RESEARCH PAPER | Physical Education | Volume : 3 | Issue : 8 | Aug 2013 | ISSN - 2249-555X

Impact of Alternate Low and High Intensity Resistance Training on Cardio-Vascular Efficiency among Adolescents

KEYWORDS: Alternate Low and High Intensity Resistance, Cardiovascular Efficiency

Bhim Singh

Research Scholar, Techno Global University, Shilong (Meghalaya)

ABSTRACT *The purpose of the present investigation was to determine the impact of alternate low and high intensity resistance training on cardiovascular efficiency among adolescents. To achieve this forty five physically active and interested students (N = 30) were selected as subjects and their age group ranged between 15 and 18 years. The subjects were categorized into two groups randomly. Group I alternate intensity resistance training group (AIRT), group II control group (CG) and both*

group had fifteen (N = 15) subjects. Both experimental groups underwent their respective experimental treatment for eight weeks, 3 days a week and a session on each day. Control group was not exposed to any specific training programme apart from their curriculum. Cardiovascular efficiency was selected as dependent variable for this study. The collected data was analysed using t-test, to test significant difference between mean. The result of the study revealed that alternate

low and high intensity resistance training (AIRT) produced significant improvement on cardiovascular efficiency (p £ 0.05) as compared to control group (CG).

Introduction

Youth sports have become more popular and in many ways, more competitive. Many young athletes and parents are seeking way to achieve a competitive edge. The physical education scientists have been trying to develop new methods of training and techniques to attain higher level of performance in sports. Physical fitness is one of the most important factors that determine the performance level of an individual. Resistance training is an anaerobic form of exercise. It is caused to enhance the ability of the body to perform at very high force or power outputs for a very short period of time (Baechle, 1994). Progressive resistance training is a muscle training programme in which the amount of resistance is systematically increased as the muscles gain in strength (Jensen & Fisher, 1979). The adaptation changes and health implications of resistance exercise are very dynamic and variable to each individual. It is nothing but weight training. In strength training load refers to the mass or amount of weights utilized for specific exercises. It is an anaerobic form of exercises (Teng et al., 2008). Resistance training is performing with weights, either free weight, the weight on a gymnasium machine or own body weight. It will help to improve the strength, power and size of muscle (Bloomfield, 1994). The percentage of one repetition maximum (1RM) method was used in this training programme. In resistance training, gradually increasing the intensity (weights) is known as the progressive method. In the present investigation for the progressive resistance training group, progression was achieved by increasing the intensity by 5% every week. In the alternate low and high intensity resistance, the intensity is first decreased and then increased during alternative weeks for recovery and overload respectively. In this study, for the alternate low and high intensity resistance training group, the intensity was first decreased by 5% from 65% of 1RM during the first week and then increased by 10% in the second week. This progression was maintained throughout the experimental period Cardio-vascular efficiency is a common term used in strength and conditioning and is often considered an essential element of many sports and activities. A boxer dodging a punch, a ballet dancer completing a pirouette, or a wrestler finishing a take-down could all be considered examples of Cardio-vascular efficiency. However, individuals involved in the development and improvement of sports performance often regard Cardio-vascular efficiency as a locomotors skill whereby an athlete changes direction. This type of movement is frequently observed in most field and court sports such as soccer, basketball, football, and lacrosse. In this light Cardio-vascular efficiency is commonly defined as the ability of heart and lungs to tale in and to transport adequate amounts of oxygen to the working muscles for activities that involve large muscles massed, to be performed over long periods of time. (Clarke and Clarke 1987).

Materials and method

The purpose of the study was to analyze the impact of Alternate low and high intensity resistance training on Cardio-vascular efficiency of adolescents. To achieve this, Thirty (N = 30) interested students of schools and colleges from Sirsa District, Haryana, were randomly selected as subjects and their age ranged between 15 to 18 years. The subjects are categorized into two groups randomly: Group I alternate intensity resistance training group (AIRT), group II control group (CG) and each group had fifteen (N = 15) subjects. Cardio-vascular efficiency was selected as variable for this study. The Cardio-vascular efficiency was measured by using Harward step testt (Lucien Brauwa, 1943). Control group was not exposed to any special training apart from their regular activities. In alternate intensity training, the intensity was decreased and increased in alternative weeks. The training groups underwent their respective training for 8 weeks, 3 days per week and a session on each day. Before the commencement of the experimentation, the investigator recorded 1RM for the group taking each subject separately. After that the group performed the following exercises 1.bench press 2. half squat 3.push press 4. heel raises 5.arm curl 6.leg curl 7.leg press 8. military press 9.sit ups 10.medicineball exercises. The intensity ranged from 60% to 95% of 1RM. These exercises were performed for 90 minutes in a day. Data were collected one day before and after the experiment.

