

Research Article



Incidence of Different Degrees of Physical Fitness

Sri Vasavi Kadiyala^{*1}, Gowri sethu²

¹BDS 1st year, Saveetha Dental College, Chennai, Tamilnadu, India.

²Lecturer, Saveetha Dental College and Hospitals, Chennai, Tamilnadu, India.

***Corresponding author's E-mail:** vasavi.kadiyala@gmail.com

Accepted on: 13-06-2015; **Finalized on:** 31-07-2015.

ABSTRACT

The aim of the experiment is to determine the physical fitness of the college students by determining the pulse and blood pressure changes in response to standard exercise. The study will include the outcome values represented in tabular columns and statistical analysis. People who do regular exercise will develop improvement in their physical fitness. They will have more efficient cardiac function. During exercise cardiac output, systolic blood pressure, pulse rate, ventilation and respiratory rate will be increased. After the exercise these values will slowly come back to normal. In physically fit people the return occurs faster. In this study return of pulse rate and blood pressure after the same exercise is used to assess physical fitness in the students of saveetha dental college and hospitals. To find out whether pulse rate and blood pressure changes are adequate measures of physical fitness.

Keywords: Cardiac output, Diastolic blood pressure, Exercise, Kilocalories, physical fitness, Pulse rates, Systolic blood pressure.

INTRODUCTION

The physical activity is defined as any bodily movement produced by skeletal muscles that are the results in the energy expenditure. The amount of energy required to accomplish an activity can be measured in kilojoules (KJ) or kilocalories (kcal); 4.184 KJ is essentially equivalent to 1 kcal.

Technically the KJ is preferred because it is a measure of energy expenditure; however historically the Kcal, a measure of heat, has been employed more often.

Expressed as rate (Kcal per unit time), the amount of energy expended by each person is a continuous variable, ranging from low to high. The total amount of caloric expenditure associated with physical activity is determined by the amount of muscle mass producing bodily movements and the intensity, duration, and frequency of muscular contractions.

Everyone performs physical activity in order to sustain life; however, the amount is largely subjected to personal choice and may vary considerably from person to person as well as for a given person over time.

The most common units of time used to refer to K cal's spent in physical activity are the week and the day. Physical activity during monthly, seasonal, or yearly periods may also be examined to establish the stability of physical activity for longer time periods.

The physical activity can be categorized in a variety of ways. A commonly used approach is to segment physical activity on the basis of the identifiable portions of daily life during which the activity occurs.

The simplest categorization identifies the physical activity that occurs while sleeping, at work, and at leisure. A

simple formula is used to express the caloric contribution of each calorie to the total energy expenditure.

The caloric contribution of each category to the total energy expenditure due to physical activity is above basal metabolic rate and does not include the effect of diet-induced thermo genesis (which is the energy expenditure above the metabolic rate in the resting state), and other activity during sleep would, of course, be small. Substituting in the formula these subcategories for the leisure category previously used.

Physical activity is complex behavior however and may be meaningfully portioned into other categories mutually exclusive of each other but not necessarily of those mentioned previously. Examples might be to divide all physical activities into those that are of light, moderate or heavy intensity: those that are will full are compulsory: all those that are weekend or week day activities. All of these are acceptable ways of subdividing physical activities. The only requirement is that the subdivisions be mutually exclusive and that they sum to the total caloric expenditure due to physical activity.

MATERIALS AND METHODS

The study was conducted among the South Indian Population for 25 females and 25 males in Saveetha Dental College and Hospitals, Tamil Nadu, India during the month of April. The females and males were selected at random within the age group of 18-20 years.

The blood pressure was checked using a digital Sphygmomanometer which shows the systolic and diastolic blood pressures and pulse rate at a given point of time. The focus of the study is to measure the blood pressure and pulse rate among the individuals before and after the exercise at the particular intervals of time. By taking the difference of three minutes after each and



every check. The subjects were asked to do a constant exercise for all the individuals who are involved in the study the jump and jack exercise at the rate of 60 times per minute approximately.

