



ISSN: 2456-0057

IJPNPE 2019; 4(1): 1677-1679

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www.journalofsports.com

Received: 17-01-2019

Accepted: 22-02-2019

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Effect of physical activity and walking on blood glucose level among college women

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Abstract

The present study is an outcome of the effect of physical activity and walking on blood glucose level among college women. To achieve the purpose of the study forty five college women were selected from various colleges in the Chennai district and their age groups were between 18-22 years. Selected subjects were divided into three equal groups, namely experimental group I, experimental group II, and control group III. Each group consisted of fifteen subjects. Random group design was used for the selection of the subjects. Training period of this study was Six weeks. Experimental group I undergone the physical activity, experimental group II undergone the walking and control group III undergone no training. Pre and post test were taken before and after the six weeks of training programme. To analyses the data ANCOVA and Scheffe's post hoc test was used. The result of the study shows that there was a significant decrease on Fasting blood glucose and postprandial blood glucose among college women due to the influence of physical activity and walking. The conclusion is that the physical activity and walking helped to positive reduction and control of the level of Fasting and Postprandial blood glucose among college women.

Keywords: Physical activity, walking, fasting blood glucose and postprandial blood glucose

Introduction

Physical activity has proved beneficial in many, many afflictions of the human body. College women students are pillars of our country. Their health is very important. Now day's college students facing many more of health problems. Stress also one of the reasons for health problems. Physical activity and walking reduce stress and excess weight it is not strenuous; however, it can increase the rate of metabolism so the body burns more calories than it normally does. In this manner physical activity can regulate the fat deposits, blood glucose level and induce weight loss control weight gain and burn more calories than would normally do (and hence lose weight), physical activity and walking can help reduce and control blood glucose level. Hence, physical activity and walking impacts the body through many ways – (i) increases the metabolic rate so more calories are burnt, (ii) reduces appetite and controls hunger, (iii) checks compulsive overeating habits and lastly (iv) relieves stress which many times is one of the main reasons for gaining weight in the first place. Both physical activity and walking give good health to college women.

Statement of the problem

The purpose of the study was to find out the effect of physical activity and walking on blood glucose level among college women.

Hypothesis

It was hypothesized that would be a significant decrease on fasting and Postprandial blood glucose among college women.

Significance of the study

College women pillar of our country. Their excellence in all fields of life is need for them. Physical activity and walking are very essential as because promote healthy life.

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Delimitation

1. The subjects were delimited into forty-five college women only.
2. The age groups of the subjects were between 18 to 22 years.
3. The selected subjects were divided into three equal groups; each group was consisted of fifteen subjects only.
4. The subjects of the study were selected from Chennai district only
5. The study was delimited to the college women only in Chennai.

Limitation

Certain factors like life style, body structure, personal habits, family heredity, and motivational factors are not to be taken into consideration for this study. Certain factor like diet, environmental and climatic conditions, and economical background is not to be taken into consideration. The day to day routine works would not be controlled.

Reviews of Related Literature

Khan UI *et al.*, (2014) [2], examined the incident progression from MBO (less than two metabolic syndrome abnormalities) to ARO (two or more metabolic syndrome abnormalities) and factors associated with progression over a 7-year period. Of 866 MBO women at baseline, 43% progressed to the ARO phenotype. Compared with those who remained MBO, those who progressed had higher baseline BMI and a higher prevalence of cardio metabolic abnormalities (elevated glucose, triglycerides, blood pressure and low high-density lipoprotein cholesterol). In multivariable analyses, an increase in body mass index was associated with a modest increase in the risk of progression. Although all cardio metabolic abnormalities were associated with an increased risk, the baseline impaired fasting glucose showed the strongest association with the risk of progression [hazard ratio 3.24; 95% confidence interval 2.10, 4.92; $P < .001$]. Physical activity played a protective role in decreasing the risk of progression [hazard ratio 0.86; 95% confidence interval 0.80, 0.92; $P < .001$]. Increasing obesity and the presence of cardio metabolic abnormalities increase the risk of progression, whereas physical activity is the only lifestyle factor protective against progression from metabolically benign to the at-risk overweight/obese phenotype, a state that is unanimously associated with an elevated risk of cardiovascular morbidity and mortality.

Methodology

Selection of the Subjects

To achieve the purpose of these study forty-five subjects were

randomly selected from various colleges in Chennai district, the subject's age groups was ranged between 18 to 22 years only. They were divided into three equal groups. Physical Activity, Walking and control group were considered as experimental groups and another group was control group.

Selection of the Variables

1. Independent variables: I. Physical Activity II. Walking

2. Dependent variables: Fasting Blood Glucose and Postprandial Blood Glucose

Experimental Design

The study was formulated as a true random group design, consisting of a pre test and post test the subjects (N=45) were randomly assigned to three equal groups. The groups were assigned as Experimental group I, II and Control group respectively. Pretest was conducted for all the subjects on the experimental groups participated in their respective physical activity and walking for a period of six weeks. The post test was conducted on the above said dependent variables after a period of six weeks in the respective treatments.

