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EFFECT OF POWER YOGA ON CARDIO RESPIRATORY ENDURANCE, EXPLOSIVE STRENGTH AND FLEXIBILITY OF INTER ENGINEERING SPORTS PLAYERS

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ABSTRACT

The purpose of the study was to find out the effects of selected Power Yoga Activity on Cardio Respiratory Endurance, Explosive Strength and Flexibility of Inter Engineering Sports Players. To achieve the purpose of these study thirty male players were selected from Engineering Students in Pune city at random and their age ranges from 19 to 24 years and all of them healthy and normal. They were divided in to two groups and designed as Experimental and Control group fifteen male players each. The experimental groups underwent a six weeks of Power Yoga Activity training were given. The control group was not allowed to participate in any of the training programme except their routine theory and Physical Education classes. The collected data were analyzed by using analysis of covariance (ANCOVA). The results of the study showed that Power Yoga Activity can be an effective training programme to increase the Cardio Respiratory Endurance, Explosive Strength and Flexibility of Inter Engineering Sports Players.

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Introduction

Yoga is a very ancient, certainly much older than archaeological record, which is the only reliable one we have at present. The archaeological finds indicate a well established system of yoga practice, which must have existed long before the figurines and seals that have been found were fashioned. One of the difficulties of tracing a history of yoga has been that by its nature it leaves nothing behind except myth and legends of miraculous powers possessed by some of more accomplished practitioners of the arts. The ideal time of practice Yoga Activity is at sunrise, the most peaceful time of day. Whenever possible practice in the open air, facing the rising sun. Sunset is also a good time to practice as it stimulates the digestive fire. Yoga Activity however, may be practiced at any time provided the stomach empty. The basic translation of Yoga Activity is solution to the sun. It is a very ancient tradition which has been in existence since the Vedic age. The physical basis of the practice link together twelve asana in a dynamically performed series. These asana are ordered so that they alternately stretch the spine backwards and forwards .when perform in the usual way, each asana is move into with alternate inhalation and exhalation. A full round of Yoga Activity is considered to be two sets of the twelve poses with a change in a second set to moving the opposite leg first through the series. With increasing scientific research in yoga, it therapeutic aspect are also being explored Yoga Activity gives more benefits with less expenditure of time. It is claimed that Yoga Activity practice improves general health and fitness. Cardio respiratory endurance refers to the ability of the circulatory and respiratory systems to supply oxygen to skeletal muscles during sustained physical activity.

Statement of problem

The Statement of the problem was stated as "Effect of Power Yoga Activity on Cardio respiratory endurance, explosive strength and flexibility of Inter Engineering Sports Players".

Objectives of the Study

- To find out the effect of Power Yoga Activity on Cardio respiratory endurance.
- To find out the status of Inter Engineering Sports Players in relation to Cardio respiratory endurance.
- To find out the status of Inter Engineering Sports Players in relation to Explosive strength.

Methodology

Subjects for the present study were taken from thirty male players were selected from Engineering students in Pune city, India, at random and their age ranges from 19 to 24 years and all of them healthy and normal. The study was conducted during the year 2024-2025; the selected subjects were divided into two groups and designed as Experimental group and Control group fifteen male students each. The experimental groups underwent a six week of Power Yoga Activity training. The control group was not allowed to participate in any of the training programs, except their routine physical education classes. A qualified physician examined the subjects medically and declared that they were fit for the study. The duration of the training period was six weeks with five days per week. On every day the training was practiced approximately 50 min60under the instruction and

supervision of the investigator. The analysis of covariance (ANCOVA) was applied to find out significant difference if any between experimental and control group. In all cases 0.05 level of confidence was utilized to test the significance.

Selection of Subjects

Subjects for the present study were taken from thirty male players were selected from Engineering Colleges in Pune, India, at random and their age ranges from 19 to 24 years and all of them healthy and normal.

Selection of Variables

Dependent Variables:

Cardiorespiratory Endurance, Explosive Strength and Flexibility

Independent Variable:

Power Yoga

Activity

Criterion Measures

S.N.	Name of Test	Purpose	Unit of score
1	Sit and Reach Test	To estimate Flexibility	Centimeters
2	Vertical Jump Test	To estimate Explosive Strength	Centimeters
3	Cooper's 12 min. Run & Walk Test	To estimate Cardio Respiratory Endurance	Meters

Collection of Data

The data was collected two times in the interval of six weeks. Total six weeks of Power Yoga Activity practices was conducted. Observations for tests were collected prior to the treatment in the form of pre-test then after six weeks of Power Yoga Activity practices; observations for second test was collected in the form of post test.

Schedule of Training

Day	Schedule		Time
	Control Group	Experimental Group	
1st Day	Control group did not participate in the training program.	Preliminary Exercises Practice of Power Yoga Activity (6 Asanas) Relaxation Posture Practice of Power Yoga Activity (6 Asanas) Relaxation Posture	10Minutes 5 minutes 5 minutes 5 minutes 5 minutes
Same schedule was repeated for two weeks sunday rest			Total 30 min.

