



Satyam • Jnanam • Anantam

Impact of Hatha Yoga on Stress: A Randomized Controlled Trial



Background- Stress is a ubiquitous factor impacting mental and physical health, with chronic stress contributing to disorders such as anxiety, depression, and cardiovascular diseases. Yoga, particularly Hatha yoga, is increasingly recognized as a potential stress management intervention. While yoga has been associated with reduced self-reported stress and some biological markers, evidence for its effects on diurnal patterns of stress biomarkers remains inconclusive.

Objective- This study aimed to examine whether an eight-week Hatha yoga intervention could reduce momentary subjective stress, diurnal levels of salivary cortisol (sCort), and salivary alpha-amylase (sAA) in healthy adults using a randomized controlled trial design.





Methodology– Participants (N = 98; aged 18–40) were randomized into intervention and waitlist control groups. The intervention consisted of 60-minute Hatha yoga sessions conducted three times per week for eight weeks. Stress biomarkers (sCort and sAA) and subjective stress were assessed using ecological momentary assessment (EMA) five times daily for three consecutive days at pre- and post-intervention phases. Saliva samples were analyzed for biomarker levels, and subjective stress was measured using a visual analogue scale.

Mechanism Explored–

Hatha yoga integrates physical postures, mindful breathing, and relaxation, potentially reducing stress through activation of the parasympathetic nervous system, emotional regulation, and enhanced mindfulness. The study hypothesized that these mechanisms could reduce both self-reported stress and stress biomarkers.





Key Findings-

Subjective Stress:

The intervention significantly reduced momentary subjective stress, with large effect sizes observed.

Stress Biomarkers:

No significant changes were found in diurnal levels of sCort or sAA between the intervention and control groups.

Potential Explanation:

The reduction in subjective stress might be due to improved psychological coping and mindfulness rather than direct changes in stress biomarkers.

Implications for Future Research:

Incorporate diverse populations, including clinical and high-stress groups, to explore differential effects of yoga interventions.

Investigate the influence of other yoga styles and components, such as breathwork and meditation, on stress biomarkers.

Utilize experimental stress induction to examine acute stress reactivity changes alongside diurnal biomarker levels.

Expand research to include immune and inflammatory biomarkers to create a holistic view of yoga's impact on stress systems.

Practical Implications:

Hatha yoga can be considered a low-risk, effective tool for reducing perceived stress in everyday life, suitable for workplace wellness programs, schools, and community interventions.

Emphasis on subjective benefits may help practitioners integrate yoga into their daily routines, despite limited evidence of biomarker changes in healthy individuals.