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Effect of circuit training programme on perceived stress on pre-obese adolescents

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Abstract

The present study was conducted to assess the effect of Circuit Training Programme on Perceived Stress on Pre-Obese Adolescents. The objective of the study was to find out the effect of 30 minutes Circuit Training Programme on Perceived Stress sedentary pre-obese adolescent for a total duration of 21 days. For the purpose of the study, thirty (n=30) subjects were selected. The age group of the subjects ranged from 12 years to 18 years. The subject selected were the students from Kendriya Vidyalaya, Shalimar Bagh New Delhi. The Statistical Technique employed for analysing the data were Mean, Standard Deviation and 't' test. The level of significance was set at 0.05 for interpreting the results. The result of the study indicates was no significant difference in Perceived Stress between Experimental and Control group. However there was a decrease in experimental group but it did not reach the significant level. Further, Experimental group had significantly higher average performance mean score as a result of 21 days of Circuit Training than the control group subjects who were not engaged in any training programme.

Keywords: Circuit training programme, perceived stress

Introduction

The high prevalence of obesity is a major public health problem because of the association of obesity with chronic health conditions such as coronary heart disease, type 2 diabetes, and some cancers (NIH 2011) [1]. The increase in prevalence during the last several decades more likely stems from environmental factors at multiple levels than genetic changes Sallis *et al.* (1998) [2].

Research interest in the potential role of stress in health is growing. Stress is an individual-level factor associated with environmental phenomena and individual-level disease processes. Stress occurs when environmental demands tax or exceed the adaptive capacity of an organism; the demands result in physiologic or psychological processes that put the organism at risk for disease Cohen *et al.* (2007) [3]. Adults experience numerous types of stress (eg, work, finances, family), and each type contributes to overall stress. Although types of stress may vary from person to person and group to group, overall measures of stress allow generalized comparisons. Measures of stress are imperfect, but measures of perceived stress are valuable because they account for differences in the appraisal of what is stressful, exposure to stressors, and coping ability Mimura *et al.* (2008) [4].

Perceived stress is associated with direct changes to both physiologic (eg, hormonal response) and psychological processes. Chronically elevated levels of perceived stress affect cortisol levels, which have been associated with increased risk for central obesity Adam *et al.* (2007) [5]. Evidence for an association between stress and physical activity behaviors is mixed Trost *et al.* (2002) [6] and more testing of physical activity theory is needed to identify inconsistencies in the literature Rhodes *et al.* (2011) [7]. Experimental studies have demonstrated that acute stress affects dietary behaviors, especially among people with certain eating behaviors, such as restrained eating (ie, intentional caloric restriction) Teegarden *et al.* (2007) [8].

Problem Statement

The purpose of the present investigation was to find the effect of Circuit Training Programme on Perceived Stress on Pre-Obese Boys Adolescents with an objective to find out the effect of

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30 minutes of Circuit Training Programme on Perceived Stress.

Methodology

The study was formulated as an experimental design of 21 days of training to find out the effect of Circuit Training Programme on Stress. Thirty (30) male subjects who were selected for the study was randomly assigned to two different groups namely Circuit Training as Experimental group & Control group (Not exposed to any training).Circuit Training group consisted of 15 subjects, and Control group consisted of 15 subjects. The age group of the subjects ranged from 12 years to 18 years. The data was collected prior to the start of training session (pre –training data), and after completion of 21 days of circuit training (post- training data) on Stress Psychological variable. For measuring the Stress of the subjects’ the research scholar was assessed with the help of Perceived Stress scale was developed by Sheldon Cohen (1988).

Circuit training group was given 5 days a week for 3 weeks and 4th week having 6 days. The control group was not exposed to any training programme. Circuit Training unlisted eight exercise grouped used 8 different states which constituted one circuit. The eight states included following exercise:

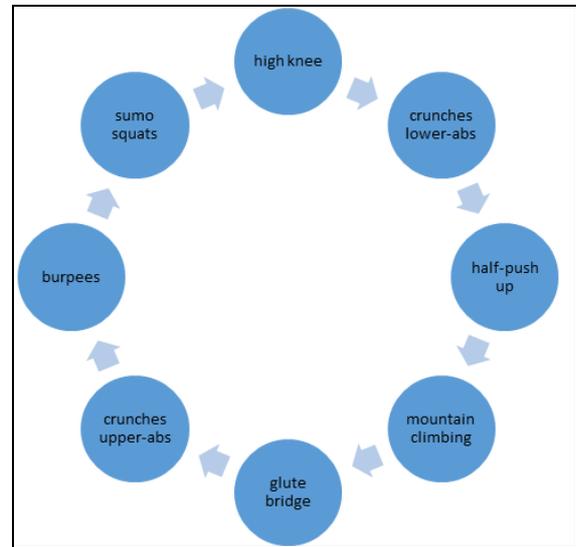


Fig 1: Circuit training programme.

Findings

To find out the effect of 21 days of circuit training on Perceived Stress on pre –obese adolescents the mean, standard deviation and the ‘t’ test were calculated which are presented in the following table .

Table 1: Descriptive statistics & paired ‘t’ test of psychological variables of Experimental and control Group:

Variables	Groups	Mean	Std. Deviation	Std. Error Mean	t	df	Sig.(2-tailed)
Perceived Stress	Exp-Pre	17.66	4.77	1.233	0.289	14	0.777
	Exp-Post	17.33	4.15	1.072			
Perceived Stress	Control-Pre	17.46	5.462	1.410	0.244	14	0.811
	Control-Post	17.80	4.678	1.207			

From table no.1 the results indicate that there was no significant difference in stress between pre and post data of experimental group $t(14) = 0.289, P = 0.777$, which is greater than 0.05. That is the average score of pre data of experimental group (M=17.66 SD=4.77) was not statistically different from that of post data of experimental group (M=17.33, SD=4.15). Thus, it could be concluded that there was a no significant difference in stress between pre and post data of experimental group. However, there was decrease in the mean score of stress after 21 days.

