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Effects of Six Week Plyometric Training and Aerobic Training on Breath Holding Time among Basketball Players

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Abstract:

The purpose of the study was to find out the effects of six week plyometric training and aerobic training on breath holding time among basketball players. To achieve this purpose of the study, ninety college men were selected as subjects who were attended the basketball coaching camp conducted by the department of physical education, Punjabi University, Patiala, Punjab. The selected subjects were aged between 17 to 21 years. The selected subjects were randomly divided into three groups of 30 subjects each group. Group one acted as experimental group I and group two acted as experimental group II and group three acted as control group. Group one underwent plyometric training, group two underwent aerobic training for six weeks and group three underwent routine physical exercise. The subjects were tested on selected criterion variable such as breath holding time prior to and immediately after the training period. The selected criterion variable such as breath holding time was assessed by abdomen touch method. The analysis of covariance (ANCOVA) was used to find out the significant differences if any, between the experimental group and control group on selected criterion variables separately. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as an appropriate. The result of the present study has revealed that there was a significant difference among the experimental and control group on breath holding time.

Keywords: *plyometric training- aerobic training-physiological variables*

1. Introduction

The major objective in training is to cause biological adaptation in any to improve performance in a specific task, to enhance physiological improvement effectively and to bring about a change. Specific exercise and overload must be followed, by exercising at a level above normal a variety of training adaptation take place in the body that makes it to function more efficiently. Training involves constructing an exercise programme to develop an athlete for particular event. This increasing skill and energy capacities are equal consideration. Without competition, training is meaningless to-day. Sports training are based on the competitive motive. Recently physical educators and coaches have observed and experienced that performance in sports depends upon the training, skills, physique, motivation and other factors related to physiological nature of participant. Polymetric training is specific work for the enhancement of explosive power. It improves the relationship between maximum strength and explosive power plyometric training utilizes the elastic energy and myopic reflex in the development of power. Thus the movement generated by the athlete acts as the overload to eccentrically stretch the muscle before concentric contraction, a greater amount of elastic. Energy is stored in the muscle; this elastic energy is then re-used in the following concentric contraction, making that contraction stranger the key is a shot coupling time or the time it takes for the muscle to switch from the lengthening/yielding phase to the shorting over coming work phase. This leads to a fundamental plyometric principle: the rate, not the magnitude of the strength is what determined. The use of elastic energy and the transfer of chemical energy into mechanical work the improvement is skeletal muscle performance that occurs with initial pre-stretching can be identified as the combined effects of both storage of elastic energy and the myotatic reflex activities of the muscle. However the percentage of contribution from each component is not known.

The term aerobic means living in an air or utilizing oxygen. Aerobic exercises refer to those activities that require oxygen for prolonged periods and place such demands on the body that it is required to improve its capacity to handle oxygen. As a result of aerobic exercise, there are beneficial changes that occur in the lungs, the heart and the vascular system. Several physiological responses the body will happen with aerobic training. The physiology of exercise is a broad concept that addresses the central issue as to how the body adapts itself to the demands of physical activity. Physiology is the academic study of the various processes, systems, and functions of the human body as influenced by the performance of physical activity. Exercise is a term that

has a variety of possible meanings, each dictated by circumstances. In a sports context, exercise is the performance, conditioning or training undertaken in respect to a particular athletic or sporting purpose. Exercise may also be directed to improvement of a person's general health, physical fitness, or as physical therapy, to augment an existing treatment to remedy or to ameliorate the effects of a disease or illness upon the body.

