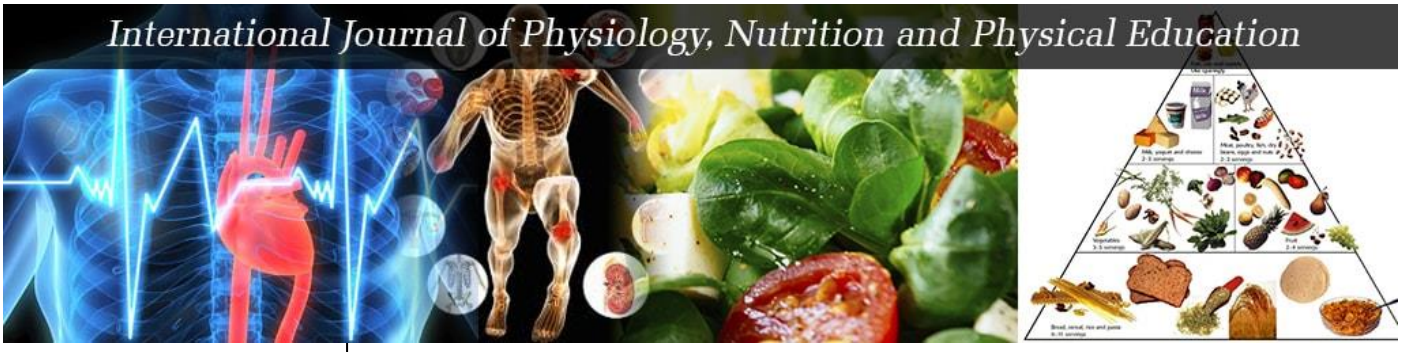

ISSN: 2456-0057
IJPNPE 2018; 3(2): 1131-1134

www.journalofsports.com
Received: 19-05-2018
Accepted: 23-06-2018

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Comparative analysis of percent body fat, blood pressure and maximum oxygen uptake of normal, overweight and obese female science students

Dr. E Saravanan

Abstract
Introduction: While the origins of overweight and obesity are complex, a lack of physical activity is a significant contributing factor. Normal regulation of body weight occurs when energy intake equals energy expenditure. A simplified model of weight regulation shows that weight gain may result when there is inadequate physical activity (energy expenditure) to balance our food consumption (energy intake). Indian women have taken big steps in politics and the workforce but their health is still determined by class and caste, says a major study tracking their experiences over the last 30 years. The demographics of physical attainment, general health and longevity are a result of the complex interactions of heredity, childhood exposures, environment, and dietary habits and so on.
Purpose: The purpose of the study was to analyze percent body fat, blood pressure, and maximum oxygen uptake of normal, overweight and obese female science students of Nirmala College for Women. It was hypothesized that there may be a significant difference in blood pressure, percent body fat, and maximum oxygen uptake of normal, overweight and obese female science students of Nirmala College for Women.
Method: To achieve the purpose of the study totally 60 female science students from Nirmala College for Women and their age ranged from 18 to 27 were selected as subjects. They will be categorized according to their BMI values into normal, overweight and obese. The selected variables for the study were percent body fat, systolic blood pressure, diastolic blood, pressure and maximum oxygen uptake (VO2 Max). In order to collect the data tests were administrated. The scores were recorded in the final reading. Analysis of variance (ANOVA) was used to determine whether there was any significant difference between the groups. Scheiffe's post hoc test was applied to test significance of mean differences between the paired means.
Results: The results of the present study indicated that there was a significant mean difference in percent body fat, systolic blood pressure, diastolic blood, pressure and maximum oxygen uptake (VO2 Max) among the normal, overweight and obese female science students of Nirmala College for Women.

Keywords: Normal, overweight, obese, percent body fat, systolic blood pressure, diastolic blood, pressure and maximum oxygen uptake (VO_2 Max).

Introduction
Every child and adolescent should have an opportunity to participate in sports and regular physical activity. Participation can be associated with both health benefits and health risks. With healthy activity as a goal for everyone, restricting participation within reason as a mean to limit risk is no more acceptable than promoting participation without regard to safety.
The foremost reason for poor health status of Indian women have taken big steps in politics and the workforce but their health is still determined by class and caste, says a major study tracking their experiences over the last 30 years. Food shortages and a declining government commitment to health care in the 1990s increased the "systemic inequities" for women throughout the country, said a copy of the report obtained by AFP. Positive developments such as longer female life expectancy is negated by the fact that a woman's health "depends on where she is born and lives, and what class and caste she belongs to," says the study. The demographics of physical attainment, general health and longevity are a result of the complex interactions of heredity, childhood exposures, environment, dietary habits and so on. While the origins of overweight and obesity are complex,

a lack of physical activity is a significant contributing factor. Normal regulation of body weight occurs when energy intake equals energy expenditure. A simplified model of weight regulation shows that weight gain may result when there is inadequate physical activity (energy expenditure) to balance our food consumption (energy intake). Given the importance of physical activity in the maintenance of healthy weight.

