IJFANS INTERNATIONAL JOURNAL OF FOOD AND NUTRITIONAL SCIENCES
ISSN PRINT 2319 1775 Online 2320 7876
 UGC CARE Listed (Group -I) Journal Volume 12 , Iss 1, Jan 2023

AN ANALYTICAL STUDY OF SELECTED ANTHROPOMETRIC AND PHYSIOLOGICAL VARIABLES BETWEEN RURAL AND URBAN AREA UNDERGRADUATE AGRICULTURE STUDENTS

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ABSTRACT

The purpose of this study was to find out the difference in selected anthropometric and physiological characteristics among students of rural and urban areas. For this study, eighty female students with the age limit of 18-22 years were selected by purposive sampling technique from Punjab Agriculture University, Ludhiana. Further, they were divided into two subgroups of rural and urban areas. Selected anthropometric characteristics of height and weight were measured with the help of an anthropometric rod and weighing machine, respectively. Selected physiological characteristics of cardiorespiratory efficiency and body mass index (BMI) were measured by the 12-minute run/walk test developed by Cooper (1968) and with the Quetelet index (Adolphe Quetelet, 1830), respectively. As per the objective of the study, descriptive statistics and comparative statistics ('t'-test) were employed by 'SPSS Version 23.' In the case of anthropometric characteristics, the results of statistical analysis indicated that there was an insignificant difference in height ($p = 0.43$) and a significant difference in weight ($p = 0.01$) among students of rural and urban areas. In the case of physiological characteristics, the results of statistical analysis also indicated that there was an insignificant difference in cardiorespiratory efficiency ($p = 0.37$) and a significant difference in body mass index ($p = 0.00$) among students of rural and urban areas. This study concluded that students from urban areas have shown better values in anthropometric characteristics, while students from rural areas have shown better values in physiological characteristics.

Index Terms: Anthropometrical, Physiological, Cardiorespiratory Efficiency, Body Mass Index.

INTRODUCTION

Physical fitness is an ancient concept in human history. Physical fitness has long been regarded as a necessary component of daily life. Individual strength and vitality were the primary means of physical survival for the ancient people. This required mastery of some basic

ISSN PRINT 2319 1775 Online 2320 7876
 UGC CARE Listed (Group -I) Journal Volume 12 , Iss 1, Jan 2023

skills such as strength, speed, endurance, and agility for running, jumping, climbing, and other hunting-related activities.

Overweight and physical fitness deterioration in adults have increased over the last four decades across all genders, ages, and racial/ethnic groups (Ichinohe et al., 2004). The negative effects of poor physical fitness on both individuals and society are severe and multifaceted. It can cause various health problems, including coronary heart disease, certain types of cancer, diabetes, hypertension, stroke, gallbladder disease, osteoarthritis, respiratory problems, and gout, as well as an increase in all-cause mortality (Cataldo 1999). Low levels of physical activity and cardiorespiratory fitness have been linked to an increased risk of all-cause and disease-specific mortality (Thune et al. 1998).

According to the National College Health Risk Behaviour Survey (Lowry et al. 2000), 35% of American college students are overweight. This is surprising that more than two-thirds of the American adult population is classified as overweight (Flegal et al. 2002), making weight gain America's leading health problem (Mokdad et al. 2001). The World Health Organization's expert committee (1981) defined physical fitness as "the ability to undertake muscular work satisfactorily." Physical fitness is defined as the ability to perform various types of physical activities reasonably well without becoming overly tired, and it includes characteristics that are important to an individual's health and well-being.

Every person has a different level of physical fitness, which can change depending on time, place of work, and situation, and there is also an interaction between an individual's daily activities and their fitness, determining where the level of optimum fitness should be set. Physical fitness can be defined physiologically as the ability of the body to adapt to and recover from strenuous exercise. Chaudhary (1998) investigated the differences in physical fitness between urban and rural students in classes IX and X and discovered that rural students had higher levels of physical fitness. Uppal and Sareen (2000) conducted a study to find out the comparison on cardiovascular fitness between rural and urban students and revealed that students from rural backgrounds performed better than their counterparts in the urban areas.

Rural sports arose out of necessity in the first settlements of civilized man. Joint defence against common foes and dangerous animals must have resulted in sports like wrestling, running, jumping, weight lifting, and performing arts such as measuring strength by holding wrists, twisting hands, and so on.

The same applies to games and sports in both rural and urban settings. It is noticed that children's interests vary greatly. For example, it is seen that children in rural areas participate in minor, indigenous activities like football, kabaddi, kho-kho, hockey, wrestling, athletics, and

ISSN PRINT 2319 1775 Online 2320 7876
Research paper UGC CARE Listed (Group -I) Journal Volume 12 , Iss 1, Jan 2023

so on, whereas children in urban areas participate in basketball, swimming, badminton, tennis, squash, golf, and so forth. The availability of facilities and parental financial support are the primary causes of the difference.

The urban people have seen a significant shift in society's living habits as cities have grown in size. The cities are the center of much social activity, and this influences the standards, intellectual development, habits, moral code conditions, behavioral patterns, and cultural conditions of the people. The city is an intricate and complex unit of modern society, with new communities, groups, ethnic relations, and a diverse range of classes.

This study was designed to compare the rural and urban students for anthropometric and physiological characteristics and to find out which of these two categories is more physically fit in response to tests administered so as one can improve the standard and level of physical fitness in rural and urban students.

