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Effect of varied aerobic training programme on selected physical variables between tribal and non-tribal adolescent boys

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Abstract

The aim of the study was to investigate the comparative effect of varied aerobic training programme on selected Physical variables namely speed, Explosive strength, Endurance and agility of Tribal and Non-Tribal adolescent school boys. For the purpose of the study 120 students each in tribal and non-tribal category were selected total 240 subjects (120 Tribal and 120 non-tribal). The age group of the subjects was ranged from 14-16 years. They were selected randomly. In each category the subjects were further sub-divided into six equal groups consisting of 20 subjects in each. Three experimental groups namely slow continuous, Fartlek, Interval running group and one control group in each category (Tribal and Non-tribal). The Physical variables namely speed was measured through 50 meter dash. Explosive strength was measured through standing broad jump, endurance was measured through Cooper's 12 min. run/walk test and agility was measured through shuttle run. For the comparison, analysis of covariance was used and the significant level was set at 0.05 level of confidence. The results reveals significant differences of means in both tribal and non-tribal group of experimental category.

Keywords: Aerobic training, speed, explosive strength, endurance, agility

Introduction

The world of games and sports is ever expanding with intensity of competition, and enlarging Scientific Studies of human movement. Sports are dynamic in nature and progressive in out load. It is not confined to "What has been", but its target is to fix new targets.

Education in its broad sense means preparation for life. It should help each individual to become all, he is capable of becoming. Therefore, it is inexorably tied in with all-Round development of a person.

Games and sports, as a part of human education, have always existed in the human society. Before the dawn of civilization and culture physical exercise was very important aspect of human existence. In the primitive society, the necessity for survival motivated man to keep himself more physically fit and stronger enough in comparison to stranger forces of nature. Sports are as old as the human society, and it has achieved a universal following in the modern times. It now enjoys a popularity which outstrips any other form of social activity. It has become an integral part of educational process. Millions of fans follow different sports events all over the world with an enthusiasm bordering on devotion. Many participate in sports activities for the fun of it or for health, strength and fitness. It is taking the shape of a profession to some with high skills with ample financial benefits linked with high degree of popularity.

Sports by their very nature are enjoyable, challenging, all absorbing and require a certain amount of skill and physical conditions. In the order of human values conquest in the field of sports holds a unique place. It is success victory, triumph and domination of some over other teammates and friends because sport is comradeship and friendship. The sublimity of competition lies in the loser's acclaim for the winner, which along with the friendly handshake acknowledges both defeat and triumph.

Out of many important pre-requisite factors for top performance physical fitness and different forms of activity have been regarded as very important factors of the fundamental pattern of living and performance for every creature that has lived on earth. For this reason the condition

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of a person's body must have always been of great concern. In primitive society there appeared to have been very little organized, purposive instruction in physical education, although early people considered that a certain type of fitness was necessary for survival.

Objective of the Study

The objective of the study was to effect of varied aerobic training programme on selected physical variables between tribal non-tribal adolescent boys from Purulia district in West Bengal were selected at random, as subjects for the study.

Methodology

In this section the selection of subjects, selection of physical variables, criterion measures, administration of test, collection of data, administration of training programmes, training schedule, reliability of the data, design of the study and statistical procedure employed for analyzing the data have been described.

Selection of the Subjects

Two hundred and forty boys (120 Boys from tribal and 120 boys from non-tribal) from Purulia district in West Bengal were selected at random, as subjects for the study. It was ensured from the health examination that all the subjects were medically fit for going through the experimental treatment of this study. One hundred twenty subjects each in tribal and non-tribal category were further subdivided randomly into six equal groups consisting of 20 subjects in each. Three experimental designs i.e. slow continuous, Fartlek and interval running group were randomly assigned to the three experimental groups in each category, while remaining one group in each category served as control group. The average age of the subjects was 15 years ranging from 14 to 16 years of age. The importance of procedure and significance of the

study was explained to them in brief and they were asked to act as the subjects from their hearts. Different types of incentives were announced to motivate and encourage them to continue the training programme and to give tests up to the best of their capacity.

Selection of the Variables

1. Speed (50 MTS Dash)
2. Explosive Strength (Standing broad jump)
3. Cardio-Respiratory Endurance (12 Min. run-Walk test)
4. Agility (4 X 30 feet Shuttle run).

