk Factors
- Chronic Obstructive Pulmonary Disease (COPD)
- Diabetes
- Irritable Bowel Syndrome (IBS)
- Menopause Symptoms
- Mental Health Conditions: Depression, Anxiety, PTSD
- Pain Conditions - low back pain, neck pain, headache, osteoarthritis
- Sleep Problems
- Smoking Cessation
- Weight Control

https://nccih.nih.gov/health/yoga/introduction.htm#hed4
Yoga Research on Mental Well-Being

- **Major Depression - 2 randomized controlled trials**
  - 8 weeks of hatha yoga resulted in clinically significant reductions in depression severity.
  - Over a 10 week study, yoga participants had lower levels of depression than those in a health education workshop. At 6-month follow-up, 51% of yoga participants showed a greater than 50% reduction in depression symptoms compared to those in the workshop.

- **Prenatal Anxiety and Depression**
  - An 8-week yoga course reduced both subjective and physiological measures of anxiety, while treatment as usual led to higher postnatal depression.

- **Anxiety**
  - A meta-analysis of 17 studies showed Hatha yoga had a meaningful effect on anxiety that was correlated with total number of hours practiced. Those with higher levels of anxiety benefited the most.
Yoga for Supportive Cancer Care

Clinical Practice Guidelines

- The Society for Integrative Oncology: integrative therapies during and after breast cancer treatment
  - Meditation, yoga, stress management, music therapy recommended for anxiety/stress reduction
  - Meditation, yoga, relaxation, massage, music therapy recommended for depression/mood disorders
  - Meditation and yoga recommended to improve quality of life


Literature Review

- Yoga therapy during cancer treatment for children and adults
  - Findings most consistently support improvement in psychological outcomes (e.g., depression, distress, anxiety)
  - Evidence increasingly suggests that yoga improves sleep and fatigue
  - Yoga enhanced quality of life

Yoga and Cardiovascular Disease

Early and Pre-Hypertension

This randomized controlled trial assessed the effects of 12 weeks of Iyengar yoga vs. enhanced usual care in untreated prehypertension or Stage 1 hypertension. Yoga produced clinically meaningful improvements in 24-hour systolic and diastolic blood pressure.


Cardiovascular Disease Risk

In this systematic review of 44 randomized controlled trials yoga improved:

- systolic and diastolic blood pressure
- Heart rate and respiratory rate
- Waist circumference
- Total and HDL cholesterol and triglycerides
- HbA1c and insulin resistance

Yoga and Diabetes

This systematic review and meta-analysis examined the effects of yoga for blood sugar control in adults with type 2 diabetes

- Included twenty-three studies with 2,473 participants
- Compared with controls, yoga participants improved their HbA1c (a measure of average blood glucose levels for the last 3 months), fasting blood glucose and postprandial blood glucose
- Yoga was also associated with significant improvements in lipid profile, blood pressure, body mass index, waist/hip ratio and cortisol levels, risk factors for complications in adults with type 2 diabetes

Yoga and the Older Adult

Cognition

- In this randomized controlled trial 118 older adults studied either Hatha yoga or stretching-strengthening exercises 3 times a week for 8 weeks

- Yoga participants improved in:
  - Working memory capacity and mental set shifting and flexibility
  - Yoga showed potential for maintaining and/or improving cognitive functioning in the aging process


Menopause

- This 3-week randomized controlled trial with 355 women compared yoga (weekly 90-minute yoga classes with daily at-home practice), exercise or usual activity as well as omega-3’s.

- Only women in the yoga group improved in the three areas of menopausal quality of life, vasomotor symptoms and sexuality scores.

Biological Mechanisms - How yoga works
Underlying physiological mechanisms and changes in the brain

Effects of yoga on stress and mood

- Systematic review of 25 randomized controlled trials
- Focuses on physiological data such as BP, heart rate and cortisol as well as brain measures such as EEG or fMRI
- Yoga practice leads to:
  - better regulation of the sympathetic nervous system and hypothalamic-pituitary-adrenal system (our main stress response system)
  - decrease in depressive and anxious symptoms in a range of populations


Effects of yoga on brain waves and brain structures

- 15 articles in this review
- Breathing, meditation, and posture-based yoga increased overall brain wave activity
- Gray matter increased, improving memory, focus and cognitive abilities
- Amygdala and frontal cortex activation increased, enhancing emotional regulation and decreasing anxiety

Underlying physiological mechanisms/changes in the brain

Yoga, neuroanatomy and pain conditions

- NIH study investigated changes in neuroanatomy that contribute to the beneficial effects of yoga using sensory testing and MRI techniques
- Those who practiced yoga long-term:
  - Tolerated pain more than twice as long as controls
  - Had more gray matter in multiple brain areas, correlated with pain tolerance
  - Increased white matter, correlated with problem solving, focus, mood, walking and balance
  - Learned different ways to deal with sensory inputs and the emotional reactions to those inputs leading to change in brain anatomy and connectivity


Yoga and the autonomic nervous system

- Explores the relationship between autonomic nervous system activity and body-mind responses during yoga
- Studied regular yoga practitioners, non-yoga practitioners and people with metabolic syndrome. The yoga group:
  - Had higher vagal tone - indicating that the nervous system can better harmonize the systems of the body to work together for the benefit the whole
  - Had greater positive mood
  - Showed the most rapid recovery from a stressful experience
  - Maintained a more stable state of mind-body equilibrium and resilience