



Effects of Anaerobic Training on Physical Fitness Variables of Adolescent Boys

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Abstract

The study was designed to investigate the “physical fitness parameters response to anaerobic training on adolescent boys”. The experimental group was given anaerobic training for the period of eight weeks. The criterion variables were chosen namely Speed, Agility and VO₂ max. All the dependent variables were assessed before and after the training period. The collected data on physical fitness variables due to know the effect of anaerobic training was analyzed by computing mean and standard deviation. After the experimental treatment, all the thirty subjects were tested on their physical fitness parameters. This final test scores are called the as Pre-test and Post-test scores of the subjects. The Pre-test and Post-test scores were subjected to the statistical analysis using the dependant ‘t’ test. In order to find out the significant improvement if any, ‘t’ test was applied significant level of 0.05 confidence. The study revealed that the physical fitness parameters were significantly improved due to the influence of anaerobic training.

Keywords: Anaerobic training, physical fitness, Speed, Agility and VO₂ max.

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Introduction

Anaerobic exercises comprise with brief periods of physical exertion and high-intensity, strength-training activities. Sports such as Basketball, Football, Tennis, and Baseball are also anaerobic activities. These sports require brief surges of high-intensity activity, lasting two minutes or fewer, with short episodes of recovery. Since anaerobic activities allow quicker recovery time, sports are efficient forms of anaerobic exercises. Now a days people are more aware of physical fitness and the importance of physical education. When a person is fit, the various systems of the body are well conditioned so that each system can play its part towards effective the performance. Fitness serves as a general base for excellence in performance, but it does not include all the essentials. An excellent performance in a particular activity must possess additionally to motor fitness, the specific skills that are part of activity, (Bucher and Willest, 1964).

Anaerobic exercise can strengthen bones, decreasing the risk of osteoporosis. It can also improve the strength of tendons and ligaments while also improving joint function. It can reduce the risk of potential injuries and improve cardiac function. Lastly, anaerobic exercise can elevate levels of good cholesterol. Again, these benefits are obtained in the combination with a healthy diet, and results vary by individual. It is

better for training to simulate the movements and energy demands of the sport of the athlete (Harman and Pandorf, 2000) anaerobic training must be done at the speed that the athlete wants to perform at Maximal Oxygen Uptake, or VO₂max health-enhancing physical activity program for school-aged children. Anaerobic training exercises are effective for improving sport-specific as well as overall speed, fitness, agility and muscular strength and endurance. They can be performed by individuals.

Materials and Methods

The 30 adolescent boys were randomly selected from MSST Higher Secondary School, Vadavalli, Coimbatore as subjects and their age ranged from 12 to 14 years. They were divided into two groups. The group - I was considered as an experimental group and group - II was considered as the control group. The control group was not given any exercise and the experimental group was given anaerobic training for three days per week, for 8 weeks. The evaluated parameters were speed (40 m dash), agility (4×10 m shuttle run) and VO₂ max (12 minutes run and walk test). The physical fitness parameters were measured before and after the anaerobic training programme. The collected data on physical fitness parameters due to effect anaerobic training which was analyzed by computing mean and standard deviation. In order to find out the significant improvement if any ‘t’ test was applied.

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Table I. Descriptive analysis of the Pre and Post test data and ‘t’ ratio on Speed of Experimental and Control group

Variables	Group	Test	Mean	Standard deviation	%	Mean difference	“t’ ratio
Speed	Experimental group	Pre	7.09	0.56	19.76%	1.16	13.96
		Post	5.92	0.40			
	Control group	Pre	7.13	0.35	0.349%	0.024	1.32
		Post	7.15	0.37			

* Significant at 0.05 level for the degrees of freedom 1 and 14, 2.145

The mean value of the experimental group on Speed among boys in pre and post training are 7.09 and 5.92, the corresponding standard deviation are 0.56 and 0.40 respectively. The t-value as per the t-test is 13.96 and these values are greater than the required table value of 2.145 for significance at 0.05 levels for 1 and 14

degrees of freedom. The mean value of the control group in pre and post training are 7.13 and 7.15 the corresponding standard deviation are 0.35 and 0.37 respectively. The t- value as per the t- test is 1.32. Since it is lesser than the critical ‘t’ value is 2.145, it is not significant at 0.05 level of confidence.

