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Effects of weight training on some physiological components of college students

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Abstract

The main purpose of the study is to find the effects of weight training on physiological components of college students. For the purpose of the study 30 students were selected randomly from Late Dattatraya Pusadkar Arts College, Nandgaon Peth, Amravati. Age of the subjects ranged from 18 to 23 years. All the subjects were having four day weight training program. A specific weight training programme was conducted for the duration of seven weeks. The following physiological components were selected for the study- hemoglobin and cardio-vascular endurance. Pre and post tests were conducted before and after the training programme. For analyzing the data, mean, Standard deviation and t-test were computed by means of Microsoft Excel 2007. The standard authorize beginners weight training programme was adopted for this paper. In the beginners training programme beginners need to run slow and concentrate on the basic exercises and avoid over training at any cost. If you are under weight then just run 3-4 days a week and if you are overweight then add cardios 2-3 time a week after exercise. The data collected on 30 subjects before and after seven week training program of weight training on physiological variables were analyzed by using the 't' test. The result of the effect of seven weeks weight training program had shows improved performance with regard to cardio-vascular endurance which is significant and hemoglobin is insignificant.

Keywords: Weight Training, Hemoglobin, cardio-vascular endurance.

1. Introduction

In addition to a medical examination for the trainee, it would be desirable to have a preliminary assessment in order to provide a workable starting point. Pollock suggests that the training program be individualized, heart rates checked periodically, warming up and tapering-off procedures observed, leg and foot problems anticipated and prevented, and variety provided for motivation.

To elicit a central circulatory training effect, the training activity should produce a heart rate between 120 and 140 beats per minute for at least five minutes. Jogging, swimming, and cycling are good examples of activities to use as training media. However, they should be performed at a sub maximum level to prevent major mobilization of anaerobic processes. This involves the intensity and duration of exercise. If a trainee jogs at 80 percent of maximum for 30 minutes, depending somewhat on that person's level of fitness, the major energy source should be the oxygen-transport system (aerobics). This type of training influences muscle capillaries and fuel storage, myocardial efficiency through increased contractile power and stroke volume, and the respiratory processes.

When there is no qualified person to assist in the training, the individual who desires to begin a fitness program should take certain precautionary measures. In general, the exercise and training program should be selected according to one's age and physical condition. Fitness is an individual matter; therefore, the amount and kind of exercise are determined by the individual matter; therefore, the amount and kind of exercise are determined by the individual's degree of fitness. Too much exercise at any one time can be harmful. The best guide concerning the amount of exercise at any one time can be harmful. The best guide concerning the amount of exercise needed is the ability to recuperate following activity. Recuperation should be fairly prompt. An individual has exercised too vigorously if muscles become unduly sore for several days afterward, if the heat continues to pound rapidly several minutes after activity has stopped, if restlessness prevails the night following activity, if there is undue fatigue the following day, and if undue weakness is prevalent following a couple hours of rest.

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As a general rule, an individual out of training should not compete with or against the trained individual in strenuous activities. Also there is a need for modification of activities as one grows older.

Regular activity with a prolonged training session (30 minutes to 1 hour minimum) is needed to achieve optimum levels of fitness. Also, the activity must be strenuous enough to place stress on the heart and respiratory system and to produce; wet. Exercise must be frequent-daily if possible-but under ideal conditions three times per week might be enough.

Duration, intensity, and frequency are basic in any fitness program. Exercise must be carried past a feeling of discomfort or perhaps even pain, a point that is frequently referred to as one's psycho logic limits. As tolerance for exercise is increased the individual can begin to reduce the difference between psycho logic and physiologic limits.