Fortunately, even if the blood pressure is high, a modest weight loss can bring it under control. Blood pressure can drop with every pound lost. In many cases people on high blood pressure medication have been able to reduce the dose or stop taking it altogether after losing 5-10 percent of their body weight. For a person weighing 170 pounds this represents a weight loss of 8-17 pounds.

To maintain your weight, work your way up to 150 minutes of moderate-intensity aerobic activity. 75 minutes of vigorous-intensity aerobic activity, or an equivalent mix of the two each week. Strong scientific evidence shows that physical activity can help you maintain your weight over time. However, the exact amount of physical activity needed to do this is not clear since it varies greatly from person to person. It's possible that we need to do more than the equivalent of 150 minutes of moderate-intensity activity a week to maintain your weight.

The main reason for taking the study was that the science students of Nimala College for Women are failing to participating the physical activities at least of 30 minutes daily. By this study the research scholar has made an attempt to aware the students participated in this study.

Procedures: The purpose of the study was to analyze percent body fat, blood pressure, and maximum oxygen uptake of normal, overweight and obese female science students of Nimala College for Women. It was hypothesized that there may be a significant difference in blood pressure, percent body fat, and maximum oxygen uptake of normal, overweight and obese female science students of Nirmala College for Women.

Methodology

To achieve the purpose of the study totally 60 female science students from Nirmala College for Women and their age ranged from 18 to 27 were selected as subjects. They will be categorised according to their BMI values into normal, overweight and obese. Normal (18.5 - 24.9), Over weight (25.0 - 29.9) and Obese (30.0 and above). Percent body fat Systolic blood pressure, Diastolic blood pressure and VO2 Max were selected as criterion variables for this study.

The Percent body fat was measured by Skin fold measurements in the unit of inches, Systolic blood pressure and Diastolic blood pressure are measured by using Sphygmomanometer and their unit was in mm/hg. VO2 Max was measured using the Queen's college 3 min step Test.

Experimental Design

From normal weight, overweight and obese category 20 subjects each were selected randomly for the present study. Their age ranged from 18 to 27 years. All the three groups were tested on selected criterion variables with appropriated tests. The data was collected and used to interpret with statistical tools. To find out there is any significant differences among normal, overweight and obese female science students of Nirmala college for Women in percent body fat, systolic blood pressure, diastolic blood pressure and maximum oxygen uptake the Analysis of variance (ANOVA) was used. Scheiffe's post hoc test was applied to test significance of mean differences between the paired means.

Analysis of data and results of the study

Table 1: Analysis of variance on selected variables of normal, overweight and obese female science students of Nirmala college for women.

Variables	Mean			Sources of variance	Sum of squire	df	Mean squire	F – value
	Normal	Over weight	Obese					
Percent body fat	24.38	30.03	35.55	BG	1247.74	2	623.87	43.81*
				WG	811.72	57	14.24	
Systolic blood pressure	98.25	117.65	127.65	BG	8938.13	2	4469.07	300.81*
				WG	846.85	57	14.86	
Diastolic blood pressure	68.40	75.05	82.50	BG	1990.23	2	995.12	85.33*
				WG	664.750	57	11.662	
VO_2 Max	36.99	34.97	32.12	BG	240.04	2	120.02	99.08*
				WG	69.05	57	1.21	

*- significant at 0.05 level table value – 3.22

Table – 1 indicated that the obtained F value of 43.81, 300.81, 85.33 and 99.08 for Percent body fat, Systolic blood pressure, Diastolic blood pressure and VO_2 Max respectively. The obtained f-values of above said variables were higher than the required table value of 3.22 they are statistically significant at the 0.05 level of confidence for the degrees of freedom 2 and 57. The results of the table 1 also reveals that there will be significant difference among selected physiological parameters of Percent body fat, Systolic blood pressure, Diastolic blood pressure and VO_2 Max.

To find out significant different with individual comparison among the normal, overweight and obese category the scheffe's test was administered to find out the much closer difference among the group on selected variables.

