

## **Effects of Endurance Training on Cardio Respiratory Functions of Sedentary Students**

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### **Abstract:**

The purpose of the study was to examine the effects of endurance training on the cardio respiratory functions of students. Twenty sedentary male students studying in different colleges of the Swami Ramanand Teerth Marathwada University Nanded, Maharashtra (India) had attended the study voluntarily the mean age of these students were  $20.3 \pm 2.66$ , height were  $172.33 \pm 5.99$  cm. the weight were  $69.29 \pm 4.01$  kg. Tests at the beginning of 2011-2012 academic years in this study, resting heart rate vital capacity, breath holding capacity after expiration and inspiration and respiratory rate were taken from the sedentary students.

The applied programme was planned for twelve weeks, 4 days a week and for 60 minutes a day, as the statistical techniques. Mean scores and standard division were take and paired t-test was applied. The significant effects on resting heart rate ( $t=$ ,  $p<.05$ ), respiratory rate ( $t=$ ,  $p<.05$ ) were found in sedentary students . In the study it was found there is a significant decrease resting heart rate and respiratory rate however significant increases in the Vital capacity.

According to the result we can conclude that endurance training is not only beneficial to increase the cardio respiratory function and to improve endurance ability of sedentary students but also improve the cardio respiratory functions of players of various sports disciplines, adolescence and childhood.

### **Introduction**

Sedentary life style is a seriously growing health problem. Epidemiological study has shown that sedentary life style will contribute to the early onset and progression of life style disease such as cardiovascular disease, hypertension, diabetes and obesity ( [Hulens Met.al. 2002](#)).

The importance of endurance training linked to a higher quality of life as well as academic achievements. It is well documented that regular physical activity in childhood and adolescence improve strength & endurance, health build, healthy bones & muscles, hips control weights, reduce anxiety and stress increases self esteem and may improve cardio reparatory function. Physical endurance is recognized as an important component of health (limb et.al 1998; ) and it may be important for the performance of functional activities and quality of life (noreau and Shepherd 1995; Stewart et.al. 1994). Low endurance may result in high physical strain during the performance of Study. As a consequence, activity levels may decrease due to fatigue and discomfort, exacerbating endurance.

Keeping in view the fact that student's endurance has important health consequences during their study, a large number of studies on endurance have been reported from different Country of the world. Data on the endurance training from Turkey ( Oner et.al. 2004, ), England ( Campbell & Pohndof, 1961), Swiden ( Orjan et.al. 2005), U.S.A (Malina,2007), Hong Kong (Kwok Kei Mak et. al., 2010), Japan (Inakuchi et.al.2007) are available in the literature all these reports maid the Sports trainers realize the importance the contribution of training in the development of endurance.

Day by day the importance of young population is being declared in many platform by international organizations, politicians and scientists according to the statistics of world health organization the deficiency of physical activates of adults are approximately at 17% (Berggren, 2005); Angilley and Haggas, 2009) in the world. In developed countries 10 to 15% of young population do sports (Yitzhak; 2009), the percentage decrease through the

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developing and undeveloped ones. Participation to physical activities is rapidly decreased specially in the college and school education, academic education in the school focuses on the specialization in preferred fields, Sinku S.K. (2009) implied that physical education and sports lessons in Swami Ramanand Teerth Marathwada University. Endurance training has an important role in the education of new generation in the frame of physical and mental health and now days it is placed as a piece of education in the developed societies, education trainings. The study regarding the endurance trainings can be placed in a special order in the subject of physical education, sports sciences and medical sciences.

### **Materials and Methods**

#### **Subjects**

Twenty students from various colleges of Swami Ramanad Teerth Marathwada University Nanded, Maharashtra India voluntary to participate in the endurance training programmes. Exclusion criteria were the presence of chronic medical conditions such as asthma, heart disease or any other condition that would put the subjects at risk when performing the experimental tests. The subjects were free of smoking, alcohol and caffeine consumption, antioxidant supplementation and drugs during the trainings. They completed an informed consent document to participate in the study. The age, height, weight, resting heart rate and respiratory rate of all subjects were measured in School. All 20 acted as experimental group for endurance training programme with no control groups.

