
**Examining the Effects of Health-Related Physical Fitness
Programs on Heart Rate of Secondary Students**

Dr. Sinku Kumar Singh

Department of Physical Education, S.R.T.M University, Nanded, India

drsinkusingh@gmail.com

Abstract: The purpose of the study is to examine the effects of health-related physical fitness programmes that are covered in the academic programme of physical education department on the Heart rate of sedentary 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 $20.3 + 2.66$, height were $172.33 + 5.99$ cm. the weight were $69.29 + 4.01$ Kg. Tests at the beginning of 2009-2010 academic year in this study, resting heart rate were taken from the sedentary students. The applied programme was planned for twelve weeks, 5 days a week and for 60 minutes a day, as the statistical techniques. Mean scores and standard deviation were taken and paired t-test was applied. The significant effects on resting heart rate ($t=4.44$, $p<.05$) was found in sedentary students. According to the result, I conclude that health-related physical fitness programme in physical education department is academic programme. It is not only beneficial to increase the cardio respiratory function and to improve physical fitness of sedentary students but also decrease the heart rate of students. The study provides a platform for further research in the field of physical education.

Key Words: *Health, Physical Fitness, Fitness Programs and Heart Rate*

Introduction:

Decreased physical fitness may result from various diseases, especially when accompanied by prolonged recumbence, or from inactivity such as a sedentary lifestyle and a low-level of physical activity. Increased health-related physical fitness, on the other hand, is associated with a decreased incidence of hypertension and cardio-related disorders.

Whether an individual is associated with lifestyle diseases or not, health-related physical fitness is an important component of a healthy lifestyle. There are many benefits of fitness: a better functioning of the cardiovascular system and an improved sense of psychological well-being. The physical fitness related benefits are especially important for people associated with lifestyle disorders who are at

greater risk on coronary artery diseases, arteriosclerosis, cerebral vascular disease, renal diseases, ocular disease and other health problems (Armstrong 1991, Maynard 1991). Various authors (Armstrong 1991 and Maynard1991) have reported that regular exercise has improved the cardio vascular system, decreased some of the risk factors leading to a cardiovascular disease, promoted fat loss, increased muscle mass, increased glucose intake by cells and enhanced well-being of the sedentary students. In other research (Clausen J P 1997) physical fitness was noted to improve cardiovascular fitness and work capacity, while decreasing resting and exercise blood pressure, as well as peripheral vascular resistance. The importance of physical fitness programmes is 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 fitness is recognized as an important component of health (Yitzhak 2000) and it may be important for the performance of functional activities and quality of life (Salmon, Owen, Crawford, Bauman, Sallis (2003). Low physical fitness may result in high physical strain during the performance of activities (Bruining et. al. 2007). As a consequence, activity levels may decrease due to fatigue and discomfort, exacerbating low physical fitness.

Day by day the importance of young population is being highlighted through many platforms, by international organizations, politicians and scientists. According to the statistics of world health organization, the deficiency of physical activities of adults is approximately at 17% (Berggren, 2005, Angilley and Haggas, 2009) in the world. In the developed countries 10 to 15% of young population do sports (Yitzhak; 2009), the percentage decrease in the developing and undeveloped ones. Participation to physical activities is rapidly decreased specially in the college and university education. Academic education in the universities focuses on the specialization in preferred fields. Sinku (2009) implied that physical education and sports lessons in Swami Ramanand Teerth Marathwada University. Physical fitness has an important role in the education of new generation in the frame of physical and mental health and now a days it is treated as a piece of education in the developed societies and education programmes. The study regarding the physical fitness programmes can be placed in a special order in the subject of physical education, Sports sciences and medical sciences. In this context, fitness program applications that are covered by the study in the field of physical education departments have an important role. Therefore, this study endeavors to examine the effects of health related physical fitness programmes that are covered in the academic programme of physical education department on the resting heart rate.

Material and Method:

Subjects: Twenty sedentary students from various colleges of Swami Ramanand Teerth Marathwada University Nanded, voluntary to participate in the health related physical fitness 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 programmes. They completed an informed consent document to participate in the study. The age, height, weight, resting heart rate, of all subjects were measured in physical education department laboratory. All 20 acted as experimental group for health- related physical fitness programmes with no control groups.

Applied training program: A training programme was planned for 12 weeks, 5 days a week and 60 minutes. a day. Exercise that use large muscles groups that can be maintained continuously and are aerobic in nature. These exercises include walking, running, jogging, climbing, jumping row and cross country. There was training programmes in the academic schedule of physical education department. The exercise session should consist of 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. Three readings were taken and their average was recorded.

