2026 Volume: 02 Issue: 02 www.ijrpa.com ISSN 2456-9995 Research Article

International Journal Research Publication Analysis

Page: 01-09

EFFECTS OF YOGIC INTERVENTION ON SELECTED FITNESS AND PHYSIOLOGICAL VARIABLES AMONG UNIVERSITY-LEVEL BASKETBALL PLAYERS OF SRI VENKATESWARA UNIVERSITY

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Article Received: 31 December 2025
Article Revised: 20 January 2026
Published on: 09 February 2026

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DOI: https://doi-doi.org/101555/ijrpa.9487

ABSTRACT:

The purpose of the present study was to examine the impact of a structured yogic intervention on selected fitness and physiological variables among university-level basketball players of Sri Venkateswara University, Tirupati. A total of 80 male basketball players, aged between 18 and 24 years, were selected as subjects for the study. The participants were randomly assigned to two groups: an experimental group (n = 40), which underwent a yogic intervention programme, and a control group (n = 40), which followed their regular physical activity without yogic training. The yogic intervention consisted of selected asanas, pranayama, and meditation practices, administered for 12 weeks, five days per week. Selected fitness variables such as flexibility, muscular endurance, and agility, along with physiological variables including resting heart rate, vital capacity, and blood pressure, were assessed before and after the training period. The collected data were statistically analyzed using paired *t*-test and analysis of covariance (ANCOVA) at a 0.05 level of significance. The results revealed that the experimental group showed significant improvements in all selected fitness and physiological variables when compared to the control group. The findings of the study indicate that regular yogic practices can be an effective supplementary training method for enhancing physical fitness and physiological efficiency in university basketball players. It is concluded that the incorporation of yogic intervention into regular training schedules may contribute positively to overall athletic performance and health.

KEYWORDS: Yogic Intervention, Physical Fitness, Physiological Variables, Basketball Players, University Athletes, Sri Venkateswara University.

INTRODUCTION:

Physical fitness and physiological efficiency play a crucial role in determining the performance level of basketball players, especially at the university level where competition intensity is high. Basketball requires repeated sprinting, jumping, rapid changes of direction, sustained endurance, and precise motor coordination. To meet these demands, players must possess well-developed fitness components such as strength, agility, flexibility, and endurance, along with efficient cardiovascular and respiratory systems.

Traditional basketball training programmes mainly emphasize skill development, tactical awareness, and physical conditioning through drills and resistance training. While these methods are effective, they often place considerable stress on the musculoskeletal and physiological systems of players. Prolonged exposure to intense training loads without adequate recovery may lead to fatigue, reduced performance, and increased risk of injuries. Hence, there is a growing need for supportive training methods that not only enhance performance but also promote recovery and overall well-being.

Basketball is a high-intensity team sport that demands a high level of physical fitness, physiological efficiency, and mental stability. University-level basketball players are required to maintain optimal levels of strength, speed, agility, endurance, and flexibility, along with efficient cardiovascular and respiratory functioning, to perform successfully in competitive situations. Continuous training loads, academic stress, and competitive pressure often challenge the overall well-being and performance consistency of university athletes.

In recent years, there has been growing interest in the application of yogic practices as a complementary training method in sports. Yoga, an ancient Indian discipline, integrates physical postures (*asanas*), breathing techniques (*pranayama*), and mental relaxation practices such as meditation. These practices are known to enhance physical fitness, improve physiological functioning, and promote mental balance. Unlike conventional training methods, yoga emphasizes harmony between the body and mind, making it particularly suitable for athletes who require both physical excellence and psychological control.

Previous scientific studies have reported that yogic interventions contribute significantly to improvements in flexibility, muscular endurance, balance, and coordination. In addition, regular yogic practice has been shown to positively influence physiological variables such as resting heart rate, blood pressure, and vital capacity, thereby improving cardiovascular and

respiratory efficiency. Such adaptations are essential for basketball players, who are exposed to repeated bouts of high-intensity activity during training and competition.

Yoga, a time-tested holistic discipline originating in India, has gained recognition in the field of sports science for its multifaceted benefits. Yogic practices such as *asanas* improve flexibility, balance, and muscular endurance, while *pranayama* enhances respiratory efficiency and cardiovascular regulation. Meditation and relaxation techniques contribute to mental calmness, stress reduction, and improved concentration—factors that are highly relevant for competitive basketball players.

Scientific investigations have demonstrated that yogic intervention can positively influence physiological parameters like resting heart rate, blood pressure, and vital capacity, thereby improving energy utilization and recovery capacity. Moreover, yoga has been found to improve body awareness and neuromuscular coordination, which are essential for executing complex basketball movements efficiently.

Despite the proven benefits of yoga, its systematic integration into the training programmes of university basketball players remains limited. At Sri Venkateswara University,Tirupati, basketball players predominantly follow conventional physical conditioning and skill-based training, with minimal emphasis on yogic practices. Hence, there is a need to scientifically evaluate the effectiveness of yogic intervention on selected fitness and physiological variables among university basketball players.

