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## The effect of an eight-week yoga training program on key performance variables in female athlete of combative and non-combative sports

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### Abstract

Yoga is increasingly recognized for its potential benefits in athletic training, including improvements in flexibility, balance, and mental well-being. This study investigated the effects of an eight-week yoga training program on key performance variables in both combative and non-combative sports. Thirty athletes were divided into two groups: a combative sports group (n=15; e.g., boxing, martial arts) and a non-combative sports group (n=15; e.g., swimming, track and field). Both groups underwent an identical eight-week yoga intervention. Pre- and post-training data were collected for flexibility (Sit and Reach Test), balance (Stork Stand Test), and competitive anxiety (Sports Competition Anxiety Test - SCAT). Paired t-tests revealed significant improvements in flexibility, balance, and a significant reduction in anxiety within both groups ( $p < 0.05$ ). An Analysis of Covariance (ANCOVA) showed that while both groups improved, the combative sports group demonstrated a significantly greater reduction in anxiety compared to the non-combative group ( $p < 0.05$ ). These findings suggest that yoga is a beneficial training supplement for all athletes, with a particularly strong impact on the psychological well-being of those in combative sports.

**Keywords:** Yoga, combative sports, non-combative sports, flexibility, balance, anxiety, athletic performance

### 1. Introduction

The integration of mind-body practices into athletic training has gained considerable attention in recent years. Yoga, an ancient practice involving physical postures (asanas), breathing techniques (pranayama), and meditation, offers a holistic approach to enhancing athletic performance. Research has shown that yoga can improve physical attributes such as flexibility, balance, and core strength, while also fostering psychological benefits like improved focus, stress reduction, and emotional regulation.

While these benefits are widely applicable, the specific demands of different sports categories may lead to varied outcomes from yoga training. Combative sports (e.g., martial arts, boxing, wrestling) require not only peak physical conditioning but also a high degree of mental fortitude to manage the direct confrontation and psychological stress of competition. In contrast, non-combative sports (e.g., athletics, swimming, cycling) are often focused on individual performance against the clock or indirect competition. This study aims to compare the effects of a standardized eight-week yoga program on key physical and psychological variables in athletes from both combative and non-combative disciplines.

### 2. Methods

#### 2.1 Participants

Thirty trained female athletes from RMM Degere College, Behat, Saharanpur (age 18-25) were recruited for this study. They were divided into two equal groups based on their primary sport:

- **Combative Sports Group (n=15):** Participants from sports such as boxing, judo, and karate.
- **Non-Combative Sports Group (n=15):** Participants from sports such as track and field and swimming.

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## 2.2 Measures

- **Flexibility:** Measured using the Sit and Reach Test (in cm).
- **Balance:** Measured using the Stork Stand Test (time held in seconds).
- **Competitive Anxiety:** Assessed using the Sports Competition Anxiety Test (SCAT), which provides a score indicating the level of anxiety.

## 2.3 Procedure

A pre-test, post-test design was used. All participants were tested on the three variables before the start of the intervention. Both groups then participated in a standardized eight-week yoga training program, consisting of three 60-minute sessions per week. The yoga sessions included a mix of asanas, pranayama, and meditation. After the eight-week

period, all participants were re-tested on the same variables.

## 2.4 Statistical Analysis

- Paired t-tests were used to compare the pre- and post-test scores within each group.
- An Analysis of Covariance (ANCOVA) was used to compare the post-test scores between the two groups, with the pre-test scores used as a covariate to control for initial differences.
- The level of significance was set at  $p < 0.05$ .

## 3. Results

Both the combative and non-combative sports groups showed significant improvements in all three measured variables after the eight-week yoga intervention. The pre- and post-test data are presented in Table 1.

