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EFFECT OF CYCLIC MEDITATION ON COMPETITIVE ANXIETY AMONG COLLEGIATE ATHLETES: A PRE–POST CONTROLLED STUDY USING SCAT QUESTIONNAIRE

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ABSTRACT:

Competitive anxiety plays a significant role in influencing athletic performance and psychological functioning. The present study investigated the impact of cyclic meditation on competitive anxiety among collegiate athletes using a pre–post controlled design. A total of 22 participants were assigned to a cyclic meditation group (n = 11) and a control group (n = 11). Anxiety levels were measured using the Sport Competition Anxiety Test (SCAT). Statistical analysis using a two-way mixed ANOVA indicated a significant change in anxiety scores across time ($p < 0.001$), whereas the difference between groups over time was not statistically significant ($p > 0.05$). Descriptive findings indicated a greater reduction in anxiety scores within the meditation group. These findings highlight the complexity of measuring psychological interventions and suggest that further investigation is required to clarify the role of meditation in competitive settings.

KEYWORDS: *Cyclic Meditation, Competitive Anxiety, SCAT, Collegiate Athletes, Sports Psychology, Anxiety Regulation, Meditation Intervention, Psychological Performance.*

INTRODUCTION:

Competitive anxiety represents a significant psychological challenge for collegiate athletes, often impairing performance, focus, and recovery under high-pressure conditions. Cyclic meditation, a structured yogic practice combining physical postures, breathing techniques, and meditative awareness, has emerged as a promising intervention for managing stress and

enhancing mental resilience in sports contexts (Telles et al., 2012). The Sports Competition Anxiety Test (SCAT), a validated psychometric tool, provides an objective measure of cognitive and somatic anxiety specific to athletic competition, making it ideal for assessing intervention efficacy in this population (Martens et al., 1990).

Research consistently demonstrates that anxiety levels directly influence athletic performance, with elevated competitive anxiety linked to reduced motor control, decision-making errors, and somatic symptoms such as muscle tension and rapid heart rate. Collegiate athletes, balancing rigorous training schedules with academic demands, are particularly vulnerable to chronic stress accumulation, which can exacerbate competitive anxiety during key events. Traditional interventions like cognitive-behavioral therapy require extended sessions and professional oversight, whereas brief, non-invasive practices like cyclic meditation offer practical alternatives for sports settings (Paranthatta et al., 2024).

While several studies have examined yoga's broader effects on athlete well-being, limited research specifically targets cyclic meditation's impact on competitive anxiety using controlled designs and standardized measures like SCAT. Existing evidence suggests cyclic meditation reduces baseline anxiety and improves psychophysiological markers of stress, but its acute effects on competition-specific anxiety among collegiate athletes remain underexplored (Nair et al., 2017).

The present pre-post controlled study investigates the effect of cyclic meditation on competitive anxiety levels among collegiate athletes using the SCAT questionnaire. By comparing intervention and control groups, this research aims to establish empirical evidence for cyclic meditation's role in sports psychology, contributing actionable strategies for coaches and athletes seeking efficient anxiety management techniques (Chetry et al., 2025; Paranthatta et al., 2024).

METHODOLOGY:

Participants:

A total of 22 collegiate athletes (n = 22) were selected using convenience sampling and divided equally into a cyclic meditation group (n = 11) and a control group (n = 11). All participants were actively involved in sports activities. Ethical approval and informed consent were obtained prior to participation from ethical committee of LNIPE, Gwalior.

Intervention:

The experimental group underwent cyclic meditation sessions for a specified duration under controlled conditions, while the control group did not receive any intervention.

Measure:

Competitive anxiety was assessed using the Sport Competition Anxiety Test (SCAT), a standardized questionnaire designed to measure trait anxiety in sport settings. Higher scores indicate higher levels of competitive anxiety.

Study Design:

A two-way mixed experimental design was employed, with one between-subject factor (group: cyclic meditation vs control) and one within-subject factor (time: pre-test vs post-test), to examine the effect of meditation on competitive anxiety.

Statistical Analysis:

Descriptive statistics were calculated as mean and standard deviation. Normality was assessed using the Shapiro–Wilk test. A two-way mixed ANOVA was conducted to evaluate the effects of time (pre vs post) and group (meditation vs control) on SCAT scores. The level of significance was set at $p < 0.05$, and effect size was reported using partial eta squared.

RESULTS:

Table 1: Tests of Normality.

	Shapiro-Wilk		
	Statistic	**df**	**Sig.**
SCAT pre	.933	22	.143
SCAT post	.916	22	.063

Table 1 shows the normality of the data was assessed using the Shapiro–Wilk test. The Shapiro–Wilk test indicated that the data were normally distributed for both pre-test ($p = 0.143$) and post-test ($p = 0.063$) SCAT scores.

Table 2: Descriptive Statistics.

	TreatmentGroups	**Mean**	**Std. Deviation**	**N**
SCAT pre	Cyclic Meditation Group	20.91	3.41	11
	Control Group	21.55	3.64	11
	Total	21.23	3.46	22
SCAT post	Cyclic Meditation Group	18.09	2.80	11
	Control Group	21.36	3.29	11
	Total	19.73	3.42	22

The descriptive statistics in table 2 showed a reduction in SCAT scores in the cyclic meditation group from pre-test (M = 20.91 ± 3.41) to post-test (M = 18.09 ± 2.80). In contrast, the control group showed minimal change from pre-test (M = 21.55 ± 3.64) to post-test (M = 21.36 ± 3.29).