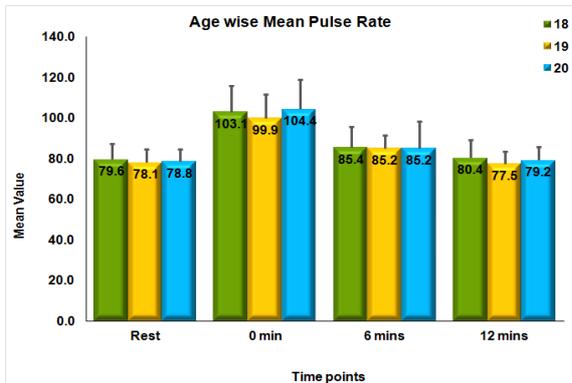


Figure 1: Age wise mean pulse rates

RESULTS

The statistical analysis was done to compare the mean values between genders using the independent sample t-test. The mean systolic blood pressure in males at rest, 0 min, 6 min and 12 min after exercise were 119.68 ± 7.034 , 137.12 ± 11.043 , 128.88 ± 10.764 and 122.64 ± 10.63 respectively. The mean systolic blood pressure in females at rest, 0min, 6 min and 12 min after exercise were 115.44 ± 4.224 , 134.84 ± 6.612 , 123.16 ± 8.673 and 114.80 ± 8.386 respectively. The mean diastolic blood pressure in males at rest, 0 min, 6 min and 12 min after exercise were 68.92 ± 7.97 , 72.56 ± 8.656 , 69.56 ± 9.088 and 65.92 ± 9.587 respectively. The mean diastolic blood pressure in females at rest, 0 min, 6 min and 12 min after exercise were 65.92 ± 8.175 , 72.04 ± 6.661 , 67.96 ± 7.340 and 63.60 ± 7.348 respectively. The mean pulse rate in males at rest, 0 min, 6 min and 12 min after exercise were 79.20 ± 5.979 , 101.48 ± 13.145 , 86.40 ± 12.237 and 80.64 ± 7.702 respectively. The mean pulse rate in females at rest, 0 min, 6 min and 12 min after exercise were 78.36 ± 7.262 , 103.20 ± 12.780 , 84.16 ± 7.702 , 77.28 ± 6.315 respectively.

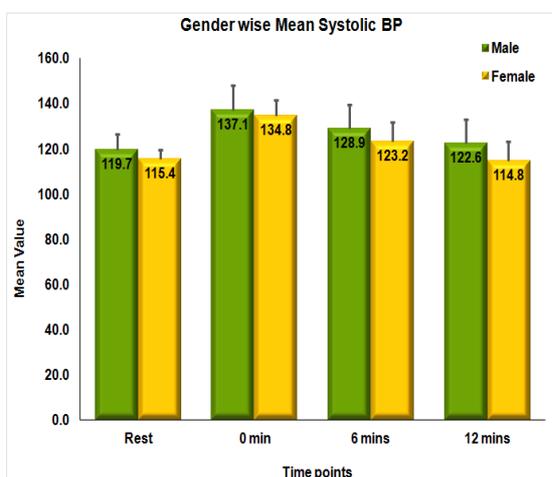


Figure 2: Gender wise mean systolic blood pressure

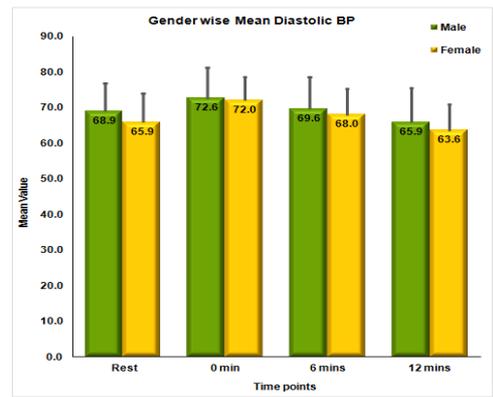


Figure 3: Gender wise mean diastolic blood pressure

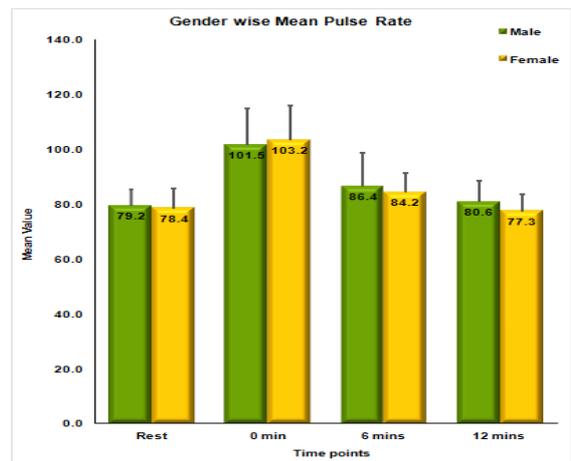


Figure 4: Gender wise mean pulse rate

DISCUSSION

The physical activity is defined as any bodily movement produced by skeletal muscles that results in the energy expenditure. The amount of energy required to accomplish an activity can be measured in kilojoules (KJ) or kilocalories (kcal); 4.184 KJ is essentially equivalent to 1 kcal¹. Technically the KJ is preferred because it is a measure of energy expenditure; however historically the Kcal, a measure of heat, has been employed more often². Expressed as rate (Kcal per unit time), the amount of energy expended by each person is a continuous variable, ranging from low to high³. The total amount of caloric expenditure associated with physical activity is determined by the amount of muscle mass producing bodily movements and the intensity, duration, and frequency of muscular contractions⁴.

