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Effects of Aerobic and Anaerobic Training Followed by Cessation on Selected Speed Related Variables of Anna University Men Players

KEYWORDS: Aerobic training, Anaerobic Training, Speed Endurance, Cessation

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ABSTRACT *The purpose of the study was to find out the effects of aerobic and anaerobic training followed by cessation on selected speed related variables of Anna University men players. The study was conducted on forty five (N=45) under graduate students, studying various affiliated Engineering Colleges from Anna University Chennai, during 2011-2012 were selected as subjects. The age of the subjects were ranged from 18 to 21 years. The subjects were assigned at random into three groups of fifteen each (n=15). Group-I underwent Aerobic training, Group-II underwent Anaerobic training and Group-III underwent Combined aerobic and anaerobic training (n=15). All the experimental groups undergo their respective training for 12 weeks and the number of sessions per week was confined to three. Among various speed related parameters speed endurance was selected as dependent variable and it was assessed by was assessed by 150mts Run. All the subjects were tested prior to and after the training and during detraining period the data were collected at the end of first, second, third and sixth week for all the selected variables. The data collected from the three groups prior to and post experimentation and detraining on Speed Endurance were statistically analyzed by using two way (3x6) factorial ANOVA with last factor repeated measures. Whenever the obtained F-ratio for interaction effect was found to be significant, the simple effect test was used as a follow up test. In all the cases .05 level of significance was fixed. The results of the study showed that there was a significant difference was found among the experimental groups. During detraining period the experimental group had significant reduce in performance of the selected dependent variable.*

INTRODUCTION

Aerobics, meaning "with oxygen," refers to physical exercise to improve cardio respiratory endurance. Aerobic movement is rhythmic and repetitive, engaging the large muscle groups in the arms and legs for at least twenty minutes at each session. The ensuing demand for a continuous supply of oxygen creates the aerobic training effect, physiological changes that enhance the ability of the lungs, heart, and blood vessels to transport oxygen throughout the body. The most beneficial aerobic exercises include cross-country skiing, swimming, running, cycling, walking, and aerobic dance. Activities that rely on brief or discontinuous bursts of energy, such as weight lifting, are anaerobic ("without oxygen").

The area between the top of the aerobic threshold and anaerobic threshold is somewhat of a no man's land of fitness. It is a mix of aerobic and anaerobic states. For, the amount of effort the athlete puts forth, not a whole lot of fitness is produced. It does not train the aerobic or anaerobic energy system to a high degree. This area does have its place in training; it is just not in base season. Unfortunately, this is the area where one's find a lot of athletes spending the majority of their seasons, which retards aerobic development. The athletes heart rate shoots up to this zone with little power or speed being produced when it gets there.

METHODOLOGY

For this purpose Forty five (N=45) men students studying various Engineering Colleges affiliated to Anna University Chennai Tamilnadu, India during 2011-2012 were selected as subjects. The age of the subjects were ranged from 18 to 21 years. Subjects were randomly assigned in to three groups of fifteen each (n=15). Group-I underwent Aerobic training, Group-II underwent Anaerobic training and Group-III underwent Combined aerobic and anaerobic training (n=15). All the experimental groups undergo their respective training for 12 weeks and the number of sessions per week was confined to three. Among various speed related parameters speed endurance was selected as dependent variable and it was assessed by was assessed by 150mts Run.

ANALYSIS OF THE DATA

All the subjects were tested prior to and after the training and during detraining period the data were collected at the end of first, second, third and sixth week for all the selected variables. The data collected from the three groups prior to and post experimentation and detraining on Speed Endurance were statistically analyzed by using two way (3x6) factorial ANOVA with last factor repeated measures. Whenever the obtained F-ratio for interaction effect was found to be significant, the simple effect test was used as a follow up test. Since, three groups and six different stages of test were compared, whenever the obtained f-ratio value in the simple effect was significant the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases .05 level of significance was fixed.

The data of Speed Endurance have been analyzed by two way Analysis of Variance (ANOVA) (3x6) with repeated measures on last factor and the obtained results are presented in Table I-A.

