International Journal of Engineering Research and Modern Education (IJERME)
Impact Factor: 6.525, ISSN (Online): 2455 - 4200
(www.rdmodernresearch.com) Volume 2, Issue 1, 2017

EFFECT OF CIRCADIAN OSCILLATION DURING FOOD DEPRIVATION ON BLOOD SUGAR IN OBESE MEN

M. A. Mohideen Abdul Khader* & Dr. K. V. Balamurugan**
* Research Scholar (PT), Department of Physical Education, Manonmaniam Sundaranar University. Tirunelveli, Tamilnadu
** Associate Professor, Department of Physical Education & Sports Science, Annamalai University, Chidambaram, Tamilnadu

Cite This Article: M. A. Mohideen Abdul Khader & Dr. K. V. Balamurugan, "Effect of Circadian Oscillation During Food Deprivation on Blood Sugar in Obese Men", International Journal of Engineering Research and Modern Education, Volume 2, Issue 1, Page Number 139-142, 2017.

Abstract:

The purpose of the study was to find out the effect of circadian oscillation during food deprivation on blood sugar among obese men. To achieve the purpose of the present study, sixty obese men from Islamiah College, Vaniyambadi, Tamilnadu, India were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into four equal groups of fifteen subjects each. Group I acted as Experimental Group I (Food Deprivation Training), Group II acted as Experimental Group II (Physical training), Group III acted as Experimental Group III (Food Deprivation & Physical training) and Group IV acted as Control Group. The requirement of the experiment procedures, testing as well as training schedule was explained to the subjects so as to get full co-operation of the effort required on their part and prior to the administration of the study. Blood sugar was assessed by lab test. Experimental Group I was exposed to food deprivation training, Experimental Group II was exposed to physical training, Experimental Group III was exposed to food deprivation & physical training and Control Group was not exposed to any experimental training other than their regular daily activities. The duration of experimental period was 120 days. After the experimental treatment, all the sixty subjects were tested on blood sugar. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to statistical analysis using 't' test. In all cases 0.05 level of significance was fixed to test hypotheses. The findings of the study showed that the all the experimental groups showed changes in blood sugar than the control group.

Key Words: Circadian Rhythm, Obese, Men & Blood sugar

Introduction:

Circadian rhythms continue to persist under constant conditions. This phenomenon is called free running and rhythms exhibit period (FR) that is slightly greater or shorter than 24 h. The endogenous period is temperature compensated within the physiological range; it means that at different ambient temperature the period length of the clock remains the same with Q10 equals to 1.0.3. They are under genetic control. It has been documented that single mutation can profoundly affect the period length of biological clocks. Mutation in gene causes shortening or lengthening of circadian period in fruit fly to become arrhythmic. Biological clocks are entrained to an exact period by environmental time cues or zeitgebers. The circadian rhythms also provide temporal organization and ensure that internal changes take place in synchronization with one another**.** Obesity may be caused by genetic and environmental factors. As an exercise specialist, one play an important role in combating this major health problem by encouraging a physically active lifestyle and by planning exercise programs and scientifically sound diets for one's clients, in consultation with trained nutrition professionals. Restricting caloric intake and increasing caloric expenditure through physical activity and exercise are effective ways of reducing body weight and fatness while normalizing blood pressure and blood lipid profiles.

Methodology:

The purpose of the study was to find out the effect of circadian oscillation during food deprivation on blood sugar among obese men. To achieve the purpose of the present study, sixty obese men from Islamiah College, Vaniyambadi, Tamilnadu, India were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into four equal groups of fifteen subjects each. Group I acted as Experimental Group I (Food Deprivation Training), Group II acted as Experimental Group II (Physical training), Group III acted as Experimental Group III (Food Deprivation & Physical training) and Group IV acted as Control Group. The requirement of the experiment procedures, testing as well as training schedule was explained to the subjects so as to get full co-operation of the effort required on their part and prior to the administration of the study. Blood sugar was assessed by lab test. Experimental Group I was exposed to food deprivation training, Experimental Group II was exposed to physical training, Experimental Group III was exposed to food deprivation & physical training and Control Group was not exposed to any experimental training other than their regular daily activities. The duration of experimental period was 120 days. After the experimental treatment, all the sixty subjects were tested on blood sugar. This final test scores formed as post

test scores of the subjects. The pre test and post test scores were subjected to statistical analysis using 't' test. In all cases 0.05 level of significance was fixed to test hypotheses.

