



ORIGINAL RESEARCH PAPER

Physical Education

COMPARATIVE EFFECT OF YOGIC PRACTICES AND CONVENTIONAL CONDITIONING EXERCISES ON MOTOR FITNESS OF HIGH SCHOOL BOYS

KEY WORDS: Yogic Practices, Conventional Conditioning Exercises, Motor Fitness

Ms. Manjulata Nayak

Lecturer, Govt. College of Physical Education, Kulundi, Sambalpur,

Sri Susanta Kumar Das*

Lecturer, Baliapal College of Physical Education, Baliapal, Balasore *Corresponding Author

Sri Prasanta Kumar Giri

Lecturer, Baliapal College of Physical Education, Baliapal, Balasore

ABSTRACT

90 (Ninety) school boys were divided into three groups i.e., two experimental groups and one control group namely conventional exercise group, yogic exercise group and control group. Motor Fitness components as dependant variables were being measured prior to the application of training stimuli (conventional exercises, yogic exercises) and after twelve weeks of application of training stimuli all the subjects of three groups were being measured to know the effect training stimuli on motor fitness. The results of the study coincided with the general conception that yogic exercises improve cardio-vascular endurance and flexibility and conventional exercises help improve speed, agility, muscular strength and endurance of the players in a progressive manner.

INTRODUCTION: The purpose of this study was to ascertain the Effect of Selected Yogic Practices and Conventional Conditioning Exercises on Motor Fitness of High School Boys. Total of 90 (Ninety) school boys were taken as subjects for the study. All the subjects were within the age group of 13 to 16 years. Random group design was adopted for the study and equal numbers of subjects were assigned at random to three groups of thirty subjects each. The experimental treatments were given to two groups and one group served as the control. For the purpose of the study the conventional exercise group, yogic exercise group and control group were named as group A, B and C, respectively.

The measurements of experimental variables were taken in the beginning and after the experimental period of twelve weeks. After the end of twelve weeks of conducting exercise programme, the three groups underwent post-test on all the variables on which pre-test was made. To obtain the data pertinent to the purpose of study, the following dependant and independent variables were selected.

Dependant Variables: (Motor fitness): a. Muscular strength (Standing broad jump), b. Muscular endurance (Pull ups), c. Cardio-vascular endurance (One mile run-walk), d. Speed (50 mt dash), e. Agility (Shuttle run), f. Flexibility (Sit and reach). Measurements on above variables were taken during pre and post-tests in all three groups and standard methods were followed to procure the data.

Independent Variables: The training stimuli i.e., Yogasans under yoga programme and conventional conditioning exercises were considered here as the independent variables.

Training Schedules: Group A (Conventional conditioning exercise group) was administered with the scheduled selected conventional conditioning exercises for a duration of 12 weeks under direct supervision of the researcher. Group B (Yogic exercise group) was administered with the scheduled selected yoga programme with prone, supine, long sitting and standing position asanas for a duration of 12 weeks under direct supervision of the researcher. The scheduled exercise programme was fixed for five days in a week from Monday to Friday in the morning from 6 am to 7 am, which was repeated along 12 weeks period. The details of conventional and yogic exercises are presented below.

Conventional Conditioning Exercises: Running on the spot (both speed and slow), Rotation exercises (ankle, hip, shoulder and wrist), Opposite toe touching, Trunk bending exercises, High kick, Half squats, Pushups, Sideward stretching, Squat thrust, Jump and turn, Abdominal curl, Skipping exercises, Harvard step exercises,

Finger dips, Leg raise, Hand stand supported pushups, Vertical jumping with making body arch.

Yogic Exercises: Following asanas were scheduled for the present study. Students were instructed to maintain each yogasana at least for a period of 30seconds. Prone: Ardha-shalbhāsana, Shavasana, Dhanurasana, Bhujangāsana, Supine, Ardha-halāsana, Halāsana, Naukasana, Sarvangāsana. **Long sitting:** Padmasana, Vajrasana, sputa-vajrasana, Ustrasana.

Standing: Chakrasana, Tadasana, Vriksāsana, Padahastāsana. The data were examined by applying analysis of variance as well as analysis of covariance with regard to two experimental groups and one control group to find out the inter-group variability to allow for the comparison between initial and final scores and to effect adjustments in final or terminal scores which allowed for difference in same initial variables.

Findings: For each of the chosen variables, the results pertaining to significant difference, if any, between the pre test and post test means for the three groups after twelve weeks of training, which were submitted to analysis of covariance, are given in Table 1 to Table 12.

