



Effects of yogasanas and pranayama on attacking and anxiety of volleyball players

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Abstract

The study was formulated as a true random group design consisting of a pre-test and post test. The subjects (N=90) were randomly assigned to three equal groups of twenty males in each. The groups were designed as experimental group I – yogasanas training group, experimental group II – pranayamas training group and control group respectively. Pre test was conducted for all the 90 subjects on attacking and anxiety variables. The experimental groups participated in respective training for a period of twelve weeks. The control group did not participate in any of the training programme. The post test was conducted on the above said dependent variables after experimental period for all the three groups. The difference between the initial and final scores on selected dependent variables were considered as the effect of respective independent variables. To test statistical significance, ANCOVA was employed. In all cases 0.05 level was fixed to test the hypothesis of this study.

Keywords: performance and physiological

Introduction

Yoga has been practiced in India for over two millennia. Stories and legends from ancient times testify to the existence of yoga, and to the practitioners and divinities associated with it. India literature is a storehouse of knowledge about yoga covering every conceivable level. Roughly in chronological order are the vocals (books of scriptural knowledge), the Upanishada (Philosophical cosmologies), and their commentaries; then the Puranas (ancient cosmologies), and the two epics, the Ramayana and the Mahabharatha. The Mahabharatha contains within itself that master piece of Indian scripture the Bagawad Gita. Towards the end of Vedic period comes the aphoristic literature, with the “yoga Aphorisms” of Patanjali of special interest to yoga students. Besides, whole bodies of works both ancient (Pre-Christian) and more modern with various aspects of yoga and yoga philosophy, testifying to the continued relevance of yoga as a discipline (Gharote, M.L. 1982)^[6].

In other systems of physical exercises, the internal organs of the body mostly do not get proper exercises, while yogic practices gives sufficient exercises to the internal organs of the body. Yoga practices have a greater impact on the mind and control the senses. Yogic practices make possible not only physical and mental development but also intellectual and spiritual development. Yoga practices are called a ‘non-violent activity’ (Sharma, 1984)^[13].

Yoga

The literal meaning of the word yoga is yoke. It means for uniting the individual spirit with the universal spirit, or God. The word yoga is derived from the roots of Sanskrit ‘Yuj’ which means to join, to attach, to bind, and yoke, and to concentrate on one’s attention. Although the word ‘yoga’ has many connotations, etymologically it means, “Integration”. The term “Samatava” of Bhagavat Gita conveys the same meaning. Other terms like homeostasis, equilibrium, balance, harmonious development etc. more or

less suggest the same things. The aim of yoga itself is an integration of personality in its all aspects. In order to help the development of such an integration, various techniques are employed. These techniques or practices enjoined in yogic literature and handed down in different traditions also go under the name of yoga. (Gharote, 1976)^[6].

Pranayama

Pranayama means control and regulation of breath. “Prana” is Sanskrit word which means ‘vital force’, “Ayana”, means the control of the Prana so Pranayama means the control of vital force (Prana) by concentration and regulated breathing. Prana is the vital power or force which is motivating every element on the earth and is the origin of the force of thought. there is a deep affinity between prana and mental force, between mental force and intellect, between intellect to soul, and between soul and God. The control of Prana through Pranayama that each part of the body can be filled with Prana. Once, one is capable of performing it, one is matter of body and can dominate illness and suffering. Prana is accumulated where our mind is concentrated. As a wind drives smoke and impurities from the atmosphere, pranayama drives away the impurities of the body and mind. (Swami Chidananda Saraswati 1984)^[4].

Need of the study

While a number of researches done on yoga proved beneficial for development of performance and psychological aspects, specially in improving specific variables, there are researchers at the University of Alberta Evidence-based Practice Center who reported after reviewing 813 studies in five broad categories of meditation: mantra meditation, mindfulness meditation, yoga, Tai Chi, and Qi Gong. The report concluded that “the therapeutic effects of meditation practices cannot be established based on the current literature,” and “firm conclusions on the effects of meditation practices in healthcare cannot be drawn based on the available evidence”.

The above findings and similar other researches proved that there was contradiction in findings on the effect of yogasanas and pranayama on selected performance and psychological variables. Hence, the investigator undertook this research to find out the effect of yogasanas and pranayama on selected performance and psychological variables of volleyball players.