Table 2: Scheffe's test for the differences between means on selected variables of normal, overweight and obese female science students of Nirmala college for women

Variables	Normal	Overweight	Obese	Mean difference	Critical value
Percent body fat	24.38	30.03	---	5.65*	1.33
	24.38	---	35.55	11.17*	
	---	30.03	35.55	5.52*	
Systolic blood pressure	98.25	117.65	---	19.4*	1.36
	98.25	---	127.65	29.4*	
	---	117.65	127.65	10.0*	

Diastolic blood pressure	68.40	75.05	---	6.65*	1.21
	68.40	---	82.50	14.1*	
	---	75.05	82.50	7.45*	
VO_2 Max	36.99	34.97	---	2.03*	0.39
	36.99	---	32.12	4.87*	
	---	34.97	32.12	2.85*	

* - 0.05 level of confidence

From the table – 2 inferred that the normal category girls' students are having lesser percent body fat that overweight and obese female students. The overweight students are having less percent body fat that the obese female students of Nirmala College. The mean difference among the all category students are found to be significant when comparted with the respective confidence interval (CI) values. Hence all are significant at 0.05 level of confidence.

The normal category students having systolic blood pressure and diastolic blood pressure of 98.25 and 68.40, for overweight students 117.65 and 75.05 and for the obese females had 127.65 and 82.50 mmHg. This result revels that the blood pressure is more for the obese category female students of Nirmalaa College for women. The normal (36.99) students having better Vo2 max than the overweight (34.97) and obese (32.12) female students.

From the result of the study it was inferred that the risk factor are very much associated with the obese category students of Nirmala college for women.

These results of the study with graphical representation was given below.