Table I-A
The two way analysis of variance on speed endurance of aerobic training, anaerobic training, combined aerobic and anaerobic training, groups at six different stages of testing periods

Source of Variance	Sum of Squares	Df	Mean Squares	F-ratio
A factor (Groups)	3.89	2	1.94	142.99*
Error I	0.57	42	0.01	
B factor (Tests)	1.41	5	0.28	474.04*
AB factor (Interaction) (Groups and Tests)	1.03	10	0.10	172.36*
Error II	0.13	210	0.001	

*Significant at .05 level

(The table valued required for significant at .05 level of confidence with df 2 and 42, 5 and 210 & 10 and 210 were 3.22, 2.56 and 1.87 Respectively)

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Table I-A shows that the obtained 'F' ratio values 142.99, for row (groups) on Speed Endurance which is greater than the required table vale 3.22 for significance with df 2 and 42. If further shows that the obtained "F" ratio value 474.04 for column (tests) on Speed Endurance which is greater than the required table value 2.56 for significance with df 5 and 210. It also shows the obtained "F" ratio value 172.36 for interaction effect (groups x tests) on Speed Endurance which also greater than the required table value 1.87 for significance with df 10 and 210.

From the table I-A, the obtained F value of Interaction A x B (Groups x Different stages of Tests) show that there is significant difference existing among the paired means of interaction A x B on Speed Endurance (P <0.05).

The results of the study indicated that there was a significant difference in the interaction effect (between rows (Groups) and columns (Tests)) on Speed Endurance. Since, the interaction effect was significant, the simple effect test was applied as follow up test and they are presented in Table I-B.

Table I-B
The Simple Effect Scores of Groups (Rows) at Three Different Stages of Tests (Columns) on Speed Endurance

Source of Variance	Sum of Squares	df	Mean Squares	"F" ratio
Groups Within Pre test	0.08	2	0.04	66.84*
Groups Within Post test	1.26	2	0.63	1056.08*
Groups Within First Cessation	1.40	2	0.70	1172.29*
Groups Within Second Cessation	1.07	2	0.53	898.81*
Groups Within Third Cessation	1.02	2	0.51	858.45*
Groups Within Fourth Cessation	0.08	2	0.04	70.27*
Tests and Aerobic Training Group	0.07	5	0.01	22.56*
Tests and Anaerobic Training Group	0.11	5	0.02	38.26*
Tests and Combined Aerobic and Anaerobic Training Group	2.26	5	0.45	757.95*
Error II	0.13	210	0.001	-

*Significant at .05 level

(The table valued required for significant at .05 level of confidence with df 2 and 10, 5 and 10 were 3.04 and 2.26 Respectively)

Table I-B shows that the obtained F-ratio for Groups within pre test, post test, first cessation, second cessation, third cessation and fourth cessation were 66.84, 1056.08, 1172.29, 898.81, 858.45 and 70.27 indicating that there was a significant difference between the paired means of groups within post test on Speed Endurance.

Table I-B shows that F-ratio values obtained for tests within Aerobic Training Group, tests within Anaerobic Training Group, and tests within Combined Aerobic and Anaerobic Training Group are 22.56, 38.26 and 757.95 indicating that there was a significant difference exists among the paired means of tests within Aerobic Training Group, tests within Anaerobic Training Group, and tests within Combined Aerobic and Anaerobic Training Group on Speed Endurance.

The pre and post tests, first, second, third, and fourth cessations mean values of Aerobic training, Anaerobic training, and Combined Aerobic and Anaerobic training on Speed Endurance were graphically represented in the Figure -I.

RESULTS AND DISCUSSION

Speed Endurance were developed significantly Isolated and Combined Aerobic and Anaerobic Training and Detraining. It is also found that the improvement caused by Combined Aerobic and Anaerobic Training was greater when compared to the effects on other Experimental groups.

The most important fundamental requirement for all sports and games is speed and speed Endurance. It is also stated that Combined Aerobic and Anaerobic Training improves the velocity and acceleration. The development of speed endurance through combined aerobic and anaerobic training is supported by the finding of Overend (1992), Berthoin(1995) and Thomas(1982).

CONCLUSION

From the analysis of the data, the following conclusions were drawn.

1. Three Experimental groups' namely aerobic training, anaerobic training and combined aerobic and anaerobic training groups have achieved significant improvement on Speed Endurance.
2. Significant differences were found among aerobic training, anaerobic training and combined aerobic and anaerobic training groups towards improving the selected criterion variable such as Speed Endurance.
3. It may be concluded that, combined aerobic and anaerobic training is found to be better than aerobic training and anaerobic training to increase Speed Endurance.
4. During detraining period the experimental groups had significant reduce in performance of the selected dependent variable such as Speed Endurance.

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