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An Experimental Study on the Effect of Aerobic Exercise and Yogic Practices on Anxiety

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Abstract

To accomplish the purpose of this study, sixty college women basketball players from affiliated colleges of the University of Madras, Chennai, Tamil Nadu, were selected as subjects. Their ages ranged from 18 to 21 years and they were randomly assigned into three groups, a yogic practices group, an aerobic exercises group and a control group. The experimental groups underwent their respective training programmed for a period of six weeks, while the control group continued only with their regular routine and did not receive any special training.

Anxiety levels of the subjects were assessed using a standardized questionnaire before and after the six-week training period. The differences between the pre-test and post-test scores were analyzed using Analysis of Covariance (ANCOVA). The results revealed that both experimental groups showed a significant reduction in anxiety levels when compared to the control group. Furthermore, the yogic practices group demonstrated a significantly greater reduction in anxiety than the aerobic exercises group.

It was concluded that yogic practices were more effective than aerobic exercises in reducing anxiety among college women basketball players.

Keywords: Yogic practices, aerobic exercises, anxiety, basketball players

I. INTRODUCTION

In the modern era, rapid technological advancement, academic pressure and lifestyle changes have contributed to increased levels of psychological stress and anxiety among individuals, particularly students and young adults. Anxiety is one of the most common psychological problems affecting mental health and overall well-being. It not only influences emotional stability but also interferes with academic performance, social relationships, and physical health.

Anxiety is characterized by feelings of tension, worry, nervousness, and physiological changes such as increased heart rate and restlessness. Prolonged anxiety may lead to several health complications including sleep disorders, fatigue, reduced concentration, and lowered quality of life. Therefore, the management of anxiety has become an important concern in both educational and health-related fields.

Physical activity has been widely recognized as an effective non-pharmacological approach for improving mental health. Among various forms of physical activity, aerobic exercise plays a vital role in enhancing cardiovascular fitness and promoting psychological well-being. Regular participation in aerobic activities has been shown to reduce stress, improve mood, and promote relaxation through the release of endorphins and other neurochemicals associated with positive emotions.

Similarly, yogic practices have been traditionally used as a holistic method for maintaining physical, mental, and emotional balance. Yoga involves a combination of physical postures (asanas), breathing techniques (pranayama), and meditation, which together help in calming the mind and regulating emotional responses. Yogic practices are known to reduce stress hormones, improve self-control, and enhance mental clarity and emotional stability.

Both aerobic exercise and yogic practices contribute positively to mental health, but they differ in their methods and mechanisms of action. Aerobic exercise primarily focuses on physical exertion and cardiovascular endurance, while yoga emphasizes controlled movements, breathing, and mental relaxation. A comparative understanding of their effects on anxiety is essential for identifying suitable interventions for psychological well-being.

In this context, the present study aims to investigate the effect of aerobic exercise and yogic practices on anxiety. By comparing these two interventions with a control group, the study seeks to determine whether structured physical and yogic training programmers can significantly reduce anxiety levels. The findings of this study may help in developing effective, simple, and economical strategies for managing anxiety and promoting mental health among individuals.

Methodology

Selection of Subjects

For the purpose of the present study, sixty (60) college women basketball players were selected from affiliated colleges of the University of Madras, Chennai, Tamil Nadu. The age of the subjects ranged from 18 to 21 years. The subjects were selected using a random sampling method and were randomly assigned into three groups with twenty (20) subjects in each group.

Group I served as the Yogic Practices Group, Group II served as the Aerobic Exercises Group, and Group III served as the Control Group.

Selection of Variables

The independent variables of the study were:

1. Yogic practices
2. Aerobic exercises

The dependent variable selected for the study was:

- Anxiety

Criterion Measure

Anxiety was assessed using a standardized Anxiety Questionnaire. The questionnaire was administered to all the subjects before and after the training period to measure their anxiety levels.

Training Programme

The training programmed was conducted for a period of six (6) weeks with five training sessions per week. Each training session lasted for approximately 45 to 60 minutes.

- **Yogic Practices Group (Group I):**
  Subjects in this group underwent a structured yogic practice programmed consisting of selected asanas, pranayama and relaxation techniques.
- **Aerobic Exercises Group (Group II):**
  Subjects in this group participated in a structured aerobic exercise programmed including jogging, skipping, rhythmic exercises and other moderate-intensity aerobic activities.
- **Control Group (Group III):**
  Subjects in this group did not undergo any special training programmed and continued with their regular routine activities.

Experimental Design

The study adopted a randomized group pre-test and post-test design. Pre-tests were conducted for all three groups before the commencement of the training programmed, and post-tests were conducted after the completion of the six-week training period.

Administration of Test

The anxiety questionnaire was administered to all subjects under standardized conditions. Adequate instructions were given to the subjects before the administration of the test to ensure proper understanding of the questionnaire.

Statistical Technique

The collected data were statistically analyzed using Analysis of Covariance (ANCOVA) to determine the significant differences among the groups on anxiety.

Scheffe's post-hoc test was applied to identify the paired mean differences wherever the F-ratio was found to be significant. The level of significance was fixed at 0.05.

Results on Anxiety

Anxiety, the psychological variable in this study, was assessed using a questionnaire. The results after twelve weeks of intervention in the three groups (yogic practices group, aerobic exercises group and control group) are presented in Table I.

Table-1

Computation of Analysis of Covariance of Anxiety

Test	Aerobic exercises	Yogic practices	Control Group	Source	SS	df	MS
Pre-test	33.60	33.09	32.52	Between	8.79	2	4.39
				Within	62.22	42	1.48
Post-test	30.33	29.91	32.45	Between	55.73	2	27.86
				Within	64.51	42	1.54
Adjusted	29.98	29.89	32.81	Between	74.89	2	37.45
				Within	37.75	41	0.92
Mean Gain	3.27	3.18	0.07				

Table shows the Analysis of Covariance (ANCOVA) of pre-test, post-test and adjusted post-test mean scores of Experimental Group I, Yogic practices group and Control Group.

