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Effects of yogasanas and pranayama on setting and self-concept 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 setting and self-confidence 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

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) [4].

Yoga is one of India's wonderful gifts to mankind. One of its valuable qualities is that it builds up a store of physical health through the practice of a system of exercises called asanas which keep the body clean and fit. Yogic exercises are essential for speedy removal of toxins for good blood circulation and for all internal process to function smoothly. Apart from the physical side of life, yoga provides beneficial effects to the mental faculties also. Different breathing exercises or techniques quieten the mind and brain, offering inner peace and an ability to face upheavals and deal with problems. Yoga therefore has a role both in every day practical life, and in the more thoughtful, idealistic scheme of things. Its valuable needs are to be experienced and savoured. (Iyengar, B.K.S., 1999)

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 setting and self-confidence variables among volleyball players.

Statement of the problem

The purpose of the study was to find out the effects of yogasanas and pranayama on setting and self-confidence 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, setting.
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 self-concept.
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.

Significance of the study

In recent years physical educationists, sports physiologists and sports scientists have started realizing the importance of yogasanas and pranayama to improve performance and psychological variables.

The significance of study are

1. The findings of the study is useful to examine the changes occur in performance and psychological among volleyball players variables as a result of yogasanas.
2. The results of the study will reveal the improvement take place on specific performance and psychological variables of volleyball players due to pranayamas.
3. The findings of the study is helpful to understand weather yogasana or pranayama is superior in altering selected performance and psychological variables.
4. The result of the study will create awareness among volleyball players, physical education teachers and coaches on yogasanas and pranayama to improve sports performance.

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.

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

Dependent Variables**Performance Variables**

1. Setting

Psychological Variables

1. Self-Concept

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)^[11].

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)^[11]

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)^[11]

Self-concept: It is the totality of attitude judgment and values of an individual relating to his behavior, ability and quality, self-concept embraces the awareness of these variables and their calculation.

Setting: The setting is usually the second contact a team makes with the ball. The main goal of setting is to put the ball in the air in such a way that it can be driven by a spike into the opponent's court.

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 considered as independent variables. The following are dependent variables.

Dependent variables

I. Performance variables

Setting

II. Psychological variables

Self-Concept

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 posttest. 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. Pretest was conducted for all the 90 subjects on setting and self-confidence 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.

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

Table 1: Tests used to assess the performance and psychological variables

S. No	Variable	Test	Unit of Measurements
1	Performance Variables	Volleyball Block Test	Points
	Setting		
2	Psychological Variables	Self-Concept Questionnaire	Numbers
	Self-Concept		

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	Volleyball Set Test	0.86*
	Set		
1	Psychological Variables	Self-Concept Questionnaire	0.94*
	Self-Concept		

* Significant at 0.01

Required table value at 0.01 with 8 degrees of freedom 0.811
Obtained results showed 'r' values proved that the testers and the data collected were highly reliable.

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.

Volleyball setting test

Purpose

Measure a player's ability to set volleyball into a designated target area

Directions

Each player receives 11 trials (trial #1 is practice only) to set a tossed volleyball from a designated position into a target area. Players must set the volleyball over a string and into the target area. The target area has values from 1 to 5 points (see Set Test Diagram).

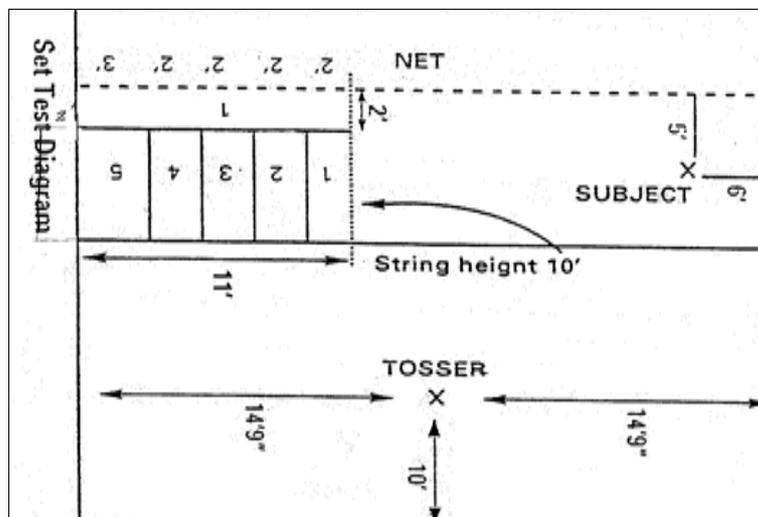


Fig 1: The target area has values from 1 to 5 points

Scoring

A player's score is determined by adding together the points awarded for each of the 10, record (non-practice) trials. Players may catch poorly tossed balls and have those trials repeated. A trial where the set ball hits the string or net, or lands outside of the scoring area, counts as a trial, but receives no points. The designated scorer uses his best judgment in assessing a score for each trial.