Results:

Table 1: Mean Gains & Losses between Pre and Post Test Scores on Blood Sugar at Different Hours of Experimental and Control Groups

S.No	Hours	Pre-Test Mean	Post-Test Mean	Mean difference	Std. Dev (±)	σ DM	't' Ratio
Food Deprivation Group							
1	6.00 am	114.13	93.40	20.73	3.59	0.92	22.33*
2	8.00 am	114.66	94.53	20.13	4.61	1.19	16.90*
3	4.00 pm	114.93	109.46	5.47	4.99	1.29	4.23*
4	6.00 pm	116.00	109.26	6.74	7.49	1.93	3.47*
Physical Training Group							
1	6.00 am	114.80	94.13	20.67	4.06	1.04	19.69*
2	8.00 am	114.00	95.40	18.60	5.43	1.40	13.25*
3	4.00 pm	114.60	109.80	4.80	7.59	1.96	2.44*
4	6.00 pm	115.66	109.46	6.20	5.78	1.49	4.15*
Combined Food Deprivation and Physical Training Group							
1	6.00 am	115.46	89.60	25.86	4.43	1.14	22.57*
2	8.00 am	115.13	91.53	23.60	3.48	0.89	26.26*
3	4.00 pm	113.73	101.40	12.33	5.28	1.36	9.03*
4	6.00 pm	114.73	101.46	13.27	6.26	1.61	8.20*
Control Group							
1	6.00 am	114.66	114.46	2.00	5.19	1.34	0.14
2	8.00 am	114.80	114.60	2.00	4.02	1.03	0.19
3	4.00 pm	115.40	114.46	0.94	3.95	1.02	0.91
4	6.00 pm	115.46	115.33	0.13	4.03	1.04	0.12

* Significant at 0.05 level

From table I the obtained 't' ratios for pre and post test mean difference of blood sugar for food deprivation group at 6.00 am (22.33), 8.00 am (16.90), 4.00 pm (4.23) and 6.00 pm (3.47), for physical training group 6.00 am (19.69), 8.00 am (13.25), 4.00 pm (2.44) and 6.00 pm (4.15), for combined food deprivation and physical training group at 6.00 am (22.57), 8.00 am (26.26), 4.00 pm (9.03) and 6.00 pm (8.20). The obtained ratios when compared with the table value of 2.14 of the degrees of freedom (14) it was found to be statistically significant at 0.05 level of confidence. For control group at 6.00 am (0.14), 8.00 am (0.19), 4.00 pm (0.91) and 6.00 pm (0.12) were lesser than the table value of 2.14 of the degrees of freedom (14) it was found to be statistically significant at 0.05 level of confidence.

Figure 1: Pre Post and Adjusted Post Test Differences of the Food Deprivation Group on Blood Sugarat 6.00 am