From table no.1 the results indicate that there was no significant difference in stress between pre and post data of control group $t(14) = 0.244, P = 0.811$, which is greater than 0.05. That is the average score of pre data of control group (M=17.46, SD=5.462) was not statistically different from that of post data of control group (M=17.80, SD=4.678). Thus, it could be concluded that there was a no significant difference in stress between pre and post data of control group. However, there was increase in the mean score of stress after 21 days.

Table 2: Descriptive statistics & Independent ‘t’ test of psychological variables of Experimental and control Group

Variables	Groups	Mean	Std. Deviation	Std. Error Mean	t	df	Sig.(2-tailed)
Perceived Stress	Exp-Pre	17.67	4.77	1.233	0.107	28	0.916
	Control-Pre	17.47	5.46	1.410			
Perceived Stress	Exp-post	17.33	4.151	1.072	0.289	28	0.775
	Control-Post	17.80	4.678	1.207			

From table no.2 the results indicate that there was no significant difference in stress between pre and pre data of experimental and control group $t(28) = 0.107, P = 0.916$, which is greater than 0.05. That is the average score of pre data of experimental group (M=17.67 SD=4.77) was not statistically different from that of pre data of control group (M=17.46, SD=5.46). Thus, it could be concluded that there was a no significant difference in stress between pre and pre data of experimental and control group. However, there was decrease in the mean score of stress after 21 days.

which is greater than 0.05. That is the average score of post data of experimental group (M=17.33, SD=4.151) was not statistically different from that of post data of experimental group (M=17.80, SD=4.678). Thus, it could be concluded that there was a no significant difference in stress between post and post data of experimental and control group. However, there was decrease in the mean score of stress after 21 days.

From table no.2 the results indicate that there was no significant difference in stress between post and post data of experimental and control group $t(14) = 0.289, P = 0.775$,

The graphical representation of mean scores of table no.1 & 2 and its variables for shown in Figure No. 1.

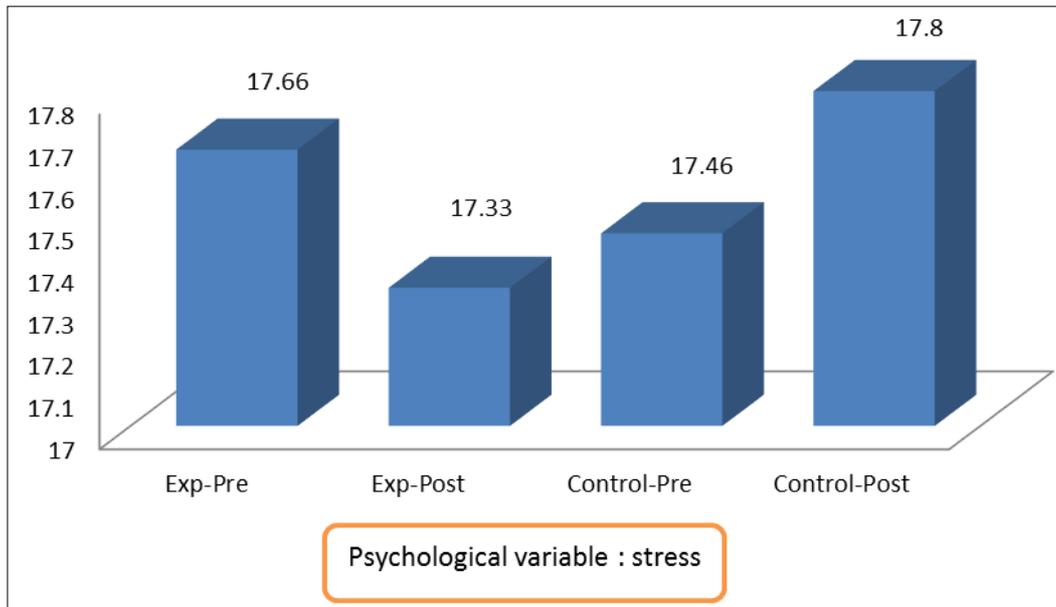


Fig 1: Graphical Representation of Mean Score from Table 1 & 2

Based on our inspection of the above figure, it is clear that the circuit training group had significantly average performance mean score as a result of 21 days circuit training than the control group.

Discussion of findings

Analysis of the data revealed no significant difference in the 't' value between the circuit training group and control group in psychological variable of Perceived Stress. Further, these scores indicates that circuit training group had significantly decrease average performance score as a result of 21 days of circuit training programme than the control group subjects who were not engaged in any training programme. So the result shows that the circuit training has a positive influence on Perceived Stress. Further, if we look at the result of the present study it is clearly visible that the circuit training group scored decrease in Perceived Stress after engaging in a 21 days training programme in comparison to their pre-recorded data. Exercise showed positive effects on Perceived Stress.

Conclusions

The result obtained after the implementation of circuit training on the psychological variable Perceived Stress of experimental group, following conclusion are drawn:

1. The circuit training group had significantly decrease average performance mean score of Perceived Stress as a result of 21 days of circuit training than the control group subjects who were not engaged in any training programme. This further indicates that the average performance of circuit training group on Perceived Stress of was decreased from the control group.

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