

Yoga as a Mind–Body Approach to Emotional Regulation: Insights from Psychological and Neurophysiological Studies

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Abstract

Emotional regulation is a central component of mental health, influencing how individuals perceive, process, and respond to emotional experiences. Yoga, as a mind–body practice integrating physical postures, breath regulation, and meditation, has gained attention for its potential to enhance emotional regulation and reduce stress, anxiety, and mood dysregulation. This narrative review synthesizes current evidence on the psychological and neurophysiological mechanisms underlying yoga’s effects, highlighting pathways such as autonomic balance, interoceptive awareness, and neurotransmitter modulation including gamma-aminobutyric acid (GABA). The review also discusses how yoga interventions influence emotional regulation across different populations and identifies gaps in existing research, including methodological heterogeneity and limited standardized measurement of emotional regulation outcomes. Overall, the findings suggest that yoga is a promising complementary approach for promoting emotional well-being, with implications for both clinical and non-clinical settings.

Keywords: Yoga, Emotional regulation, Stress, Anxiety, Mind–body interventions, Emotions

Introduction:

According to James Gross, “Emotional regulation involves the processes by which individuals influence which emotions they have, when they have them, and how these emotions are experienced and expressed.” (Wimmer et al., 2019) (Gross et al., 2006). The capacity, which enables people to react appropriately to emotional awareness, includes understanding, modulation, and recovery.

Positive emotional regulation, which includes strategies such as cognitive reappraisal, attentional redirection, and acceptance of internal experiences, is essential for adaptive psychological functioning. In contrast, dysfunctional

emotional regulation—characterized by emotional suppression, rumination, and experiential avoidance—has been associated with various clinical symptoms, including anxiety, disordered eating, and substance use behaviors (Tsujimoto et al., 2024). Furthermore, studies indicate that adolescents with poor emotional regulation capacity experience greater emotional instability, mood disturbances, low self-esteem, and increased vulnerability to psychological disorders (Janjhua et al., 2020). Emotional regulation involves both psychological and physiological processes. Interventions that focus on the mind-body interface may be very successful in improving emotional regulation capacity and lowering the likelihood of secondary difficulties like stress, anxiety, depression,

etc. Several studies on these possibilities have already been conducted and have shown promising results. (Quiñones et al., 2025; Wimmer et al., 2019). In addition to a variety of treatments such pharmaceutical drugs, electroconvulsive therapy, and biological interventions, yoga has grown in popularity as a successful intervention to enhance mental health and manage anxiety and depression. (Janjhua et al., 2020) The potential of yoga, an integrated practice that combines physical postures, breath control, and meditation awareness, to improve emotional regulation and modulate stress reactions, has been the subject of growing research.

A growing number of individuals are using yoga to address self-regulation difficulties such as stress, anxiety, mood dysregulation, and related psychological challenges. Research has demonstrated the benefits of yoga across diverse age groups. For instance, yoga-based interventions implemented in school settings have been shown to reduce maladaptive psychological and cognitive stress responses among children (Janjhua et al., 2020)

Trauma-informed yoga-based interventions have also shown promise in improving emotional regulation outcomes in high-risk populations. A quasi-experimental study conducted in juvenile detention centers in Colombia reported significant reductions in aggression and improvements in emotional regulation following an Integral Yoga intervention, highlighting yoga's relevance for psychosocial rehabilitation (Tsujimoto et al., 2024)]

Additionally, yoga has been found to support psychological and physical well-being, with practitioners commonly reporting reduced stress and burnout, alongside improvements in sleep quality and physical health. (Cocchiara et al., 2019) Through modulation of central and autonomic nervous system functioning, yoga and meditation

practices have been associated with enhanced emotional regulation capacity, enabling individuals to manage academic and life-related demands with greater composure and confidence. (Liu et al., 2025)

This narrative review aims to synthesize existing evidence on the role of yoga in emotional regulation and related emotional processes, highlighting underlying psychophysiological mechanisms.

Yoga and stress Regulation

Stress is a basic biological and psychological reaction to perceived difficulties that affect many bodily systems and is necessary for adaptation, but excessive or persistent stress can harm emotional and physical well-being. (Valencia-Florez et al., 2023) Chronic or uncontrolled stress interferes with emotional regulation, making people more vulnerable to anxiety, mood disorders, and other psychological issues.