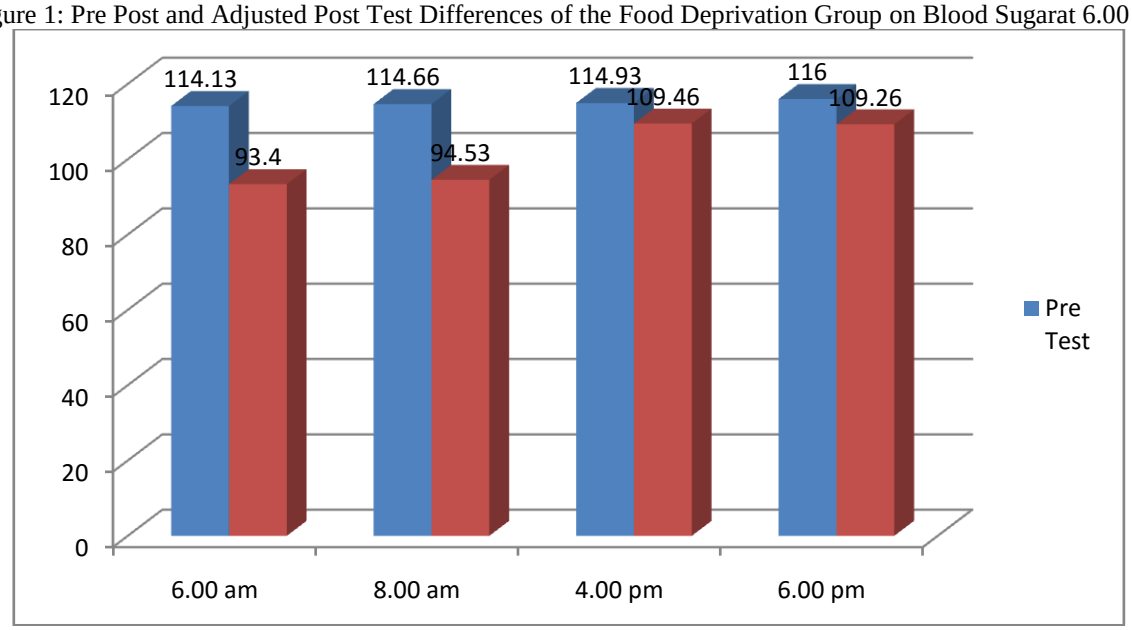


Figure 2: Pre Post and Adjusted Post Test Differences of the Physical Training Group on Blood Sugarat 8.00 am

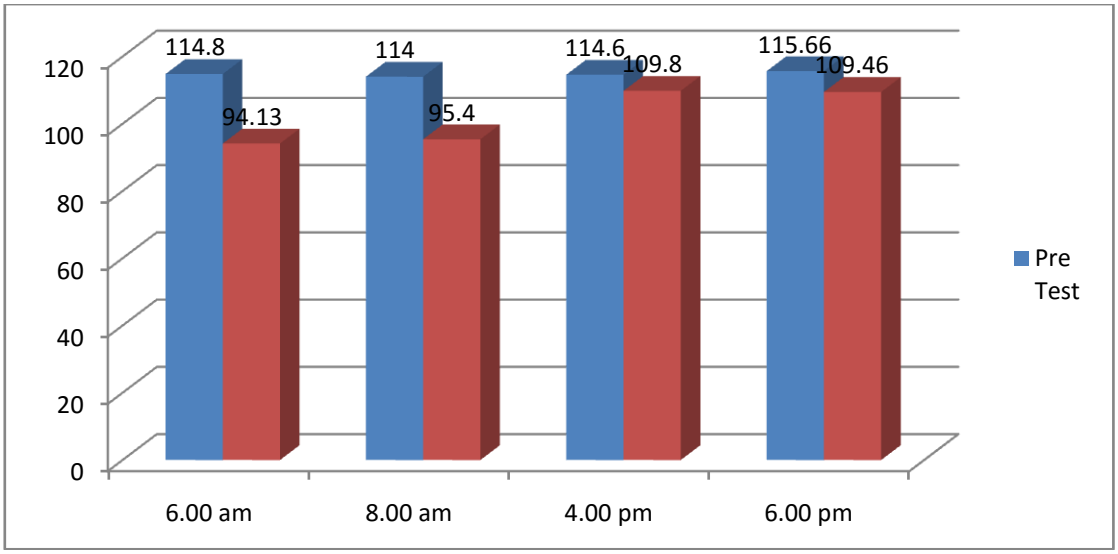


Figure 3: Pre Post and Adjusted Post Test Differences of the Combined Food Deprivation and Physical Training Group on Blood Sugarat 4.00 pm

