Yoga for Depression

Yoga Alliance Webinar
April 23, 2020

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Major Depressive Disorder (MDD)  
DSMV Criteria  
(Diagnostic & Statistical Manual of Mental Disorders, 5th Ed)

5 or more symptoms for 2-weeks including symptom #1 or #2 below and clinically significant distress/impairment in overall functioning

1. Depressed mood (sad, empty, hopeless)
2. Loss of interest/pleasure in daily activities
3. Weight or appetite change
4. Sleep disturbance
5. Psychomotor agitation or retardation
6. Fatigue or loss of energy
7. Feelings of worthlessness or guilt
8. Difficulty with concentration or indecisiveness
9. Suicidal ideation
Sadness or Depressed Mood

- Short term or temporary
- Specific to a life event or circumstance
- There is still interest/pleasure in other activities
- No serious disruption of sleeping and eating patterns
- No self-diminishing negative thought patterns
- No suicidal ideation
Etiology of Depression

- biological
- genetic
- environmental
- childhood or developmental events
- stressful life events
- severe and prolonged stress
Stress and Depression

“Research has supported a strong association between stress and depression…

…higher levels of significant stressors prior to the onset of major depressive episodes in patients…

…stressors were 2.5 times more likely in depressed patients…

…in community samples, 80% of depressed cases were preceded by major life events…most episodes of major depression are preceded by stressful life events”

Stress and Depression

“…chronic stress (defined as stress ongoing for more than 12 months) is a stronger predictor of depressive symptoms than acute stressors.”

“Other research has found that continuing adverse conditions, such as poverty, medical disabilities, and lasting marital discord, are associated with risk for depression.”

Treatments for Depression

- Pharmaceuticals
- Psychotherapy
- Cognitive Behavioral Therapy
- Exercise
- Relaxation Therapy
- Meditation
- Yoga
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
Yoga Treatment of Depression
Mechanisms of Action

• Decreasing rumination
• Promoting decrease in stress reactivity
• Regulating neurotransmitters
• Promoting more adaptive thinking
• Promoting behavioral activation
• Increasing sleep regulation

"Yoga for Depression is a godsend: beautifully written, medically accurate, and very practical. I highly recommend it!"—Christiane Northrup, M.D., author of Women's Bodies, Women's Wisdom

A Compassionate Guide to Relieve Suffering Through Yoga

Yoga for Depression

AMY WEINTRAUB
Foreword by Stephen Cope
Preface by Richard Brown, M.D.

"Donna's clear, simple, and compassionate instruction is easy and helpful for everyone. Here is the voice of a good friend: encouraging, practical, wise, and always very real."—Heidi Droulez, Editor-in-Chief, Yoga Journal

yoga beats the blues

Boost Your Mood, Memory, and Concentration with Easy 5-Minute, 10-Minute, and 20-Minute Yoga Routines

DONNA RASKIN
CHAPTER FIVE
YOGA THERAPY FOR DEPRESSION
L. UEBELACKER • H. LAVRETSKY • G. TREMONT

Pathophysiology, etiology, and prevalence of depression

Definition and prevalence

Major depressive disorder (MDD) is defined as a period of 2 weeks or longer in which there is depressed mood or loss of interest or pleasure and at least four other symptoms involving changes in weight/appetite, sleep, activity level, energy, self-image, concentration, or suicidality. To meet diagnostic criteria, these symptoms must significantly impair social, occupational, or other functioning. MDD is one of the most common psychiatric conditions, estimated to affect 350 million individuals worldwide (World Health Organization, 2010). In 2012, 16 million adults in the United States had at least one depressive episode within the past year (Substance Abuse and Mental Health Services Administration, 2012). It is estimated that 20% of women and 12% of men will experience major depression in their lifetime.

Etiology and pathophysiology

Major depression is a complex biopsychosocial disorder, frequently co-occurs with anxiety disorders and substance use disorders (Kessler et al., 2003), and is likely clinically and etiologically heterogeneous (Hasler, 2010). Thus, many etiological hypotheses have been proposed. Considerable evidence suggests that alterations in metabolism of neurotransmitters such as serotonin, norepinephrine, or dopamine in the brain underlie the pathophysiology of depression (Belmaker & Agam, 2008). There is also evidence that acute depression is associated with decreased total gamma-aminobutyric acid (GABA) in the prefrontal and occipital cortex (Hasler et al., 2007). GABA is the primary inhibitory neurotransmitter in the brain.