15th Day	Control group did not participate in the training program.	Preliminary Yogic Exercises Practice of Power Yoga Activity (7 Asanas) Relaxation Posture Practice of Power Yoga Activity (7 Asanas) Relaxation Posture Practice of Power Yoga Activity (7 Asanas) Relaxation Posture	10minutes 5 minutes 5 minutes 5 minutes 5 minutes 5 minutes 5 minutes
Same schedule was repeated for two weeks sunday rest			Total 40 min.

29th Day	Control group did not participate in the training program.	Preliminary Yogic Exercises Practice of Power Yoga Activity (9 Asanas) Relaxation Posture Practice of Power Yoga Activity (9 Asanas) Relaxation Posture Practice of Power Yoga Activity (9 Asanas) Relaxation Posture Practice of Power Yoga Activity (9 Asanas) Relaxation Posture	10minutes 5 minutes 5 minutes 5 minutes 5 minutes 5 minutes 5 minutes 5 minutes 5 minutes
Same schedule was repeated for two weeks Sunday rest			Total 50 min.

Statistical Procedure

The data was analyzed by applying Descriptive Statistics and Analysis of Co- Variance (ANCOVA). The level of significance was set at 0.05.

Analysis of data and findings of the study

The statistical analysis of data collected on thirty male Engineering College level players age ranged between 19-24 years, who were associated with different sports from Anantrao Pawar College of Engineering is presented in this chapter. Data were collected two times in the interval of six weeks. Total six weeks of Power Yoga Activity practices was conducted. Observations for tests were collected prior to the treatment in the form of pre-test then after six weeks of Power Yoga Activity practices; observations for second test was collected in the form of post test. The data on selected criterion measures for all the groups were collected under similar conditions.

Results of the study

The results pertaining to analysis of data between Dependent Variables (Cardio respiratory endurance, Explosive strength and flexibility) and Independent Variable (Power Yoga Activity) Descriptive Statistics and Analysis of Co-Variance (ANCOVA) was used. The data pertaining to the

results of analysis of students have been presented through the table No. II -VII.

Table-II

Descriptive statistics of flexibility for Experimental and control group of sports Players.

		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Flexibility Pre Test	Control	15	18.8667	1.552264	0.400793	16.00	21.00
	Experimental	15	19.9333	2.016598	0.520683	17.00	23.00
	Total	30	19.4000	1.849511	0.337673	16.00	23.00
Flexibility Post Test	Control	15	18.8000	1.612452	0.416333	15.00	21.00
	Experimental	15	21.4667	1.995232	0.515167	19.00	25.00
	Total	30	20.1333	2.239663	0.408905	15.00	25.00

Table -II reveals that, the mean and standard deviation of flexibility of Pre Test (Experimental Group 19.93 ± 2.01, control Group 18.86 ± 1.55), Post Test (Experimental Group 21.13 ±1.99, control Group 18.80 ±1.61).

Table-III

Analysis of co-variance of the means of experimental group and the control group in relation to flexibility

S. V.	Group			d.f.	Sum of square	Mean square	F ratio
	Control	Experimental					
Pre Test	18.86	19.93	B	1	8.533	8.533	2.635
			W	28	90.666	3.238	
Post Test	18.80	21.46	B	1	53.333	53.333	16.208*
			W	28	92.133	3.290	
Adjusted Post mean	19.312	20.955	B	1	18.490	18.490	58.569*
			W	27	8.524	0.316	

* Significant at 0.05 level of significance

F = Ratio needed for significance at 0.05 level of significance = df (1, 28) = 4.20, df (1,27) = 4.21

The analysis of co-variance for flexibility indicated that the resultant F-ratio of 2.635 was insignificant in case of pre-test means from which it is clear that the pre-test mean does not differ significantly and that the random assignment of subjects to the experimental groups was quite successful. The post-test means of all the two groups yielded a F-ratio of 16.208 which was significant at 0.05 level of confidence. The F-ratio needed for significance with 1, 28 degree of freedom is 4.20 at 0.05 level of confidence. The difference between the adjusted posts means was found significant as the obtained F-ratio was 58.569. The F-ratio needed for significance at 0.05 level of confidence was 4.21. Thus, mean significant difference exits between experimental and control group in relation to flexibility.

Table-IV

Descriptive statistics of explosive strength for Experimental and control group of sports Players

		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Explosive Strength Pre Test	Control	15	47.4000	7.17934	1.85370	36.00	59.00
	Experimental	15	44.1333	7.59574	1.96121	33.00	59.00
	Total	30	45.7667	7.44952	1.36009	33.00	59.00
Explosive Strength Post Test	Control	15	46.6000	7.37564	1.90438	35.00	59.00
	Experimental	15	52.4000	6.94674	1.79364	42.00	67.00
	Total	30	49.5000	7.63273	1.39354	35.00	67.00

Table –IV reveals that, the mean and standard deviation of explosive strength of Pre Test (Experimental Group 44.13 ± 7.59, control Group 47.40 ± 7.17), Post Test (Experimental Group 52.40 ±6.94, control Group 46.60 ±7.37).

