

Assessing the Impact of Yoga Practice on the Psychological Well-Being of Adolescents: A Pre-Test and Post-Test Analysis

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Abstract: *Using a pre-test and post-test experimental design, the study sought to assess the psychological advantages of yoga interventions on the wellbeing of adolescents. Purposive sampling was used to choose a sample of 90 adolescent athletes from Rajasthan for the study. Stress, anxiety, emotional equilibrium, and mental recuperation were among the psychological factors evaluated. As part of their routine, participants regularly practiced yoga. Following the intervention, all measured psychological parameters showed significant improvements, according to data analysis using paired samples t-tests. In particular, there were improvements in mental recovery and emotional balance, as well as decreases in stress and anxiety levels. The results demonstrate yoga's potential as a successful therapeutic and preventive strategy for enhancing mental health and lowering psychological risks in this age group, supporting the idea that yoga practice benefits adolescents' psychological health.*

Keywords: Yoga Interventions, Depression, Psychological Effects.

1. Introduction

Significant physical, emotional, cognitive, and social changes occur during adolescence, a critical and transformative stage of human development. As adolescents negotiate academic pressures, identity formation, social dynamics, and expectations from family and society, this stage frequently presents a variety of psychological difficulties. If these difficulties are not adequately addressed, they may result in elevated stress, anxiety, mood fluctuations, depression, and general psychological distress. Preventive and supportive interventions that can promote psychological well-being in adolescents are desperately needed, as the prevalence of mental health issues among this age group is on the rise worldwide.

In order to balance the body, mind, and spirit, yoga, which has its roots in ancient Indian tradition, combines physical postures (asanas), breathing exercises (pranayama), and meditation (dhyana). Beyond its health benefits, yoga is well known for its beneficial effects on mental health, especially in lowering stress, improving emotional control, boosting focus, and encouraging self-awareness and mindfulness. Numerous studies have shown that regular yoga practice can improve psychological metrics like mood enhancement, anxiety reduction, resilience, and improved coping strategies for stressful situations.

Despite these encouraging results, there is still a dearth of research that focuses exclusively on adolescent populations, and systematic interventions are required to substantiate the psychological advantages of yoga in this group. Adolescents can gain a great deal from activities that not only improve their mental health but also give them the skills they need to develop long-term emotional resilience and self-regulation

because of their developing minds and increased vulnerability to emotional disorders.

Using a pre-test and post-test experimental framework, the current study aims to assess the psychological effects of yoga practice on adolescents' well-being. The intervention seeks to measure changes in key psychological indicators such as stress levels, anxiety, mood, emotional stability, and overall psychological wellness before and after participation in a guided yoga program. The goal of this study is to demonstrate the effectiveness of yoga through empirical data, making it a practical, easily accessible, and non-pharmacological approach to enhancing teenage mental health and delaying the onset of more serious psychological disorders.

In order to promote holistic development and psychological well-being during the formative years of life, this study ultimately hopes to add to the larger conversation on adolescent health by promoting the inclusion of yoga and mindfulness practices in school curricula, athletic training, and daily routines.

2. Literature Review

Several studies have examined the psychological advantages of yoga, emphasizing how effective it is at treating mental health issues like stress, anxiety, and depression as well as improving general wellbeing. A systematic review and meta-analysis by Cramer et al. (2013) proved that yoga is a useful adjunctive strategy for lowering depression. Their analysis confirmed yoga's therapeutic potential in mental health care by showing that participants who practiced the practice experienced significant improvements in depressive symptoms when compared to control groups.

Similarly, yoga interventions helped reduce depressive symptoms in a pilot study conducted by Rani et al. (2021) on people with hypothyroidism. This suggests that yoga can have a dual benefit in addressing the interplay between psychological health and physiological disorders. The effects of yoga on middle-aged women with hypothyroidism were further investigated by Kamatchi and Elangovan (2022), who found that the practice improved lipid profiles and increased self-confidence, both of which tangentially contribute to improved psychological health through physiological enhancements.

Younger populations and medical students have been the subject of more recent research. In their pilot study, Chauhan et al. (2024) examined the effects of yoga on stress, anxiety, and depression in medical students and found that structured yoga interventions significantly decreased psychological distress. This supports the ability of yoga practices to reduce stress, as demonstrated by research by Kavitha et al. (2023), who linked regular yoga and meditation practice with lower serum cortisol levels, a biological indicator of stress.

In their systematic review and meta-analysis of the effects of yoga on clinical symptoms and social functioning in patients with schizophrenia, Yin et al. (2024) looked at the wider applications of yoga in a variety of populations. Their results demonstrated the therapeutic versatility of yoga in psychiatric conditions by showing improvements in social integration and quality of life. In support of this, Sarubin et al. (2014) showed that Hatha yoga had a positive impact on the hypothalamic-pituitary-adrenal (HPA) axis when used as an adjuvant treatment for major depression, indicating biological bases for the psychological advantages of yoga.