Objectives of the study

The following are main objectives

1. To examine the changes occur on performance variables and psychological variables as a results of yogasanas.
2. To explore the changes occur on biochemical variables and performance variables due to pranayama.
3. To compare the effect of yogasanas and pranayama on selected attacking and anxiety among volleyball players.

Statement of the Problem

The purpose of the study was to find out the effects of yogasanas and pranayama on attacking and anxiety variables of volleyball players.

Hypotheses

In the present study, the following hypotheses were formulated:

1. It was hypothesized that the yogasanas and pranayama would significantly influence selected performance variables of volleyball players, namely, attacking.
2. It was also hypothesized that there would not be any significant difference among yogasanas and pranayama in influencing selected performance variables of volleyball players.
3. It was hypothesized that the yogasanas and pranayama would significantly influence selected psychological variables of volleyball players, namely, anxiety
4. It was also hypothesized that there would not be any significant difference among yogasanas and pranayama in influencing selected psychological variables of volleyball players.

Delimitations

To achieve the objectives of the study, the investigator delimited the research for the following factors.

1. This study was conducted only on ninety volleyball players drawn from different colleges in Andhra Pradesh.
2. The subjects were volleyball players who participated in intercollegiate level tournaments.
3. The selected volleyball players were in the age group of 19 to 25 years.

The study was restricted to the following dependent and independent variables.

Dependent Variables

Performance Variables

1. Attacking

Psychological Variables

1. Anxiety

Independent Variables

1. Twelve weeks Yogasana Training
2. Twelve weeks Pranayama Training

Limitations

This research was limited in the following respects.

1. The day today activities, rest period, food habits and life style could not be controlled.
2. The researcher could not control the humidity, temperature, and other environmental conditions, while measuring the performance.
3. No special motivation technique was given to the subjects during training and testing period.

Meaning and definition of the terms

Yoga: Yoga is a way of life which can be practiced by any human being regardless of age and condition of health. Yoga is a gaining process of control over the mind, thereby improving the physiological and psychological behaviour of an individual. (Sharma, 1984)^[13].

Asana: Asana means holding the body in a particular posture to bring stability to the body and poise to the mind. The practices of asana bring purity in tabular channels firmness to the body and vitality to the body and the mind. (Sharma, 1984)^[13].

Pranayama: Term pranayama in yoga, is often translated more specifically as "breath control". Literal translations include "suspension of breath" and regulation of breath". For the purpose of this study, a set of pranayama in yoga were considered. (Sharma, 1984)^[13].

Anxiety: Anxiety is a state of motional and physical disturbance included in a person by real or imagined threat. In psychology the term refers to disturbance caused by threats that are only apparent to the individual and causing to behave in a way that is not relevant to the true situations (Vealy, R.S. 1986).

Attack King: The attack is usually the third contact a team makes with the ball. The object of attacking is to handle the ball so that it lands on the opponent's court. The series of steps (the "approach"), jumps and then projects his body forward, thus transferring its weight to the ball when contact is made is called attack kit.

Methodology

Selection of subjects

To facilitate the study, ninety male volleyball players who participated in intercollegiate tournaments were selected from different Colleges in Andhra Pradesh. and their age ranged between 19 to 25 years They were further divided into three groups namely Yogasana Group, Pranayamas Group and control group on random basis, each group consisting of 30 subjects.

Before the commencement of the training, purpose of the study and method of performing yogasanas and pranayama practices were explained to the subjects for their cooperation.

Selection of Variables

The researcher reviewed the various scientific literatures pertaining to yogasanas and pranayama on selected performance and psychological variables from books, journals, and research papers. Resorting from the review of literature and discussions with the experts and considering the feasibility criteria of the study and the relevance of the variables of the present study. In the present study yogasana and pranayama exercise is consider as independent variables. The following are dependent variables

Dependent Variables

I. Performance variables

1. Attack

II. Psychological variables

1. Anxiety

Independent Variables

The independent variables for this study were 12 weeks training on yogasanas and 12 weeks training on pranayama. Yogasanas and pranayama were given for the experimental groups while, control group was advised not to undergo any type of training during the experimental period.