Stress reactivity and psychological stress can be successfully reduced by yoga. In addition to increases in psychosocial resources like mindfulness, interoceptive awareness, and self-control, a 12-week yoga intervention was found to significantly reduce stress reactivity in clinical research. These modifications were closely linked to decreases in perceived stress, indicating that yoga may affect stress reactions by improving emotional and self-regulation. (Park et al., 2021)

Even Adults in distress found that integrative sessions that combined physical postures, mindfulness training, and philosophical elements—or mainly physical Iyengar yoga—were successful in lowering their perceived stress levels. (Fischer et al., 2022) . Yoga's effectiveness as a mind-body intervention for stress management and associated emotional processes is supported by a number of empirical studies. An 8-week yoga program dramatically increased heart rate variability in a randomized controlled

study of healthy adults, suggesting better autonomic balance and decreased stress reactivity when compared to a control group. (Pakulanon et al., 2024).

Additionally, practicing yoga significantly decreased work-related stress and increased autonomic nerve activity, indicating that yoga can improve stress adaptation in extremely demanding work environments. (Lin et al., 2015)

Complementing these findings, a narrative synthesis on the role of yoga in stress management and major depressive disorder highlights that yoga can modulate key physiological systems implicated in stress and mood regulation — including the hypothalamic-pituitary-adrenal axis, autonomic nervous system, and neurotransmitter balance — thereby contributing to reductions in stress and depressive symptoms (R et al., 2023)

Collectively, these studies underscore that yoga influences both psychological perceptions of stress and underlying physiological mechanisms, supporting its relevance as a complementary strategy for emotional regulation.

Yoga and Anxiety

According to Griffin (1990) and the NCBI Bookshelf, anxiety is generally described as a state of fear, tension, or uneasiness that develops in anticipation of perceived danger or threat. It frequently involves heightened cognitive, affective, and physiological responses even when the threat is not actually present. Anxiety reflects emotional dysregulation brought on by unresolved internal issues and an excessive dependence on maladaptive defense systems. Anxiety's psychophysiological origin is highlighted by the biological elements that contribute to its symptoms, including autonomic arousal, chemoreceptor sensitivity, and neurotransmitter imbalance. Research supports the potential of yoga interventions

to alleviate anxiety symptoms across diverse populations. In a community-based randomized trial, adults participating in hatha yoga demonstrated significant reductions in anxiety and improvements in overall mental health compared to relaxation controls (Smith et al., 2007). Many factors related to their social and intellectual surroundings can cause anxiety in college students. Academic pressure is one of the main factors. Anxiety levels might rise because of the heavy workloads, impending deadlines, and ongoing pressure to maintain high grades that college students frequently experience. Over the course of an eight-week program, yoga has been proved to reduce stress and anxiety symptoms in college students on level with mindfulness training.(Falsafi, 2016) .

Anxiety disorders include a variety of conditions marked by excessive anxiety, fear, and avoidance of perceived risks. These symptoms are frequently accompanied by increased physiological arousal and functional impairment. Generalized anxiety disorder, social anxiety disorder, panic disorder, and particular phobias are examples of core disorders that involve persistent or disproportionate anxiety reactions to different stimuli. The Lancet study highlights that inappropriate anticipation of threat is important to these illnesses, supporting the idea that inadequate emotional regulation contributes to symptom onset and maintenance, even if its focus is on diagnostic categories and prevalence. (Penninx et al., 2021) Although results are more inconsistent among people with officially identified anxiety disorders, meta-analytic evidence also indicates that yoga may result in modest moderate reductions in anxiety in those with elevated anxiety levels.(Cramer et al., 2018) For adults with PTSD, yoga seems to be a safe and effective alternative therapy, especially when it comes to lowering self-reported symptoms of depression and PTSD. Most of the research found no significant negative effects and benefits in participants' felt well-being.

