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# Psychophysiological effects of yoga on stress in college students

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## Abstract:

College students are vulnerable to a critical period in developmental maturation, facing rigorous academic work, and learning how to function independently. Physical activities such as running and bicycling have been shown to improve mood and relieve stress. However, college students often have low levels of physical activity. Yoga is an ancient physical and mental activity that affects mood and stress. However, studies examining the psychophysiological effects of yoga are rare in peer-reviewed journals. The aim of this study is to establish preliminary evidence for the psychophysiological effects of yoga on stress in young-adult college students. The present study suggests that yoga has positive effects on a psychophysiological level that leads to decreased levels of stress in college student. Further research is needed to examine the extent to which different types of yogic practices address the needs of different college subpopulations (e.g., overweight, sedentary, and smokers).

## Keywords:

College students, review, yoga

## Introduction

About 40%–50% of college students are physically inactive. Similarly, it was found that college students' physical activity has been seriously neglected as a research topic, there is a lack of multiple-level approaches (i.e., personal, psychosocial, and environmental levels) for examining physical activity behaviors in the college student population and measures of physical activity are subjective and inconsistent which makes comparisons of physical activity patterns among different samples very difficult or impossible.<sup>[1]</sup> Similarly, the available research indicates that the prevalence of stress is increasing among college students.<sup>[2]</sup> The previous study reported that yoga reduces menstrual cramps and menstrual distress in female undergraduate students with primary dysmenorrhea.<sup>[3]</sup> The psychophysiological changes that characterize the efficacy of yoga for better stress management in

college students have not been studied adequately.

## Yoga

Participation in physical activity on a regular basis is one of the primary factors in maintaining sound health in modern society. Due to sedentary lifestyle leading many health-related issues, the prevalence of physical inactivity among college students calls for immediate action.<sup>[4]</sup> Along with aerobics and dance, yoga is one of the most famous physical activity that college girl student would like to prefer as a choice.<sup>[5]</sup> Physical activity such as yoga is a key element in health promotion. The traditional expressions of yoga as a lifestyle is firmly rooted in and committed to the classic texts (e.g., Yoga Sutra by Patanjali, Hatha Yoga texts like Hatha Yoga Pradeepika, Gheranda Samhita) and embrace the concept of the eight limbs, or aspects, of yoga. In more specific, the eight limbs are of great interest to yogis who seek to adhere to yoga as a philosophical foundation for life, rather than solely a

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physical practice.<sup>[6]</sup> Therefore, yoga is essentially an art and science of holistic living; an effective method for improving health in addition to the prevention and management of diseases.<sup>[7]</sup> Yoga reduces stress through reducing sympathetic activity,<sup>[8,9]</sup> and improves the sense of general well-being.<sup>[10]</sup>

### Stress and college student

Stress affects college students' physical, mental, social, and intellectual health. College student will not always possess the necessary stress management skills and coping strategies. Physical activity is one coping strategy that is perhaps underutilized by many college students.<sup>[11]</sup> Many systematic reviews and different studies on effects on yoga for stress management in college students revealed positive effects of yoga (as a mind-body intervention) on stress reduction in college student.<sup>[12-14]</sup>

### Physiological effects of yoga in college students

Yoga holds potential as a self-empowering, nonpharmacological method for enhancing stress management, and wellness in college students.<sup>[15]</sup> It was reported that Pranayama training decreases sympathetic activity, resulting in mental relaxation and decreased autonomic arousal thereby, decreasing force fluctuations during isometric contraction. This was reflected as improvement in hand grip strength and endurance in medical students.<sup>[16]</sup> In one study aimed at investigating the effect of integrated yoga on autonomic parameters and psychological well-being during both pre- and post-phases of menstrual cycle in healthy young female controls, it was observed that there was a significant alteration of autonomic functions and psychological status in premenstrual phase when compared with postmenstrual phase in young healthy females. In addition, it was revealed that regular practice of yoga has beneficial effects on both phases of menstrual cycle by bringing parasympathetic dominance and psychological well-being probably by balancing neuro-endocrinal axis.<sup>[17]</sup>

### Psychological effects of yoga in college students

It was observed that Suryanamaskara, a yogic practice was effective in leading to relaxation dispositions such as physical relaxation, mental quiet, at ease/peace, rested and refreshed, strength and awareness and joy and reduces sleepiness, somatic stress, worry and negative emotion at a dispositional level.<sup>[18]</sup> Yogic practices play an important role in enhancing emotional sensitivity,<sup>[19]</sup> sustained attention,<sup>[20]</sup> mental performance,<sup>[21]</sup> and balance personality trait<sup>[22]</sup> among students, thus paving the way for their academic excellence. Yoga also reduces perceived stress and negative affects in college students thereby improving psychological well-being in them.

### Suggested evidence-based yoga therapy protocol for college students

Based on clinical management and psychophysiological effects of yoga in college students, the suggested evidence-based yoga therapy for college students may include following yogic practices:<sup>[11,13,16-18,23,24]</sup>

- Starting Prayer
- Kapalbhathi Kriya (frontal brain cleansing), Agnisar Kriya (activating the digestive fire)
- Hands in and out breathing, hands stretch breathing, ankle stretch breathing
- Jogging, forward and backward bending, side bending, twisting
- Surya namaskara (salutations to the sun practice)
- Tadasan (palm tree pose), Vrikshasana (tree pose), Padahastasan (hand to foot pose), Ardha Chakrasana (half wheel pose), Bhujangasana (cobra pose), Shalabhasana (locust pose)
- Quick Relaxation Technique
- Nadi Shuddhi Pranayama (psychic network purification), Sheetal Pranayama (cooling breath), Seetkari Pranayama (hissing breath), Bhramari Pranayama (humming bee breath)
- Om Meditation
- Closing Prayer.

### Summary

The present review study suggests that yoga has positive effects on psychophysiological level that leads to increased academic performance in college student. Further research on the relationship between yoga practice and college students is warranted to confirm the efficacy of yoga and to include it in the syllabus of the college student.

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### Conflicts of interest

There are no conflicts of interest.

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