It is at this point in training with repetition of sessions of intensive type of activity that the trainee begins to experience the phenomenon of "second wind" a physiologic adjustment of the cardio respiratory system to the increased demands for oxygen and the elimination of the oxidation products. When second wind occurs, the participant obtains relief from the distress and discomfort of breathlessness and lethargy and is able to continue effort with renewed vigor and efficiency. While the physiologic basis of second wind is not clearly understood, the changes in several physiologic basis of second wind is not clearly understood, the changes in several physiologic functions an onset are easily distinguished. There appear to be adaptations in not only the cardio respiratory system, but also the muscles, peripheral circulation, and the brain.

Another principle involved in fitness concerns the application of the overload. This principle is in operation when the exercise load is increased in intensity. Muscles gain in size and strength in only one of two ways; through maturation and through the application of the overload principle. This principle can be applied in three ways; (1) by increasing the resistance (weights, etc.), (2) by increasing the speed of repetitions, and (3) by increasing the number of repetitions.

The trainee should have knowledge of how the overload can be used in acquiring muscular strength, muscular endurance, and cardiovascular endurance.

The overload principle seems to operate more effectively in youth than it does not negate the need for exercise although it may alter the amount required. One's potential for strength, endurance, and agility is highest in the mid-twenties and after that, unless kept up by some type of motivation, slowly declines. The need for some exercise is always there. Studies show that not only middle-age people, but also people between ages 50 and 80 can undergo training and expect significant improvements in physical abilities. Also, it has been shown that the breathing capacity of young girls can be improved to the same extent as boys through running.

The individuals exercising must be knowledgeable regarding the principles of training. In addition to the ones already mentioned, they should know the value of the warm-up and the cool-down or tapering-off. Most people are more cognizant of the necessity for the warm-up than they are for the trainee to continue with some moderate exercise following strenuous activity so that the muscles may aid in increased venous circulation to enhance the flow of blood out of the lower extremities and to remove the excess waste products from the cells. The trainees should be aware of the cause for muscle soreness, muscle cramps, and the "stitch" in the side and know how these physiologic conditions may be avoided and treated if necessary. They should know that there is likely to be a

period of retrogression when they first begin work and performance will be poorer for a time.

2. Material and Methods

For the purpose of the study 30 students were selected randomly from Late Dattatraya Pusadkar Arts College, Nandgaon peth, Amravati. Age of the subjects ranged from 18 to 23 years. All the subjects were having four day weight training program. A specific weight training programme was conducted for the duration of seven weeks. The following physiological components were selected for the study- Hemoglobin and Cardio-Vascular endurance. Pre and post tests were conducted before and after the training programme. For analyzing the data, mean, Standard deviation and t-test were computed by means of Microsoft Excel 2007.

Criterion Measure

The criterion measures selected to collect the data for testing of hypothesis were as under.

1. Hemoglobin: Sahli Hemometer was used to measure hemoglobin percentage in gm/100ml.
2. Cardio-Vascular endurance: Hard-ward step test was used to measure Cardio-Vascular endurance.

Weight training programme for the College Students

The standard authorize beginners weight training programme was adopted for this paper. In the beginners training programme beginners need to run slow and concentrate on the basic exercises and avoid over training at any cost. If you are under weight then just run 3-4 days a week and if you are overweight then add cardios 2-3 time a week after exercise.

Day	Components	Type	Sets and Repetition
1 & 4	Chest	Bench press	3X8
		Inclined Bench press	2X8
		Parallel bar dips	2X capacity Reps.
	Shoulders	Front Press	2X8
		Side raises or bend over lateral raises or front raises	2X8
	Triceps	Triceps Barbell extensions	2X8
		Pulley push down or French press or kick back or triceps dips	1-2X8
Abs	Sit-ups or leg raises	2X20 slow	
2 & 5	Legs	Calf raises	2X maximum reps
		Squats	3X8
		Leg Curls	1X8
	Back	Chinning	2X maximum reps
		Lats pull down	2X8
		Ground pulley or T-bar rows or barbell rows or dumbbell rows	2X8
	Biceps	Barbell Curls	2X8
		Bumble Curls or preacher curls or concentrate curls or hammer curls	1-2X8
Traps	Shrugs	2X8	
Cardios-20-30 minuetts if one is over weight			
3, 6 & 7	Rest not even abs or running etc.		