Criterion Measures

Physical Variables

1. Speed was recorded to the nearest 1 /10th of a second using 50 meter dash.
2. Explosive strength was measured in centimeter (than converted into meter) using standing broad jump.
3. Cardio-Respiratory Endurance was assessed by Cooper's 12 min. run-walk test. The scores were recorded to the nearest fifty meters.
4. Agility was recorded using 4 x 30 feet shuttle run. The scores were in 1 / 10th of a second in case of shuttle run.

Statistical Procedure

In order to investigate the comparative effect of each training method on the mean values of each physical variables of the tribal and non-tribal subjects, the analysis of covariance statistics was used.

For testing the mean differences among the subjects belonging to the experimental and control group each in tribal and non-Tribal category as well as between the tribal and non-tribal subjects in physical variables, the level of significance was set at 0.5 level of confidence.

Table 1: Ancova table for the data on speed for tribal, non-tribal, tribal control and non-tribal control groups involved In continuous, fartlek and interval training

Source	Sum of squares	DF	Mean square	F	(p-value) sig.
Pre	13.861	1	13.861	42.866	.000
Training	33.749	11	3.068	9.488	.000
Error	37.402	227	.323		
Corrected total	122.034	239			

Shows the f-value {F (11,227)=9.488} for comparing the adjusted means of the criterion variable in Continuous, Fartlek and Interval training on Tribal, non-tribal, Tribal Control and non-tribal Control group. F statistics computed for aerobic training was significant because p-value associated with it was.000 which is less than.05 levels, thus

the null hypothesis of no difference among the adjusted means for the data on criterion variable in the training groups may be rejected at 5% level.

Since F-statistics was significant, post-hoc comparison has been made for the adjusted means of the training groups, which is shown in table:

Table 2: Speed

Group	Pre-test mean	Post-test mean	Adjusted mean
CONT-T	7.48	6.55	6.579
CONT-NT	7.47	6.87	6.903
CONT-T-CON	7.46	7.51	7.548
CONT-NT-CON	7.57	7.61	7.597
FART-T	7.47	6.77	6.796
FART-NT	7.63	6.98	6.932
FART-T-CON	7.49	7.49	7.512
FART-NT-CON	7.4	7.46	7.524
INTV-T	7.57	6.98	6.965
INTV-NT	7.64	6.93	6.882
INTV-T-CON	7.59	7.6	7.578
INTV-NT-CON	7.70	7.72	7.646

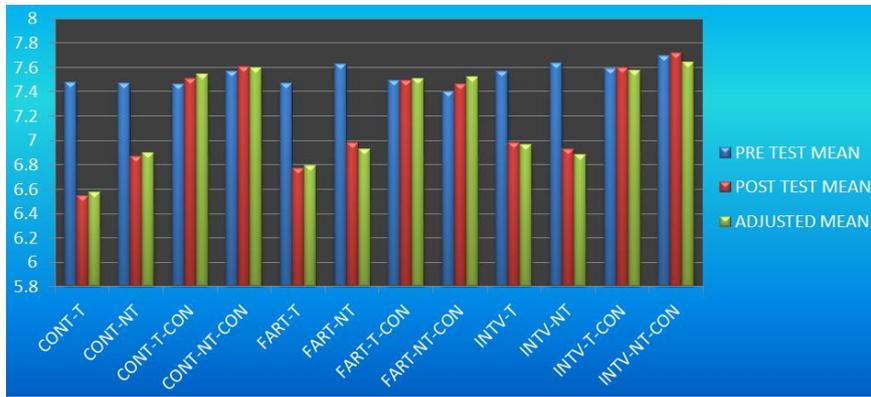


Fig 1: Pre, post and adjusted means of the various groups.

Table 3: Ancova table for the data on explosive strength for tribal, non-tribal, tribal control and non-tribal control groups involved in continuous, fartlek and interval training.

Source	Sum of squares	DF	Mean square	F	(p-value)sig.
Pre	2.193	1	2.193	70.324	.000
Training	1.629	11	.148	4.750	.000
Error	7.078	227	.031		
Corrected total	11.066	239			

Shows the f-value {F(11,227)=4.750} for comparing the adjusted means of the criterion variable in Continuous, Fartlek and Interval training on Tribal, Non-Tribal, Tribal Control and non-tribal Control group. F statistics computed for aerobic training was significant because p-value associated with it was.000 which is less than.05 levels, thus

the null hypothesis of no difference among the adjusted means for the data on criterion variable in the training groups may be rejected at 5% level.