Everyone performs physical activity in order to sustain life; however, the amount is largely subjected to personal choice and may vary considerably from person to person as well as for a given person over time⁵. The most common units of time used to refer to Kcals spent in physical activity are the week and the day⁶. Physical activity during monthly, seasonal, or yearly periods may also be examined to establish the stability of physical activity for longer time periods⁷. The physical activity can be categorized in a variety of ways. A commonly used approach is to segment physical activity on the basis of

the identifiable portions of daily life during which the activity occurs⁸. The simplest categorization identifies the physical activity that occurs while sleeping, at work, and at leisure⁹. A simple formula is used to express the caloric contribution of each calorie to the total energy expenditure.

The caloric contribution of each category to the total energy expenditure due to physical activity is above basal metabolic rate and does not include the effect of diet-induced thermo genesis (which is the energy expenditure above the metabolic rate in the resting state)¹⁰, and other activity during sleep would, of course, be small. Substituting in the formula these subcategories for the leisure category previously used.

The pulse rates and blood pressures are calculated in every individuals firstly at rest and they were guided to do the jump and jack exercise at the rate of 60 times per minute. Now their blood pressures are calculated immediately after exercise and at 0 minutes and from there at the time interval of 3 minutes. The pulse rates and the systolic and diastolic blood pressures are increased immediately after exercise and they gets decreased in the regular intervals of time.

The blood pressures and pulse rates in the physically fit people who do regular exercises the values comes back to normal very fast when compared to the people who are not physically fit.

CONCLUSION

From this study it is determined that the blood pressure and the pulse rate are correlated and the systolic blood pressures and the pulse rates are drastically increased when compared to the diastolic blood pressure.

And the blood pressure and pulse rate in the physically fit people who do regular exercises either regularly or weekly their blood pressures and pulse rates are tend to

come to the resting state faster for example at 6 minutes after exercise when compared to the normal individuals.

REFERENCES

1. Taylor HL, Jacobs DR Jr, Schucker B, Knudsen J, Leon AS, Debacker G. A questionnaire for the assessment of leisure time physical activities. *J Chronic Dis.* 31(12), 1978, 741–755.
2. Paffenbarger RS Jr, Wing AL, Hyde RT. Physical activity as an index of heart attack risk in college alumni. *Am J Epidemiol.* 108(3), 1978 Sep, 161–175.
3. Dishman RK, Sallis JF, Orenstein DR. The determinants of physical activity and exercise. *Public Health Rep.* 100(2), 1985 Mar-Apr, 158–171.
4. Iverson DC, Fielding JE, Crow RS, Christenson GM. The promotion of physical activity in the United States population: the status of programs in medical, worksite, community, and school settings. *Public Health Rep.* 100(2), 1985 Mar-Apr, 212–224.
5. Taylor HL. Physical activity: is it still a risk factor? *Prev Med.* 12(1), 1983 Jan, 20–24.
6. Taylor HL, Buskirk E, Henschel A. Maximal oxygen intake as an objective measure of cardio-respiratory performance. *J Appl Physiol.* 8(1), 1983 Jan, 73–80.
7. Jetté M. The standardized test of fitness in occupational health: a pilot project. *Can J Public Health.* 69(6), 1978 Nov-Dec, 431–438.
8. Siconolfi SF, Cullinane EM, Carleton RA, Thompson PD. Assessing VO₂max in epidemiologic studies: modification of the Astrand-Rhyming test. *Med Sci Sports Exerc.* 14(5), 1982, 335–338.
9. Keys A, Fidanza F, Karvonen MJ, Kimura N, Taylor HL. Indices of relative weight and obesity. *J Chronic Dis.* 25(6), 1972 Jul 1, 329–343.
10. Leighton JR. Flexibility characteristics of four specialized skill groups of college athletes. *Arch Phys Med Rehabil.* 38(1), 1972 Jul 1, 24–28.

Source of Support: Nil, Conflict of Interest: None.

