Volume-4, Issue-9, Sept-2015 • ISSN No 2277 - 8160

Research Paper Engineeering

Effect of Resistance Training on Cardiovascular Fitness on College Men

Dr. Saleem M. K Asst. Professor,Govt. College of Physical Education, Calicut

Dr. Jince Kappan Asst. Professor, Amal Jyothi College of Engineering, Kanjirapally

ABSTRACT

The purpose of the study was to determine the effects of eight weeks of resistance training programme on selected physiological variables such as, anaerobic capacity, aerobic capacity, and resting pulse rate of college men. The subjects of the study were 50 college men from place, Kerala state. The subjects were randomly assigned into two groups that was an experimental group (N=25) and a control group (N=25). The experimental group participated in resistance training programme three days in a week for a period of eight weeks. The control group did not participate in any training except their day to day activities. All the subjects were tested in the selected physiological variables such as aerobic capacity, anaerobic capacity, and resting pulse rate before and after eight weeks of resistance training programme.

Aerobic capacity measured with Forestry step test and the pulse counted was taken for 15 seconds, after 15 seconds of the completion of test. It was tabulated with norms and expressed as VO2 Max (ml Kg–1 min–1). Anaerobic capacity measured with Sargent vertical jump test was taken and expressed in kgm/s. The number of inches between the reach and jump measured to the nearest inch further converted into centimetres and derived in kgm/s-1 from the equation [p=2.21 wt D]. Resting pulse rate was taken at the radial artery and the pulse counted for one minute was recorded in number of beats per minute.

The data pertaining to selected physiological variables were analysed by paired 't' test to determine the difference between initial and final mean for experimental and control group. Significant difference were existing at 0.05 level (0.05 = 2.064) in experimental group following eight weeks of resistance training in anaerobic capacity, aerobic capacity, and resting pulse rate. In the case of control group there were no changes in any of the selected variables.

KEYWORDS : Resistance Training, Cardio Vascular Fitness

INTRODUCTION

Each day, virtually all people participate in some type of physical activity. For some, this may mean making their bed or preparing meals. For others, this might entail high-intensity exertion. Such as running a 1500 meters race. Common to all activities is the involvement of the cardiovascular responds that take place can be brief and relatively minor, such as an increase in heart rate as one stands up from a chair and walks from one room to another. Alternatively, cardiovascular responses can be quiet complex; to the extent that blood flow during intense mountain biking is increased and preferentially directed toward the more metabolically active skeletal muscles. And while much is already known about how the cardiovascular system adapts or responds to an acute bout of exercise, many key questions still remain unanswered. A thorough knowledge of cardiovascular physiology, its many terms, and acute exercise responses will help serve persons entering career in medicine, and athletic training.

Performance in any sports activity depends to a large extent of physical fitness. Sports trainers concentrate on improving the physical fitness and mental abilities of a player, that is speed, strength, endurance and flexibility. The extent of the contribution of these factors varies in different individuals, in different sports, at different stages of development and different level of competition. The importance of these factors must be identified, prioritized, assessed and modified to exhibit excellence in performance. Training is usually defined as a "systematic process of repetitive, progressive, exercise or work involving also the learning process and acclimatization".

METHDOLOGY

The purpose of the study was to determine the effects of eight weeks of resistance training programme on selected physiological variables such as, anaerobic capacity, aerobic capacity, and resting pulse rate of college men. The subjects of the study were 50 college men from place, Kerala state. The subjects were randomly assigned into two groups that was an experimental group (N=25) and a control group (N=25). The experimental group participated in resistance training programme three days in a week for a period of eight weeks. The control group did not participate in any training except their day to day activities. All the subjects were tested in the selected physiological variables such as aerobic capacity, anaerobic capacity, and resting pulse rate before and after eight weeks of resistance training programme.

Aerobic capacity measured with Forestry step test and the pulse counted was taken for 15 seconds, after 15 seconds of the completion of test. It was tabulated with norms and expressed as VO2 Max (ml Kg–1 min–1). Anaerobic capacity measured with Sargent vertical jump test was taken and expressed in kgm/s. The number of inches between the reach and jump measured to the nearest inch further converted into centimetres and derived in kgm/s-1 from the equation [p=2.21 wt D]. Resting pulse rate was taken at the radial artery and the pulse counted for one minute was recorded in number of beats per minute. The data pertaining to aerobic power, resting pulse rate, anaerobic power, for both experimental and control groups were tested by 't' test. The level of significant was chosen at 0.05 level.

FINDINGS

To find out the significant mean difference between initial and final scores for experimental and control groups 't' test was used. The mean difference of the criterion measures for the control and experimental groups are presented in tables.