Since F-statistics was significant, post-hoc comparison has been made for the adjusted means of the training groups, which is shown in table:

Table 4: Explosive Strength

Group	Pretest mean	Posttest mean	Adjusted mean
CONT-T	2.047	2.116	2.078
CONT-NT	1.994	2.078	2.076
CONT-T-CON	1.998	1.926	1.921
CONT-NT-CON	1.953	1.902	1.927
FART-T	2.015	2.098	2.082
FART-NT	1.944	2.07	2.102
FART-T-CON	1.987	1.917	1.919
FART-NT-CON	1.988	1.899	1.901
INTV-T	1.978	2.057	2.067
INTV-NT	1.998	2.083	2.078
INTV-T-CON	1.998	1.893	1.888
INTV-NT-CON	1.99	1.964	1.965

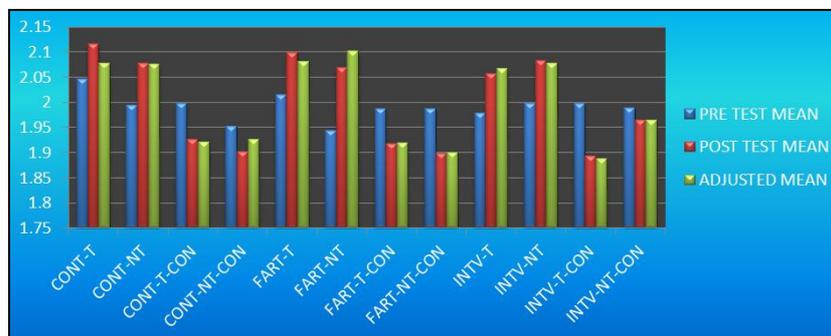


Fig 2: Pre, post and adjusted means of the various groups.

Table 5: Ancova table for the data on endurance for tribal, non-tribal, tribal control and non-tribal control groups involved in continuous, fartlek and interval training

Source	Sum of squares	DF	Mean square	F	(p-value)sig.
Pre	8625849.768	1	8625849.768	642.906	.000
Training	1688853.491	11	153532.136	11.443	.000
Error	3045650.232	227	13416.961		
Corrected total	14534958.333	239			

Shows the f-value { $F(11,227)=11.443$ } for comparing the adjusted means of the criterion variable in Continuous, Fartlek and Interval training on Tribal, Non-Tribal, Tribal Control and non-tribal Control group. F statistics computed for aerobic training was significant because p-value associated with it was .000 which is less than .05 levels, thus

the null hypothesis of no difference among the adjusted means for the data on criterion variable in the training groups may be rejected at 5% level.

Since F-statistics was significant, post-hoc comparison has been made for the adjusted means of the training groups, which is shown in table:

Table 6: Endurance

Group	Pretest mean	Posttest mean	Adjusted mean
CONT-T	2235	2400	2405.46
CONT-NT	2215	2345	2367.94
CONT-T-CON	2200	2162.5	2198.54
CONT-NT-CON	2200	2172.5	2208.54
FART-T	2375	2525	2408.14
FART-NT	2227.5	2347.5	2359.51
FART-T-CON	2230	2205	2307.33
FART-NT-CON	2260	2225	2208.62
INTV-T	2280	2447.5	2413.64
INTV-NT	2200	2302.5	2338.54
INTV-T-CON	2307.5	2187.5	2219.17
INTV-NT-CON	2667.5	2242.5	2219.56

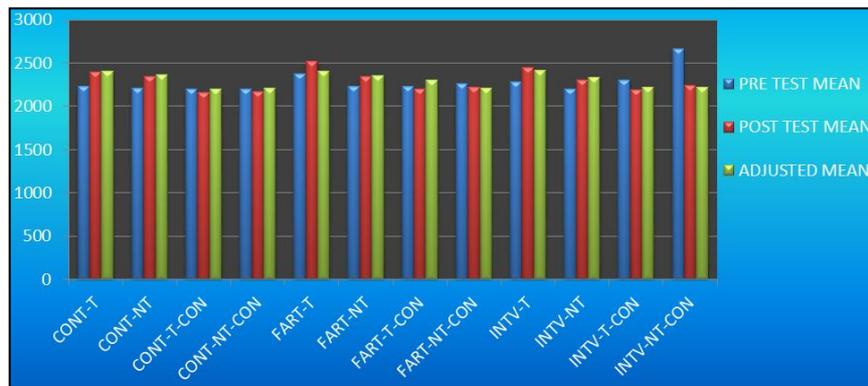


Fig 3: Pre-post and adjusted means of the various groups.