#### **Applied Training**

Training was planed as Six weeks, 5 days a week and 60 min. a day. Exercise that use large muscles groups that can be maintained continuously and are aerobic in nature. These exercises include walking, running, jogging and jumping. The exercise session should consist the following procedure:

Warm - up period will be approximately 10 min., this was combine callisthenic – type stretching, exercise and progressive aerobic activity. However cool down period was 5 to 10 min.

#### **Parameters Measurements**

Heart rate was measured by counting radial pulse for a minute. The respiratory rate was taken by keeping palm on the stomach and counting the total number of breath for a period of 30 sec. and doubled later on the get the respiratory rates per minute.

#### **Statistical Analysis**

Statistical technique used for analyzing the collected data in the study was 't' value.

#### **Results**

All subjects were tested for resting heart rate and, respiratory rate. The collected data were analyzed by t – ratio with the level of significance set at 0.05.

The mean, standard deviation and t value analyzed each dependent variable separately.

**Table 1 shows the criterion measure of variables of students**

Morphological Characteristics of Students			
S.No.	Parameters	Mean	SDs.
1	Age	22.34	4.98
2	Height	170	24.78
3	Weight	65.44	11.21

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Table 1 illustrates the age, height and weight of sedentary collegiate students.

**Table -2**  
**Statistical Comparison of Body Mass Index among students**

Variable	Test	Number	Mean	S.D.	T-ratio
Body Mass Index	Post	20	20.12	5.32	3.45*
	Pre	20	23.78	7.88	

**\* Significant**

Table -1 Shows that mean scores, standard deviation and t-ratio of body mass index sedentary collegiate students. With regards to body mass index in pre and post test of students, they have obtained mean value were 20.12 and 23.78 respectively, the result reveals a statistically significant difference of body mass index ( $t=3.23 < .05$ ) was found between pre and post test students; That means there was significant effects of endurance training on BMI

**Table 3 statistical analysis of heart rate before and after endurance training**

Stages	No.	Means	Sd.	t-values
Before trainings test	20	75.00	1.81	8.86*
After Training test	20	71.70	1.56	

\* Significant at 0.05 level.

**Table 4** depicts the statistical comparison of heart rate between before and after training, the mean values of 75 and 71.70 were observed respectively, the obtained  $t= 8.86$  was significant at 0.05 level indicating that heart rate decreased after endurance trainings.

**Table 2** Statistical information of respiratory rate before and after endurance training

Stages	No.	Means	Sd.	t-values
Before trainings test	20	15	0.75	2.41*
After Training test	20	14.3	0.68	

\*Significant at 0.05 level.

The data obtained before and after endurance training with respect to respiratory rate were analyzed by t value and presented in table 2.

Table 2 Depicts that mean of respiratory rate before training was 0.65 and after training was 0.68. The statistics ( $t=2.41, P<.05$ ) indicates that there was a significant effects of endurance trainings on respiratory rate.

**Discussion**

The decrease in resting heart rate after endurance training is in conformity with a study of (S. Grant-et-al 1992, laurin m et al. ,2008) who concluded that the endurance training can influences heart rate. This result is also supported by Sinku (2010) and if heart rate is much less, then the individuals would not get fatigue. Soon as their will be less pressure on the

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heart due to this they can do work efficiently (Sinku 2010) in the study, it is found that there was significant decrease respiratory rate after endurance training. The result shows similarities of Skelton D. A. et al (1995) W. L. Haskell , et. al (1985) they found that significant decrease respiratory rate in a six weeks endurance training period. If respiratory rate is less in the students they will avoid excess load on heart and decrease fatigue. Depending on the students to feel themselves better.

**Conclusions**

It is found that the endurance training have beneficial effects in on the improvement of cardio Respiratory function of sedntry students, besides this, it may be also concluded that the result the present study indicate that trainees get experience in their occupation, be happier and this is important to improve their knowledge owing to communicating mutually. In this perceptive, endurance training make education more active and effective in schools and colleges that educate students in movement basis.

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