3. Statistical Analysis

Findings

The data collected on 30 subjects before and after seven week training program of weight training on physiological variables were analyzed by using the 't' test. Therefore the separate tables and graphs have been presented for each variable as follows.

Table 1: Significance difference of mean of hemoglobin between pre and post test

Variable	Test	Mean	SD	SE	MD	Ot	df	Tt
Hemoglobin	Pre	14.186	0.875	0.21	0.202	0.959	58	2.00
	Post	14.389	0.755					

Significance at 0.05 level.

Table-1 indicates that the obtained ‘t’ value of (0.959) between pre and post of college students in hemoglobin was found to be insignificant at 0.05 level of confidence as we obtained

value of (2.00) with 58 degree of freedom. Graphical representation of above table is made in figure No. 1.

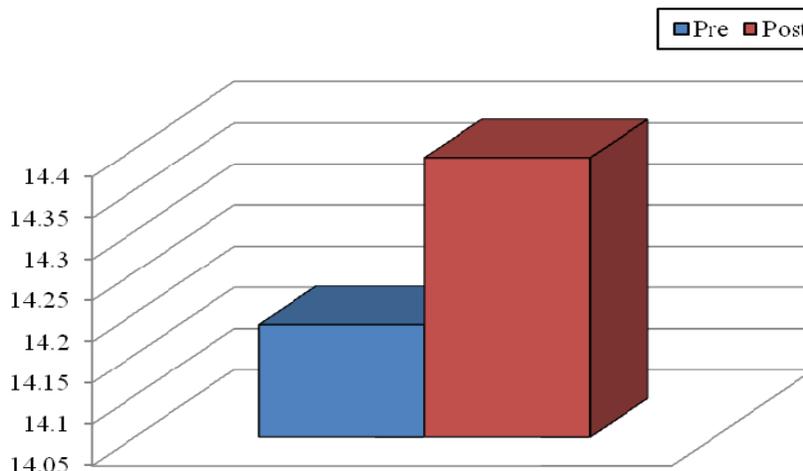


Fig 1: Mean value of Pre and Post of Hemoglobin

Table-2: Significance difference of mean of cardio-vascular endurance between pre and post test

Variable	Test	Mean	SD	SE	MD	Ot	df	Tt
Cardio-Vascular endurance	Pre	67.033	4.180	1.21	5.575	4.595	58	2.00
	Post	72.608	5.165					

Significance at 0.05 level.

Table-2 indicates that the obtained ‘t’ value of (4.595) between pre and post of college students in cardio-vascular endurance was found to be significant at 0.05 level of confidence as we obtained value of (2.00) with 58 degree of freedom. Graphical representation of above table is made in figure No. 2.

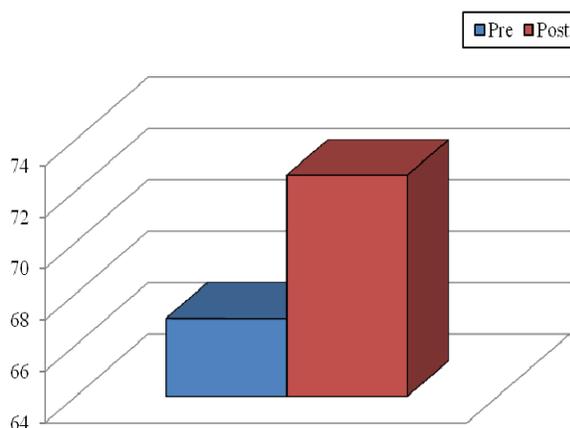


Fig 2: Mean value of Pre and Post of cardio-vascular endurance.

4. Conclusion

It is concluded that the effect of seven weeks weight training program had shows improved performance with regard cardio-vascular endurance which is significant and in hemoglobin performance is improved but it is insignificant.

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