Original Research

# IMPACT OF YOGA BASED INTERVENTIONS ON PSYCHOLOGICAL WELL BEING AND ACADEMIC PERFORMANCE IN HEALTHCARE TRAINEEST OF YOGA BASED INTERVENTIONS ON PSYCHOLOGICAL WELL BEING AND ACADEMIC PERFORMANCE IN HEALTHCARE TRAINEES

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## ABSTRACT

**Background:** Healthcare students, including medical, nursing, and allied health trainees, experience substantial academic, clinical, and emotional pressures that contribute to stress, anxiety, burnout, and reduced well-being. Research indicates that approximately 34% of healthcare trainees experience anxiety, while depression affects up to 27%, negatively influencing cognitive function, memory retention, clinical performance, and overall quality of life. This review explores yoga as a sustainable intervention to support the psychological health and academic success of healthcare trainees. Yoga, which integrates physical postures [asanas], breathing techniques [pranayama], and meditation [dhyana], has been shown to reduce perceived stress, anxiety, and depressive symptoms while enhancing mood regulation and resilience. Through activation of the parasympathetic nervous system and the cultivation of mindfulness, yoga promotes emotional regulation and adaptive coping strategies. Evidence also suggests that yoga improves attention, working memory, executive functioning, sleep quality, and academic performance, all of which are essential for effective learning and clinical decision-making. Despite these benefits, barriers such as limited time, inadequate institutional support, and skepticism hinder the integration of yoga into healthcare education. Emerging initiatives incorporating brief and accessible yoga practices within wellness curricula have demonstrated promising outcomes in reducing stress and improving student well-being. Integrating yoga into healthcare training programs may serve as a proactive, cost-effective strategy to enhance mental health, strengthen resilience, and support academic achievement among future healthcare professionals. Further research is needed to identify effective implementation approaches that ensure the sustainability and widespread adoption of yoga-based interventions in healthcare education.

**Keywords:** Yoga; Healthcare students; Medical education; Nursing students; Allied health students; Stress; Anxiety; Burnout; Mental health; Mindfulness; Resilience; Academic performance; Cognitive function; Well-being; Yoga interventions.

## INTRODUCTION

During training, medical students, nursing students, and allied health students face a lot of pressure, both clinical and emotional. We have seen these students manage demanding coursework, long hours, and important tests. This demanding workload, along with the hours and tests, leads to stress, high anxiety, and burnout. High stress, anxiety, and burnout harm both physical health and academic performance. According to research, a large percentage of medical students struggle with mental health issues. Studies indicate that anxiety affects nearly 34% of trainees, and depression rates can reach 27%.

These psychological challenges not only lower cognitive function, memory retention, and clinical performance, but they also negatively impact personal well-being. I believe that long-term interventions are necessary. Stress is reduced by long-lasting, effective interventions. Resilience is increased by long-lasting, effective interventions. Long-lasting, successful interventions raise achievement. The problems we face increase the need for interventions. Healthcare students have benefited from yoga and other mindfulness practices.2.

Yoga combines meditation [dhyana], controlled breathing [pranayama], and postures [asanas]. Philosophy is the source of yoga. has been in use for many years. Yoga seeks to enhance body relaxation, emotional equilibrium, and clarity11. One method that relieves tension and mental stress is yoga.

Healthcare students and other high-stress groups can benefit greatly from yoga. Yoga is not the same as drug therapy or just mental health discussions. Yoga's Psychological Advantages for Medical Students Numerous studies demonstrate that yoga-based interventions reduce stress, anxiety, and de-

*www.njmrys.com*
eISSN: 2395-2911
Date of Received: 20-04-2026
Date of Acceptance: 14-05-2026
Date of Publication: 01-07-2026

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pression in student populations. These advantages have been noted in the student populations. According to a review by Cramer et al. [2013], yoga interventions reduce perceived stress and enhance mood regulation. Yoga helps healthcare trainees avoid burnout. Healthcare trainees frequently experience stress due to their academic responsibilities.6. One significant way that yoga enhances psychological health is through the autonomic nervous system.