However, the evidence is still limited because the included studies were frequently small, had a variety of designs, and were susceptible to bias. Therefore, before yoga can be suggested as a stand-alone treatment for PTSD, additional carefully planned, larger studies are required, even though it can be utilized as a supporting intervention.(Nejadghaderi et al., 2024)

All these studies suggest that yoga could be a useful supplemental treatment for anxiety, possibly affecting both physiological and psychological regulatory mechanisms.

Mechanisms of Action

Yoga poses (āsana) improve physical integration and body awareness, which helps regulate emotions. āsana practice improves proprioception and interoceptive awareness through sustained postures, controlled movement, and stretching, allowing people to perceive emotional states as actual experiences rather than overwhelming cognitive events.(Menezes et al., 2015).

The brain's major inhibitory neurotransmitter, gamma-aminobutyric acid (GABA), is essential for controlling emotions because it lowers neuronal activity and reduces excessive stress and anxiety reactions. Anxiety and mood disorders are frequently linked to low GABA levels.(Jie et al., 2018) Yoga practice has been shown to increase central GABA activity, possibly through parasympathetic activation and reduced hypothalamic–pituitary–adrenal (HPA) axis reactivity. Improved self-regulation, decreased anxiety, and emotional stability are all supported by this increase in inhibitory brain signals. (Streeter et al., 2007) (Streeter et al., 2018)(Streeter et al., 2012) Pranayama, or yogic breath regulation, plays a central role in modulating emotional responses through its effects on the autonomic nervous system. Slow, rhythmic breathing techniques lower sympathetic arousal and increase parasympathetic activity, which lessens physiological stress

reactions like higher cortisol and heart rate. Prāṇāyāma reduces anxiety, alertness, and emotional reactivity by providing a physiological condition that promotes emotional peace through the maintenance of autonomic balance. (Brown & Gerbarg, 2005) (Jerath et al., 2006)

Meditative activities build attentive awareness and attentional control, enhancing top-down regulation of emotional responses. According to neuropsychological research, meditation reduces emotional reactivity and fear-based reactions by improving functional connections between the prefrontal cortex and limbic areas, especially the amygdala. This enhanced cognitive control promotes acceptance-based regulation and lessens maladaptive behaviors like rumination by enabling people to perceive emotional experiences without repression or avoidance. (Wu et al., 2019) (Hölzelet al., 2011)

Collectively, the integration of breath regulation, bodily awareness, and meditative attention creates a bidirectional mind–body feedback loop in which physiological calming supports cognitive control, and improved emotional awareness further stabilizes autonomic functioning. This synergistic interaction distinguishes yoga from purely cognitive or purely physical interventions and underlies its effectiveness in improving emotional regulation across stress-related and anxiety-related conditions.

Limitations of the Present Review

This review follows a narrative approach rather than a systematic review methodology. Therefore, it does not include formal quality appraisal, meta-analysis, or exhaustive database searching, which may limit reproducibility.

The included studies vary widely in terms of yoga styles, duration of intervention, outcome measures, and study populations. This heterogeneity makes direct comparison across studies difficult.

Many studies assessed stress, anxiety, depression, or mood rather than emotional regulation as a primary outcome. Emotional regulation was often inferred indirectly, which may limit the specificity of conclusions.

Most available studies focus on adults or clinical populations, with relatively fewer studies on children, adolescents, and diverse cultural groups.

While neurobiological and psychophysiological mechanisms (e.g., autonomic balance, GABA activity) are discussed, causal pathways between yoga and emotional regulation require further experimental validation.

Despite these limitations, this review provides an integrative understanding of how yoga may support emotional regulation through psychological and physiological pathways.

Conclusion

In a variety of demographics, yoga shows to be a promising mind-body intervention for improving emotional regulation. Yoga improves psychological and neurophysiological processes, such as autonomic balance, interoceptive awareness, and neurotransmitter modulation, such as elevated GABA activity, by combining physical postures, breath control, and meditation. Yoga supports adaptive emotional functioning by reducing stress, anxiety, and mood dysregulation, according to evidence from numerous research. Yoga's promise as a supplementary technique for emotional self-regulation is highlighted in the current literature, however methodological heterogeneity and limited demographic diversity present limitations. In order to better understand the mechanisms and maximize its use in both clinical and non-clinical contexts, future research will use standardized protocols, longitudinal designs, and direct assessments of emotional regulation.

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