TABLE – 1: Significance of Difference Between Pre-Test And Post-Test Means of the Two Experimental Groups and the Control Group in Standing Broad Jump

Groups	Pre-test mean±SE	Post-test mean±SE	Difference between mean	SE	't' ratio
A	126.472±1.186	134.436±1.186	7.964	0.131	60.740*
B	126.903±1.298	130.932±1.329	4.029	1.397	28.882*
C	126.772±1.266	126.432±1.215	0.340	0.285	1.170

* Significant at 0.05 level of confidence, 't'_{0.05}(29) = 2.045

Table 1 clearly reveals that the conventional exercise group and yogic exercise group improved significantly yielding 't' value 60.740 and 28.882, respectively, where as the control group did not show any significant improvement in standing broad jump performance of subjects indicating 't' values of 1.170. The needed 't' value for significance at 0.05 level of confidence with 29 degrees of freedom was 2.045. As the experimental groups showed a significant increase, the data were put to analysis of variance and covariance to find out if there was a significant difference among the groups.

TABLE – 2: Analysis of Variance and Covariance of the Means of two Experimental Groups and the Control Group in Standing Broad Jump

	A Group	B Group	C Group	Sum of squares	df	Mean square	F ratio
Pre-test means	126.472±1.186	126.903±1.298	126.772±1.266	B 2.956 W 4083.533	2 87	1.47846.937	0.031
Post-test means	134.43±1.186	130.932±1.329	126.432±1.215	B 965.000 W 4042.600	2 87	482.50046.467	10.384*
Adjusted post-test means	134.722± 0.198	130.724±0.198	126.423±0.198	B 1032.702 W101.339	2 86	516.3511.178	438.196*

* Significant at 0.05 level of confidence, N = 90, B = Between group variance, W = Within group variance

The analysis of covariance for standing broad jump showed that the resultant 'F' ratio of 0.031 was not significant in case of pre-test means. The post test means yielded 'F' ratio of 10.384, which was found to be significant. The adjusted final means yielded the 'F' ratio of 438.196 and was found to be significant. The 'F' ratio, needed for significance at 0.05 level of confidence (df 2, 87) was 3.07.

TABLE – 3: Significance of Difference Between Pre-Test And Post-Test Means Of the Two Experimental Groups and the Control Group in Pull Ups

Groups	Pre-test mean±SE	Post-test mean±SE	Difference between mean	SE	't' ratio
A	4.833±0.160	6.867±0.190	2.034	0.131	15.503*
B	4.900±0.147	5.500±0.213	0.600	0.156	3.844*
C	4.700±0.167	4.800±0.147	0.100	0.194	0.516

* Significant at 0.05 level of confidence , 't' 0.05 (29) = 2.045

Table 3 reveals that both the experimental groups improved significantly yielding 't' value 15.503 and 3.844, whereas, control group did not show any significant improvement in pull ups performance of subjects indicating 't' values of 0.516. The needed 't' value for significance at 0.05 level of confidence with 29 degrees of freedom was 2.045. As the experimental groups showed a significant increase, the data were analysed by applying of variance and co-variance to find out if there was significant differences among the groups. zz

TABLE – 4: Analysis of Variance and Covariance of the Means of Two Experimental Groups and the Control Group in Pull Ups

	A Group	B Group	C Group	Sum of squares	df	Mean square	F ratio
Pre-test means	4.833±0.160	4.900±0.147	4.700±0.167	B 0.622 W 65.167	2 87	0.311 0.749	0.415
Post-test means	6.867±0.190	5.500±0.213	4.800±0.147	B 66.289 W 89.767	2 87	33.144 1.032	32.123*
Adjusted post-test means	6.852±0.154	5.441±0.154	4.873±0.155	B 62.153 W 61.349	2 86	31.077 0.713	43.563*

* Significant at 0.05 level of confidence, N = 90, B = Between group variance, W = Within group variance

The analysis of covariance for pull ups showed that the resultant 'F' ratio of 0.415 was not significant in case of pre-test means. The post test and adjusted final means yielded the 'F' ratio of 32.123 and 43.563, respectively, which were found to be significant. The 'F' ratio, needed for significance at 0.05 level of confidence (df 2, 87) was 3.07.