Statistical Analysis:

Statistical technique used for analyzing the collected data in the study was “t” value. All the values obtained before and after performing „Health related physical fitness programme“. The Student paired t” test was used to compare parameters within groups. P value of less than 0.05 indicates a significant difference.

Result and Discussion:

The mean age of students were 20.3 ± 2.66 , height were 172.33 ± 5.99 cm. the weight were 69.29 ± 4.01 Kg. All subjects were tested for resting heart rate after and before Health related physical fitness programme“, on sedentary students.

Table 1 statistical analysis of heart rate before and after health-related physical fitness programme among sedentary students.

Stages	Mean	S.D.	t-value
Before Programmes Test	06	.13	40.44*
After Programmes Test	04	.66	

* Significant at 0.05 level.

Table 1 depicts the statistical comparison of heart rate between before and after programmes, the mean values of 76.13 and 64.66 were observed respectively the obtained $t= 4.44$ was significant at 0.05 level indicating that heart rate decreased after health- related fitness programmes. The decrease in resting heart rate after health- related fitness programme is in conformity with a study of Jyoti (2010), Salmern, Owen, Growferd, Baumam, Sallis (2003) who concluded that the endurance training can influence on heart rate. This result is also supported by (Clusen 1977), if heart rate is less, then the individuals would not decrease fatigue (Fringer, , and Stull 1974). There will be less pressure on the heart due to this; they can do their work efficiently (Clusen 1977). Finally, health-related fitness programme has an important role for sedentary students to feel themselves better and achieve their academic performance.

Conclusions:

It is found that the health- related fitness program in the physical education schedule has beneficial effects in on the improvement of cardio vascular of sedentary students besides, it may be also concluded that the results of 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, physical fitness makes education more active and effective in physical education colleges that educate students in movement basis.

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References:

1. Angilley H., Haggas S. (2009) “Physical fitness in children with movement difficulties.” *Physiotherapy*, 95: 144.
2. Armstrong J J (1991) “A brief overview of diabetes mellitus and exercise”. *Diabetes*

Educ.:17:175-178

3. Berggren, F. (2005) "Physical inactivity-why the problem is too important to be taken serious and how lifelong quality education of the whole person may prosper by new international partnerships." The 46th Ichper Anniversary World Congress. 19
4. Bruinings A.L., et. al., (2007) "Energy cost and physical strain of daily activities in adolescents and young adults with myelomeningocele." *Dev Med Child Neurol* 49:672–677
5. Clausen J P (1977) "Effects of physical training on cardio vascular adjustments to exercise in man." *Physiol Rev.* 57(4):779-815
6. Fringer M N and Stull G A (1974) "Changes in cardio respiratory parameter during periods of training and detraining in young adult females". *Med. Sci. Sports.* 6(1): 20-25.
7. J Bharti (2010) "Effects of endurance training on school boys." Unpublished M.P.Ed. Dissertation, Swami Ramanand Teerth Marathwada University Nanded.
8. Maynard T (1991) Exercise "Part I Physiological response to exercise in diabetes mellitus Diabetes" *Educ.:*17:196-206.
9. Milesis C, Pollock M L, Bah M.D. Ayres J J, Ward A and Linnerud AC (1976) : "Effects of Different durations of physical training on cardio respiratory function body composition and serum lipids" *Res. Q.* 47(4) : 716-725,.
10. Ogden CL, et. al. (2000): "Prevalence and trends in overweight among children and adolescents." *JAMA* 2002, 288(14):1728-1732.
11. Oner N, Vatansever U, sari A, Ekuklu E, Guzel A, karasalihoglu S, Boris NW (2004): "Prevalence of underweight, overweight, and obesity in Turkish adolescents". *Swiss Med Wkly*, 134(35-36):529533.
12. Ortega FB, Artero EG. Ruiz JR, et. al. (2008): "Reliability of health- related physical fitness tests in European adolescents. The HELENA study." *Int J Obes*, 32(Suppl. 5): S49-57.
13. Shi Z, Lien N, Nirmal KumarB, Holmboe-Ottesen G(2007) " Perception of weight and associated factors of adolescent in Jiangsu province, China." *Public health Nutr*, 10(3): 298-305.
14. Salmon J, Owen N, Crawford D, Bauman A, Sallis JF. (2003) "Physical activity and sedentary behaviour: a population-based study of barriers, enjoyment and performance." *Health Psychology.* : 22: 178-188. dio. 10.1037/0278-6133.22.2.178.
15. Yitzhak W., (2000) "Physical activity and health." 6th Sport Sciences Congress, 3-5 November 2000, Ankara, 95