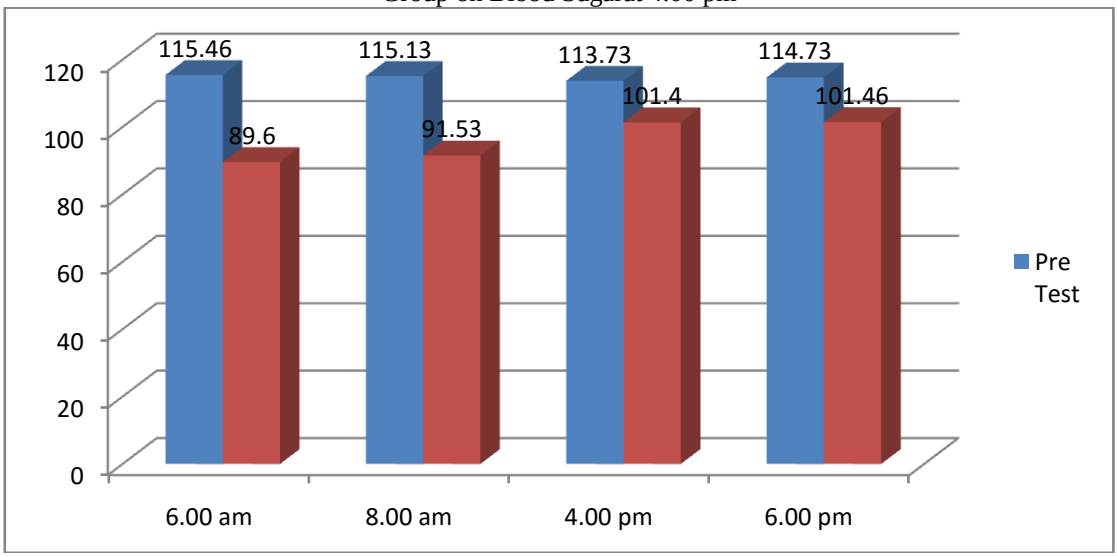
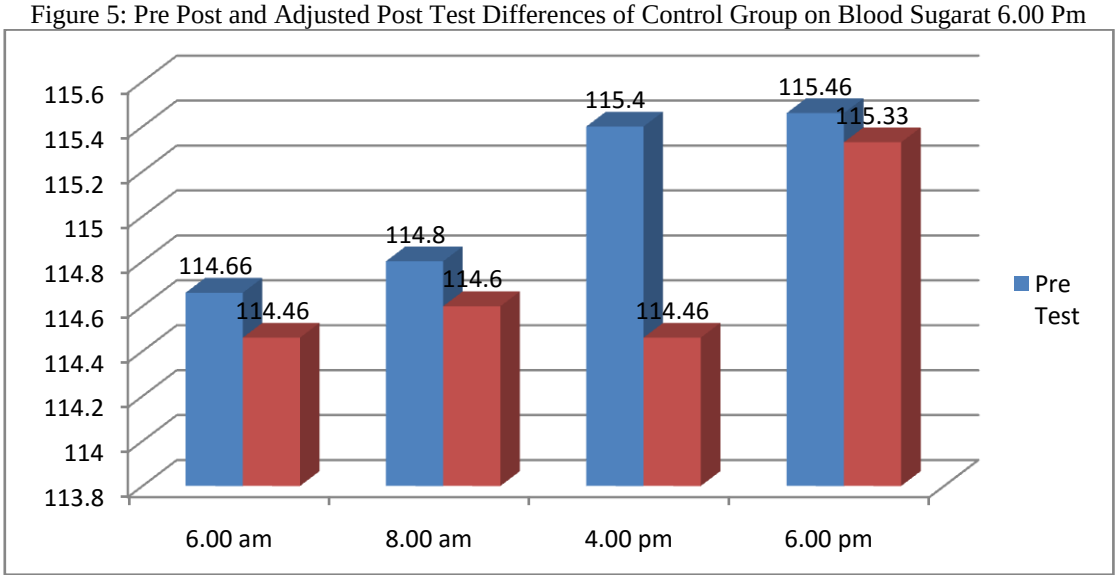


Figure 5: Pre Post and Adjusted Post Test Differences of Control Group on Blood Sugarat 6.00 Pm



Conclusion:

The findings of the study showed that the all the experimental groups showed changes in blood sugar than the control group.

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