Experimental Design

The study was formulated as a true random group design consisting of a pre-test and post test. The subjects (N=90) were randomly assigned to three equal groups of twenty males in each. The groups were designed as experimental group I – yogasanas training group, experimental group II – pranayamas training group and control group respectively. Pre test was conducted for all the 90 subjects on selected performance and psychological variables. The experimental groups participated in respective training for a period of twelve weeks. The control group did not participated in any of the training programme. The post test was conducted on the above said dependent variables after experimental period for all the three groups. The difference between the initial and final scores on selected dependent variables were considered as the effect of respective independent variables. To test statistical significance, ANCOVA was employed. In all cases 0.05 level was fixed to test the hypothesis of this study.

Selection of Test: The tests used to assess the biochemical and physiological variables are given in

Table 1: Tests used to assess the performance and Psychological Variables

S.No	Variable	Test	Unit of Measurements
1	Performance Variables Attack	Volleyball Block Test	Points
1	Psychological Variables Anxiety	Sports Competitive Anxiety Index	Numbers

The intraclass correlation coefficient obtained for test-retest data are presented in Table II.

Table 2: Test and retest intraclass correlation on selected performance and Psychological variables

S. No	Variable	Test	Coefficient of Correlation
1	Performance Variables Attack	Volleyball Block Test	0.86*
1	Psychological Variables Anxiety	Sports Competitive Anxiety Index	0.93*

* Significant at 0.01

Required table value at 0.01 with 8 degrees of freedom 0.811

Training Programme

It is most essential to warm up before every session. The method of doing yogasanas training and pranayama training were explained to the experimental groups before starting the training. The researcher himself demonstrated the trainings to the subjects. The training was given for a period of twelve weeks on alternate days, three days in a week.

Attacking Purpose

To measure the Attacking (spiking) ability of the subjects, they were rated in subjective manner during the match by the investigator and two coaches.

Field Marking

Use a regulation size court of 18m (59') long and 9m (29' 6") wide, five volleyballs, net (2.43m [7' 11 5/8"]) standards, antennas, measuring tape, floor tape or chalk and ball box as shown in Figure.

Volleyball Test – Spike Diagram

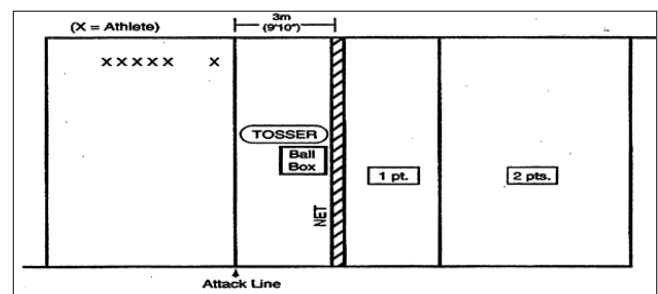


Fig 1

Test

Tosser will toss the ball in front of the player and 2m (6' 6 3/4") above the net. Tosses that were not at the proper height were repeated. The player stood in the court 3.05-4.57m (10-15') off the net, made a spiking approach, and spikes the ball over the net and within the boundaries of the opponent's court. Each player was given 10 attempts.

Scoring

Subject received two points for each spike that landed beyond the attack line in the backcourt and one point for each spike that landed between the net and the attack line within the opponent's front court. A tip (dink) or half-speed shot was not recorded as a spike. The subject's final score should be the total of all 10 attempts.

Staging

Volunteers administer the test and were not to interfere with any subject who was performing the test. Volunteer A would instruct the group doing this particular test while Volunteer B demonstrated the actual test. Volunteer C would toss the volleyball to the subject who performed. Volunteers would retrieve the volleyballs after they landed and would roll them to a volunteer who was standing near the ball box. When the subject was finished, Volunteer A would give the score to Volunteer D who was the scorekeeper. Each volunteer was to administer the test and manage their area only.

Psychological Variables

Anxiety

Anxiety was measured through the anxiety questionnaire. The anxiety questionnaire was designed to measure the degree of anxiety experience prior to the competition. It was developed by Spielberger.(1979). Spielbergers Trait Anxiety questionnaire was given to all subjects. Twenty items were adopted from Spielbergers Trait Anxiety questionnaire for this investigation. The complete questionnaire is scores as follows:

Table 3

S. No	Response	Score of Positive statements	Score of Negative statements
1	Not at all	1	4
2	Some what	2	3
3	Moderately so	3	2
4	Very much	4	1
Positive Statements		1,2,5,8,10,11,15,16,19,20	
Negative Statements		3,4,6,7,9,12,13,14,17,18	

Statistical Techniques

Design is the key for controlling the outcomes from experimental research. The independent variables are

manipulated in an attempt to judge their effects on the dependent variable. The experimental design used in this study was pre test, post test random group design. Here, the groups were randomly formed but the groups were taken a pre test as well as post test. The major purpose of this type of design was to determine the amount of change produced by the treatment, that is, does the experimental group change more than the control group.