Table 7: Ancova table for the data on agility for tribal, non-tribal, tribal control and non-tribal control groups involved in continuous, fartlek and interval training

Source	Sum of Squares	DF	Mean Square	F	(P-Value)Sig.
Pre	15.536	1	15.536	24.933	.000
Training	147.678	11	13.425	21.545	.000
Error	141.450	227	.623		
Corrected total	300.952	239			

Shows the f-value { $F(11,227)=21.545$ } for comparing the adjusted means of the criterion variable in Continuous, Fartlek and Interval training on Tribal, Non-Tribal, Tribal Control and non-tribal Control group. F statistics computed for aerobic training was significant because p-value associated with it was .000 which is less than .05 levels, thus

the null hypothesis of no difference among the adjusted means for the data on criterion variable in the training groups may be rejected at 5% level.

Since F-statistics was significant, post-hoc comparison has been made for the adjusted means of the training groups, which is shown in table:

Table 8: Agility

Group	Pretest mean	Posttest mean	Adjusted mean
CONT-T	10.14	10.02	10.078
CONT-NT	10.30	10.08	10.088
CONT-T-CON	10.35	11.62	11.613
CONT-NT-CON	10.25	11.51	11.532
FART-T	10.34	10.19	10.181
FART-NT	10.14	10	10.057
FART-T-CON	10.35	11.81	11.798
FART-NT-CON	10.24	11.75	11.770
INTV-T	10.48	10.36	10.312
INTV-NT	10.76	10.1	9.963
INTV-T-CON	10.38	11.50	11.478
INTV-NT-CON	10.16	11.75	11.800

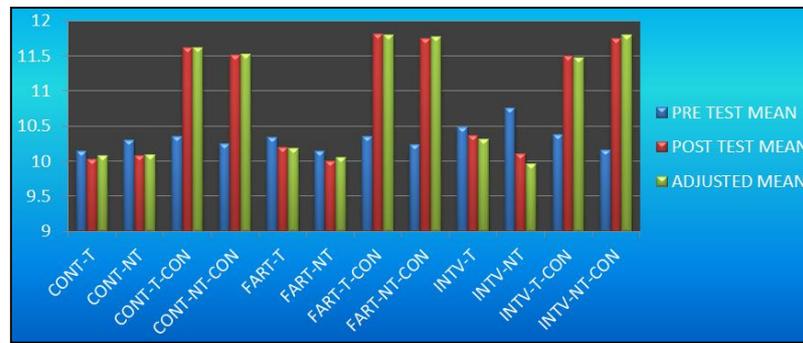


Fig 4: Pre, Post and Adjusted Means of the Various Groups. Discussion of Findings

Table 2 shows the comparison of speed for tribal, non-tribal, tribal control and non-tribal control groups involved in continuous, fartlek and interval training in pre, post and adjusted post means respectively which reveals significant differences in adjusted post-test means in both tribal and non-tribal group of experimental category.

Table 4 shows the comparison of explosive strength for tribal, non-tribal, tribal control and non-tribal control groups involved in continuous, fartlek and interval training in pre, post and adjusted post means respectively which reveals significant differences in adjusted post-test means in both tribal and non-tribal group of experimental category.

Table 6 shows the comparison of endurance for tribal, non-tribal, tribal control and non-tribal control groups involved in continuous, fartlek and interval training in pre, post and adjusted post means respectively which reveals significant differences in adjusted post-test means in both tribal and non-tribal group of experimental category.

Table 8 shows the comparison of agility for tribal, non-tribal, tribal control and non-tribal control groups involved in continuous, fartlek and interval training in pre, post and adjusted post means respectively which reveals significant differences in adjusted post-test means in both tribal and non-tribal group of experimental category.

Conclusions

Within the limitation of the present study the following conclusions were drawn on the basis of the obtained results:

1. Specific endurance training undertaking for the study showed significant improvement on the training groups. However these effects are significantly higher in case of tribal than non-tribal boys. Thus it may be concluded the specific endurance training programme have distinct advantage in developing the physical fitness components like endurance and speed.
2. Fartlek and continuous training proved to be effective in developing speed ability of the tribal than non-tribal boys.
3. Continuous and Fartlek running methods were found to be effective in developing explosive strength ability more on tribal than non-tribal boys.
4. Continuous, Fartlek and interval training programme were found to be effective in developing endurance ability more on tribal than non-tribal boys.
5. All training programme were found to be effective in developing agility for tribal and non-tribal boy.

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