Yoga and Anxiety

Yoga Alliance Webinar
April 7 & 9, 2020

Sat Bir S. Khalsa, Ph.D.
Assistant Professor of Medicine, Harvard Medical School
Director of Yoga Research, Yoga Alliance
Director of Research, Kundalini Research Institute
Editor in Chief, International Journal of Yoga Therapy
Research Associate, Benson Henry Institute for Mind Body Medicine
Research Affiliate, Osher Center for Integrative Medicine
Anxiety

- An unpleasant feeling of worry, concern, dread
- Physical, emotional, mental, behavioral components
- With or without psychological stress
- Should not be confused with outright fear; more of a dreaded feeling about something which appears intimidating and can be overwhelming
- A normal reaction to a stressor
- It may help an individual to deal with a demanding situation by prompting them to cope with it
- When overwhelming and interfering with daily life it may a clinically significant anxiety disorder
Anxiety Disorders

- panic disorder
- obsessive-compulsive disorder (OCD)
- social phobia (or social anxiety disorder)
- specific phobias
- generalized anxiety disorder (GAD)

Each anxiety disorder has different symptoms, but all the symptoms cluster around excessive, irrational fear and dread.
Generalized Anxiety Disorder

- Pervasive day-long exaggerated worry and tension
- Anticipation of disaster and excessive concern about health issues, money, family problems, or work difficulties
- Patients realize that their anxiety is more intense than is warranted
- Can’t relax, startle easily, difficulty concentrating
- Sleep disturbance
- Fatigue, headaches, muscle tension & aches, difficulty swallowing, trembling, twitching, irritability, sweating, nausea, lightheadedness, breathlessness, hot flashes
- diagnosed when a person worries excessively about a variety of everyday problems for at least 6 months
Treatment of Anxiety Disorders

- Pharmaceuticals
- Psychotherapy; talk therapy understanding and dealing with their disorder
- Cognitive-behavioral therapy; recognition and change of thought patterns and behaviors in anxiety
- Mindfulness-related practices, e.g. Acceptance and Commitment Therapy (ACT), Dialectical Behavioral Therapy (DBT), yoga, meditation, etc.
Yoga Practices
Postures, Breathing, Relaxation, Meditation

Fitness
↑Flexibility
↑Strength
↑Coordination/Balance
↑Respiratory Function
↑Self-Efficacy

Self-Regulation
↑Stress Regulation
↑Emotion Regulation
↑Resilience
↑Equanimity
↑Self-Efficacy

Awareness
↑Attention
↑Mindfulness
↑Concentration
↑Cognition
↑Meta-cognition

Spirituality
↑Unitive State
↑Transcendence
↑Flow
↑Transformation
↑Life Meaning/Purpose

Global Human Functionality
↑Physical & Mental Health, ↑Physical Performance
↑Stress & Emotion Regulation, ↑Awareness/Mindfulness, ↑Meta-cognition
↑Positive Behavior, ↑Wellbeing, ↑Values, ↑Life Purpose & Meaning, ↑Spirituality
“Due to its good compliance and lack of drug interactions, yoga appears to be safe and could be encouraged to improve quality of life and, perhaps, the symptoms of stress and anxiety.”

“…yoga can serve as a therapeutic option for addressing the onset of state anxiety…doing yoga as part of a healthy lifestyle can have benefits with regard to state anxiety.”
Mood in Long Term Practitioners

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control group</th>
<th>Long-term yoga group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total mood disturbance score</td>
<td>34.11 ± 31.46</td>
<td>18.03 ± 31.54 *</td>
</tr>
<tr>
<td>Tension-Anxiety</td>
<td>9.86 ± 6.01</td>
<td>6.95 ± 5.84 *</td>
</tr>
<tr>
<td>Depression</td>
<td>9.81 ± 8.52</td>
<td>7.89 ± 9.46</td>
</tr>
<tr>
<td>Anger-Hostility</td>
<td>10.08 ± 7.40</td>
<td>6.29 ± 6.97 **</td>
</tr>
<tr>
<td>Vigor</td>
<td>12.16 ± 5.59</td>
<td>15.00 ± 6.57</td>
</tr>
<tr>
<td>Fatigue</td>
<td>8.65 ± 5.94</td>
<td>5.47 ± 5.31 **</td>
</tr>
<tr>
<td>Confusion</td>
<td>7.86 ± 4.73</td>
<td>6.42 ± 4.68</td>
</tr>
</tbody>
</table>

Results are presented as the means ± standard deviation (SD). *: p < 0.05; **: p < 0.01

From: Profile of mood states and stress-related biochemical indices in long-term yoga practitioners, Yoshihara K, Hiramoto T, Sudo N, Kubo C, Biopsychosocial Medicine, 3;5:6, 2011.
Kripalu Yoga for Performance Anxiety

Kripalu Yoga in Harvard Physicians

From: A Yoga-based Program Decreases Physician Burnout in Neonatologists and Obstetricians at an Academic Medical Center, Scheid, Dyer, Dusek, Khalsa, (manuscript under review).
**ARTICLE**

**Effect of Hatha yoga on anxiety: a meta-analysis**

Stefan G. Hofmann, Giovanbattista Andreoli, Joseph K. Carpenter and Joshua Curtiss

Department of Psychological and Brain Sciences, Boston University, Boston, MA, USA

**Keywords**

Anxiety; complementary therapies; meta-analysis; systematic review; yoga.

