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ORIGINAL RESEARCH ARTICLE

Effect of Specific Yoga Protocol on Stress and Academic Performance in Adolescents

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ABSTRACT

Background: This study investigates the impact of a structured Yoga protocol on perceived stress and academic performance among adolescents. Adolescence is a pivotal developmental stage often accompanied by heightened stress and academic pressures, which can adversely affect mental and physical health. Existing literature indicates that Yoga can effectively reduce stress and enhance cognitive functioning, making it a potential intervention in educational settings.

Aim: The study aimed to evaluate the effectiveness of a specific Yoga protocol on stress management and academic performance in adolescents.

Materials: A total of 70 participants from H.N. Model Senior Secondary School in Sanga, Bhiwani, were recruited for the study.

Intervention: Participants were divided into an experimental group practicing a specific Yoga protocol (*Yogāsana*, *Prāṇāyāma*, and meditation) and a control group engaging in non-specific physical activities. Utilizing a pre-test and post-test control group design, the study assessed perceived stress using the perceived stress questionnaire and academic performance through the Academic Performance Rating Scale.

Results: Results showed that the experimental group experienced a significant reduction in perceived stress, with pre-test mean values decreasing from 0.645 to 0.493, compared to a minor reduction in the control group from 0.617 to 0.550. Similarly, academic performance improved markedly in the experimental group, whose mean scores increased from 2.829 to 3.351, while the control group saw a smaller increase from 2.914 to 3.117.

Conclusion: The findings suggest a strong correlation between the Yoga intervention and enhanced stress management and academic performance. This underscores the potential of incorporating Yoga into school curricula as an effective strategy for promoting holistic development among adolescents. By fostering emotional regulation and cognitive clarity, Yoga may contribute to improved learning environments and overall student well-being, warranting further exploration and implementation in educational settings.

1. INTRODUCTION

Adolescence is a critical developmental phase characterized by significant physical, emotional, and cognitive changes. During this period, stress and academic pressures are often heightened, leading to adverse effects on mental and physical health.[1] Numerous studies have shown that Yoga, as a holistic mind-body practice, can effectively reduce stress and improve mental clarity, emotional regulation, and academic performance in adolescents. Yoga interventions have demonstrated significant reductions in stress levels by promoting relaxation and enhancing self-regulation skills.[2] Moreover, Yoga's emphasis on breath control, mindfulness, and physical postures positively impacts concentration and cognitive functioning, which are vital for academic success.[3]

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A study conducted by Telles *et al*.[4] revealed that adolescents who participated in a structured Yoga program showed improved academic performance and a marked reduction in anxiety. Similarly, Noggle *et al*.[5] found that high school students practicing Yoga exhibited lower levels of test anxiety and improved overall academic outcomes. These findings suggest that incorporating Yoga into school curricula may serve as an effective strategy to manage stress and enhance academic achievement in adolescents, providing a foundation for holistic development during this formative period.

Yoga has been increasingly recognized for its benefits in helping children and adolescents manage psychosocial stress. Studies have shown that practicing Yoga can significantly reduce stress, anxiety, and anger while promoting emotional regulation. For instance, Galantino *et al*.[6] highlight how Yoga enhances children's capacity to cope with psychosocial stressors. Controlled studies on adolescents have provided further evidence of Yoga's psychological benefits. Khalsa *et al*.[3] found that Yoga can reduce anger, while West *et al*.[7] demonstrated its efficacy in decreasing stress and negative emotions. Similarly, Berger and Owen[8] emphasized Yoga's potential to alleviate symptoms of depression, while Wade[9] reported improvements in self-confidence among adolescents practicing Yoga.

Moreover, continuous Yoga practice has been linked to holistic development, improving physical, mental, and spiritual well-being.[10] Yoga's positive effects extend beyond emotional health, as it has been shown to improve cognitive functions such as memory and attentiveness, thereby boosting academic performance.[6] Other studies support these findings, indicating that regular Yoga practice fosters greater psychological well-being and overall life satisfaction.[11,12] As such, integrating Yoga into educational settings offers a valuable tool for enhancing both the mental and academic outcomes of students.

1.1. Objective of the Study

- To measure the effect of Yoga protocol on stress in a sample of adolescents
- To measure the effect of Yoga protocol on academic performance in a sample of adolescents.

2. METHODS

2.1. Sample

A study was conducted with 70 participants divided into two groups: one practicing a specific Yoga protocol and the other a non-specific practice group. Each group consisted of 35 participants. The primary aim of this research was to examine the effect of Yogic practices on stress levels and academic performance.

2.2. Variables

The independent variables in the study were *Yogāsana, Prāṇāyāma,* and meditation. These practices formed the core of the specific Yoga protocol group. On the other hand, the dependent variables were stress and academic performance, both of which were evaluated for their change over time.