TABLE – 5: Significance of Difference Between Pre-Test and Post-Test Means of the two Experimental Groups and the Control Group in One Km. Run-Walk

Groups	Pre-test mean±SE	Post-test mean±SE	Difference between mean	SE	't' ratio
A	545.713±12.251	480.972 ±12.244	64.741	0.065	100.231*
B	539.922±13.006	417.644 ±12.985	122.278	0.111	107.223*
C	535.764±12.281	535.872 ±12.275	0.108	0.056	1.908

* Significant at 0.05 level of confidence, 't' 0.05 (19) = 2.045

Table 5 clearly shows that both the conventional exercise and yogic exercise groups improved significantly yielding 't' value of 100.231 and 107.223, respectively, whereas, control group did not show any significant improvement in running high jump performance of subjects indicating 't' values of 1.908. The needed 't' value for significance at 0.05 level of confidence with 29 degrees of freedom was 2.045. As the experimental groups showed a significant increase, the data were put to analysis of variance and covariance to find out if there were significant differences among the groups.

TABLE – 6: Analysis of Variance and Covariance of the Means of two Experimental Groups and the Control Group in One Km. Run-Walk

	A Group	B Group	C Group	Sum of squares	df	Mean square	F ratio
Pre-test means	545.713 ±12.251	539.922±13.006	535.764±12.281	B 1777.881 W 408959.788	2 87	888.940 4700.687	0.189
Post-test means	480.972 ±12.244	417.644±12.985	535.872±12.275	B 210018. 776 W 408218.562	2 87	105009.388 4692.167	22.380*
Adjusted post-test means	474.723 ±0.081	420.235±0.081	539.624±0.081	B 2142.786 W 16.774	2 86	1071.393 0.195	5494.323*

* Significant at 0.05 level of confidence, N = 90, B = Between group variance, W = Within group variance

The analysis of covariance for one km run-walk showed the resultant 'F' ratio of 0.189, which was not significant in case of pre test means. The post test means and adjusted final means yielded

the 'F' ratio of 22.380 and 5494.323 and were found significant. The 'F' ratio, needed for significance at 0.05 level of confidence (df 2, 87) was 3.07.

TABLE – 7: Significance of Difference Between Pre-Test and Post-Test Means of the two Experimental Groups and the Control Group in Shuttle Run

Groups	Pre-test mean±SE	Post-test mean±SE	Difference between mean	SE	't' ratio
A	11.133 ±0.224	9.253 ±0.218	1.880	0.059	31.973*
B	11.223 ±0.224	10.220 ±0.228	1.003	0.017	59.228*
C	11.230 ±0.228	11.323 ±0.234	0.093	0.054	1.735

* Significant at 0.05 level of confidence, 't' _{0.05} (29) = 2.045

Table 7 clearly reveals that both the conventional exercise group

and yogic exercise group improved significantly yielding 't' value of 31.973 and 59.228, respectively, whereas, control group did not show any significant improvement in shuttle run performance of subjects indicating 't' values of 1.735. The needed 't' value for significance at 0.05 level of confidence with 29 degrees of freedom was 2.045

In shuttle run performance, it was noted that the differences between the means existed and the experimental groups improved, whereas, no significant changes was observed in the control group. As the experimental groups showed a significant increase, the data were put to analysis of variance and covariance to find out if there was significant difference among the groups. The analysis of variance and covariance for shuttle run is shown in Table 11.

TABLE – 8: Analysis of Variance and Covariance of the Means of Two Experimental Groups and the Control Group in Shuttle Run

	A Group	B Group	C Group	Sum of squares	df	Mean square	F ratio
Pre-test means	11.133±0.224	11.223±0.224	11.230±0.228	B 0.175 W 132.663	2 87	0.087 1.525	0.057
Post-test means	9.253±0.218	10.220±0.228	11.323±0.234	B 64.367 W 134.376	2 87	32.183 1.545	20.837*
Adjusted post-test means	9.315±0.047	10.193±0.047	11.289±0.047	B 58.680 W 5.745	2 86	29.340 0.067	439.187*

* Significant at 0.05 level of confidence, N = 90, B = Between group variance, W = Within group variance

The analysis of covariance for shuttle run showed that the resultant 'F' ratio of 0.057 was not significant in case of pre-test means. The post test and adjusted final means yielded the 'F' ratio of 20.837 and 439.187, respectively and were found to be significant. The 'F' ratio, needed for significance at 0.05 level of confidence (df 2, 87) was 3.07.