**Correspondence**

Stefan G. Hofmann, Ph.D. Department of Psychological and Brain Sciences, Boston University, 648 Beacon St., 6th floor, Boston, MA 02215, USA.
Tel: (617) 353-9610; Fax: (617) 353-9609; Email: shofmann@bu.edu

Received 11 May 2016; accepted for publication 13 May 2016.

doi: 10.1111/jebm.12204

**Abstract**

**Objective:** Some evidence suggests that Hatha yoga might be an effective practice to reduce anxiety. To examine the effect of Hatha yoga on anxiety, we conducted a meta-analysis of relevant studies extracted from PubMed, PsycINFO, the Cochrane Library, and manual searches.

**Method:** The search identified 17 studies (11 waitlist controlled trials) totaling 501 participants who received Hatha yoga and who reported their levels of anxiety before and after the practice. We estimated the controlled and within-group random effects of the practice on anxiety.

**Results:** The pre–post within-group and controlled effect sizes were, Hedges’ $g = 0.44$ and Hedges’ $g = 0.61$, respectively. Treatment efficacy was positively associated with the total number of hours practiced. People with elevated levels of anxiety benefitted the most. Effect sizes were not moderated by study year, gender, presence of a medical disorder, or age. Although the quality of the studies was relatively low, the risk of study bias did not moderate the effect.

**Conclusion:** Hatha yoga is a promising method for treating anxiety. However, more well-controlled studies are needed to compare the efficacy of Hatha yoga with other more established treatments and to understand its mechanism.
Yoga for Anxiety

**FIGURE 3** Forest plot of yoga versus no treatment or active comparators for anxiety severity
CI, confidence interval; IV, inverse variance; SD, standard deviation

Hatha yoga for acute, chronic and/or treatment-resistant mood and anxiety disorders: A systematic review and meta-analysis

Nina K. Vollbehr1,2,*, Agna A. Bartels-Veltwcu1,3, Maaike H. Nauta4, Styneke Castoein5,6, Laura A. Stenhuys7, H. J. Rogier Hoender3, Brian D. OStatin7

1 Leiden Psychiatric Institute, Center for Integrative Psychiatry, Groningen, the Netherlands. 2 University of Groningen, Faculty of Behavioral and Social Sciences, Department of Clinical Psychology and Experimental Psychopathology, Groningen, the Netherlands. 3 University of Groningen, University Medical Center Groningen, University Center for Psychiatry, Rob Giel Research Center, Groningen, the Netherlands. 4 Leiden Psychiatric Institute, Leiden Research, Groningen, the Netherlands.

* n.vollbehr@leidsi.nl

Abstract

Background

The aim of this study was to systematically investigate the effectiveness of hatha yoga in treating acute, chronic and/or treatment-resistant mood and anxiety disorders.

Methods

Medline, Cochrane Library, Current Controlled Trials, Clinical Trials.gov, NHR Centre for Reviews and Dissemination, PsycINFO and CINAHL were searched through June 2018. Randomized controlled trials with patients with mood and anxiety disorders were included. Main outcomes were continuous measures of severity of mood and anxiety symptoms. Cohen’s d was calculated as a measure of effect size. Meta-analyses using a random effects model were applied to estimate direct comparisons between yoga and control conditions for depression and anxiety outcomes. Publication bias was visually inspected using funnel plots.

Results

Eighteen studies were found, fourteen in acute patients and four in chronic patients. Most studies were of low quality. For depression outcomes, hatha yoga did not show a significant effect when compared to treatment as usual, on overall effect size of Cohen’s d = 0.64 (95% CI = -1.41, 2.61) or to all active control groups, Cohen’s d = 0.13 (95% CI = -0.49, 0.32). A sub-analysis showed that yoga had a significant effect on the reduction of depression compared to psychopharmacological control groups, Cohen’s d = 0.52 (95% CI = -0.96, -0.08) but not to other active control groups. Cohen’s d = 0.28 (95% CI = -0.67, 0.83). For studies using a follow-up of six months or more, hatha yoga had no effect on the reduction of depression compared to active control groups, Cohen’s d = -0.14 (95% CI = -0.60, 0.33). Regarding anxiety,
CHAPTER SIX
YOGA THERAPY FOR ANXIETY
K PILKINGTON • PL GERBARG • RP BROWN