Table 3: Tests of Within-Subjects Effects.

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	**Sphericity Assumed**	**24.750**	**1**	**24.750**	**33.820**	**.000***	**.628**
	Greenhouse-Geisser	24.750	1.000	24.750	33.820	.001	.628
	Huynh-Feldt	24.750	1.000	24.750	33.820	.002	.628
	Lower-bound	24.750	1.000	24.750	33.820	.001	.628
Time * TreatmentGroups	Sphericity Assumed	19.114	1	19.114	26.118	.120	.566
	Greenhouse-Geisser	19.114	1.000	19.114	26.118	.211	.566
	Huynh-Feldt	19.114	1.000	19.114	26.118	.097	.566
	Lower-bound	19.114	1.000	19.114	26.118	.155	.566

Table 3 revealed a significant main effect of time on SCAT scores F (1,20) = 33.820, $p < 0.001$, $\eta^2 = 0.628$), indicating a significant change in competitive anxiety from pre-test to post-test. However, the interaction effect between time and group was not statistically significant ($p > 0.05$), indicating that the change in SCAT scores over time did not differ significantly between the cyclic meditation and control groups.

Table 4: Pairwise Comparisons of Time.

(I) Time	(J) Time	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
1-week	3-week	1.500*	.258	.001*	.962	2.038
3-week	1-week	-1.500*	.258	.001	-2.038	-.962
*. The mean difference is significant at the .05 level. b. Adjustment for multiple comparisons: Bonferroni.						

Further table 4 displays pairwise comparisons revealing a significant difference between pre-test and post-test scores (mean difference = 1.50, $p < 0.001$), indicating a significant reduction in competitive anxiety over time.

Although the cyclic meditation group showed a greater reduction in SCAT scores, the absence of a significant interaction effect suggests that the improvement cannot be conclusively attributed to the intervention.

DISCUSSION OF FINDINGS:

The present study demonstrated a significant reduction in competitive anxiety over time, evidenced by decreased SCAT scores from pre-test (M = 21.23, SD = 3.46) to post-test (M = 19.73, SD = 3.42) across both groups, $F(1,20) = 33.82$, $p < .001$, $\eta_p^2 = .628$. This temporal decline (mean difference = 1.50, $p < .001$) indicates competitive anxiety's responsiveness to short-term influences, potentially driven by familiarization with assessment procedures or reduced anticipatory stress from repeated exposure (Martens et al., 1990). The large effect size underscores the change's magnitude, though non-specific factors like testing effects warrant cautious causal attribution.

Descriptively, the cyclic meditation group exhibited greater anxiety reduction ($\Delta M = 2.82$) than the control ($\Delta M = 0.19$), suggesting potential intervention benefits. This trend aligns with evidence that cyclic meditation promotes stress reduction and emotional regulation via parasympathetic activation and autonomic rebalancing (Telles et al., 2012; Nair et al., 2017; Cramer et al., 2024). Cyclic meditation's integration of breathwork, postures, and awareness likely modulates sympathetic overactivity, yielding favorable psychophysiological shifts observable even in acute applications.

Critically, the time × group interaction proved non-significant ($p > .05$, $\eta_p^2 = .566$), precluding attribution of anxiety decline specifically to cyclic meditation. Despite the substantial partial eta squared indicating explained variance, this null result tempers efficacy claims. Contributing factors include the modest intervention duration, as meditation benefits often emerge from sustained practice rather than isolated sessions (Gallego et al., 2023; Paranthatta et al., 2024; Sezer et al., 2025). The small sample (n = 22) further compromised power, elevating Type II error risk for detecting group differences (Cohen, 1988).

Uncontrolled confounds—training demands, academic pressures, individual coping—likely influenced both groups, highlighting measurement challenges in dynamic athletic contexts. The passive control design also conflated specific intervention effects with expectancy or Hawthorne influences.

Methodological merits offset these constraints. The 2×2 mixed ANOVA appropriately parsed within- and between-subjects effects; SCAT ensured validated trait anxiety capture (Martens et al., 1990); Shapiro-Wilk confirmed parametric assumptions; and effect size reporting adhered to best practices (Field, 2018). Relative to uncontrolled yoga literature, this design yields a credible null, guiding realistic expectations.

Overall, while time drove universal anxiety decline, cyclic meditation failed statistical superiority over controls, though descriptive patterns and effect sizes suggest practical

promise. Larger RCTs with extended protocols, active comparators, and covariates are essential to clarify utility for collegiate athletes (Chetry et al., 2025a, 2025b). These findings advance sports psychology by demonstrating rigorous null evidence amid yoga's anecdotal appeal.

CONCLUSION:

The findings of this study emphasize the importance of considering both statistical and practical perspectives when evaluating psychological interventions in sport. While observable improvements were noted, the results indicate the need for more rigorous designs to isolate intervention-specific effects. Enhancing methodological strength through larger samples, extended intervention periods, and controlled conditions will be essential for advancing research in this area. The study contributes to the ongoing exploration of accessible strategies for supporting athletes' psychological readiness.

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