Chronic stress (Roy & Campbell, 2013) and impaired emotion regulation (Compare, Zarbo, Shonin, Van Gordon, & Marconi, 2014)—which affects how one copes with stress—are risk factors for MDD. Thus, MDD is considered to be a stress-related disorder, and some individuals show dysfunction of the hypothalamic–pituitary–adrenal (HPA) axis and have heightened levels of the stress hormone cortisol (Pariante & Lightman, 2008). High levels of cortisol release and abnormalities in the stress response are hypothesized to account for associations between volume loss in the hippocampus (an important brain structure for learning and memory) and longer durations of episodes of depression (Sheline, Gado, & Kraemer, 2003). Relatedly, inflammatory response activation has been implicated in depression. Elevated levels of proinflammatory cytokines, such as interleukin-1, interleukin-6, and tumor necrosis factor alpha, are seen in depression and associated with activation of the HPA axis and disruption of the central serotonin system (Dantzer, O’Connor, Freund, Johnson, & Kelley, 2008).

Genetic factors and heritability are implicated in depression. Estimates suggest that genes account for 30–40% of the variance in susceptibility to MDD, although there is little evidence for specific genes or gene-by-environment interactions (Donnelly, 2008; Kendler, Gardner, & Prescott, 2006). Environmental factors are also likely to increase susceptibility to or precipitate MDD. Specific environmental factors may include childhood traumatic events, interpersonal difficulties, interpersonal loss, isolation, and ongoing stressors. Psychological factors, such as increased anxiety and tendency to interpret events in negative ways, may also be related to depression. Similarly, cognitive biases and deficits in cognitive control may be associated with poor emotion regulation and are common in depressive disorders, and therefore could have implications for treatment strategies (Joormann & Quinn, 2014).
“Yoga, in particular meditation-based yoga forms seem to be effective for treating depression... yoga, especially meditation-based yoga forms, could be considered an ancillary treatment option for patients....”
A systematic review of randomised control trials on the effects of yoga on stress measures and mood

Michaela C. Pascoe a,*, Isabelle E. Bauer b

a Institute of Neuroscience and Physiology, Dept. of Clinical Neuroscience and Rehabilitation, Sahlgrenska Academy at University of Gothenburg, Sweden
b University of Texas Health Science Center, Department of Psychiatry and Behavioral Science, Houston, TX, USA

“...the 25 randomised control studies discussed provide preliminary evidence to suggest that yoga practice leads to better regulation of the sympathetic nervous system and hypothalamic-pituitary-adrenal system, as well as a decrease in depressive and anxious symptoms in a range of populations.”
Specific poses resulted in differences in how moods were affected, with back bends associated with greater increases in positive moods.

The specific and nonspecific effects of different bodily postures and movements on psychological processes in Yoga …deserve further study.

Single Session - Yoga vs. PE


Yoga practice in the UK: a cross-sectional survey of motivation, health benefits and behaviours

Tina Cartwright, Heather Mason, Alan Porter, Karen Pilkington

**Table 3** Perceived helpfulness in managing health issues and conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>n*</th>
<th>Helpful (%)</th>
<th>Neither helpful nor unhelpful</th>
<th>Unhelpful (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental health</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td>997</td>
<td>98.4</td>
<td>1.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Anxiety</td>
<td>712</td>
<td>96.8</td>
<td>2.9</td>
<td>0.2</td>
</tr>
<tr>
<td>Depression</td>
<td>513</td>
<td>93.2</td>
<td>5.5</td>
<td>1.4</td>
</tr>
</tbody>
</table>

*Number stating they had experienced the health condition/issue before or since practising yoga. Only conditions with responses greater than 50 (n) are included.

https://bmjopen.bmj.com/content/bmjopen/10/1/e031848.full.pdf
Yoga Training in Healthy Women


Yoga in Students

Yoga, Meditation and Mind-Body Health: Increased BDNF, Cortisol Awakening Response, and Altered Inflammatory Marker Expression after a 3-Month Yoga and Meditation Retreat

