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INFLUENCE OF STEP AEROBICS AND RESISTANCE VEST TRAINING ON VO2 MAX AMONG ATHLETES

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Abstract*:*

The purpose of the study was to find out the influence of step aerobics and resistance vest training on vo2 max among athletes. To achieve the purpose of the present study, forty five athletes from Madurai district, Tamilnadu were selected as subjects at random and their ages ranged from 18 to 28 years. The subjects were divided into three equal groups of fifteen athletes each. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (N=45) were randomly assigned to three equal groups of fifteen athletes each. The groups were assigned as step aerobic exercises, resistance vest training and control group in an equivalent manner. The group I underwent step aerobic exercises, group II underwent resistance vest training, group III acted as a control group. The two experimental groups were participated the training for a period of twelve weeks to find out the outcome of the training packages and the control group did not participated in any training programme. Analysis of covariance (ANCOVA) was applied because the subjects were selected random, but the groups were not equated in relation to the factors to be examined. Hence the difference between means of the three groups in the pre-test had to be taken into account during the analysis of the post-test differences between the means. This was achieved by the application of the analysis of covariance, where the final means were adjusted for differences in the initial means, and the adjusted means were tested for significance. Whenever the adjusted post-test means were found significant, the scheffe's post-hoc test was administer to find out the paired means difference. To test the obtained results on variables, level of significance 0.05 was chosen and considered as sufficient for the study. The significant mean difference does not exist among the experimental groups in the pre test on VO2 max. In testing post test mean difference among the experimental groups, it shows statistically significant on VO2 max. In testing the post adjusted mean among the experimental groups also predicts the above result.

Keywords: Step Aerobics, Resistance Vest Training, Vo2 Max, Athletes.

INTRODUCTION

Step aerobics was innovated by 'Gin Miller', circa 1989. It is a variation of traditional aerobics with the addition of a specially designed platform upon which one can step on and off during the workout, which would be more intense than walking but less intense than running. Step aerobics is distinguished from other forms of aerobic exercise by its use of an elevated platform (the step). The height can be tailored to individual taste by inserting risers under the step. Step aerobics classes are offered at many gyms and fitness centers which have a group exercise program. Step aerobics can also be involved in dancing games, such as Dance Revolution or In the Groove. Even so, the dynamics of the idea are more complicated than implied by the definition. Aerobics can be viewed as an intricate system of bodily supply and demand. That is, the body needs energy for any kind of activity and the need is filled by burning off the foods that we eat. Oxygen is the spark the fuel needs to burn regardless aerobics is the word in general use. The fact is that Cooper (1969) codified and organized what fitness means to many people. He is generally credited with being one of the main forces of the current fitness craze. The majority medical opinion is that aerobic programs strengthen heart muscle, increase the efficiency of lungs and offer other wonderful benefits. Aerobic exercise refers to exercise that involves or improves oxygen consumption by the body. Aerobics means "with oxygen", and refers to the use of oxygen in the body's metabolic or energy generating process. Many types of exercise are aerobic, and by definition are performed at moderate levels of intensity for extended periods of time. To obtain the best results, an aerobic exercise session involves a warming up period, followed by at least 20 minutes of moderate to intense exercise involving large muscle groups, and a cooling down period at the end. Step aerobics form of aerobics exercise distinguished from other types of aerobic exercise by its use of an elevated platform (the step). The height can be tailored to individual needs by inserting risers under the step. Step aerobics classes are offered at many gyms and fitness centers which have a group exercise program (Sarah, et al. 2006).

A weighted vest is simply a vest that is either made from a heavy material, or equipped with small

pockets that can be filled with tiny sand bags, small steel bars, or other weighted objects. The general purpose of a weighted vest is to add extra weight for body-weight exercises, walking, distance running or speed, agility and quickness drills. When it comes to performance, research has shown that using this type of extra load during sprinting or speed work requires your lower-body muscles to generate more force against the ground, and can lead to improvements in strength, power, and acceleration during running, as well as increased strength and efficiency during speed, power, and agility drills.A weight vest is a valuable fitness accessory that can be used for a variety of reasons. Some people wear such a vest during normal exercise for improving strength and losing weight. Athletes preparing for specific sporting events or to reach certain goals during training also use a weight vest. A weight vest is just what it sounds like, a heavy vest that contains weights. The heaviness of a weight vest can vary and the weight to use would depend on your fitness level. Weight vests can be bought as light as 1/2 pound or as heavy as 30 pounds, according to Fit Stream. Some are adjustable, allowing you to add or remove weight as needed (Rantalainen et al. 2012).

METHODOLOGY

The purpose of the study was to find out the influence of step aerobics and resistance vest training on vo2 max among athletes. To achieve the purpose of the present study, forty five athletes from Madurai district, Tamilnadu were selected as subjects at random and their ages ranged from 18 to 28 years. The subjects were divided into three equal groups of fifteen athletes each. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (N=45) were randomly assigned to three equal groups of fifteen athletes each. The groups were assigned as step aerobic exercises, resistance vest training and control group in an equivalent manner. The group I underwent step aerobic exercises, group II underwent resistance vest training, group III acted as a control group. The two experimental groups were participated the training for a period of twelve weeks to find out the outcome of the training packages and the control group did not participated in any training programme. Analysis of covariance (ANCOVA) was applied because the subjects were selected random, but the groups were not equated in relation to the factors to be examined. Hence the difference between means of the three groups in the pre-test had to be taken into account during the analysis of the post-test differences between the means. This was achieved by the application of the analysis of covariance, where the final means were adjusted for differences in the initial means, and the adjusted means were tested for significance. Whenever the adjusted post-test means were found significant, the scheffe's post-hoc test was administer to find out the paired means difference. To test the obtained results on variables, level of significance 0.05 was chosen and considered as sufficient for the study.