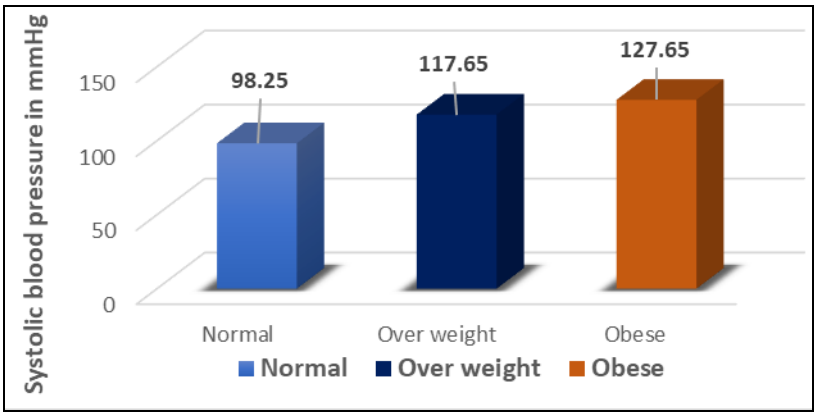

Fig 1: Bar Diagram showing the mean values of Systolic blood pressure in mmHg

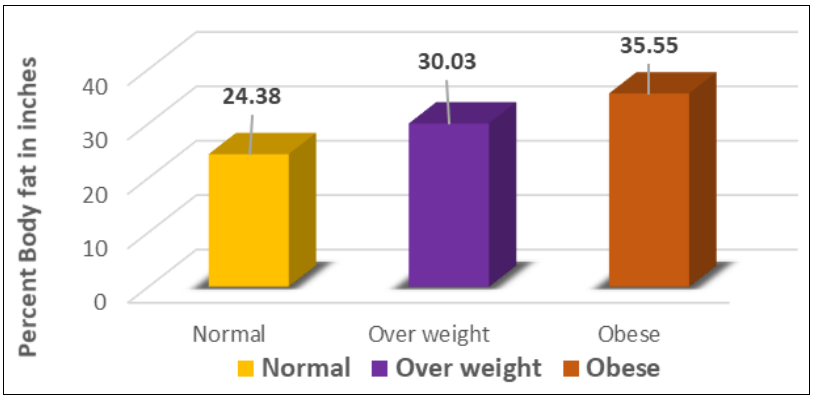

Fig 2: Bar Diagram showing the mean values of Percent body fat in inches

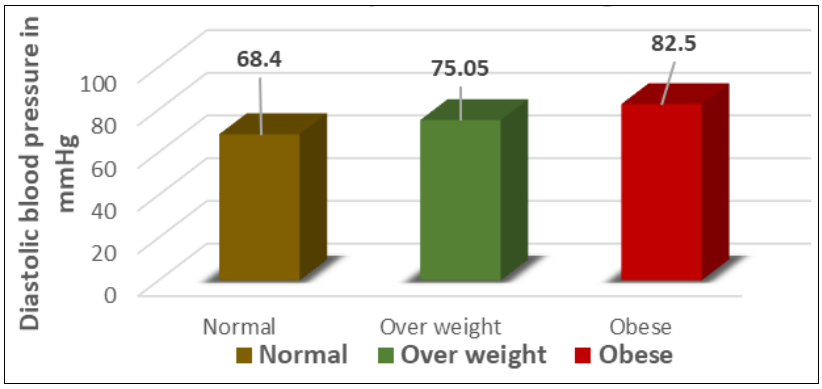

Fig 3: Bar Diagram showing the mean values of Diastolic blood pressure in mmHg

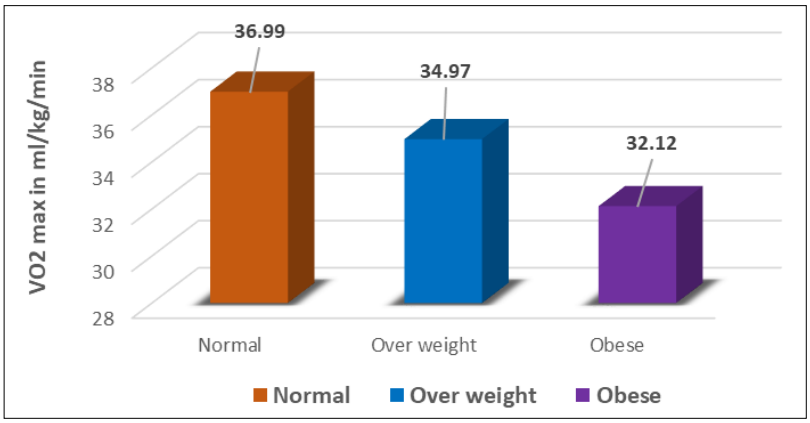

Fig 4: Bar Diagram showing the mean values of VO2 Max in ml/kg/min

Discussion on finding

The influence of adult lifestyles on their future health is a contemporary issue of great concern. At the onset of this investigation, no comprehension information was available on CVD risk factors among the female science students of Nirmala College for Women.

From the result of this study the following findings were drawn:

The results of percent body fat of the obese female science students of Nirmala College for Women were having more percent body fat than normal and overweight female science students of Nirmala college for Women. And the overweight female students of Nirmala college for Women were having more percent body fat than the normal weight female students of Nirmala college for Women (Li L, et.al 2007) [1]. From the results of the study indicated that the systolic blood pressure of the obese female science students of Nirmala college for Women were having more systolic blood pressure than normal and overweight female science students of Nirmala college for Women. And the overweight female students of Nirmala college for Women were having more systolic blood pressure than the normal weight female students of Nirmala college for Women. (Pantsulaia Ia,)

With reference to the results of diastolic blood pressure of the obese female science students of Nirmala college for Women were having more diastolic blood pressure than normal and overweight female science students of Nirmala college for Women. And the overweight female students of Nirmala college for Women were having more diastolic blood pressure than the normal weight female students of Nirmala college for Women. (Pantsulaia Ia,) The results of maximum oxygen uptake (VO_2 max) of the normal weight female science students of Nirmala college for Women were having more maximum oxygen uptake (VO_2 max) than overweight and obese female science students of Nirmala college for Women. And the overweight female students of Nirmala college for Women were having more maximum oxygen uptake (VO_2 max) than the obese female students of Nirmala college for Women. (McInnis KJ, et. al, 1996) [3].

In the present study the result indicated that there was a significant mean difference in percent body fat, Systolic blood pressure, Diastolic blood pressure and maximum oxygen uptake (VO2 max) among the normal, overweight and obese female science students of Nirmala college for Women. Hence the hypothesis was accepted.

Conclusions

Based on the results and discussion made in the previous chapter, the following conclusions were drawn. It was concluded that the obese female science students had a higher value of Percent Body Fat, systolic blood pressure and diastolic blood pressure and had a lower value of maximum oxygen uptake (VO_2 max) than the normal and overweight female science students of Nirmala college for Women. It was also concluded that the overweight female science students had a higher value of Percent Body Fat, systolic blood pressure and diastolic blood pressure and had a lower value of maximum oxygen uptake (VO_2 max) than the normal weight female science students of Nirmala college for Women. Further it was inferred that the overweight female science students had a lower value of Percent Body Fat, systolic blood pressure and diastolic blood pressure and had a higher value of maximum oxygen uptake (VO_2 max) than the obese female science students of Nirmala college for Women. From the finding of the study it was concluded that the normal weight female science students had a lower value of Percent Body Fat, systolic blood pressure and diastolic blood pressure and had a higher value of maximum oxygen uptake (VO_2 max) than the overweight and obese female science students of Nirmala college for Women.

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