



IMPACT OF CONCURRENT STRENGTH AND ENDURANCE TRAINING ON MEAN ARTERIAL PRESSURE

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ABSTRACT

The aim of this study was to examine the impact of concurrent strength and endurance training on mean arterial pressure. Thirty untrained men volunteers to participate in this study, the selected participants were studied Bachelor of Arts and Sciences, Annamalai University. Theirs age 18 to 21 years, height 156 to 170 cms, and weight 50 to 60 kg. They were assigned to experimental (n=15) and control (n=15) groups. They carried out 12 weeks concurrent strength and endurance training. Mean arterial pressure was measured before and immediately after training period. The data collected from the two groups prior to and post experimentation were statistically analyzed by analysis of covariance (ANCOVA). Result showed that concurrent strength and endurance training reduced mean arterial pressure.

Key words: Concurrent, Detraining and Mean Arterial Pressure

INTRODUCTION

Working on strength and endurance at the same time, whether be in the same session, alternative days, alternative sessions, etc. Countless numbers of recreational workout enthusiasts complete their strength and endurance training workouts during the same training session, or within hours of one another. Many people, athletes and non-athletes, take part in a combination of resistance and endurance training. These people are expecting to experience the benefits that these two different types of training have to offer. A number of studies have shown that performing these two types of training simultaneously can be detrimental to the gains that might be made in performing one type of training alone (Bell, *et al.*, 2000). Some of the research has noted negative consequences to concurrent training, while other findings are more positive. According to the NSCA, including strength training in an endurance training program can improve the ability of the heart, lungs and circulatory system to perform under conditions of high pressure and force production (NSCA, 2000).

METHODOLOGY

The aim of this study was to examine the impact of concurrent strength and endurance training on mean arterial pressure. Thirty untrained men volunteers to participate in this study, the selected participants were studied Bachelor of Arts and Sciences, Annamalai University. Their's age 18 to 21 years, height 156 to 170 cms, and weight 50 to 60 kg. The experimental procedures and study protocols,

which were fully explained to all subjects. They were randomly divided into two groups and each group consisted of fifteen participants. The mean arterial pressure was measured by Digital blood pressure monitor and the value are calculated by the method of $MAP = DP + 1/3 (SP - DP)$. The data were collected before and after the twelve weeks of concurrent strength and endurance training.

TRAINING PROGRAMME

The experimental group performed both the strength and endurance training programme three sessions per week on alternative days for 12 weeks. General exercises given to participants for one week though they were untrained. The strength training programme was a total body workout consisting of 3 sets of 6-10 repetitions on 8 exercises that trained all the major muscle groups. A percentage of intensity of each exercise was determined by one-repetition maximum of each subject's for every week. The intensity and number of repetitions performed for each exercise changed once in two weeks. The endurance training consists of 20-40 minutes running 3 times per week with 65-80% HRR. The running intensity was determined by a percentage of heart rate reserve (HRR). Every odd numbered week they performed the strength training in the morning session and endurance training in the evening session. Every even numbered week they performed endurance training in the morning session and strength training in the evening session.

STATISTICAL TECHNIQUE

The data collected from the two groups prior to and post experimentation were statistically analyzed

RESULTS

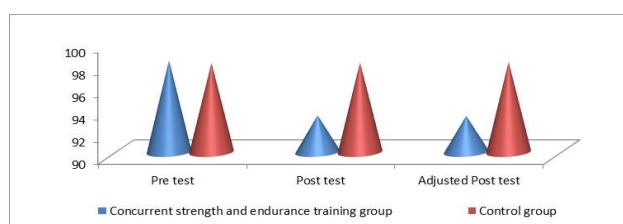
Analysis of Covariance on Mean Arterial Pressure of Concurrent Strength and Endurance Training and Control Groups

	Concurrent strength and endurance training group	Control group	S o V	Sum of Squares	df	Means Squares	'F' ratio
Pre test	98.25	98.01	B	0.45	1	0.45	0.30
Mean SD	5.05	3.28	W	508.94	28	18.17	
Post test	93.30	98.07	B	170.88	1	170.88	26.93*
Mean SD	2.08	2.89	W	177.66	28	6.34	
Adjusted	93.26	98.11	B	175.79	1	175.79	34.78*
Post test Mean			W	136.46	27	5.05	

(The required table value for significance at 0.05 level of confidence with degrees of freedom 1 and 27 is 4.21 and degrees of freedom 1 and 28 is 4.20)

The adjusted post test mean on mean arterial pressure of experimental and control groups are 93.26 and 98.11 respectively. the obtained 'F' ration value of 34.78 for adjusted post test mean on mean arterial pressure of experimental and control groups was greater than the required table value of 4.21 for the degrees of freedom 1 and 27 at 0.05 level of confidence. Hence it was concluded that due to the effect of twelve weeks of concurrent strength and endurance training induced to reduce on mean arterial pressure of the subjects significantly.

Figure – I Cone Diagram of the Data on Mean Arterial Pressure of Experimental and Control Groups



DISCUSSION

The result of the study indicates that the mean arterial pressure of concurrent strength and endurance training group decreased significantly by underwent the twelve weeks of concurrent training programme. These results are conformity with the following findings. Figueroa & others (2011) documented that combined resistance and endurance exercise training, resulted in decreased arterial pressure. Davis and others (2008) evaluated the effects of concurrent strength and aerobic endurance training, and found that serial concurrent exercise reduced systolic and diastolic blood pressure.

to find out the significant difference if any, by applying the alaysis of covariance (ANCOVA). In all the cases statistical significance was fixed at 0.05 levels.

CONCLUSION

The conclusion of the study pointed out that concurrent strength and endurance training groups decreased on mean arterial pressure due to the twelve weeks of concurrent training programme.

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