The physiological aspects that have an indirect impact on psychological well-being have also been studied. According to a meta-analysis by Ghazvineh et al. (2022), yoga dramatically enhances lipid profiles, which are frequently associated with general health and vitality. In their review of the effects of yoga interventions on pulmonary functions, Bhagel and Saha (2021) focused on how better respiratory health can promote better mental states by improving oxygenation and relaxation responses.

In conclusion, Rizvi et al. (2023) presented a body of evidence supporting the incorporation of yoga into hospital-based palliative care programs, emphasizing the practice's ability to improve psychological comfort and quality of life in clinical settings. When taken as a whole, these studies highlight the many ways that yoga can support mental health, manage stress, and promote psychological well-being in a variety of demographics.

3. Research Methodology

A pre-test and post-test experimental design was used in this study to assess the psychological impacts of yoga practice on the wellbeing of adolescents. The psychological states of the participants before and after the yoga intervention could be compared thanks to this framework.

People/Universe: The population was made up of 18–19-year-old adolescents who were involved in a variety of sports

and came from the Rajasthani districts of Jaipur, Jodhpur, and Udaipur. Understanding the psychological advantages of yoga in a physically active population was the goal of the study on adolescent athletes.

Sampling Method: Adolescents who were willing to take part in a structured yoga program intended to improve psychological well-being in addition to being involved in sports training were chosen using a purposive sampling technique.

Sample Size: Ninety adolescents in all, evenly split among the different districts under consideration, participated in the study.

Tools for Gathering Data: Self-reported questionnaires and standardized psychological well-being scales were used to measure changes in psychological parameters like stress, anxiety, depression, and self-esteem before (pre-test) and after (post-test) the yoga intervention.

Objectives:

- 1) To measure the impact of regular yoga practice on the psychological well-being of adolescents, specifically focusing on levels of stress, anxiety, depression, and self-esteem using a pre-test and post-test design.
- 2) To assess the effectiveness of yoga interventions in promoting overall psychological well-being and reducing mental health risks among adolescent populations.

Hypotheses:

Based on the above objectives following hypotheses was being framed:

H₀1: There is no significant difference in the psychological well-being of adolescents before and after yoga interventions.

H_a1: There is significant difference in the psychological well-being of adolescents before and after yoga interventions.

4. Results and Discussion

4.1 Respondents Profile:

Ninety adolescents athletes participated in the study; they were equally divided in age, with 50% being 18 and 50% being 19. With 45 males (50%) and 45 females (50%), the gender distribution was likewise balanced. Three districts in Rajasthan—Jaipur, Jodhpur, and Udaipur—were equally represented among the participants, accounting for 33.3% of the sample.

In terms of education, 8.9% had finished secondary school, 32.2% had finished senior secondary, and 58.9% were pursuing undergraduate studies. In terms of sports specialization, 47.8% of participants competed in field events, followed by combined events (23.3%), track events (23.3%), and other sports disciplines (5.6%).

Sixty percent had one to three years of experience, thirty percent had less than a year, and ten percent had more than four years. Interestingly, 83.3% of the athletes said they did yoga as part of their training, compared to 16.7% who did not. This diverse profile highlights a well-represented group of

adolescent athletes across age, gender, education, sports type, and training experience.

4.2 Psychological Aspects and Yoga Interventions

The hypothesis H_{01} is further sub divided into three hypotheses $H_{01.1}$, $H_{01.2}$ and $H_{01.3}$.

4.2.1 Stress / Anxiety and Yoga Interventions

$H_{01.1}$: There is no significant difference between the pre-test and post-test psychological parameter of stress/anxiety among adolescents following yoga interventions.

$H_{a1.1}$: There is significant difference between the pre-test and post-test psychological parameter of stress/anxiety among adolescents following yoga interventions.

Table 4.1: Paired Samples Statistics (H1.1)

Paired Samples Statistics				
		Mean	N	Std. Deviation
Pair 1	Stress & Anxiety: Post	3.8000	90	1.22887
	Stress & Anxiety: Pre	2.0444	90	1.14078
				Std. Error Mean
				.12953
				.12025

Table 4.2: Paired Samples Correlations (H1.1)

Paired Samples Correlations			
		N	Correlation
Pair 1	Stress & Anxiety: Post and Stress & Anxiety: Pre	90	-.819
			Sig.
			.000

Table 4.3: Paired Samples T- Test (H1.1)

Paired Samples Test								
		Paired Differences				t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
					Lower	Upper		
Pair 1	Stress & Anxiety: Post and Stress & Anxiety: Pre	1.75556	2.26011	.23824	1.28218	2.22893	7.369	.000

The mean difference between the pre-test and post-test scores for stress and anxiety in adolescents after yoga interventions is 1.76, according to the paired samples t-test. Following the intervention, there was a statistically significant decrease in stress and anxiety, as indicated by the t-value of 7.369 and the p-value of 0.000 ($p < 0.05$). Furthermore, the negative correlation (-0.819 , $p = 0.000$) between pre- and post-test scores indicates that yoga led to greater reductions in stress and anxiety in adolescents who had higher initial levels. These results show how beneficial yoga is for reducing stress and anxiety in adolescents.