Collection of Data

The subjects of the study were selected at random and divided into three homogeneous groups. Among the three groups, the control group was strictly under control, without undergoing any special activity. The experimental group I and experimental group II underwent the experimental treatments. The experimental groups were well acquainted with their allotted techniques and did only the experimental treatment given to them for a period of six weeks under the personal supervision of the researcher.

Statistical Technique

The data collected from the subjects were treated statistical Analysis of Covariance was used to find out the adjusted mean difference among the treatment groups. The Scheffe's post hoc test was used to find out the paired mean significance.

Results and Discussion

Results on Fasting Blood Glucose

The statistical analyses comparing the initial and final means of Fasting Blood Glucose accessed through blood test by the biochemist due to Physical Activity and Walking on college women presented in table –1.

Table 1: Analysis of Covariance on Fasting Blood Glucose

Test	Physical Activity	Walking	Control Group	Source of variation	Sum of Squares	Df	Mean Squares	Obtained F values
Pre test mean	81	78.60	78.27	Between	66.71	2	33.356	1.72
				Within	814.53	42	19.39	
Post test mean	74.4	74.00	78.53	Between	188.98	2	94.49	5.07*
				Within	783.33	42	18.65	
Adjusted mean	72.88	74.61	79.44	Between	331.29	2	165.65	49.12*
				Within	138.263	41	3.37	

Table F value at 0.05 level of significance for 2 and 41 df & 2 and 42 was 3.16.

From the table 1 obtained F value for pre test 0.86 was lesser than the table F value 1.72, this indicates that the random assignment of the subjects were successful. The analysis of post test proved that the obtained F value 5.07 was greater than the required value of 3.16 to be significant at 0.05 levels. Taking into consideration of adjusted post test, the obtained F

value 49.12 was greater than the required value of 3.16 and hence it was accepted that physical activity and walking significantly decreased Fasting Blood Glucose since significance differences were recorded, the results were subjected to post hoc analysis using Scheffe's confidence interval test. The result were presented in table 1(a)

Table 1(a): Scheffe's confidence interval test scores on Fasting Blood glucose

Control Group	Means		Mean difference	Required CI
	Physical Activity	Walking		
79.44	72.88	-	6.57*	1.67
79.44	-	74.61	4.83*	1.67
-	72.88	74.61	1.74*	1.67

The table 1(a), it was proved that there was significant differences between Physical Activity, walking and control group.

Discussion on the findings of fasting blood glucose

The result presented in table-1 proved that there was significantly decreased the Fasting Blood Glucose due to Physical Activity, walking and control group.

Results on Postprandial Blood Glucose

The statistical analyses comparing the initial and final means of Postprandial Blood Glucose accessed through blood test by the biochemist due to Physical Activity and walking presented in table -2

Table 2: Computation of Analysis of Covariance of Postprandial Blood Glucose

Test	Physical Activity	Walking	Control Group	Source of variation	Sum of Squares	Df	Mean Squares	Obtained F values
Pre test mean	96.07	95.00	95.40	Between	108.71	2	54.356	1.81
				Within	4148.53	42	98.77	
Post test ASmean	85.6	90.27	95.87	Between	792.71	2	396.36	4.76*
				Within	3496.27	42	83.24	
Adjusted mean	85.17	90.63	95.93	Between	868.63	2	434.31	15.21*
				Within	1170.51	41	28.55	

Table F value at 0.05 level of significance for 2 and 41 df & 2 and 42 was 3.16

From the table 2 obtained F value for pre test 1.81 was lesser than the table value of F (3.10), this indicates that the random assignment of the subjects were successful. The analysis of post test proved that the obtained F value 4.76 was greater than the required value of 3.16 to be significant at 0.05 levels. Taking into consideration of adjusted post test, the obtained F value 15.21 was greater than the required value of 3.16 and hence it was accepted that the physical activity and walking significantly decreased Postprandial Blood Glucose. Since significance differences were recorded, the results were subjected to post hoc analysis using Scheffe's confidence interval test. The result were presented in table 2 (a)

Table 2(a): Scheffe's confidence interval test scores on postprandial blood glucose

Control Group	Means		Mean difference	Required CI
	Physical Activity	Walking		
95.93	85.17	-	10.77	4.86*
95.93	-	90.63	5.30	4.86*
-	85.17	90.63	5.47	4.86*

The table 2(a), it was proved that there was significant differences between physical activity, walking and control group.

Discussion on the findings of postprandial blood glucose

The result presented in the table 2 proved that there was significantly decreased postprandial blood glucose due to physical activity and walking compared to control group.

Conclusion

From the analysis and discussions of the present study, the following conclusions were drawn.

- It was concluded that there was significantly decrease on Fasting blood glucose among college women due to physical activity and walking.
- It was concluded that there was significantly decreased on postprandial blood glucose among college women due to physical activity and walking.

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