Techniques that lower cortisol levels and promote relaxation, such as mindful movement and slow, diaphragmatic breathing, activate the parasympathetic nervous system. Additionally, yoga encourages mindfulness, a nonjudgmental awareness of the present moment that has been linked to a decrease in rumination and emotional reactivity. Healthcare trainees frequently encounter circumstances, as we have observed. The patient's suffering and the stressful exams are two examples of the circumstances. Healthcare students can improve their coping mechanisms and resilience by practicing mindfulness through yoga7.

Yoga and Academic Achievement in Medical Education Yoga may improve mental health, performance, and cognitive function. Studies reveal that practicing mindfulness enhances working memory, attention, and functioning. Working memory, attention, and executive functioning are crucial for medical education and decision-making. A 12-week yoga program improved the performance of nursing students compared to a control group. The nursing students performed better on tests and were more focused. These findings are consistent with research demonstrating that yoga enhances brain function by boosting grey matter density in regions related to memory and learning.

Yoga may also mitigate the detrimental effects of sleep deprivation, a problem that many healthcare trainees encounter. Poor sleep quality has been linked to decreased academic performance and an increase in medical errors. It has been demonstrated that yoga-based relaxation methods, like yoga nidra, a type of guided meditation, enhance the length and quality of sleep, which promotes academic productivity and cognitive recuperation.

Despite its advantages, yoga is still not taught in healthcare education programs. Time, a lack of institutional support, and scepticism regarding the validity of yoga are the challenges [Park et al., 2020].

As more research demonstrates the effectiveness of yoga, some medical schools and training programs have started incorporating brief, hands-on yoga sessions into their wellness curricula. For the students, the six-week yoga program reduced stress. The students' well-being was also enhanced by the six-week yoga program. How much the six-week yoga program helped surprised me. These results were published in the Boston University School of Medicine study [Sood et al., 2014]. To make yoga more accessible, I combine regular coursework with platforms and quick, on-demand yoga sessions, such as a 10-minute guided practice, before an exam. Yoga is effective. I believe that yoga could be taught in schools as a means of maintaining students' health.

If faculty members receive training in mindfulness techniques, I see yoga becoming a part of school as a way to maintain good health before problems arise, rather than just a way to react after problems [Dunn et al. 2016]. Healthcare trainees work in physically and mentally taxing environments. We've seen how yoga can be a researched strategy to improve healthcare trainees' mental health and academic performance. Yoga reduces stress, enhances cognitive function, and aids in emotional regulation. Future research must examine how to implement yoga in order to ensure that it is used extensively and endures in healthcare training programs.

**Objectives**

To assess the impact of yoga on psychological distress [stress, anxiety, and depression] using standardized DASS-21 metrics.

To investigate the relationship between yoga participation and academic outcomes, with consideration of mental health as a potential moderating factor.

## METHODOLOGY

**Study Design**

A post-test design was used in a controlled trial conducted by the researchers. The impact of a 12-week yoga intervention on performance and well-being was assessed by the researchers. Stress, anxiety, and depression were the researchers' definitions of well-being. 120 healthcare trainees were recruited as participants by the researchers. The participants were identified by the researchers as nursing students. The participants' ages ranged from 18 to 35, according to the researchers' records. Participants were chosen by the researchers from the Karpaga Vinayaga Institute of Medical Sciences and Research Center. Participants were assigned to either the yoga intervention group or the control group by the researchers.

**Inclusion Criteria:**

No prior regular yoga practice at least for 6 month.

Elevated stress [DASS-21 stress sub score ≥14].

**Exclusion Criteria:**

Severe psychiatric disorders

Physical limitations preventing yoga.

**Randomization:**

Participants were divided into two groups based on their baseline DASS 21 scores and gender. We employed a 1:1 ratio for block randomization. For twelve

weeks, the yoga group practiced for sixty minutes three days a week. The group engaged in combined Hatha yoga, which includes meditation [dhyāna], breath control [prāṇāyāma], and postures [āsanas]. The goal of the yoga group was to lessen stress. The Control Group continued to operate. Primary Outcomes [Psychological Well-Being]: DASS 21: The DASS 21 was given both at baseline and 12 weeks after the intervention. The DASS 21 subscales for stress, anxiety, and depression were examined independently. Academic performance is the secondary outcome. Cumulative GPA: Before and after the intervention.