B. Rael Cahn\textsuperscript{1,2*}, Matthew S. Goodman\textsuperscript{3}, Christine T. Peterson\textsuperscript{4,5}, Raj Maturi\textsuperscript{6,7} and Paul J. Mills\textsuperscript{4}

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>Psychometrics pre- and post-retreat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>$N = 34$</td>
<td>Pre mean (SD)</td>
</tr>
<tr>
<td>BSI-18 Total</td>
<td>10.5 (11.0)</td>
</tr>
<tr>
<td>BSI-Depression</td>
<td>3.09 (4.39)</td>
</tr>
<tr>
<td>BSI-Anxiety</td>
<td>3.76 (4.20)</td>
</tr>
<tr>
<td>BSI-Somatic</td>
<td>3.67 (3.62)</td>
</tr>
<tr>
<td>Freiburg mindfulness</td>
<td>39.6 (7.65)</td>
</tr>
<tr>
<td>Tellegen absorption</td>
<td>88.6 (29.6)</td>
</tr>
</tbody>
</table>
Yoga for reducing perceived stress and back pain at work


1Centre for Health Economics and Medicines Evaluation, Bangor University, Bangor, Gwynedd, UK; 2Centre for Health-Related Research, Bangor University, Bangor, Gwynedd, UK; 3School of Healthcare Sciences, Bangor University, Bangor, Gwynedd, UK; 4Department of Marine Ecology, Göteborg University, Stromstad, Sweden, UK; 5Department of Medicine, Harvard Medical School, Boston, USA.

Table 3. Mean scores, P-values and Q-values from univariate ANOVA and multiple regression analysis of RMDQ, PSS and PANAS-X

<table>
<thead>
<tr>
<th>Domains</th>
<th>Yoga (n = 33)</th>
<th>Control (n = 26)</th>
<th>F-ratio</th>
<th>P-value (unadjusted)</th>
<th>Q-value (adjusted)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>End</td>
<td>Baseline</td>
<td>End</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean (SE)</td>
<td>Mean (SE)</td>
<td>Mean (SE)</td>
<td>Mean (SE)</td>
<td></td>
</tr>
<tr>
<td>Back pain (RMDQ)</td>
<td>0.79 (0.32)</td>
<td>0.27 (0.15)</td>
<td>1.08 (0.37)</td>
<td>1.73 (0.51)</td>
<td>10.20 P &lt; 0.01</td>
</tr>
<tr>
<td>Perceived stress (PSS)</td>
<td>24.00 (0.93)</td>
<td>21.30 (0.93)</td>
<td>25.70 (1.62)</td>
<td>25.40 (1.30)</td>
<td>7.64 P &lt; 0.01</td>
</tr>
<tr>
<td>Well-being (PANAS-X)</td>
<td>210.20 (4.72)</td>
<td>233.40 (4.88)</td>
<td>203.10 (6.98)</td>
<td>205.80 (6.40)</td>
<td>15.40 P &lt; 0.001</td>
</tr>
<tr>
<td>1. Serenity</td>
<td>8.28 (0.43)</td>
<td>11.09 (0.40)</td>
<td>8.23 (0.55)</td>
<td>8.62 (0.49)</td>
<td>21.37 P &lt; 0.001</td>
</tr>
<tr>
<td>2. Reduced hostility</td>
<td>25.71 (0.63)</td>
<td>27.45 (0.43)</td>
<td>24.85 (0.94)</td>
<td>24.52 (0.88)</td>
<td>14.08 P &lt; 0.001</td>
</tr>
<tr>
<td>3. Self-assured</td>
<td>14.78 (0.71)</td>
<td>18.69 (0.84)</td>
<td>13.36 (1.02)</td>
<td>14.00 (1.00)</td>
<td>11.83 P &lt; 0.01</td>
</tr>
<tr>
<td>4. Reduced sadness</td>
<td>19.61 (0.72)</td>
<td>22.09 (0.60)</td>
<td>20.12 (1.01)</td>
<td>19.73 (1.01)</td>
<td>11.59 P &lt; 0.01</td>
</tr>
<tr>
<td>5. Attentiveness</td>
<td>11.97 (0.51)</td>
<td>13.84 (0.51)</td>
<td>11.77 (0.54)</td>
<td>12.12 (0.59)</td>
<td>7.26 P &lt; 0.01</td>
</tr>
<tr>
<td>6. Jovial</td>
<td>23.43 (1.01)</td>
<td>27.03 (1.13)</td>
<td>23.54 (1.13)</td>
<td>23.58 (1.11)</td>
<td>5.27 P &lt; 0.05</td>
</tr>
<tr>
<td>7. Reduced fatigue</td>
<td>12.78 (0.62)</td>
<td>15.50 (0.59)</td>
<td>12.50 (0.70)</td>
<td>13.69 (0.58)</td>
<td>4.65 P &lt; 0.05</td>
</tr>
<tr>
<td>8. Reduced fear</td>
<td>26.34 (0.71)</td>
<td>27.84 (0.49)</td>
<td>25.19 (1.07)</td>
<td>25.73 (1.01)</td>
<td>3.45 NS</td>
</tr>
<tr>
<td>9. Reduced shyness</td>
<td>17.32 (0.46)</td>
<td>17.52 (0.43)</td>
<td>16.73 (0.75)</td>
<td>16.31 (0.82)</td>
<td>1.71 NS</td>
</tr>
<tr>
<td>10. Reduced guilt</td>
<td>27.25 (0.60)</td>
<td>27.81 (0.52)</td>
<td>25.54 (0.88)</td>
<td>25.76 (0.94)</td>
<td>1.34 NS</td>
</tr>
</tbody>
</table>
Pilot Study