2.3. Tools Used

Stress levels were measured using the Perceived Stress Questionnaire, a widely accepted tool for assessing stress in individuals. Academic performance was evaluated using the Academic Performance Rating Scale, which provides a structured measure of students' academic abilities and efforts.

2.4. Research Design

A pre-test and post-test control group design was used, with one experimental group following the specific Yoga protocol and the control group engaging in non-specific activities. The design allowed for comparing outcomes in stress reduction and academic performance between the two groups, highlighting the effectiveness of structured Yogic practices.

The participants were selected from H.N. Model Senior Secondary School in Sanga, Bhiwani. None of the participants had prior experience with the Specific Yoga Protocol.

2.5. Intervention

Both groups underwent their respective activities for 55 min per session. The specific Yoga protocol group performed daily Yogic practices, including *Yogāsana*, *Prāṇāyāma*, and Meditation, while the non-specific group played games. The specific Yoga protocol consisted of the following routine:

- Yogic Prayer: 2 min
- Warm-up Exercises: 5 min
- Asana (Yoga Postures): 20 min
- Prāṇāyāma (Breathing Techniques): 13 min
- Meditation: 10 min.

After the intervention, post-tests on academic performance were conducted on both groups to evaluate the impact of these activities.

3. DATA ANALYSIS AND RESULTS

The data in Table 1 and Graph 1 provides the mean and standard deviation (SD) for the perceived stress levels of both control and experimental groups before and after the intervention.

In the control group, the pre-test mean value for perceived stress was 0.617 with a standard deviation of 0.162, while the post-test mean value decreased to 0.550 with a standard deviation of 0.128. This slight reduction in perceived stress indicates that while there was a minimal decrease in stress levels, the change was relatively modest. The control group participants showed a small reduction in stress, but it is likely attributable to external factors unrelated to the intervention.

In the experimental group, the pre-test mean value was 0.645 with a standard deviation of 0.140, while the post-test mean decreased to 0.493 with a standard deviation of 0.110. Compared to the control group, the experimental group showed a greater reduction in perceived stress. The decrease in mean stress levels from 0.645 to 0.493 suggests that the intervention had a notable impact on reducing stress levels in the experimental group. Furthermore, the reduction in the standard deviation indicates less variation in perceived stress post-intervention, suggesting that the intervention was uniformly effective across participants in this group.

The significant decrease in perceived stress levels in the experimental group compared to the control group suggests that the intervention (possibly a stress-reduction program such as Yoga or meditation) had a beneficial effect. The reduction in stress in the control group was minimal, indicating that without the intervention, stress levels remained relatively unchanged. The greater decrease in stress levels in the experimental group suggests a strong correlation between the intervention and the reduction in perceived stress.

Table 2 and Graph 2 show the academic performance scores, with the mean and standard deviation for both control and experimental groups.

The pre-test mean academic performance score for the control group was 2.914, with a standard deviation of 0.577. In the post-test, the mean slightly increased to 3.117 with a lower standard deviation of 0.460. This small increase in mean scores reflects a minor improvement in academic performance, with less variability in scores after the intervention.

In the experimental group, the pre-test mean score was 2.829 with a standard deviation of 0.600, while the post-test mean increased significantly to 3.351 with a standard deviation of 0.496. The greater increase in academic performance in the experimental group indicates that the intervention had a positive impact. The decrease in the standard deviation suggests that the improvement in academic performance was consistent across participants in the experimental group.

The comparison of pre-test and post-test scores shows that both the control and experimental groups improved in academic performance, but the experimental group demonstrated a more pronounced improvement. This suggests that the intervention not only helped reduce perceived stress but also positively affected academic performance. Reduced stress may have contributed to better focus and academic outcomes for the experimental group.

4. DISCUSSION

The present study examined the effect of an intervention on perceived stress and academic performance among control and experimental groups. The findings indicate significant differences between pre-test and post-test results across both groups, especially in the experimental group, highlighting the impact of the intervention on reducing stress and improving academic outcomes.

For perceived stress, the control group exhibited a slight reduction from a pre-test mean of 0.617 (SD = 0.162) to a post-test mean of 0.550 (SD = 0.128). However, this reduction is minimal compared to the experimental group, where the mean stress levels decreased from 0.645 (SD = 0.140) to 0.493 (SD = 0.110). The substantial reduction in the experimental group's stress levels suggests the effectiveness of the intervention, possibly aligning with prior research that has demonstrated the beneficial impact of stress-reducing programs, such as Yoga and mindfulness interventions. Studies like those conducted by Sharma *et al*.[13] and Cohen *et al*.[14] reported similar reductions in stress following mindfulness-based interventions, with significant improvements noted particularly in high-stress environments such as academic settings. This suggests that practices aimed at stress management may offer tangible benefits to students struggling with perceived stress.