Psychological variables

Self-concept

Self-concept questionnaire constructed by Mukta Rastogi (1979) was used in this study. The questionnaire consists of twenty statements which included both positive and negative statements, with a response from any five answer, namely, strongly agree, agree, undecided, disagree and strongly disagree. The scale was scored with the help of the scoring key. A separate scoring method was followed for positive and negative statements.

Table 3: A separate scoring method was followed for positive and negative statements

S. No	Responses	Scores for Positive Statements	Scores for Negative statements
1	Strongly Agree	5	1
2	Agree	4	2
3	Undecided	3	3
4	Disagree	2	4
5	Strongly Disagree	1	5

Self-concept scale consists of both positive and negative statements. The following are the numbers of the statement that are positive and negative.

Positive Numbers: 1, 3, 4, 9, 11, 12, 17, 18, 19

Negative Numbers: 2, 5, 6, 7, 8, 10, 13, 14, 15, 16, 20

Scoring

The scores obtained for both positive and negative statements were added to determine the individual score. The total scores reflected the individuals self-concept with high scores showing higher self-concept level.

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 pretest, posttest random group design. Here, the groups were randomly formed but the groups were taken a pretest as well as posttest. 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 set

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

Table 4: Computation of analysis of covariance of set

	Yogasanas group	Pranayamas group	Control GROUP	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	28.30	29.85	28.35	Between	21.96	2	10.98	0.02
				Within	50162.82	57	576.58	
Post Test Mean	31.90	32.15	28.40	Between	210.16	2	105.08	0.16
				Within	56178.21	57	645.73	
Adjusted Post Test Mean	32.00	31.08	28.69	Between	175.07	2	87.53	7.09*
				Within	1062.02	56	12.35	
Mean Diff	3.60	2.30	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 pretest means on Set on yogasanas group was 28.30, pranayamas group was 29.85 and control group was 28.35. The obtained pretest F value was 0.02 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 posttest means on Set on yogasanas group was 31.90, pranayamas group was 32.15 and control group was 28.40. The obtained posttest F value was 0.16 and the required table F value was 3.16, which proved that there was no significant difference among post test scores of the

subjects.

Taking into consideration of the pretest means and posttest means adjusted posttest means were determined and analysis of covariance was done and the obtained F value 7.09 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 Set

MEANS				Required. C I
Yogasanas Group	Pranayamas Group	Control Group	Mean Difference	
32.00	31.08		0.92	2.26
32.00		28.69	3.31*	2.26
	31.08	28.69	2.39*	2.26

* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between yogasanas group and control group (MD: 3.31). There was significant difference between pranayamas group and control group (MD: 2.39). There was no significant difference

between treatment groups, namely, yogasanas group and pranayamas group. (MD: 0.92).

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

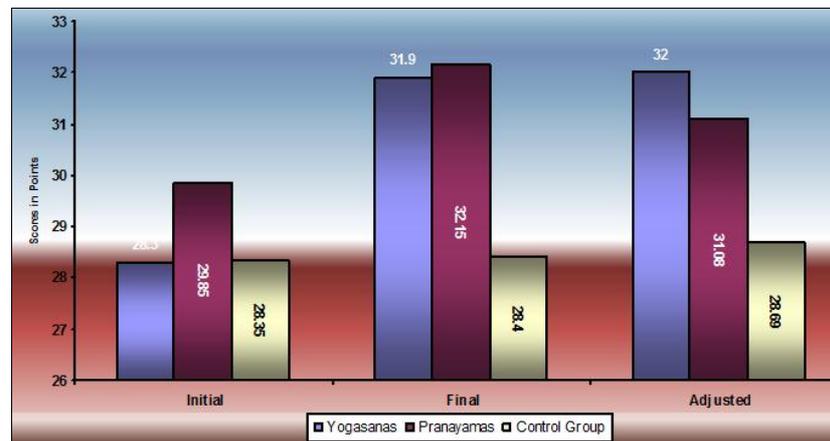


Fig 2: Bar diagram on ordered adjusted means on set

Discussions on findings on set

The effect of Yogasanas and Pranayamas on Set is presented in Table IV. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value 7.09 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: 3.31) and pranayamas group and control group (MD: 2.39). 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 pranayamas were significantly better than control group in improving performance variable, Set of the volleyball players.