The collected data on selected performance and psychological variables prior to and after 12 weeks of yogasanas and pranayama training were statistically analysed using Analysis of Covariance (ANCOVA) as recommended by Clarke and Clarke (1972) and Best and Khan (1986). In all the cases 0.05 level was fixed as level of significance which was considered as appropriate. Scheffe’s confidence interval was calculated to find out the significance of mean differences where F value of the obtained ANCOVA is greater than the required value to be significant.

Results on Attack: The statistical analysis comparing the initial and final means of Attack due to yogasanas and pranayamas among volleyball players is presented in Table III

Table 4: Computation of analysis of covariance of Attack

	Yogasanas group	Pranayamas group	control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	10.30	10.05	10.20	Between	1.09	2	0.54	0.60
				Within	78.70	57	0.90	
Post Test Mean	11.75	10.95	10.15	Between	30.96	2	15.48	14.50*
				Within	92.87	57	1.07	
Adjusted Post Test Mean	11.64	11.01	10.21	Between	30.97	2	15.48	26.08*
				Within	51.05	56	0.59	
Mean Diff	1.45	0.90	-0.05					

Table F-ratio at 0.05 level of confidence for 2 and 87 (df) =3.10, 2 and 86 (df) =3.10.
*Significant

As shown in Table III, the obtained pre test means on Attack on yogasanas group was 10.30, pranayamas group was 10.05 was and control group was 10.20. The obtained pre test F value was 0.60 and the required table F value was 3.10, which proved that there was no significant difference among initial scores of the subjects.

The obtained post test means on Attack on yogasanas group was 11.75, pranayamas group was 10.95 was and control group was 10.15. The obtained post test F value was 14.50 and the required table F value was 3.16, which proved that there was significant difference among post test scores of the subjects.

Taking into consideration of the pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 26.08 was greater than the required value of 3.16 and hence it was accepted that there was significant differences among the treated groups.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s Confidence Interval test. The results were presented in Table IV.

Table 5: Scheffe’s Confidence Interval Test Scores on Attack

Means				Required . C I
Yogasanas Group	Pranayamas Group	Control Group	Mean Difference	
11.64	11.01		0.63*	0.50
11.64		10.21	1.43*	0.50
	11.01	10.21	0.80*	0.50

* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between yogasanas group and control group (MD: 1.43). There was significant difference between pranayamas group and control group (MD: 0.80). There was significant difference between treatment groups, namely, yogasanas group and pranayamas group. (MD: 0.63).

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure I.

Bar diagram on ordered adjusted means on attack

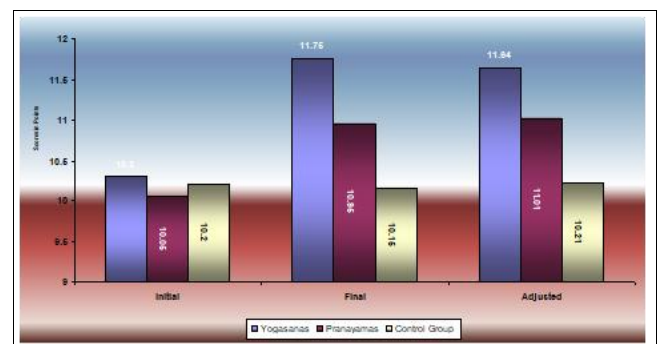


Fig 2

Discussions on findings on attack

The effect of Yogasanas and Pranayamas on Attack is presented in Table III. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value 26.08 was greater than the required table F value to be significant at 0.05 level.

Since significant F value was obtained, the results were further subjected to post hoc analysis and the results presented in Table IV proved that there was significant difference between yogasanas group and control group (MD: 1.43) and pranayamas group and control group (MD:

0.80). Comparing between the treatments groups, it was found that there was significant difference between yogasanas and pranayamas group among volleyball players. Thus, it was found that yogasanas was significantly better than pranayamas and control group in improving performance skill, Attack of the volleyball players.

