Volume : 2 | Issue : 11 | Nov 2013 • ISSN No 2277 - 8160

Research Paper | Physical Education

An Impact of Isolated and Combined Aerobic and Anaerobic Training Packages on Speed Performance of Senior Level School Hockey Players

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ABSTRACT

The purpose of this study was to find out the impact of isolated and combined aerobic and anaerobic training packages on speed performance of senior level school Hockey players. The study was conducted on eighty(N=80) school senior Hockey Players who were participated at district level Hockey tournaments of Namakkal District during the year 2011-2013 were randomly selected as subjects and assigned equally into four groups of twenty each (n=20). Group –I underwent aerobic training, Group –II underwent anaerobic training, Group-III underwent Combined Aerobic and Anaerobic training and Group --IV acted as control Group. Speed performance was selected as dependent variable and assessed by 50 meters dash. To make adjustments for difference in the initial means and test the adjusted post test means for significant differences, the analysis of covariance (ANCOVA) was used. Since four groups were involved whenever the 'F' ratio was found to be significant for adjusted post means, Scheffe's test was followed as a post hoc test to determine which of the paired means difference was significant. The level of significant was fixed at 0.05 level to the significant differences if found. The findings revealed that Speed showed significant difference among the selected groups.

KEYWORDS : Speed, Aerobic training, anaerobic training, Combined Aerobic and Anaerobic training

INTRODUCTION

Aerobic means 'with oxygen'. During aerobic work the body is working at a level that the demands of oxygen and fuel can be meeting by the body's intake. The only waste products formed are corbondioxide and water. These are removed as sweat and by breathing out. (Thomas,1994).

A sports event, or activity that will build cardio respiratory endurance, is termed aerobic when the majority of the energy in the athlete is derived aerobically (aerobic training is without oxygen debt). Aerobic training should be activities that are performed continuously for a minimum of 15 to 20 minutes at a level of 70% to 90% of maximal heart rate; not less than three times a week.

Athletes requiring a higher level of aerobic fitness (endurance) will train four to six days a week. Examples of large muscle group activities include; walking, jogging running non-sprint cycling, swimming, and cross-country skiing.

Anaerobic means 'without oxygen'. During anaerobic work, involving maximum effort, the body is working so hard that the demands for oxygen and full exceed the rate of supply and the muscles have to rely on the stored recovers of fuel. In this case waste product accumulate, the chief one being lactic acid. The muscles, being starved of oxygen, take the body into a state known as oxygen debt. The body's stored fuel soon runs out and activity ceases with pain.

Anaerobic training is shorter than aerobic training in duration (less than two minutes), in which oxygen is not a limiting factor in performance, and requires energy from anaerobic sources. These energy sources involve the utilization of phosphagen and lactic acid by the athlete's body; and enables them to perform brief, near maximal muscular activity (<2 min). Events, or activity that lasts up to 30 seconds in length, rely almost exclusively on the phosphagen system (Sundaramoorthy, 2004),

METHODOLOGY

To achieve the purpose of the study, eighty(N=80) school senior Hockey Players who were participated at District level Hockey tournaments of Namakkal District during the year 2011-2013 were randomly selected as subjects who were their assigned equally into four groups of twenty each (n=20) Group-I underwent aerobic training, Group-II underwent anaerobic training, Group--III underwent Combined Aerobic and Anaerobic training and Group --IV acted as control Group. The training period was redistricted to 12 weeks and the number of session limited to three per week. Speed performance was selected as dependent variable and it was assessed by 50 meters dash. All the groups were tested on selected the criterion variables prior to and immediately after the training periods. To make adjustments for difference in the initial means and test the adjusted post test means for significant differences, the analysis of covariance (ANCOVA) was used. Since three groups were involved whenever the 'F' ratio was found to be significant for adjusted post means, Scheffe's test was followed as a post hoc test to determine which of the paired means difference was significant. The level of significance was fixed at 0.05 level of confidence for all the cases.

RESULTS AND DISCUSSION

The Analysis of covariance (ANCOVA) on Speed of aerobic training, anaerobic training, combined aerobic and anaerobic training groups and the control group have been analysed and presented in Table -I.

TABLE – I : ANALYSIS OF COVARIANCE ON SPEED OF AEROBIC TRAINING, ANAEROBIC TRAINING, COMBINED AEROBIC AND ANAEROBIC TRAINING GROUPS AND CONTROL GROUP

Adjusted Post test Means				Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
Aerobic Training Group – (I)	Anaerobic Training Group – (II)	Combined Aerobic and Anaerobic Training Group – (III)	Control Group – (IV)					
8.25	7.92	7.73	8.83	Between With in	14.04 11.95	3 75	4.68 0.16	29.37*

* Significant at.05 level of confidence

(Speed Scores in Seconds) (The table value required for Significance at0 .05 level with df 3 and 75 is 2.73)

Table -I shows the adjusted post test mean value of Speed for aerobic training group, anaerobic training group, combined aerobic and anaerobic training group and the control group are 8.25, 7.92, 7.73 and 8.83 respectively. The obtained 'F'-ratio of 29.37 for the adjusted post test mean is more than the table value of 2.73 for df 3 and 75 required for significance at 0.05 level of confidence.