Results on self-concept

The statistical analysis comparing the initial and final means of Self Concept due to yogasanas and pranayamas among volleyball players is presented in Table V.

Table 6: Computation of analysis of covariance of self-concept

	Yogasanas group	Pranayamas group	Control GROUP	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	49.13	51.13	49.53	Between	67.20	2	33.60	0.63
				Within	4674.40	57	53.73	
Post Test Mean	52.13	54.93	51.00	Between	245.96	2	122.98	2.70
				Within	3969.33	57	45.62	
Adjusted Post Test Mean	52.86	53.85	51.36	Between	93.47	2	46.74	26.30*
				Within	152.82	56	1.78	
Mean Diff	3.00	3.80	1.47					

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 pretest means on Self Concept on yogasanas group was 49.13, pranayamas group was 51.13 and control group was 49.53. The obtained pretest F value was 0.63 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 posttest means on Self Concept on yogasanas group was 52.13, pranayamas group was 54.93 and control group was 51.00. The obtained posttest F value was 2.70 and the required table F value was 3.16, which proved that there was no significant difference among post test scores of the subjects.

Taking into consideration of the pretest means and posttest means adjusted posttest means were determined and analysis of covariance was done and the obtained F value 26.30 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 6: Scheffe's Confidence Interval Test Scores on Self Concept

MEANS				Required . C I
Yogasanas Group	Pranayamas Group	Control Group	Mean Difference	
52.86	53.85		-0.99*	0.86
52.86		51.36	1.49*	0.86
	53.85	51.36	2.49*	0.86

* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between yogasanas group and control group (MD: 1.49). There was significant difference between pranayamas group and control group (MD: 2.49). There was significant difference between treatment groups, namely, yogasanas group and pranayamas group. (MD: -0.99).

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

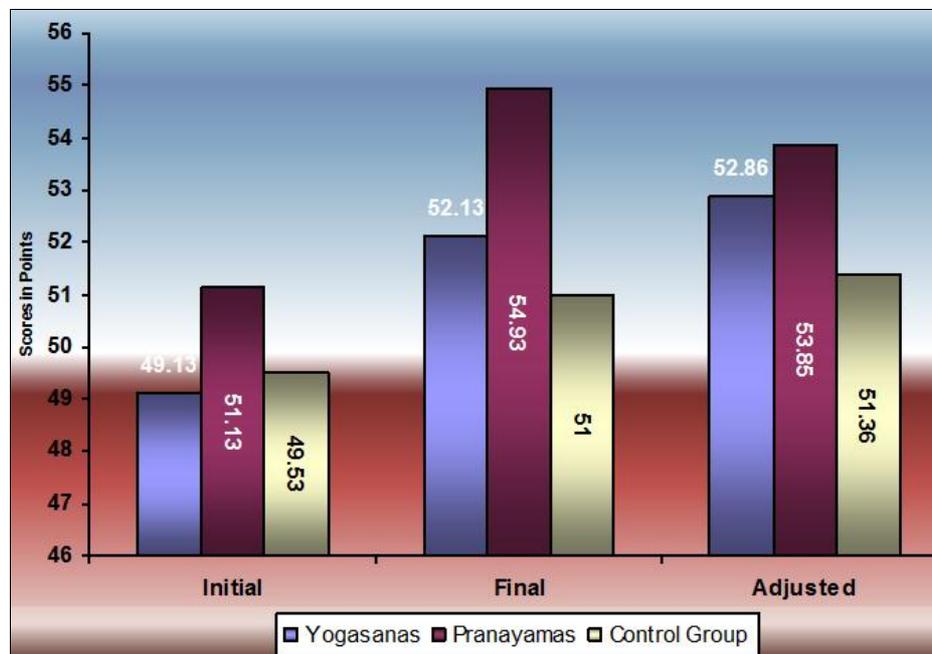


Fig 3: Bar diagram on ordered adjusted means on self-concept

Discussions on findings on self-concept

The effect of Yogasanas and Pranayamas on Self Concept 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 26.30 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 VI proved that there was significant difference between yogasanas group and control group (MD: 1.49) and pranayamas group and control group (MD: 2.49). 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 and pranayama were significantly better than control group in improving Self Concept of the 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 setting of the volleyball players compared to control group. And there was no significant difference between treatment groups in altering performance variable set.
2. It was concluded that yogasana and pranayama significantly altered psychological variable self-concept of the volleyball players compared to control group. And there was significant difference between treatment groups in altering self concept and pranayama group was found to be significantly better than yogasana group in altering self-concept of volleyball players.

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