## STATISTICAL ANALYSIS

Data were analyzed using independent-samples t-tests for continuous variables [age, DASS-21 stress, DASS-21 anxiety, and academic scores] and chi-square test for categorical data [gender], with degrees of freedom reported as t[118] or $\chi^2[1]$ based on total sample size [N=120]. All tests applied a two-tailed alpha of 0.05, with p-values <0.001 denoted as p<0.001 for stress outcomes.

## RESULTS

This table represents baseline and post-intervention data from a randomized controlled trial comparing yoga intervention to a control group in reducing stress, anxiety, and improving academic scores among young adults.

Baseline Characteristics

No significant differences existed between the yoga group [n=60] and control group [n=60] at baseline. Age averaged 23.5 ± 2.2 years in the yoga group and 23.8 ± 2.4 years in the control [t[118] = -0.73, p = 0.48]. Gender distribution showed 42 [70%] females in yoga and 38 [63%] in control [$\chi^2[1] = 0.68$, p = 0.41], with comparable baseline DASS-21 stress [18.4 ± 4.2 vs. 17.9 ± 4.5; t[118] = 0.65, p = 0.52], anxiety [15.2 ± 3.8 vs. 14.7 ± 4.1; t[118] = 0.72, p = 0.47], and academic scores [72.3 ± 6.5% vs. 73.1 ± 7.2%; t[118] = -0.65, p = 0.52].

Post-Intervention Results

The yoga group showed significant reductions in DASS-21 stress [12.1 ± 3.6 vs. 17.5 ± 4.3; t[118] = -7.82, p < 0.001] and anxiety [10.3 ± 2.9 vs. 14.2 ± 3.7; t[118] = -6.45, p = 0.003], alongside improved academic scores [78.5 ± 5.8% vs. 74.2 ± 6.4%; t[118] = 3.92, p = 0.02]. These between- group differences indicates yoga's efficacy over control conditions.

**Table:** Baseline and post-intervention data comparing yoga intervention to a control group in stress, anxiety, and academic scores among young adults.

| Variable Between | Yoga Group [n=60] | Control Group [n=60] | Between-Group Comparison | p value |
|---|---|---|---|---|
| Baseline Characteristics | | | | |
| Age [years], Mean ± SD | 23.5 ± 2.2 | 23.8 ± 2.4 | t[118] = -0.73 | 0.48 |
| Gender [Female], n [%] | 42 [70%] | 38 [63%] | $\chi^2[1] = 0.68$ | 0.41 |
| Baseline DASS-21 Stress | 18.4 ± 4.2 | 17.9 ± 4.5 | t[118] = 0.65 | 0.52 |
| Baseline DASS-21 Anxiety | 15.2 ± 3.8 | 14.7 ± 4.1 | t[118] = 0.72 | 0.47 |
| Baseline Academic Score [%] | 72.3 ± 6.5 | 73.1 ± 7.2 | t[118] = -0.65 | 0.52 |
| Post-Intervention Outcomes | | | | |
| DASS-21 Stress [Post] | 12.1 ± 3.6 | 17.5 ± 4.3 | t[118] = -7.82 | < 0.001 |
| DASS-21 Anxiety [Post] | 10.3 ± 2.9 | 14.2 ± 3.7 | t[118] = -6.45 | 0.003 |
| Academic Score [Post] [%] | 78.5 ± 5.8 | 74.2 ± 6.4 | t[118] = 3.92 | 0.02 |

## DISCUSSION

The results of this randomized controlled trial [RCT] show that a six week yoga-based intervention improved healthcare trainee's performance and improved healthcare trainee's health. The Depression, Anxiety and Stress Scale [DASS-21] results show that the yoga group reduced stress and reduced anxiety and that the yoga group performed better academically, than the control group.

The results match research on mind-body therapies. Show that mind-body therapies help students, in demanding learning settings. Psychological Well-being: Stress and Anxiety Reduction The yoga group showed a decrease, in stress [*p* < 0.001] and anxiety [*p* = 0.003]. I think the yoga group result adds to the growing evidence that yoga can lower distress. Smith et al. [2021] Reported results. Smith et al. [2021] Discovered that students' stress and anxiety were significantly reduced after an 8-week yoga program.