The result of the study indicates that there is a significant difference among the adjusted post test means of experimental groups on the improvement of Speed performance.

To determine which of the paired means had a significant difference, Scheffe's test was applied as post hoc test and the results are presented in Table II.

TABLE – II
THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED POST TESTS PAIRED MEANS ON SPEED

Adjusted Post test Means				Mean Difference	Confidence Interval
Aerobic Training Group – (I)	Anaerobic Training Group – (II)	Combined Aerobic and Anaerobic Training Group – (III)	Control Group – (IV)		
8.25	7.92	---	----	0.33	0.36
8.25	----	7.73	----	0.52*	0.36
8.25	----	----	8.83	0.58*	0.36
----	7.92	7.73	----	0.19	0.36
-----	7.92	---	8.83	0.91*	0.36
----	----	7.73	8.83	1.10*	0.36

* Significant at 0.05 level of confidence

Table II shows the adjusted post test mean differences on Aerobic training group and Combined aerobic and anaerobic training group, Aerobic training group and Control group, Anaerobic training group and Control group and Combined aerobic and anaerobic training group and control group are 0.52, 0.58, 0.91 and 1.10 respectively and are found greater than the confidence interval value 0.36, which shows significant differences at .05 level of confidence. The adjusted post test mean differences on Aerobic training group and Anaerobic training group, Anaerobic training group and combined aerobic and anaerobic training group are 0.33 and 0.19. This was found lesser than the confidence interval value 0.36 that shows insignificant differences at 0.05 level of confidence.

The results of the study further revealed that there is a significant difference on the increment of Speed between the adjusted post test means of Aerobic training group and Combined aerobic and anaerobic training group, Aerobic training group and Control group, Anaerobic training group and Control group and Combined aerobic and anaerobic training group and control group. The values between Aerobic training group and Anaerobic training group, Anaerobic training group and Combined aerobic and anaerobic training group, showed insignificant differences.

However, the improvement in Speed was significantly higher for combined aerobic and anaerobic training group than other Experimental Groups and control group.

The results had clearly demonstrated that the Combined Aerobic and Anaerobic training group had yielded better performance on Speed that the other experimental groups and control group.

It is possibly inferred from the analysis that the training of more than one form is more appropriate method in developing individual skills and related factors the single from of training.

The mean values of experimental groups on Speed are graphically represented in the Figure -I.

The adjusted post test mean values of experimental groups on Speed are graphically represented in the Figure -II.

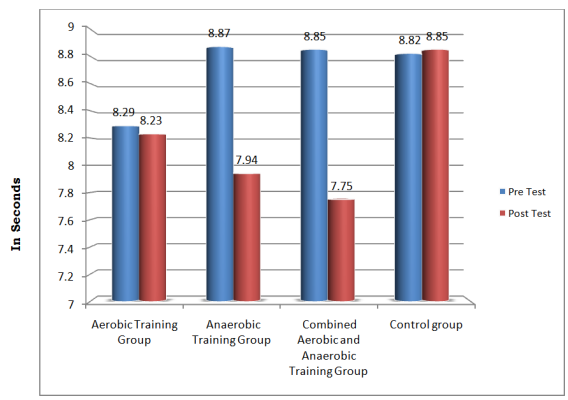


FIGURE-I: THE MEAN VALUES OF EXPERIMENTAL GROUPS ON SPEED

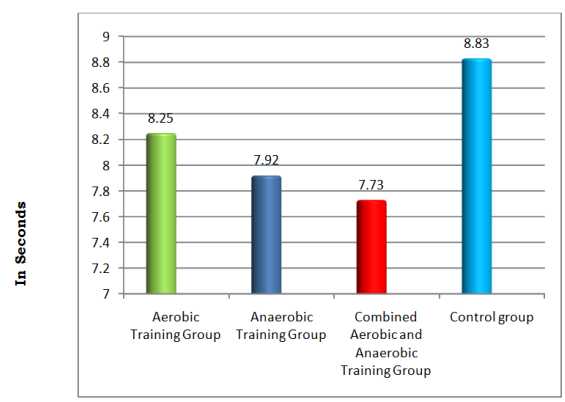


FIGURE-I : THE ADJUSTED POST TEST MEANS VALUES OF EXPERIMENTAL GROUPS ON SPEED

CONCLUSION

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

1. The Experimental group had registered significant improvement on the selected criterion variable namely Speed.
2. It may be concluded that the combined aerobic and anaerobic training group is better than aerobic training group, anaerobic training group and control group in improving Speed.

REFERENCES

Baechle Thomas R(1994). "Essential of Straining Training and Conditioning" Champaign Illinois: Human Kinetics Publishers. | | Sundaramoorthy V.(2004), "Training Sessions in Sports" Journal of Physical Education and Sports, 18 (July). |