TABLE – 9: Significance Of Difference Between Pre-Test And Post-Test Means Of The Two Experimental Groups And The Control Group In 50 Mt. Dash

Groups	Pre-test mean±SE	Post-test mean±SE	Difference between mean	SE	't' ratio
A	9.390±0.254	7.550±0.268	1.84	0.030	60.984*
B	9.333±0.241	8.350±0.247	0.983	0.059	16.685*
C	9.323±0.246	9.423±0.258	0.100	0.051	1.962

* Significant at 0.05 level of confidence, 't' _{0.05} (29) = 2.045

Table 9 clearly reveals that conventional exercise group and yogic exercise group improved significantly yielding 't' value of 60.984 and 16.685, respectively, whereas, control group did not show any significant improvement in personality of subjects indicating 't' values of 1.962. The needed 't' value for significance at 0.05 level of confidence with 29 degrees of freedom was 2.045. As the experimental group showed a significant increase, the data were put to analysis of variance and covariance to find out if, there were significant differences among the groups.

TABLE – 10: Analysis of Variance and Covariance of the Means of Two Experimental Groups and the Control Group in 50 Mt. Dash

	A Group	B Group	C Group	Sum of squares	df	Mean square	F ratio
Pre-test means	9.390±0.254	9.333±0.241	9.323±0.246	B 0.078 W 159.227	2 87	0.039 1.830	0.021
Post-test means	7.550±0.268	8.350±0.247	9.423±0.258	B 53.014 W 173.164	2 87	26.507 1.990	13.318*
Adjusted post-test means	7.508±0.048	8.366±0.048	9.450±0.048	B 56.782 W 5.977	2 86	28.391 0.069	408.529*

* Significant at 0.05 level of confidence, N = 90, B = Between group variance, W = Within group variance

The analysis of covariance for 50 mt dash showed that the resultant 'F' ratio of 0.021 was not significant in case of pre-test means. The post test and adjusted final means yielded the 'F' ratio of 13.318 and 408.529, respectively and were found to be significant. The 'F' ratio, needed for significance at 0.05 level of confidence (df 2, 87) was 3.07.

TABLE – 11: Significance of Difference between Pre-Test and Post-Test Means of the Two Experimental Groups and the Control Group in Sit And Reach Test

Groups	Pre-test mean±SE	Post-test mean±SE	Difference between mean	SE	't' ratio
A	10.533±0.229	11.533±0.229	1.000	0.107	9.346*
B	10.467±0.213	12.400±0.218	1.967	0.046	41.738*
C	10.367±0.217	10.433±0.207	0.066	0.283	0.235

* Significant at 0.05 level of confidence, 't' _{0.05} (29) = 2.045

Table 11 clearly reveals that conventional exercise group and yogic exercise group improved significantly yielding 't' value of 9.346 and 41.738, respectively, whereas, control group did not show any significant improvement in sit and reach of subjects indicating 't' values of 0.235. The needed 't' value for significance at 0.05 level of confidence with 29 degrees of freedom was 2.045. As the experimental group showed a significant increase, the data were put to analysis of variance and covariance to find out if, there was significant difference among the groups.

TABLE – 12: Analysis of Variance and Covariance of the Means of Two Experimental Groups and the Control Group in Sit and Reach Test

	A Group	B Group	C Group	Sum of squares	df	Mean square	F ratio
Pre-test means	10.533±0.229	10.467±0.213	10.367±0.217	B 0.422 W 125.900	2 87	0.211 1.447	0.146
Post-test means	11.533±0.229	12.400±0.218	10.433±0.207	B 58.289 W 124.033	2 87	29.144 1.426	20.443*
Adjusted post-test means	11.478±0.154	12.392±0.154	10.496±0.154	B 53.872 W 60.977	2 86	26.936 0.709	37.990*

* Significant at 0.05 level of confidence, N = 90, B = Between group variance, W = Within group variance

The analyses of covariance for sit and reach test showed that the resultant 'F' ratio of 0.146 was not significant in case of pre-test means. The post test and adjusted final means yielded the 'F' ratio of 20.443 and 37.990, respectively and were found to be significant. The 'F' ratio, needed for significance at 0.05 level of confidence (df 2, 87) was 3.07.

DISCUSSION OF FINDINGS

The analysis of data revealed that the two experimental groups, administered with conventional exercises and yogic exercises showed significant gains in performance of motor fitness components after administration of the exercises for a duration of 12 weeks. The control group did not show any significant increase in the performance of any variable under study.

The yogic exercises showed significantly better gain in performance of subjects in one km run-walk and sit and reach than the conventional exercises. However, the conventional exercises had better impact than yogic exercises in standing broad jump, pull ups, shuttle run and 50 mt. dash. Whereas, both the experimental groups showed significant increase in performance of all fitness variables under study, compared to those of control group.

The results of the study coincided with the general conception that yogic exercises improve cardio-vascular endurance and flexibility and conventional exercises help improve speed, agility, muscular strength and endurance of the players in a progressive manner.