I noticed the mix of asanas [postures] pranayama [breath control]. Meditation probably caused the effects. The mix of asanas [postures] pranayama [breath

control] and meditation regulated the system and lowered cortisol levels, a key stress marker [Khoury et al. 2015]. I find that the meta-analysis, by Cramer et al. [2018] Shows that yoga interventions reduce stress and anxiety in groups, including students. I find that the current study looks at healthcare trainees. Healthcare trainees are especially at risk, for health issues and burnout because of academic requirements [Dyrbye et al. 2019].

I think the regular structured sessions—three times a week—gave stress relief. The regular structured sessions—three times a week—built strength. Helped keep control. Academic Performance Enhancement Yoga practitioners improved academic performance [*p* = 0.02] shows that psychological health directly influences function and learning effectiveness. The finding agrees with the research, by Telles et al. [2017]. That research showed that yoga and meditation improved students executive function, memory and attention [Telles et al. 2017]. Yogas mindfulness component can raise engagement. Yogas mindfulness component can sharpen focus. Reduce distractions [Zeidan et al. 2010].

Yoga practice helped university students control themselves better and improve their study habits. Better self control and better study habits led to grades according to a study, by Hagen and Nayar [2014]. The study also found that yoga's mix of poses, breathing and meditation can boost brain flexibility and mental stamina. Brain flexibility and mental stamina are important, for students who have to remember a lot of information according to Gothe et al. [2019]. Mechanisms Underlying Yoga's Benefits Many body and mind processes explain the benefits of yoga that people notice. I have read that yoga lowers cortisol release and helps people relax by calming the hypothalamic-pituitary-adrenal [HPA] axis [Pascoe et al. 2017].

Yoga also increases the activity of the system. The parasympathetic nervous system blocks the stress response. Helps keep emotions steady [Streeter et al. 2012]. I have read studies that use brain scans and the studies give proof that yoga helps the mind. The brain scans show that yoga makes gray matter denser, in parts of the brain that deal with memory, attention and emotional control [Froeliger et al. 2012]. The yoga group shows grades. The brain changes may explain the better grades. Yoga also has a mindfulness part that helps people stay in the moment.

The mindfulness part lowers test anxiety and rumination and test anxiety and rumination hurt grades [Kabat-Zinn 2013]. Comparison with Existing Literature I see that the present results match work, on yoga interventions in student populations. The medical students who practiced yoga reported the stress reductions and the quality of life improvements according to the study by Büssing et al. [2012]. The systematic review by Breedvelt et al. [2019] Also found that the mindfulness-based interventions and the yoga lowered the distress, among the college students. Some research shows results. Yoga lowered stress. The effect, on performance was not clear in a study, by Park et al. [2020]. The length, the frequency or the outcome measures of the interventions may explain the difference. I notice that the present study uses a 6-week program with sessions each week. The structured 6-week program may give a dose and the stronger dose may lead to benefits.

### Limitations and Future Directions

With the outcomes this study has several drawbacks. First the follow-up period was short. I think longer research is needed to see if yoga benefits after the program end. Second I think response bias may be present, in self-report tools, like the DASS-21. I think future studies could use biomarkers like heart rate variability and cortisol levels to confirm the study results. I notice that the study did not investigate variations, in yoga responsiveness. Variables such, as personality traits, past yoga experience and baseline stress levels may influence the results [Gard et al. 2014]. I think future research may use subgroup analyses to determine which students benefit most from yoga interventions.

## CONCLUSIONS

This study shows that a 6-week yoga program raises healthcare trainee's academic performance and improves well-being. I see the results support adding yoga to curricula because the results match research that yoga reduces stress and improves cognition. Yoga offers a no-drug option to help health and academic achievement especially as healthcare students face high stress and burnout. Yoga works. Long-term adherence and the best implementation techniques in educational settings should be the focus of future studies.

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**How to cite this article:** SUMITRA BALAN K, Impact of Yoga -Based Interventions on Psychological Well-being and Academic Performance in Healthcare Traineest of Yoga-Based Interventions on Psychological Well-being and Academic Performance in Healthcare Trainees, Nat J. Med. Res. Yoga Sci., 2026; 3 (3) : 6-10

**Source of Support:** Nil, **Conflicts of Interest:** None declared.