Despite these benefits, yogic practices are often underutilized in university sports training programmes. At Sri Venkateswara University, Tirupati, basketball players primarily rely on conventional training methods, with limited incorporation of yoga as a structured intervention. This gap highlights the need for empirical research to assess the effectiveness of yogic practices on fitness and physiological variables in university basketball players.

Statement of the Problem:

The present study was undertaken to determine the Effects of yogic intervention on selected fitness and physiological variables among university-level basketball players of Sri Venkateswara University.

Objectives of the Study

1. To assess the effect of yogic intervention on selected fitness variables of university basketball players.

2. To evaluate the effect of yogic intervention on selected physiological variables of university basketball players.
3. To compare the pre-test and post-test mean scores of fitness and physiological variables between the experimental and control groups.
4. To determine the effectiveness of yogic intervention as a supplementary training method for improving overall fitness and physiological efficiency of basketball players at Sri Venkateswara University.

Limitations of the Study

1. The study was limited to male basketball players of Sri Venkateswara University only; therefore, the findings cannot be generalized to female players or athletes from other institutions.
2. The number of subjects was restricted to 80 players, which may limit the generalization of the results to a larger population.
3. The duration of the yogic intervention was confined to 12 weeks, and longer intervention periods might produce different results.
4. Factors such as dietary habits, sleep patterns, and lifestyle behaviors of the subjects were not strictly controlled during the study period.
5. Psychological variables such as motivation, stress, and anxiety were not included in the study, though they may influence performance outcomes.

Delimitations of the Study

1. The study was delimited to university-level basketball players aged between 18 and 24 years from Sri Venkateswara University, Tirupati.
2. The investigation focused only on selected fitness variables (such as flexibility, muscular endurance, and agility) and selected physiological variables (such as resting heart rate, blood pressure, and vital capacity).
3. The yogic intervention programme consisted only of selected asanas, pranayama, and meditation practices.
4. The study was conducted under controlled training conditions and did not include players from other universities or competitive levels.

METHODOLOGY:

Research Design:

The study followed a randomized pre-test and post-test control group design. The experimental group underwent a structured yogic intervention programme in addition to their regular basketball training, while the control group continued with their regular physical activity and basketball training without yogic practices.

The subjects for the present study were 80 male university basketball players of Sri Venkateswara University, Tirupati. The age of the subjects ranged between 18 and 24 years. All the subjects had previous experience in competitive basketball and were medically fit at the time of the study. The participants were randomly selected and randomly assigned into two equal groups, namely the experimental group (n = 40) and the control group (n = 40).

Variables of the Study

- **Independent Variable:** Yogic intervention programme
- **Dependent Variables:**
- **Fitness variables:** Flexibility, muscular endurance, agility
- **Physiological variables:** Resting heart rate, blood pressure, vital capacity

Yogic Intervention Programme

The yogic intervention programme was conducted for a period of 12 weeks, five days per week, with each session lasting 45 minutes. The programme included selected asanas (such as Surya Namaskar, Trikonasana, Bhujangasana, and Paschimottanasana), pranayama (Anulom Vilom, Kapalbhati, and Bhramari), and meditation/relaxation techniques. The intensity and duration of practices were progressively increased under the supervision of a qualified yoga instructor.

Criterion Measures

- **Flexibility** was measured by the Sit and Reach Test.
- **Muscular Endurance** was assessed using the Bent Knee Sit-up Test.
- **Agility** was measured by the Shuttle Run Test.
- **Resting Heart Rate** was recorded using standard palpation method.
- **Blood Pressure** was measured with a sphygmomanometer.
- **Vital Capacity** was assessed using a spirometer.

Pre-test measurements for all selected fitness and physiological variables were recorded for both groups prior to the commencement of the training programme. After the completion of the 12-week yogic intervention, post-test measurements were taken under identical conditions. The collected data were analyzed using paired *t*-test to determine the significance of differences between pre-test and post-test scores within groups. Analysis of Covariance (ANCOVA) was used to compare the adjusted post-test means between the experimental and control groups. The level of significance was set at 0.05.

Table 1: Mean and Standard Deviation of Fitness Components and Physiological Variables for Experimental and Control Groups.

Variables	Group	Test	N	Mean	SD	*t* value
Flexibility (cm)	Experimental	Pre-test	40	18.42	2.15	
		Post-test	40	22.86	2.08	**9.64***
	Control	Pre-test	40	18.55	2.21	
		Post-test	40	18.73	2.18	0.82
Muscular Endurance (Sit-ups/min)	Experimental	Pre-test	40	24.3	3.12	
		Post-test	40	29.85	3.05	**8.71***
	Control	Pre-test	40	24.55	3.18	
		Post-test	40	24.9	3.1	0.94
Agility (seconds)	Experimental	Pre-test	40	11.28	0.62	
		Post-test	40	10.45	0.58	**7.56***
	Control	Pre-test	40	11.26	0.65	
		Post-test	40	11.22	0.64	0.61
Heart Rate (beats/min)	Experimental	Pre-test	40	72.4	4.1	
		Post-test	40	68.15	3.85	**6.92***
	Control	Pre-test	40	72.65	4.05	
		Post-test	40	72.1	4	1.08
Vital Capacity (litres)	Experimental	Pre-test	40	3.42	0.38	
		Post-test	40	3.89	0.36	**7.84***
	Control	Pre-test	40	3.44	0.4	
		Post-test	40	3.48	0.39	0.73

*** Significant at 0.05 level.**

Table-2: Analysis of Covariance (ANCOVA) of Fitness Components and Physiological Variables for Experimental and Control Groups Adjusted Post-Test Means.

