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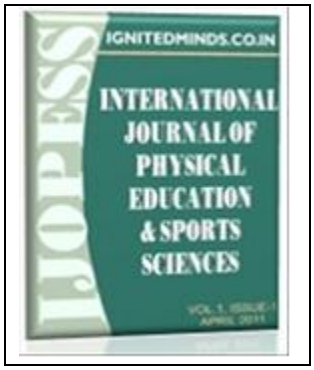
A Comparative Study of Obese and Non-Obese Male Students in Cardiovascular Function



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INTRODUCTION

Body composition is defined as the relative percentage of fat and fat-free body mass. An excessive accumulation of body fats significantly hinders the ability to perform tasks requiring speed, endurance, and coordination. Additionally, research indicates that an excess amount of body fat is an associative and/or contributing factor to four categories of health hazards: (a) disturbance of normal body function,(b) increased risk of disease (e.g., hypertension, high cholesterol, diabetes, coronary heart disease), (c) exacerbation of existing disease states, and (d) adverse psychological effects.

The cardiovascular system is sometimes called the blood-vascular, or simply the circulatory, system. It consists of the heart, which is a muscular pumping device, and a closed system of vessels called arteries, veins, and capillaries. As the name implies, blood contained in the circulatory system is pumped by the heart around a closed circle or circuit of vessels as it passes again and again through the various "circulations" of the body.

As in the adult, survival of the developing embryo depends on the circulation of blood to maintain homeostasis and a favorable cellular environment. In response to this need, the cardiovascular system makes its appearance early in development and reaches a functional state long before any other major organ system. Incredible as it seems, the primitive heart begins to beat regularly early in the fourth week following fertilization.

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The vital role of the cardiovascular system in maintaining homeostasis depends on the continuous and controlled movement of blood through the thousands of miles of capillaries that permeate every tissue and reach every cell in the body. It is in the microscopic capillaries that blood performs its ultimate transport function. Nutrients and other essential materials pass from capillary blood into fluids surrounding the cells as waste products are removed.

Aerobic exercise is exercise of any kind that primarily uses the one of the bodies three energy systems known as the "aerobic" energy system (thus the name aerobic exercise). The aerobic energy system is called such because it uses oxygen as its main source of energy production (aero meaning "air"). Aerobic exercise for the benefits outlined below is usually prescribed using the FITT system. FITT stands for: Frequency: 3-4 times a week; Intensity: 60-80% MHR (see below)for increased cardio-vascular fitness. 50-70% MHR for general health and weight loss (note: The lower end of these ranges should be used by those not accustomed to regular aerobic exercise and as fitness increases the higher ranges are used);Time:20-60 minutes and Type: "aerobic" exercise

Physical fitness is a positive and dynamic quality of a continuum from abundant life to death. It is related to the ability to meet the demand of the environment specifically to preserve, to withstand stress, to resist fatigue and to possess the energy for an abundant life. Physical fitness is minimal in seriously ill and is maximum in the highly conditioned persons. While energy demands of daily task vary for individuals. Some population between these minimal and maximal poles is satisfactory for most people.

PROCEDURE

Skin fold measurement of 60 students studying in B.A, Bsc and B.com students for obese students and non obese students from B.P.Ed was taken in order to select two study groups. Each group consisting of 30 students, representing Fitness group 14-17% and obese group above than 25% fat. In order to determine the fat percentage, the skin fold measurement at three different sites i.e Chest, Abdomen and Thigh was recorded in millimeters with the help of skin fold caliper. The total value of skin fold of all the four sights was calculated from particular web site via feeding the data on the site www.linear-software.com/online.html.

Measurement of Fat folds

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The **body fat percentage** was measured by fat folds: the fat folds measurements are: MEN: **chest, abdomen, and thigh**.

Chest: a diagonal fold taken one-half of the distance between the anterior axillary line and the nipple.

Abdomen: vertical fold measured 1 inch to the right of the umbilicus.

Thigh: vertical fold measured at the anterior midline of the thigh, midway between the knee cap and the hip.

Aerobic/Cardiovascular function

Test: - The 1-Mile Run

Equipment required: - stop watch

Procedure:-The aerobic/cardiovascular function was measured by 1-mile run. Aerobic-cardiovascular performance during exercise can be measured by a running performance over a distance of 1 mile. Warm-up for several minutes, then run/walk as rapidly as possible for 1 mile.

Scoring: - times recorded to the nearest of second.

FINDINGS

The findings pertaining to the status of cardiovascular functional of obese and non-obese groups has been given below.

Variables	Groups	Mean	Standard Deviation
Cardiovascular function	Obese	22.70	1.43
	Non Obese	17.29	1.55

Table-2

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Significance of mean difference on cardiovascular function belonging to Obese and Non Obese students

Variables	Mean	S. D.	D.M.	D.M.	t-Ratio
Obese	21.70	1.83			
			4.81	2.26	5.76*
Non Obese	16.89	1.25			

*** Significant at .05 level** **Tab $t_{0.05}$= 2.05**

From table-2, it is evident that there is significant difference between Obese and non obese students on Cardiovascular function, test means in the cardiovascular function where the calculated t ratio was 5.76, which was greater than tabulated t value 2.05 at .05 level.

DISCUSSION OF FINDINGS

It evident from the findings of the t-test that there is significant difference between obese and non obese subjects when compared on the physiological variable cardiovascular function that cardiac performance is reduced in obese subjects despite increased cardiac output. This increased cardiac output depends on Vo_2, which was also elevated and correlated with weight and overweight.

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