Table-V

Analysis of co-variance of the means of experimental group and the control group in relation to explosive strength

S. V.	Group			d.f.	Sum of square	Mean square	F ratio
	Control	Experimental					
Pre Test	47.40	44.13	B	1	80.033	80.033	1.465
			W	28	1529.333	54.619	
Post Test	46.60	52.40	B	1	252.300	252.300	4.915*
			W	28	1437.200	51.329	
Adjusted Post mean	45.165	53.835	B	1	535.723	535.723	56.331*
			W	27	256.777	9.510	

* Significant at 0.05 level of significance

F = Ratio needed for significance at 0.05 level of significance = df (1, 28) = 4.20, df (1,27) = 4.21

The analysis of co-variance for explosive strength indicated that the resultant F-ratio of 1.465 was insignificant in case of pre-test means from which it is clear that the pre-test mean does not differ significantly and that the random assignment of subjects to the experimental groups was quite successful. The post-test means of all the two groups yielded a

F-ratio of 4.915 which was significant at 0.05 level of confidence. The F-ratio needed for significance with 1, 28 degree of freedom is 4.20 at 0.05 level of confidence. The difference between the adjusted posts means was found significant as the obtained F-ratio was 56.331. The F-ratio needed for significance at 0.05 level of confidence was 4.21. Thus, mean significant difference exits between experimental and control group in relation to explosive strength.

Table-VI

Descriptive statistics of Cardio Respiratory Endurance for Experimental and control group of sports Players

		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Cardio respiratory Endurance Pre Test	Control	15	2750.0000	420.03401	108.45232	2100.00	3550.00
	Experimental	15	2656.6667	282.12628	72.84469	2300.00	3450.00
	Total	30	2703.3333	354.75425	64.76897	2100.00	3550.00
Cardio respiratory Endurance Post Test	Control	15	2683.3333	406.95150	105.07443	2100.00	3400.00
	Experimental	15	2980.0000	312.13550	80.59304	2500.00	3700.00
	Total	30	2831.6667	386.96951	70.65064	2100.00	3700.00

Table-VI reveals that, the mean and standard deviation of cardio respiratory endurance of Pre Test (Experimental Group 2656.66 ± 282.126, control Group 2750.00 ± 420.03), Post Test (Experimental Group 2980.00 ± 312.13, control Group 2683.33 ±406.95).

Table-VII

Analysis of co-variance of the means of experimental group and the control group in relation to cardio respiratory endurance

S. V.	Group			d.f.	Sum of square	Mean square	F ratio
	Control	Experimental					
Pre Test	2750.00	2656.66	B	1	65333.333	65333.333	0.510
			W	28	3584333.333	128011.905	
Post Test	2683.33	2980.00	B	1	660083.333	660083.333	5.019*
			W	28	3682533.333	131519.048	
Adjusted Post mean	2637.843	3025.491	B	1	1106855.874	1106855.874	108.048*
			W	27	276590.062	10244.076	

* Significant at 0.05 level of significance

F = Ratio needed for significance at 0.05 level of significance = df (1, 28) = 4.20, df (1,27) = 4.21

The analysis of co-variance for cardio respiratory endurance indicated that the resultant F-ratio of 0.510 was insignificant in case of pre-test means from which it is clear that the pre-test mean does not differ significantly and that the random assignment of subjects to the experimental groups was quite successful. The post-test means of all the two groups yielded a F-ratio of 5.019 which was significant at 0.05 level of confidence. The F-ratio needed for significance with 1, 28 degree of freedom is 4.20 at 0.05 level of confidence. The difference between the adjusted posts means was found significant as the obtained F-ratio was 108.048. The F-ratio needed for significance at 0.05 level of confidence was 4.21. Thus, mean significant difference exits between experimental and control group

in relation to cardio respiratory endurance.

Discussion of Findings

Results of this study have shown that there was mean significant difference exits between experimental and control group in relation to flexibility, mean significant difference exits between experimental and control group in relation to explosive strength, mean significant difference exits between experimental and control group in relation to cardio respiratory endurance. Results of the presented study are completely supported by other similar studies.

Ananda Balayogi B. (2011) studied on **"**A comparative study of slow and fast Yoga Activity on physiological function" he found that SN has positive physiological benefits as evidenced by improvement of pulmonary function, respiratory pressures, hand grip strength and endurance, and resting cardiovascular parameters. It also demonstrates the differences between SN training when performed in a slow and fast manner, concluding that the effects of FSN are similar to physical aerobic exercises, whereas the effects of SSN are similar to those of yoga training.

Conclusions

- In the light of the findings, it is concluded that, there is significant difference in the flexibility of Engineering College sports Players due to the six weeks Power Yoga Activity training.
- In the light of the findings, it is concluded that, there is significant difference in the cardio respiratory endurance of Engineering College sports Players due to the six weeks Power Yoga Activity training.
- In the light of the findings, it is concluded that, there is significant difference in the Explosive Strength of Engineering College sports Players due to the six weeks Power Yoga Activity training.

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