Prevalence of anxiety disorders
Anxiety disorders, obsessive-compulsive and related disorders (OCD), and trauma- and stressor-related disorders are among the most commonly occurring mental disorders worldwide and include conditions such as generalized anxiety disorder (GAD), panic disorder, phobias, acute stress disorder, and posttraumatic stress disorder (PTSD). Anxiety and trauma-related disorders often cause feelings of panic, fear, and intrusive thoughts and may result in interrupted sleep, difficulty functioning at work, disturbances in relationships, and physical symptoms (American Psychiatric Association, 2013). GAD is characterized by constant and excessive anxiety about many aspects of daily life, including health, money, and family and work issues (Stein & Sareen, 2015). There may also be an overwhelming feeling of impending disaster. OCD involves persistent and unwanted feelings or thoughts (obsessions) accompanied by rituals or repetitive behavior such as hand-washing (compulsions) or constant checking carried out in an attempt to control these thoughts (American Psychiatric Association, 2013). Phobias and panic disorder involve intense feelings of fear. Panic disorder involves recurrent and sudden unprovoked episodes, each referred to as a “panic attack” (American Psychiatric Association, 2013). In phobias, the feelings of fear are provoked by particular items, such as spiders or flying (specific phobias) or social situations (social anxiety disorder or social phobia) (Combs & Markman, 2014). PTSD describes a condition following severe physical or emotional trauma, in which reminders of the experience seriously affect thoughts and behavior over a prolonged period of time (American Psychiatric Association, 2013).

Estimates of lifetime prevalence range from 6–12% for specific phobias; 3–5% for GAD; 2–5% for panic disorder, and 2–3% for OCD. Due to variance in trauma exposure, estimates of lifetime prevalence of PTSD differ among countries: 1–2% in Western Europe, 6–9% in North America, and greater than 10% in countries with long-term sectarian violence (Kessler, Berglund, et al., 2005). In a given year, about 18% of American adults and about 8% of adolescents (ages 13–18 years) experience an anxiety disorder. Symptoms commonly appear around age 6–11 years (Kessler, Chiu, Demler, Merikangas, & Walters, 2005).

Pathophysiology and etiology of anxiety disorders
Genetic, environmental, psychological, and developmental factors contribute to anxiety disorders. Stress and trauma play key roles in the development of anxiety disorders and in the triggering of anxiety symptoms. Anxiety disorders are manifestations of dysfunction in stress-response systems (SRS): the autonomic nervous system (ANS) and the hypothalamic–pituitary–adrenal axis (HPA). Overactivity or erratic activity in the sympathetic nervous system (SNS) and underactivity in the parasympathetic nervous system (PNS) have been documented in anxiety disorders (Porges, 2007; Thayer, Hansen, Saus-Rose, & Johnsen, 2009). These imbalances have widespread effects on emotion regulation; perception; cognitive function; social relationships; and the functioning of the cardiovascular, respiratory, gastrointestinal, neuroendocrine, immunological, and other systems (Brown, Gerbarg, & Muench, 2013; Carter et al., 2013; Porges, 2009).

Fear-processing circuits in the brain include the higher centers (e.g., prefrontal cortex and insular cortex), the thalamus, and the lower centers.
Yoga-Enhanced Cognitive Behavioural Therapy (Y-CBT) for Anxiety Management: A Pilot Study

Manjit K. Khalsa, Julie M. Greiner-Ferris, Stefan G. Hofmann and Sat Bir S. Khalsa

1 Outpatient Center at Upton, Riverside Community Care, Upton, MA, USA
2 Department of Psychology, Boston University, Boston, MA, USA
3 Division of Sleep Medicine, Brigham and Women’s Hospital, Harvard Medical School, Boston, MA, USA

Y-CBT for Generalized Anxiety Disorder

Trait Anxiety

Average STAI Score

State Anxiety

Average STAI Score

\[ p = 0.004 \]

\[ N = 13 \]

\[ p < 0.002 \]

\[ N = 15 \]
Yoga for Generalized Anxiety Disorder


**SCL90-R Anxiety**

- **Baseline**: N = 34
- **End Treatment**: N = 34
- ES = 0.56

**STAI State Anxiety**

- **Baseline**: N = 29
- **End Treatment**: N = 29
- ES = 0.91

**Beck Anxiety Inventory**

- **Baseline**: N = 19
- **End Treatment**: N = 19
- ES = 0.75
Qualitative Evaluations – Anxiety

• “If you had a lot of stuff on your mind or something you could just use some of those exercises... I just felt calmer and stuff…”

• “I used breathing outside the classroom in my life to calm me down... if I was stressed or angry I would then do the breathing to calm me down and I will probably continue to do this... I was less anxious about school in general...”

• “Before you’re taking a test... relax and breathe and you don’t get as nervous or as tense.”

• “I felt like it was [easier] to calm myself if I was like nervous about something ... or just like to deal with my stress.”

From:
Yoga is the stilling of the fluctuations of the mind.

_Patanjali_

“Do not dwell in the past, do not dream of the future, concentrate the mind on the present moment.”

_Buddha_