PURPOSE OF STUDY

The purpose of this study was to find out the difference in selected anthropometric and physiological characteristics among students of rural and urban areas. It was hypothesized that there will be no significant difference in selected anthropometric and physiological characteristics among students of rural and urban areas**.**

MATERIAL AND METHODS

For this study, eighty female students with the age limit of 18-22 years were selected by purposive sampling technique from Punjab Agriculture University, Ludhiana. Further, they were divided into two subgroups of rural and urban areas. Selected anthropometric characteristics of height and weight were measured with the help of an anthropometric rod and weighing machine, respectively. Selected physiological characteristics of cardiorespiratory efficiency and body mass index (BMI) were measured by the 12-minute run/walk test developed by Cooper (1968) and with the Quetelet index (Adolphe Quetelet, 1830), respectively.

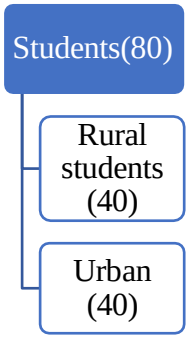

FIG.-I DESCRIPTION OF SUBJECTS

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PROCEDURE

WEIGHT

Body weight was taken with a portable weighing machine. Except for brief undergarments the subject was asked to take off his/her shoes and clothes the barefooted subjects were asked to stand straight with equal weight on both feet on the horizontal platform and final readings were taken in kilogram (kgs).

HEIGHT

Height of the subjects was measured with the help of an anthropometer rod. The subjects were asked to stand erect, barefooted on a plane horizontal surface against a wall, with his/her heels, back of the shoulders and head touching the wall. The subject's heels were watched to make sure they did not leave the ground. The anthropometer rod was kept in front of the subject so that its lower edge touched the highest point of the subject's head point "vertex" and the measurement were recorded in centimeters.

BODY MASS INDEX (BMI)

Body Mass Index was calculated using height and weight. BMI was designed to be used as a simple means of classifying average sedentary (physically inactive) populations, with an average body composition. The purpose of this test is to measure the height and weight to measure the BMI. Body Mass Index was calculated by dividing body weight in kilograms by the square of body height in meters.

The body mass index was measured through the body mass index formula.

Body Mass Index = Weight (kg) / Height $(m)^2$.

CARDIORESPIRATORY EFFICIENCY

Cardiorespiratory Efficiency was measured by the 12-minute run/walk test developed by Cooper (1968). This test was administered with the help of qualified testers. For this test, a 400m track was prepared with marking at every tenth meter. The investigator and the testers served as the lap scorers. The subjects were asked to stand on the starting line drawn at finish line of the 400m track and were given instructions to cover as much distance as possible by running/walking. They were instructed to continue running/walking till the final whistle. The race was started with a whistle and the numbers of minutes left was announced to the subjects at every minute and at the twelfth minutes a whistle was blown a second time and all the subjects stopped instantly and stood on the spot. The distance covered by each subject in twelve minutes was recorded to the nearest tenth of a meter.

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The score in meters was determined by multiplying the numbers of completed laps time the distance (e.g., 400m) of each lap plus the number of segments of an uncompleted lap to the nearest 10 meters.

STATISTICAL TECHNIQUE

Descriptive statistics i.e., mean and standard deviation were calculated. As per objective of the study, independent t-test was employed. All tests were employed with the help of SPSS-software version 23. The level of significance was set at 0.05.

RESULTS

TABLE-1

DIFFERENCES BETWEEN ANTHROPOMETRIC AND PHYSIOLOGICAL CHARACTERISTICS

Variable	Rural		Urban		Sig.
	Mean	SD	Mean	SD	
Height	156.56	6.67	157.04	5.63	0.75
Weight	51.54	9.68	60.47	15.43	0.01*
Cardiorespiratory Efficiency	1482.77	208.49	1365.82	169.33	0.37
Body Mass Index	20.94	3.03	24.42	5.59	0.00*

*Indicate significant at 0.05 level SD = Standard Deviation

Table no. 1 shows the mean and standard deviation of height (156.56 ± 6.67), weight (51.54 ± 9.68), cardiorespiratory efficiency (1482.77 ± 208.49), and body mass index (20.94 ± 3.03) for the rural students' group. It also shows the mean and standard deviation of height (157.04 ± 6.63), weight (60.47 ± 15.43), cardiorespiratory efficiency (1465.82 ± 169.33), and body mass index (24.42 ± 5.59) for the urban students' group.

Further, table no. 1 also presents the results of comparative statistics between students of urban and rural areas. In the case of anthropometric characteristics, the results of statistical analysis indicated that there was an insignificant difference in height ($p = 0.43$) and a significant difference in weight ($p = 0.01$) among students of rural and urban areas. In the case of physiological characteristics, the results of statistical analysis also indicated that there was an insignificant difference in cardiorespiratory efficiency ($p = 0.37$) and a significant difference in body mass index ($p = 0.00$) among students of rural and urban areas.

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DISCUSSION

In the present study, the assumption was that there would be no significant difference in selected anthropometric and physiological characteristics among students of rural and urban areas.

The result indicated that there was an insignificant difference in cardiorespiratory efficiency (p = 0.37) among students of rural and urban areas. The findings of the study were supported by the study conducted by Tsimeas et al. (2005), who conducted a study in Greece on rural and urban young people and did not find any difference in the measured cardiorespiratory efficiency.

The results of statistical analysis also indicated that there was an insignificant difference in height (p = 0.43) and a significant difference in weight (p = 0.01) and body mass index (p = 0.00) among students of rural and urban areas. The findings of the study were supported by the study conducted by Kryeziu and Iseni (2022), who conducted a comparative study of anthropometric characteristics and physical fitness on 80 children in urban and rural areas. They found that there was an insignificant difference in height (p = 0.46), a significant difference in body mass (p = 0.030), and body mass index (p = 0.004) variables.

CONCLUSION

This study concluded that students from urban areas have shown better values in anthropometric characteristics, while students from rural areas have shown better values in physiological characteristics.

ACKNOWLEDGEMENT

The authors want to acknowledge all participants who participated in this study and their teachers who gave permission for data collection.

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