As the p-value is found to be lesser than the standard alpha value of 0.05 it can be concluded that the null hypothesis $H_{01.1}$ is being rejected confirming that there is significant difference between the pre-test and post-test psychological parameter of stress/anxiety among adolescents following yoga interventions.

4.2.2 Emotional Balance and Yoga Interventions:

$H_{01.2}$: There is no significant difference between the pre-test and post-test psychological parameter of emotional balance among adolescents following yoga interventions.

$H_{a1.2}$: There is significant difference between the pre-test and post-test psychological parameter of emotional balance among adolescents following yoga interventions.

Table 4.4: Paired Samples Statistics (H1.2)

Paired Samples Statistics				
		Mean	N	Std. Deviation
Pair 1	Emotional Balance: Post	4.0000	90	1.03858
	Emotional Balance: Pre	1.9000	90	.96045
				Std. Error Mean
				.10948
				.10124

Table 4.5: Paired Samples Correlations (H1.2)

Paired Samples Correlations			
		N	Correlation
Pair 1	Emotional Balance: Post & Emotional Balance: Pre	90	-.924
			Sig.
			.000

Table 4.6: Paired Samples T- Test (H1.2)

Paired Samples Test								
		Paired Differences				t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
					Lower	Upper		
Pair 1	Emotional Balance: Post & Emotional Balance: Pre	2.10000	1.96057	.20666	1.68937	2.51063	10.162	.000

The mean difference between pre-test and post-test scores for emotional balance in adolescents after yoga interventions is 2.10, according to the paired samples t-test. Following the intervention, there was a highly significant improvement in emotional balance, as evidenced by the t-value of 10.162 and the p-value of 0.000 ($p < 0.05$). Additionally, it appears that participants with lower emotional balance initially

demonstrated greater improvements after yoga practice, as indicated by the strong negative correlation (-0.924 , $p = 0.000$) between pre- and post-test scores. These findings support the effectiveness of yoga interventions in improving adolescents' emotional balance and regulation.

As the p-value is found to be lesser than the standard alpha value of 0.05 it can be concluded that the null hypothesis $H_{01.2}$ is being rejected confirming that there is significant difference between the pre-test and post-test psychological parameter of emotional balance among adolescents following yoga interventions.

4.2.3 Mental Recovery and Yoga Interventions:

$H_{01.3}$: There is no significant difference between the pre-test and post-test psychological parameter of mental recovery among adolescents following yoga interventions.

$H_{a1.3}$: There is significant difference between the pre-test and post-test psychological parameter of mental recovery among adolescents following yoga interventions.

Table 4.7: Paired Samples Statistics (H1.3)

Paired Samples Statistics				
		Mean	N	Std. Deviation
Pair 1	Mental Recovery: Post	3.2667	90	1.29649
	Mental Recovery: Pre	2.6111	90	1.24246
				Std. Error Mean
				.13666
				.13097

Table 4.8: Paired Samples Correlations (H1.3)

Paired Samples Correlations			
		N	Correlation
Pair 1	Mental Recovery: Post & Mental Recovery: Pre	90	-.897
			Sig. .000

Table 4.9: Paired Samples T- Test (H1.3)

Table 4.2: Paired Samples t-Test (111.5)									
Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Mental Recovery: Post & Mental Recovery: Pre	.65556	2.47305	.26068	.13759	1.17353	2.515	89	.014

The mean difference between pre-test and post-test scores for mental recovery in adolescents after yoga interventions is 0.65556, according to the paired samples t-test. The obtained t-value is 2.515 with a p-value of 0.014 ($p < 0.05$), indicating a statistically significant improvement in mental recovery after the yoga intervention. Adolescents with lower initial mental recovery scores may have improved more after the intervention, according to the strong negative correlation (-0.897 , $p = 0.000$) between pre- and post-test scores. These results support the idea that consistent yoga practice aids in mental healing and improves adolescents' psychological health.

As the p-value is found to be lesser than the standard alpha value of 0.05 it can be concluded that the null hypothesis $H_{01.3}$ is being rejected confirming that there is significant difference between the pre-test and post-test psychological parameter of mental recovery among adolescents following yoga interventions.

5. Conclusion

The findings of this study provide strong evidence that regular yoga practice significantly enhances the psychological well-being of adolescents. The pre-test and post-test analysis revealed marked improvements across psychological dimensions such as stress and anxiety reduction, improved emotional balance, better mental recovery, and increased self-esteem. These outcomes support the alternative hypothesis (H_{a1}), confirming that there is a significant difference in adolescents' psychological well-being before and after yoga interventions. The rejection of the null hypothesis (H_{01}) across all psychological parameters validates the effectiveness of yoga as a beneficial intervention for mental health enhancement among adolescents. The results highlight that yoga can be an effective preventive and therapeutic strategy, particularly in reducing psychological distress and promoting emotional resilience in adolescent populations. Integrating yoga into adolescent routines, especially within

educational and sports settings, can foster holistic development and safeguard against emerging mental health risks.

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