RESULTS

TABLE I
COMPUTATION OF ANALYSIS OF COVARIANCE OF MEAN OF STEP AEROBICS TRAINING, RESISTANCE VEST TRAINING AND CONTROL GROUPS ON VO2 MAX (SATG, RVTG & CG)

	SATG	RVTG	CG	Source of Variance	Sum of Squares	Df	Means Squares	F-ratio
Pre-Test Means	36.42	36.44	36.43	**BG**	0.006	2	0.003	0.03
				WG	3.431	42	0.082	
Post-Test Means	40.99	39.66	36.51	**BG**	158.870	2	79.435	93.14*
				WG	35.820	42	0.853	
Adjusted Post-Test Means	40.99	39.66	36.51	**BG**	158.875	2	79.438	91.41*
				WG	35.629	41	0.869	

Table – I reveals that the indicated that the obtained 'F'-ratio for the pre-test means among the groups on VO2 max were 36.42 for experimental group – I, 36.44 for experimental group – II and 36.43 for control group. The obtained 'F'-ratio 0.03 was lesser than the table 'F'-ratio 3.21. Hence the pre-test mean 'F'-ratio was insignificant

at 0.05 level of confidence for the degree of freedom 2 and 42. The post-test means were 40.99 for experimental group – I, 39.66 for experimental group – II and 36.51 for control group. The obtained 'F'-ratio 93.14 was higher than the table 'F'-ratio 3.21. Hence the post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 42. The adjusted post-test means were 40.99 for experimental group – I, 39.66 experimental group – II and 36.51 for control group. The obtained 'F'-ratio 91.41 was higher than the table 'F'-ratio 3.22. Hence the adjusted post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 41. It was concluded that there was a significant mean difference among step aerobics training group, resistance vest training group and control group, in developing VO2 max of the athletes.

FIGURE I
ADJUSTED POST TEST DIFFERENCES OF THE STEP AEROBICS TRAINING, RESISTANCE VEST TRAINING AND CONTROL GROUPS ON VO2 MAX (SATG, RVTG & CG)

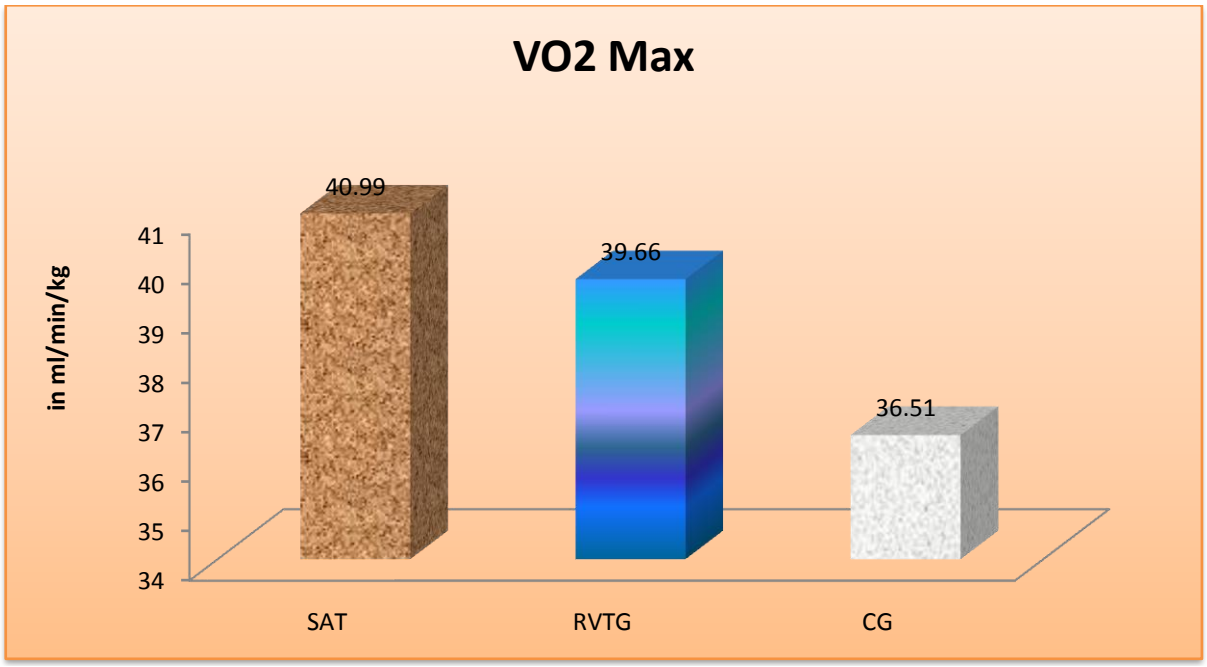

TABLE II
THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED POST TEST MEANS ON VO2 MAX

Adjusted Post-test means			Mean Difference	Required CI
Step Aerobics Training	**Resistance Vest Training**	**Control Group**		
40.99	**39.66**	---	1.33*	**0.85**
40.99	---	**36.51**	4.48*	
---	**39.66**	**36.51**	3.15*	

**** Significant at 0.05 level of confidence***

Table II shows the post hoc analysis obtained on adjusted post test means. The mean difference required for the confidential interval to be significant was 0.85. It was observed that the step aerobics training group significantly improved VO2 max better than the control group. The resistance vest training group significantly improved VO2 max better than the control group. The step aerobics training group significantly improved VO2 max better than the resistance vest training and control group.

CONCLUSION

1. The significant mean difference does not exist among the experimental groups in the pre test on VO2 max.
2. In testing post test mean difference among the experimental groups, it shows statistically significant on VO2 max. In testing the post adjusted mean among the experimental groups also predicts the above result.

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