The pre-test means values of Aerobic exercises (33.60), Yogic practices group (33.09) and Control Group (32.52) indicate that there was no significant difference among the groups at the initial stage. This shows that the groups were homogeneous before the administration of the training programmed.

The post-test means values of Aerobic exercises (30.33), Yogic practices group (29.91) and Control Group (32.45) reveal that there was a noticeable difference among the groups after the training period.

After adjusting the pre-test scores, the adjusted post-test means values of Aerobic exercises (29.98), Yogic practices group (29.89) and Control Group (32.81) show a significant difference among the groups. The obtained mean gain values further support this result, where Aerobic exercises (3.27) and Yogic practices group (3.18) showed greater improvement when compared to the Control Group (0.07).

Hence, it may be concluded that the training programmed was effective in improving WBC among the experimental groups when compared to the control group.

Table- 2
Scheffe's Confidence Interval Test Scores on Anxiety

Aerobic exercises	Yogic practices	Control Group	(MD)	(CI)
29.98	29.89	–	0.09	0.89
29.98	–	32.81	-2.83	0.89
–	29.89	32.81	-2.92	0.89

Table shows the results of Scheffe's post-hoc test for the adjusted post-test means scores of Experimental Group I, Yogic practices group and Control Group

The mean difference between Aerobic exercises (29.98) and Yogic practices group (29.89) was 0.09, which is less than the confidence interval value (0.89). Hence, there was no significant difference between Aerobic exercises and Experimental Group II.

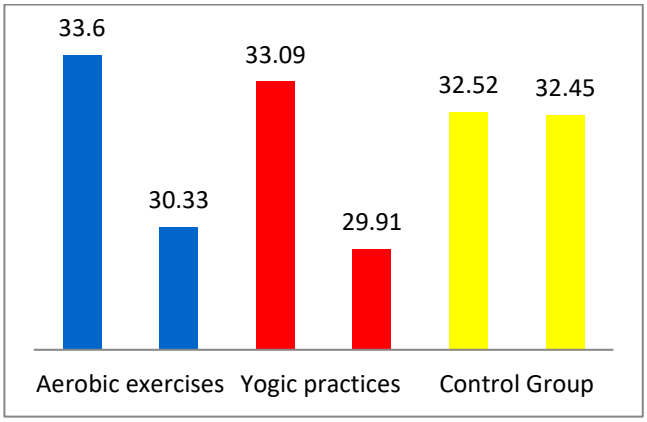
The mean difference between Aerobic exercises (29.98) and Control Group (32.81) was -2.83, which is greater than the confidence interval value (0.89). Therefore, a significant difference was found between Aerobic exercises and the Control Group.

Similarly, the mean difference between Yogic practices group (29.89) and Control Group (32.81) was -2.92, which is also greater than the confidence interval value (0.89), indicating a significant difference between Yogic practices group and the Control Group.

Hence, it is concluded that both Aerobic exercises and Yogic practices group differed significantly from the Control Group, whereas no significant difference was observed between the two experimental groups.

The ordered adjusted means are presented through bar diagram for better understanding of the results of this study in Figure -1

Figure -1
Bar Diagram on Ordered Adjusted Means of Anxiety



Discussion on the Findings of Anxiety

The present study was designed to examine the effect of aerobic exercises and yogic practices on anxiety levels. The results of the Analysis of Covariance (ANCOVA) and Scheffe's post-hoc test clearly indicate that both experimental treatments were effective in reducing anxiety when compared to the control group.

The pre-test means scores of the aerobic exercises group (33.60), yogic practices group (33.09), and control group (32.52) showed no significant difference among the groups. This confirms that all three groups were homogeneous at the beginning of the study and that any changes observed in the post-test can be attributed to the training interventions rather than to initial differences.

After the twelve-week training programmed, the post-test means scores revealed a noticeable reduction in anxiety levels in the aerobic exercises group (30.33) and yogic practices group (29.91), whereas the control group showed comparatively higher anxiety (32.45). This demonstrates the positive influence of physical and yogic activities on psychological well-being.

Further, the adjusted post-test means values showed significant differences among the groups, with the aerobic exercises group (29.98) and yogic practices group (29.89) recording lower anxiety scores than the control group (32.81). The mean gain values also support this finding, as the aerobic exercises group (3.27) and yogic practices group (3.18) exhibited greater improvement compared to the control group (0.07). These results suggest that both aerobic exercises and yogic practices are effective interventions for reducing anxiety.

The results of Scheffe's post-hoc test revealed no significant difference between the aerobic exercises group and the yogic practices group, indicating that both methods were equally effective in reducing anxiety. However, significant differences were observed between each experimental group and the control group, confirming the superiority of both interventions over no training.

The reduction in anxiety observed in the experimental groups may be attributed to the physiological and psychological benefits of regular physical activity and yogic practices. Aerobic exercises are known to improve mood, reduce stress hormones, and enhance mental relaxation, while yogic practices promote mental calmness, emotional stability, and better stress management through controlled breathing and meditation techniques.

In conclusion, the findings of the study clearly demonstrate that both aerobic exercises and yogic practices significantly reduce anxiety levels when compared to the control group. Since no significant difference was found between the two experimental groups, it may be inferred that both training methods are equally effective in managing anxiety. Therefore, incorporating aerobic exercises and yogic practices into regular routines can be recommended as effective non-pharmacological strategies for improving psychological health and reducing anxiety.

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