Regarding academic performance, the control group showed a modest increase in mean scores from 2.914 (SD = 0.577) in the pre-test to 3.117 (SD = 0.460) in the post-test. In contrast, the experimental group showed a more pronounced improvement, with their mean academic performance increasing from 2.829 (SD = 0.600) to 3.351 (SD = 0.496). This suggests that, beyond stress reduction, the intervention may have positively impacted cognitive performance and academic outcomes. Previous research by Mrazek *et al*.[15] and Shapiro *et al*.[16] supports these findings, showing that mindfulness and stress-reduction techniques can enhance attention, memory retention, and overall academic performance in students.

The greater improvement in both perceived stress and academic performance within the experimental group underscores the effectiveness of targeted interventions in promoting well-being and enhancing academic outcomes. The control group's improvements, though smaller, indicate that other factors such as natural adaptation to academic challenges may also play a role. Nevertheless, the marked changes in the experimental group suggest that introducing stress-management techniques can significantly impact students' stress levels and performance, as suggested by previous literature.

5. CONCLUSION

The data analysis reveals significant insights into the impact of the experimental intervention on perceived stress and academic performance across the two groups studied. In terms of perceived stress, both groups exhibited a decrease from pre-test to post-test measurements. However, the experimental group demonstrated a more pronounced reduction in perceived stress levels compared to the control group, indicating the effectiveness of the intervention in alleviating stress.

When examining academic performance, the experimental group also showed notable improvement, surpassing the control group in post-test scores. This suggests that the strategies implemented in the experimental group not only reduced stress but also positively influenced academic outcomes. The control group, while improving, did not achieve the same level of enhancement as seen in the experimental group.

Overall, the findings indicate a strong relationship between reduced perceived stress and improved academic performance, particularly in the context of the experimental intervention. These results underscore the importance of integrating stress-reduction strategies into educational settings to foster better learning environments and enhance student outcomes. This study highlights the potential benefits of such interventions, encouraging further exploration and implementation in academic curricula.

6. ACKNOWLEDGEMENT

Nil.

7. AUTHORS' CONTRIBUTIONS

All the authors contributed equally to the design and execution of the article.

8. FUNDING

Nil.

9. ETHICAL APPROVALS

This study was approved by the Chandigarh Yog Institutional Ethical Committee (CYIEC).

10. CONFLICTS OF INTEREST

Nil.

11. DATA AVAILABILITY

This is an original manuscript and all data are available for only review purposes from principal investigators.

12. PUBLISHERS NOTE

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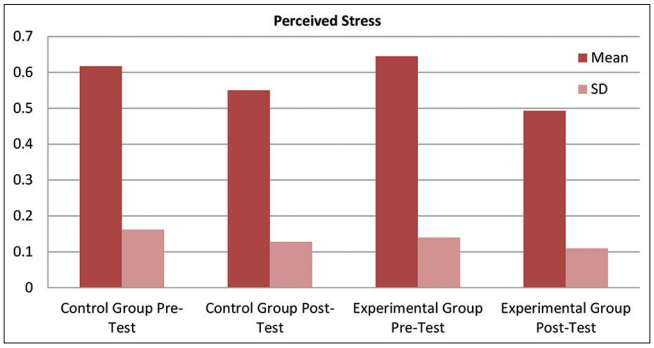
Table 1: The mean and standard deviation (SD) for the perceived stress levels of both control and experimental groups before and after the intervention

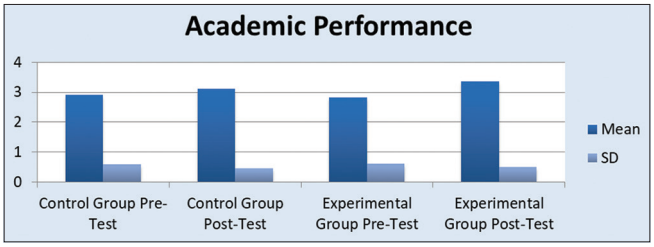
Group	Pre-test	Post-test
Control		
Mean	0.617	0.550
Standard deviation	0.162	0.128
Experimental		
Mean	0.645	0.493
Standard deviation	0.140	0.110

Table 2: The academic performance scores, with the mean and standard deviation for both control and experimental groups

Group	Pre-test	Post-test
Control		
Mean	2.914	3.117
Standard Deviation	0.577	0.460
Experimental		
Mean	2.829	3.351
Standard Deviation	0.600	0.496



Graph 1: The mean and standard deviation (SD) for the perceived stress levels of both control and experimental groups before and after the intervention



Graph 2: The academic performance scores, with the mean and standard deviation for both control and experimental groups