Table – I

Percentage of Intensity, Repetitions and Sets of Training

Volume : 3 | Issue : 8 | Aug 2013 | ISSN - 2249-555X

for Experimental Group

Group	Compo-nents	Weeks							
		I	II	III	IV	V	VI	VII	VIII
Alternate Low and high intensity reastance training	Intensity	65	60	75	70	85	80	95	90
	Repotion	10to 12	12to 14	10to 12	8to 10	6to 8	4to 6	4to 6	6to 8
	Sets	2	2	2	2	3	3	3	3

Data Analysis

Mean and standard deviation were calculated for Cardio-vascular efficiency of training group, and the data were analyzed by using t-test and find out the significant difference between the means. All analysis was carried out using SPSS version (Field, 2000) and statistical significance was set to priority at $p<0.05$.

Results

Cardio-vascular Efficiency

Table – I

To find out significant difference between Experimental Group and Control Group at pre-test level

	Pre- test				
	N	Mean	S.D	SED	t
AIRT	15	83.18	0.40	.15	1.249
CG	15	82.99	0.55		

Significant, p 0.05. (df=28)

The mean, SD and t-test were applied on cardio-vascular efficiency of the pre mean scores of alternate low and high intensity resistance training and control groups have been analysed and presented in Table - I. The above table indicates that the pre test mean of AIRT group and control group is 83.18 and 82.99 respectively. The pret test SD of AIRT group and control group is .4033 and .55 respectively. The obtained 't' value for pret test mean on cardio-vascular efficiency was .55, which was less than table value of 1.96 at 0.05 level of confidence; hence there was no significance difference in cardio-vascular efficiency between experimental and control groups at initial level and it was presented in Table I.

Table - II

To find out significant difference between Experimental Group and Control Group at pre-test level

	Post - test				
	N	Mean	S.D	SED	t
AIRT	15	96.14	4.52	1.347	9.326
CG	15	83.58	3.98		

***Significant, p 0.05. (df=28)**

The mean, SD and t-test were applied on cardio-vascular efficiency of the post mean scores of alternate low and high intensity resistance training and control groups have been analysed and presented in Table - II. The above table indicates that the post test mean of AIRT group and control group is 96.14 and 83.58 respectively. The post test SD of AIRT group and control group is 4.52 and 3.98 respectively. The obtained 't' value for post test mean on cardio-vascular efficiency was 9.326, which was more than table value of 1.96 at 0.05 level of confidence; hence there exist difference in cardio-vascular efficiency between experimental and control groups. Since, two groups were compared, whenever obtained't' ratio for post test was found to be significant and it was presented in

Table II.

Conclusion

Resisted exercise helps to develop or maintain physical fitness and overall health. It is evident from a number of the adaptations that occur with resistance training that there are several health-related benefits. Resistance training has been shown to increase factors associated with cardiovascular endurance. From the results, the different modes of resistance training can be improved cardiovascular endurance during the age between 15 and 18 years of boys. Any practical application requires careful implementation and individual experimentation. The result of the study indicated that there was significant improvement on cardiovascular endurance due to eight weeks of alternate low and high intensity resistance training. From the results, we recommend that resistance training is one of the methods to improve cardiovascular endurance.

REFERENCE

• Baechle Thomas, R. (1994). Essentials of Strength Training and Condition. | Champaign: Human Kinetics. | | • Boomfield, J., Ackland,T & Elliott, B. (1994). Applied Anatomy and Biomechanics in Sports, London: Blackwell Scientific Publications, p. 255. | | • Craig, B.W. (2004). What is the scientific basis of speed and agility?, Strength and Conditioning 26(3), 13-14. | | • Drabik, J. (1996) Children & Sports Training: How Your Future Champions | Should Exercise to be Healthy, Fit, and Happy. Island Pond: Stadion Publishing Co. | | • Ellis, L., P. Gastin, S. Lawrence, B. Savage, A. Buckeridge, A. Stapff, D. Tumilty, A. Quinn, S. Woolford, and W. Young. (2000) Protocols for the Physiological Assessment of Team Sports Players. In: Physiological Tests for Elite Athletes. C.J. Gore, ed. Champaign: Human Kinetics, pp. 128- 144. | | • Field, A. (2000). Discovering Statistics Using SPSS for Windows, London: Sage Publications. | | • Jensen Clyne, R and A. Garth Fisher (1979). Scientific basic of athletic conditioning, Philaldelphia: Lea and Febger. | | • Kansal K. Devinder (1996) Test and measurement in sports and physical education, DVS Publication Kalkaji, New Delhi-110019. | | | |