Results on anxiety: The statistical analysis comparing the initial and final means of Anxiety due to yogasanas and pranayamas among volleyball players is presented in Table V

Table 6: Computation of analysis of covariance of anxiety

	Yogasanas group	Pranayamas group	Control group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre test Mean	53.13	53.73	53.80	Between	8.09	2	4.04	0.21
				Within	1640.13	57	18.85	
Post Test Mean	51.23	51.37	53.60	Between	106.07	2	53.03	3.86*
				Within	1195.53	57	13.74	
Adjusted Post Test Mean	51.53	51.24	53.43	Between	84.35	2	42.18	9.96*
				Within	364.33	56	4.24	
Mean Diff	-1.90	-2.37	-0.20					

Table F-ratio at 0.05 level of confidence for 2 and 87 (df) =3.10, 2 and 86 (df) =3.10.

*Significant

As shown in Table V, the obtained pre test means on Anxiety on yogasanas group was 53.13, pranayamas group was 53.73 was and control group was 53.80. The obtained pre test F value was 0.21 and the required table F value was 3.10, which proved that there was no significant difference among initial scores of the subjects.

The obtained post test means on Anxiety on yogasanas group was 51.23, pranayamas group was 51.37 was and control group was 53.60. The obtained post test F value was 3.86 and the required table F value was 3.16, which proved that there was significant difference among post test scores of the subjects.

Taking into consideration of the pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 9.96 was greater than the required value of 3.16 and hence it was accepted that there was significant differences among the treated groups.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s Confidence Interval test. The results were presented in Table VI

Table 7: Scheffe’s Confidence Interval Test Scores on Anxiety

MEANS				Required . C I
Yogasanas Group	Pranayamas Group	Control Group	Mean Difference	
51.53	51.24		0.29	1.32
51.53		53.43	-1.89*	1.32
	51.24	53.43	-2.19*	1.32

* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between yogasanas group and control group (MD: -1.89). There was significant difference between pranayamas group and control group (MD: -2.19). There was no significant difference between treatment groups, namely, yogasanas group and pranayamas group. (MD: 0.29).

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in FigureII- BAR DIAGRAM ON ORDERED

Adjusted means on anxiety

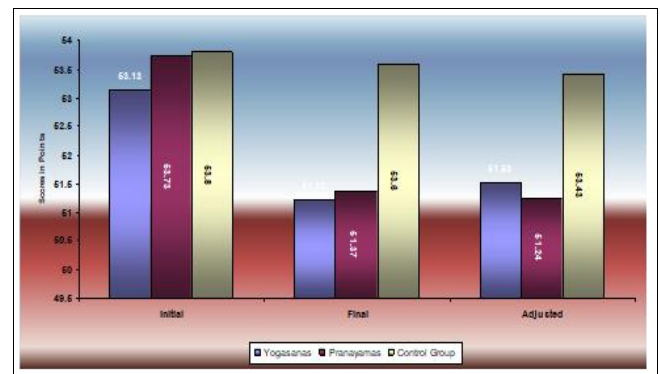


Fig 3

Discussions on findings on anxiety

The effect of Yogasanas and Pranayamas on Anxiety is presented in Table VI. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value 9.96 was greater than the required table F value to be significant at 0.05 level.

Since significant F value was obtained, the results were further subjected to post hoc analysis and the results presented in Table VII proved that there was significant difference between yogasanas group and control group (MD: -1.89) and pranayamas group and control group (MD: -2.19). Comparing between the treatments groups, it was found that there was no significant difference between yogasanas and pranayamas group among volleyball players. Thus, it was found that yogasanas and pranayama were significantly better than control group in reducing Anxiety of the volleyball players.

Finding

Based on the results of the study, it was found yogasana and pranayama can contribute for improvement of performance variables set, serve, attack and block compared to control group. Similarly yogasana and pranayama can contribute for the well being and mental health by altering selected psychological variables, anxiety, aggression, team cohesion and self concept of volleyball players.

Conclusions

Within the limitations and delimitations of the study, the following conclusions were drawn.

1. It was concluded that yogasana and pranayama significantly improved performance variable attack of the volleyball players compared to control group. And there was significant difference between treatment groups in altering performance variable attack and yogasana group was found to be significantly better than pranayama group in improving performance variable, attack of volleyball players.

It was concluded that yogasana and pranayama significantly altered psychological variable anxiety of the volleyball players compared to control group. And there was no significant difference between treatment groups in altering anxiety of volleyball players.

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