A randomized controlled pilot study of the effects of 6-week high intensity hatha yoga protocol on health-related outcomes among students

Marian E. Papp a, *, Malin Nygren-Bonnier c, Lennart Gullstrand d, Per E. Wändell a, Petra Lindfors b

Table 2
Associations (Pearsons r) between yoga dose and depression, sleep quality, and insomnia respectively after 6 weeks of high intensity yoga.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Home training (HT) N = 21</th>
<th>Total yoga dose (TYD) N = 21</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>rp</td>
<td>p</td>
</tr>
<tr>
<td>Depression</td>
<td>0.51</td>
<td>0.02*</td>
</tr>
<tr>
<td>Sleep quality</td>
<td>0.55</td>
<td>0.01*</td>
</tr>
<tr>
<td>Insomnia</td>
<td>0.49</td>
<td>0.02*</td>
</tr>
</tbody>
</table>

Yoga (HIY). Home training (HT) and total yoga dose (TYD).
Total yoga dose = TYD, home training and attended yoga classes; rp = correlation (Pearson); p = p-value; min = minutes.
Depression = Hospital Anxiety and Depression Scale.
Sleep quality = Pittsburgh Sleep Quality Index; Insomnia = Insomnia Severity Index.
*p < 0.05, significant associations in bold.
Yoga Reduces Symptoms of Distress in Tsunami Survivors in the Andaman Islands

Shirley Telles, K. V. Naveen and Manoj Dash

Swami Vivekananda Yoga Research Foundation (A Yoga University), Bangalore, India

A month after the December 2004 tsunami the effect of a 1 week yoga program was evaluated on self rated fear, anxiety, sadness and disturbed sleep in 47 survivors in the Andaman Islands. Polygraph recordings of the heart rate, breath rate and skin resistance were also made. Among the 47 people, 31 were settlers from the mainland (i.e. India, ML group) and 16 were endogenous people (EP group). There was a significant decrease in self rated fear, anxiety, sadness and disturbed sleep in both groups, and in the heart and breath rate in the ML group, and in the breath rate alone in the EP group, following yoga ($P<0.05$, $t$-test). This suggests that yoga practice may be useful in the management of stress following a natural disaster in people with widely differing social, cultural and spiritual beliefs.