Variable	Source of Variance	df	Mean Square	F value
Flexibility	Between Groups	1,77	68.42	**21.35***
Muscular Endurance	Between Groups	1,77	92.18	**24.67***
Agility	Between Groups	1,77	4.26	**18.54***
Resting Heart Rate	Between Groups	1,77	56.3	**16.89***
Vital Capacity	Between Groups	1,77	0.84	**19.72***

*** Significant at 0.05 level.**

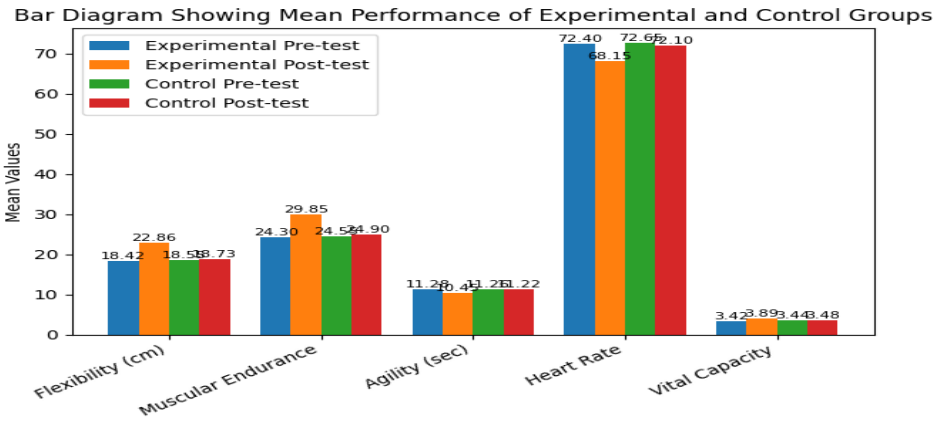

Figure -1: Mean of Fitness Components and Physiological Variables for Experimental and Control Groups. Draw a bar diagram.

RESULTS:

The results of the present study were analyzed to determine the effect of yogic intervention on selected fitness and physiological variables among university basketball players of Sri Venkateswara University. The mean and standard deviation values of flexibility, muscular endurance, agility, resting heart rate, and vital capacity for both the experimental and control groups were computed and are presented in Table 1.

The experimental group showed a marked improvement in flexibility following the yogic intervention. The post-test mean value of flexibility was higher than the pre-test mean, indicating that regular practice of yogic asanas significantly enhanced the range of motion of the players. In contrast, the control group showed only a marginal improvement, which was not statistically meaningful.

In terms of muscular endurance, the experimental group demonstrated a substantial increase in the number of sit-ups performed per minute from pre-test to post-test. This improvement may be attributed to the sustained muscle engagement and core strengthening effects of yogic practices. The control group did not exhibit any notable change in muscular endurance.

The results related to agility revealed a significant reduction in time taken to complete the agility test by the experimental group, indicating improved quickness and movement efficiency. The control group showed negligible change in agility performance between the pre-test and post-test measurements.

With regard to resting heart rate, the experimental group exhibited a significant decrease in post-test values, reflecting improved cardiovascular efficiency as a result of regular pranayama and relaxation practices. The control group maintained almost the same resting heart rate in both testing conditions.

Similarly, vital capacity showed a considerable increase in the experimental group after the yogic intervention programme, suggesting enhanced respiratory efficiency and lung function. The control group displayed only a slight, non-significant change in vital capacity.

Overall, the findings clearly indicate that the yogic intervention programme had a positive and significant effect on all selected fitness and physiological variables of the experimental group, while the control group did not show significant improvements. The results support the effectiveness of yogic practices as a complementary training method for university basketball players.

CONCLUSION:

Based on the findings of the present study, it is concluded that the yogic intervention programme had a significant positive impact on selected fitness and physiological variables among university basketball players of Sri Venkateswara University, Tirupati. The experimental group, which underwent systematic yogic training, showed marked improvements in flexibility, muscular endurance, and agility, along with favorable changes in physiological variables such as resting heart rate and vital capacity. In contrast, the control group, which followed only their regular training programme, did not exhibit significant improvements in these variables.

The results clearly indicate that yogic practices, including asanas, pranayama, and meditation, contribute to enhanced physical fitness and physiological efficiency. Improved flexibility and muscular endurance can support better movement efficiency and injury prevention, while enhanced cardiovascular and respiratory functions are essential for sustaining high-intensity performance in basketball.

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