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A diagnostic study of cardiovascular fitness between rural and urban college girls of physical education classes

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Abstract
The purpose of the study was to find out the difference between cardiovascular fitness of the rural and urban college girls who opted physical education as an elective subject. For this purpose 200 college level female girls of four colleges from Punjabi University two colleges from Rural Area and two colleges from Urban Areas were selected as the subjects for study. The age range of the subjects ranged between 17 to 25 year. Cardiovascular fitness were measured with the help of twelve minute run and walk test constructed by Cooper in 1968. To determine the significance between the means of rural and urban college of rural and urban college girl's students of physical education classes on cardiovascular fitness t-test was employed and the level of significance was set at 0.05 levels. After the collection of relevant data, it was processed and analysed by't' test. The study showed that urban girls have on the average higher endurance levels than rural girls.

Keywords: rural, urban, cardiovascular fitness

Introduction

Physical fitness is essential for every sphere of human life. In the field of physical education and sports, Physical fitness is key point or considered as axis around which all physical education and sports programme revolve. Physical fitness consists of five major components, speed, strength, flexibility, agility and endurance. Endurance plays a major role in every outdoor activity. To measure endurance the different test were adopted from time to time by eminent physical educationist and sports scientists. Cardiovascular test have generally been considered useful in the field of physical education and sports for the purpose of evaluating physical fitness of the participants. Muscular efficiency is known to be modified by circulation, nutrition and fatigue, likewise, it has been established that the normal cardiovascular system gradually adjusts itself to increased amounts of strenuous muscular activity. The world's greatest thinkers have stressed upon the importance of physical fitness in living beings to ensure a productive and a meaningful life. The Greek philosopher Aristotle states, "The body is the temple of the soul, and to reach harmony of body, mind and spirit, the body must be physically fit." Fitness of man has always been a concern of mankind. Physical fitness from prehistoric times to the present day has been equated with survival and power. The earnest human being was dependent mainly upon their individual strength, vigor and vitality for survival.

Physical fitness can be classified into two categories:
A. Health related physical fitness
B. Motor related physical fitness

Cardiovascular fitness comes under health related physical fitness. The cardiovascular fitness deals with physiological aspects of fitness and is particularly related with the fitness of heart and circulatory system and its adjustments to stress conditions. Cardiovascular fitness is defined as the ability to perform large muscle or vital activities continuously for a sustained period. A number of factors contribute to efficient cardiovascular functioning, including the ability of the heart to pump blood, the ability of the veins and arteries to carry blood, the ability of the muscles to utilize the oxygen delivered by the blood. Crampton (1905) constructed a test known as Crampton Blood Ptosis test to measure cardiovascular function of an individual. In this test he observed changes in heart rate and systolic blood pressure from a reclining to standing position. He formulated a norm from his experimental data to consider the score or cardiovascular fitness and according to him 50 to 10 should be considered as normal. He further stated that score below 50 should be further investigated to find out the exact cause, score below zero is evidence of impaired circulation, toxic state or severe physical disturbance. Lowsley (1911) developed a test to observe the effect of strenuous exercise. His test was based upon the measurement of systolic pressure, diastolic pressure and pulse rate after exercise. He concluded that if the pulse rate and blood pressure returns to normal within one hour, the exercise is beneficial for the development of health. Stone (1913) constructed a test to measure the efficiency of circulatory system. His test was based on the measurement of the pulse pressure and diastolic pressure. Barach (1914) [4] developed a test to measure the efficiency of the heart. He took all the readings from the sitting position and studied three elements, pulse rate, diastolic pressure and systolic pressure for assessing the efficiency of the heart. Barringer (1916) published his test to assess the cardiovascular fitness. His test was based on the rise of blood pressure. He advised dumbbell exercise to accelerate the circulatory system. The blood pressure was taken during