TABLE I

Groups	No.	Initial mean	Final mean	Mean Diff.	't' ratio
EXP.	25	39.12	42.04	2.92	10.13*
CONT.	25	40.28	39.04	1.24	1.16

DIFFERENCE IN MEAN OF EXPERIMENTAL AND CONTROL GROUPS ON AEROBIC CAPACITY (ml Kg^{-1} min^{-1})

*** Significant at 0.01 (24, 2) = 2.797.**

Table I reveals that in the case of the experimental group significant changes were noticed in aerobic capacity following eight weeks of resistance training. Since the 't' value obtained for aerobic capacity was 10.13, which is higher than the required table value.

TABLE II
DIFFERENCE IN MEAN OF EXPERIMENTAL AND CONTROL GROUPS ON VO_2 MAX (ml Kg^{-1} min^{-1})

Group	No.	Initial mean	Final mean	Mean diff	't' ratio
EXP.	25	39.12	42.04	2.92	10.13*
CONT.	25	40.28	39.04	1.24	1.16

* Significant at 0.01 (24, 2) = 2.797.

Table II reveals that in the case of the experimental group significant changes were noticed in maximum oxygen consumption following 12 weeks of resistance training. Since the 't' value obtained for maximum oxygen consumption was higher than the required table value. In the case of control group there were no significant changes.

TABLE III
DIFFERENCE IN MEAN OF EXPERIMENTAL AND CONTROL GROUP ON ANAEROBIC CAPACITY

Groups	No	Initial Mean	Final Mean	Mean Diff.	't'ratio
EXP.	25	92.28	94.66	2.38	5.92*
CONT.	25	96.98	96.7	0.28	0.40

*** Significant at 0.01 (24, 2) = 2.797.**

Table III shows that in the case of experimental group significant changes were noticed in an aerobic capacity following eight weeks of resistance training programme. The obtained 't' values was higher than the required table value. In the case of control group there was no significant changes.

TABLE IV
DIFFERENCE IN MEAN OF EXPERIMENTAL AND CONTROL GROUP ON RESTING PULSE RATE (in beats/minutes)

Group	No	Initial Mean	Final Mean	Mean Diff.	't' ratio
EXP.	25	70	68	2	8.61*
CONT.	25	72.84	73.04	.2	1.11

*** Significant at 0.01 (24, 2) = 2.797.**

Table IV revels that in that in case of the experimental group. significant changes was noticed in resting pulse rate following eight weeks of resistance training programme. Since the 't' value obtained was 8.61 which was higher than the required table value of 2.797. In the case of control group, there was no significant change.

DISCUSSION ON FINDINGS

All the subjects of the experimental group involved in this study were under gone resistance training programme for a period of eight weeks. From the tables it was evident that in the case of selected physiological variables such as aerobic capacity, anaerobic capacity, and resting pulse rate there were significant changes noticed after eight weeks of resistance training programme. As regard to control group no significant changes were seen in the selected physiological variables.

Aerobic capacity of the experimental group improved after following eight weeks of resistance training. This may be attributed to the fact that as muscles were exercised the heart rate, respiratory functions and the muscles undergone the work load for eight weeks. These load caused the physiological changes such that the cardio respiratory system was adjusted slowly and thus improved in efficiency. When the mean score of the experimental group in aerobic capacity was compared with norms of aerobic fitness category of Forestry step test for college boys. The subjects ranked only fair (initial mean 39.12), prior to the training programme while after eight weeks of training they had progressed to a better grade 'good' (final mean being 42.04 ml Kg^{-1} min^{-1}).

The resting pulse rate for the experimental group was decreased due to adaptation of following the weight training programme. This is due to the vigorous work out done by men who increased the parasympathetic activity in the heart while decreasing the sympathetic drive which would have probably improved the efficiency of the heart. From these findings it is quite interesting to know that the college males have positive influence upon their physiological variables due to the training programme.

REFERENCES

Barrow Harold M. and Rossmary McGee. A Practical Approach toMeasurement in Physical Education. 2nd ed. Philadelphia: Lea and Febiger, 1971. | Foss M. L. and S. J. Keteyian. Fox's Physiological Basis for Exercise and Sport. Newyork: United States, Edward E. Barteell, 1998. | Garrett E.W. and T. Donald. Exercise and Sports Sciences. Philadelphia: East Washington, Williams and Wilkins, 2002. | Hardayal Singh. Sports Training General Theory and Methods Patiala: Nethaji Subash National Institute of Sports, 1984. | Hoffman J. Physiological Aspects of Sports Training and Performance. Newyork: Simon and Schuster,1992. | Komi P. V. Strength and Power in Sport. Oxford: United Kingdom: Blackwell Scientific Publications, 1991. | Sharkey B. J. Physiology of Fitness. Campaign, Illinosis: Human Kinesthetic Publishers, 1984. | Willmore J. H. Strength, Power and Muscular Endurance in Athletic Training and Physical Fitness. Boston: Allgn and Batter Inc., 1997. |