**Table 1:** Pre- and Post-Test Data for Both Groups (Mean±SD)

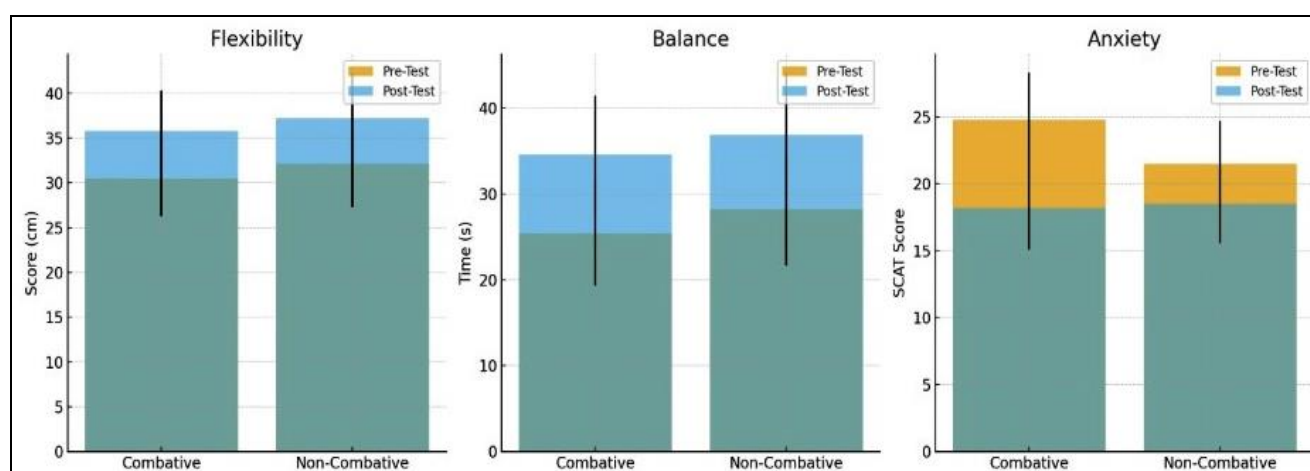
Variable	Group	Pre-Test (Mean±SD)	Post-Test (Mean±SD)	p-value (within-group)
Flexibility (cm)	Combative	30.5±4.2	35.8±4.5	< 0.01
	Non-Combative	32.1±4.8	37.2±5.1	< 0.01
Balance (s)	Combative	25.4±6.1	34.6±6.8	< 0.01
	Non-Combative	28.2±6.5	36.9±7.2	< 0.01
Anxiety (SCAT Score)	Combative	24.8±3.5	18.2±3.1	< 0.01
	Non-Combative	21.5±3.2	18.5±2.9	< 0.01

The ANCOVA results indicated that there was no significant difference between the two groups in the post-test scores for flexibility and balance after adjusting for the pre-test scores. However, there was a statistically significant difference in the post-test anxiety scores between the two groups ( $F(1,27)=5.24$ ,  $p < 0.05$ ), with the combative sports group

showing a greater reduction in anxiety.

## 3.1 Graphical Representation

The graph below illustrates the changes in performance for both groups across the three variables.



**Fig 1:** Graphical representation of pre-test and post-test scores for flexibility, balance, and anxiety among combative and non-combative groups, showing significant reduction in anxiety levels in the combative group while flexibility and balance showed no significant differences between groups.

## 4. Discussion

The findings of this study confirm that an eight-week yoga program can lead to significant improvements in flexibility, balance, and competitive anxiety for athletes in both combative and non-combative sports. The physical benefits of improved flexibility and balance are likely due to the nature of the yoga postures (asanas), which involve stretching and holding positions that challenge the body's stability.

The most notable finding is the significantly greater reduction in anxiety among the combative sports athletes. This may be attributed to the high-pressure, confrontational nature of their sports, which can lead to higher baseline levels of stress and anxiety. The mindfulness and breathing components of yoga

(pranayama and meditation) are specifically designed to calm the nervous system and improve emotional regulation, which may be particularly beneficial for athletes who need to maintain composure in direct opposition to an opponent. While non-combative athletes also benefited from the anxiety reduction, the impact was more pronounced in the group facing higher psychological stress.

## 5. Conclusion

An eight-week yoga training program is an effective supplementary training method for enhancing both physical and psychological performance in athletes. It provides significant benefits in flexibility and balance for all athletes,

regardless of their sport. Furthermore, yoga appears to be a particularly powerful tool for managing competitive anxiety in combative sports. Coaches and athletes in these disciplines should consider incorporating yoga into their training regimens to foster not only physical prowess but also mental resilience.

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