exercise after every 30 seconds. Schneider (1920) published his work under the heading "A Cardiovascular rating as a measure of physical fatigue and efficiency" in journal of the American Medical Association. In his study he observed the change in the pulse rate and systolic blood pressure from reclining to standing position. After the exercise the readings were again taken. For this he developed test which is known as Schneider Test. Michigan (1920) constructed a test known as "Michigan Pulse-Rate Test of physical Fitness" in the state of Michigan and published it. This test was based on the recovery period after exercise. A short sprint was advised as an appropriate exercise. Normal pulse rate was recorded before the exercise. After the exercise the pulse recovery period was recorded at different intervals. Hindman (1931) [3] conducted a study to improve the scoring method of Schneider Test D. A. Hindman successfully prepared a table for accurate scoring. His test is known as "The Hindman Revision of Schneider Test". The Mccurdy (1931) cardiovascular rating of "Present Health" was published by Mccurdy. The study was based on the pulse-rate, systolic and diastolic blood pressure. Norms were developed to assess the present health. Tuttle (1931) developed a test to get 2.5 ratio. His study was based on the adaptability of the heart exercise. He increased the intensity of the exercise to get 2.5 ratio. Karpovich (1932) conducted a study on the patients and published it under the heading "Physical reconditioning". His study was based on that when the patient can resume physical exercise. He used 29 inches bench for stepping exercise. The Mertinent (1934) test was developed to measure cardiovascular fitness. This test was based on three factors. (1) Circulatory changes from reclining to standing position (2) effect of exercise on circulatory changes (3) returning the pulse rate and blood pressure to normal after exercise. Medical Department of Prudential Life Insurance Company of America (1934) developed Flerimeter test for the purpose of corrective therapy. They used the Flerimeter to give the rhythm for stepping exercise. Maccurdy-Larson (1935) organic efficiency test was developed to measure cardiovascular fitness and published Maccurdy and Larson after a study of 26 items selected five for the test. Bruha (1943) and his associates developed a test in the Harvard fatigue laboratory during World War II. This test was based on the recovery of pulse-rate to normal after stepping exercise on a 20 inches bench. Taylor (1944) constructed a test known as "Taylor Pack Test" during World War II. He used 18 inches bench and 10 pounds of weight on the back of the subject while performing the exercise. Garlson (1945) conducted a study on 200 soldiers to test the absolute condition of physical fitness. His test was based on the efficiency of the heart to supply fuel to the different working muscles. He used on spot running with their own rhythm for 10 seconds. Ten repetitions of the same exercise were done and the fatigue was prepared. Keller (1932) conducted a study on the basis of Mccloy's rating of present health. His subject of study was to determine the difference of score when boys are in good health condition and ill. He also conducted that when a boy can resume physical exercise after illness. He submitted his thesis for the requirement of M. A. degree to the State University of Lowa. Howell (1964) Bakogeorge and Kerr conducted a study on 180 subjects to develop a "Progressive Treadmill Test Norms for College Males". They used treadmill to give a running exercise at a rate of 91 meters per minute. After every minute, one percent speed was increased to raise the heart rate up to 180 beats per minute. The scoring was given according to work load.

Methodology

200 college level female girls of four colleges from Punjabi University two colleges from Rural Area and two colleges from Urban Areas were selected as the subjects for study. The age range of the subjects ranged between 17 to 25 year. Cardiovascular fitness were measured with the help of twelve minute run and walk test constructed by Cooper in 1968. To determine the significance between the means of rural and urban college of rural and urban college girl's students of physical education classes on cardiovascular fitness t-test was employed and the level of significance was set at 0.05 levels. After the collection of relevant data, it was processed and analysed by't' test.

Table 1: Significance of Difference between the Rural and Urban Girls Students

Groups	N	Mean	S.D.	M.D.	S.E.	T
Rural	100	1434	94.02	0.263	12.78	2.057*
Urban	100	1460	86.66			

* Significance at 0.05 level of confidence i.e. (N_1+N_2-2)= 1.96.

The above table indicates that there is a significant difference in the means of cardio-vascular fitness, between rural college girl students (1434) and urban college girl students (1460), as the calculated t-value 2.057 is greater than tabulated t-value (1.96) at 0.05 level of confidence.

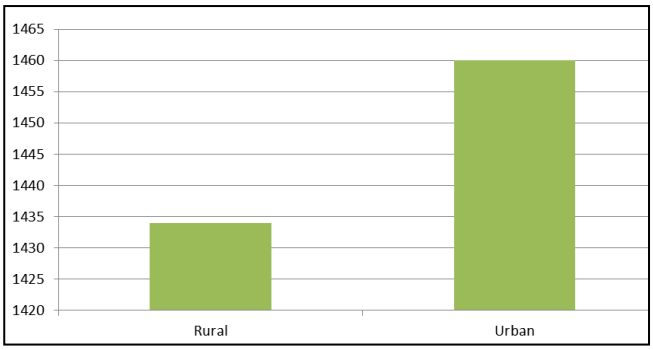

Fig 1: Comparison of mean of cardiovascular fitness

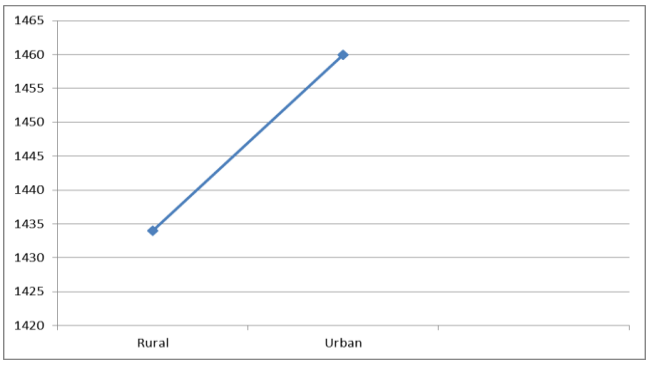

Fig 2: Comparison of mean of cardiovascular fitness

Discussion of Findings

The results of above mentioned table revealed that cardiovascular fitness of urban college girls was greater than the rural college girls because they cover maximum distance in 12 minutes. The reason for these findings may be attributed to the fact that the urban college girls have better playing facility and were more exposed to physical activity than rural college girls. The urban college girls were more health conscious and regular in their daily exercise programme in comparison to rural college girls.

Conclusions

The study conducted on the cardiovascular fitness of rural and urban college girls provided valuable information about the relative health of rural and urban girls as it disproved the widely held nation that rural girls are in general fitter than their urban counterpart. The study showed that urban girls have on the average higher endurance levels than rural girls.

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