Table II. Descriptive analysis of the Pre and Post test data and ‘t’ ratio on Agility of Experimental and Control group

Variables	Group	Test	Mean	Standard deviation	%	Mean difference	“t’ ratio
Agility	Experimental group	Pre	18.61	1.29	30.04%	1.95	12.91
		Post	14.31	0.68			
	Control group	Pre	17.99	1.16	0.49%	0.088	1.30
		Post	18.08	1.22			

* Significant at 0.05 level for the degrees of freedom 1 and 14, 2.145

The mean value of experimental group on Agility among boys in pre and post training are 18.61 and 14.31, the corresponding standard deviation are 1.29 and 0.68 respectively. The t-value as per the t-test is 12.91 and these values are greater than the required table value of 2.145 for significance at 0.05 levels for 1 and 14

degrees of freedom. The mean value of the control group pre and post training are 17.99 and 18.08 the corresponding standard deviation are 1.16 and 1.22 respectively. The t- value as per the t- test is 1.30. Since it is lesser than the critical ‘t’ value is 2.145, it is not significant at 0.05 level of confidence.

Table III. Descriptive analysis of the Pre and Post test data and ‘t’ ratio on VO₂ max of Experimental and Control group

Variables	Group	Test	Mean	Standard deviation	%	Mean difference	“t’ ratio
VO ₂ max	Experimental group	Pre	25.45	4.48	22.29%	8.87	7.13
		Post	32.75	5.05			
	Control group	Pre	28.50	6.92	5.55%	1.50	0.61
		Post	27.00	9.02			

* Significant at 0.05 level for the degrees of freedom 1 and 14, 2.145

The mean value of the experimental group on VO₂ max among boys in pre and post training are 25.45 and 32.75, the corresponding standard deviation are 4.48 and 5.05 respectively. The t-value as per the t-test is 7.13 and these values are greater than the required table value of 2.145 for significance at 0.05 levels for 1 and 14 degrees of freedom. The mean value of the control group pre and post training are 28.50 and 27.00 the corresponding standard deviation are 6.92 and 9.02 respectively. The t-value as per the t-test is 0.61. Since it is lesser than the critical 't' value is 2.145, it is not significant at 0.05 level of confidence.

Result and Discussion

The results clearly indicate that the Speed, Agility and VO₂ max of the experimental group improve due to the influence of a 8 week anaerobic training programme. One of the most important fitness levels for adolescence boys is to improved performance. Therefore, this study aims to provide scientific training techniques for improving speed performance of adolescence boys. In this study, the subjects who underwent anaerobic training were able to improve their physical fitness. Therefore, it kinds a positive relationship between anaerobic training and improvements of physical fitness variables of Speed, Agility and VO₂ max. This improvement in physical fitness is beneficial for athletes who require speed while performing their sport and support the results from other studies. In the present study anaerobic training has improved the speed, agility and VO₂ max 19.76%, 30.04% and 22.29% respectively by finding significant differences in comparison from baseline to post test.

Conclusion

Eight weeks of anaerobic training programme produced significant improvements in the speed, agility and VO₂ max of adolescent boys. Anaerobic training is an appropriate training protocol to bring out desirable changes over physical fitness parameters for adolescent boys. The result of the study reveals that there was a significant enhancement in the experimental groups on the selected physical fitness parameters when compared with the control group after the completion of Eight weeks of Anaerobic group and control group training. The Anaerobic training group is the most effective compared to the control group to develop the Speed, Agility and VO₂ max of adolescent boys.

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