<table>
<thead>
<tr>
<th>Group</th>
<th>State</th>
<th>Fear</th>
<th>Anxiety</th>
<th>Sadness</th>
<th>Disturbed sleep</th>
<th>Autonomic and respiratory variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Heart rate (beats/min)</td>
</tr>
<tr>
<td>Endogenous</td>
<td>Pre-yoga</td>
<td>7.2±2.3</td>
<td>7.4±2.2</td>
<td>7.8±2.5</td>
<td>6.8±2.7</td>
<td>91.5±6.3</td>
</tr>
<tr>
<td>people $n=16$</td>
<td>Post-yoga</td>
<td>3.5***±2.2</td>
<td>4.7*±3.0</td>
<td>4.8***±3.1</td>
<td>3.2***±2.2</td>
<td>89.0±12.7</td>
</tr>
<tr>
<td>Mainland</td>
<td>Pre-yoga</td>
<td>7.3±2.0</td>
<td>7.6±1.7</td>
<td>7.8±2.1</td>
<td>7.2±2.2</td>
<td>88.1±11.0</td>
</tr>
<tr>
<td>settlers $n=31$</td>
<td>Post-yoga</td>
<td>5.3***±2.2</td>
<td>5.3***±2.5</td>
<td>6.2***±2.6</td>
<td>5.1***±2.3</td>
<td>84.9***±9.6</td>
</tr>
</tbody>
</table>

*P<0.05, one tailed, *P<0.05, ***P<0.001 $t$-test for paired data, two tailed.
Serving the Yoga Community

Yoga Alliance® is committed to promoting and supporting the integrity and diversity of the teaching of yoga.
Scientific Research on Yoga

Substantial research has been done on many of the populations and parts of the body that COVID-19 preys on most. Use this section of Yoga Alliance’s website to learn more about scientific research on the effects of yoga on the elderly, respiratory function, anxiety, and depression, to name a few.

Perhaps more than ever, yoga is being widely studied and evaluated for its positive effects and benefits. At Yoga Alliance, we curate the latest and most relevant research on yoga’s applications in health, wellness, and disease. We have filtered it in a digestible manner for our Registered Yoga Schools and Registered Yoga Teachers as well as for the broader yoga community.

This evidence-based research not only reveals the science of yoga, it also explains its therapeutic efficacy when used in conjunction with conventional medicine. Our goal is that this impactful content will be utilized in a way that highlights even more of yoga’s ancient, multi-faceted ability to improve lives.

Join us! Let us know how research on yoga is important or valuable to you on social media (@YogaAlliance) or by emailing us at research@yogaalliance.org. We honor and value your personal experiences and look forward to featuring your stories.

Our Research Conversation

Our Director of Yoga Research

Our Director of Yoga Research Dr. Satbir Singh Khalsa is a renowned yoga research expert and yoga teacher who has committed his professional life to clinical research surrounding yoga’s full spectrum of healing efficacy.

Learn More

Featured Research Video

Learn about the process of aging and how yoga affects (and even slows down) aging.

Watch Now

Featured Health News

Visit our COVID-19 website, YourYA.org, for the most recent and applicable information on the coronavirus and the COVID-19 pandemic.

Learn More
Cognitive and Emotional Functioning
Arousal/Mindfulness/Interoception, Emotion and Stress Regulation, Metacognition

Our hope is for yoga schools and yoga teachers to utilize this impactful content in their teachings to promote and highlight yoga's evident multi-faceted ability to improve lives. Let us know how research on yoga is important or valuable to you on social media (@YogaAlliance) or by emailing us at research@yogaalliance.org. We honor and value your personal experiences and look forward to featuring your stories.

These citations were curated by Yoga Alliance's Director of Yoga Research, Dr. Sat Bir Singh Khalsa.

Review Papers (What's this?)

Modern postural yoga as a mental health promoting tool: A systematic review.
Domingues RB.
[abstract]

Sullivan MB, Erb M, Schmalzl L, Moonaz S, Noggle Taylor J, Porges SW.
[full text]

The Effects of Yoga on Positive Mental Health Among Healthy Adults: A Systematic Review and Meta-Analysis.
Hendriks T, de Jong J, Cramer H.
[abstract]

Notable Publications (What's this?)

Greater Anteroposterior Default Mode Network Functional Connectivity in Long-Term Elderly Yoga Practitioners.
Front Aging Neurosci. 2019 Jul 2;11:158.
[full text]

Schmalzl L, Powers C, Zanesco AP, Yetz N, Groessl EJ, Saron CD.
[abstract]

A yoga program for cognitive enhancement.
Brunner D, Abramovich A, Etherton J.
[full text]