2. Methodology

The purpose of the study was to find out the effects of plyometric training and aerobic training on breath holding time among basketball players. To achieve this purpose of the study, ninety college men were selected as subjects who were attended the basketball coaching camp conducted by the department of physical education, Punjabi University, Patiala, Punjab. The selected subjects were aged between 17 to 21 years. The selected subjects were randomly divided into three groups of 30 subjects each group, Group one acted as experimental group I and group two acted as experimental group II and group three acted as control group. Group one underwent plyometric training, group two underwent aerobics training for six weeks and group three underwent routine physical exercise. The subjects were tested on selected criterion variable such as breath holding time prior to and immediately after the training period. The selected criterion variable such as breath holding time was assessed by abdomen touch method. The analysis of covariance (ANCOVA) was used to find out the significant differences if any, between the experimental group and control group on selected criterion variable. Scheffe's post hoc test was used to find out the paired adjusted mean difference when the study was significant. In all the cases, 0.05 level was used to test this significance.

3. Results

3.1. Findings

The mean and standard deviation scores of pretest, posttest and adjusted posttest of breath holding time on plyometric training, aerobic training and control group are given in table. 'F' ratio test computed in regards to the breath holding time on plyometric training, aerobic training and control group in the pretest, posttest and adjusted post test are also presented in table.

	P T Group	A T Group	Control Group	Source of Variance	Sum of Squares	Df	Mean Squared	'F' ratio
Breath Holding Time								
Pre test Mean	29.48	29.37	29.29	Between	0.62	2	0.31	0.01
S D	4.15	4.19	4.17	Within	2512.37	87	28.88	
Post test Mean	33.57	34.55	29.32	Between	5633.16	2	2816.58	66.19*
S D	5.39	5.49	5.28	Within	3702.23	87	42.55	
Adjusted posttest Mean	33.61	34.72	29.23	Between	5282.84	2	2791.42	151.77*
				Within	1581.79	86	18.39	

Table 1: Mean Standard Deviation And 'F' Ratio Of Plyometric Training, Aerobic Training And Control Group On Breath Holding Time

Table 1 shows the analysed data of breath holding time. The breath holding time pre means were 29.48 for the plyometric training group, 29.37 for the aerobic training group and 29.29 for the control group. The resultant 'F' ratio of 0.01 was not significant at .05 levels, indicating that the three groups were no significant variances. The post test means were 33.57 for the plyometric training group, 34.55 for the aerobic training group and 29.32 for the control group. The resultant 'F' ratio of 66.19 at .05 levels, indicating that it was significant. The difference between the adjusted post-test means of 33.61 for the plyometric training group, 34.72 for the aerobic training group and 29.23 for the control group yield on 'F' ratio 151.77 which was significant at .05 level. The result of this study showed that there was a significant difference between plyometric training, aerobic training and control groups on breath holding time. Further to determine which of the paired means had a significant difference Scheffé S test was applied and the result was presented in Table.

Variables	Adjusted Post Test means			Mean Difference	Confidence Interval at .05
	Plyometric Training Group	Aerobic Training Group	Control Group		
Breath Holding Time	33.61		29.23	4.38*	2.75
	33.61	34.72		1.11	2.75
		34.72	29.23	5.49*	2.75

Table 2: Scheffé S Test For The Difference Between The Adjusted Post-Test Mean Of Breath Holding Time

The mean differences of breath holding time between the plyometric training group and control group, plyometric training group and aerobic training group and aerobic training group and control group were 4.38, 1.11 and 5.49 respectively. The results of the study shows that six weeks of training produced significant improvement in breath holding time for both plyometric training group and aerobic training group, the difference between the experimental groups are not significant but aerobic training group produced greater increase in breath holding time as compared to plyometric training group.

4. Discussion/Conclusion

The findings of the study showed that there was no significant difference between the pretest of breath holding time breath holding time.

The findings of the study showed that there was a significant difference between the posttest and adjusted posttest of breath holding time.

The results on physiological variable breath holding time assessed by abdomen touch method was presented and proved that there was a significant difference between post test means and the adjusted means. Thus, comparing to control group, plyometric training group and aerobic training group significantly improved the breath holding time of the basketball players. Scheffe's post hoc analysis presented in the table and proved that plyometric training and aerobic training was significant difference when compared to control group and there was no significant difference between the experimental groups on breath holding time among basketball players. The results by and large are in conformity with findings of Williford, Scharff-Olson and Blessing and Turner, Owings and Schwane.

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