ISSN: 2349 - 4891

International
Journal of Recent Research and Applied Studies
(Multidisciplinary Open Access Refereed e-Journal)

Influence of Recreation Activity and Aerobic Exercise on Muscular Endurance and Anaerobic Capacity Variables of School Boys with Overweight

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Received 4th February2020, Accepted 5th March 2020

Abstract

The objective of the study was to investigate the Influence of Recreation Activity and Aerobic Exercise on Muscular Endurance and Anaerobic Capacity Variables of School Boys with Overweight. To achieve this purpose, Sixty Overweight School Boys from various schools in Thirunelveli District were selected at random. Their age ranged between 14 and 17. The selected subjects were randomly divided into three equal groups of 20 each, namely Recreation Activity Group (Group - A), Aerobic Exercise (Group - B) and Control Group (Group - C). The Experimental Group had undergone Recreation Activity and Aerobic Exercise for 12 weeks, five days a week and daily one session only in the morning, duration of session one hour, whereas the Control Group (Group - C) maintained their daily routine activities and no special training was given. Physical variable namely Muscular Endurance and Physiological Variable Anaerobic Capacity were chosen as variables for this study. The subjects of the three groups were tested using standardized tests and procedures on selected Physical and Physiological variables before and after the training period. The following test items namely push – Ups and Anaerobic Capacity were used to collect relevant data. The collected data were analyzed statistically through analysis of Covariance (ANCOVA) to find out the pre and post training performances. To compare the significant difference between the Adjusted final means and better group. The Recreation Activity and Aerobics Exercise showed significant improvement due to 12 weeks of training on Muscular Endurance and Anaerobic Capacity compared to Control Group.

Keywords: Recreation Activity, Aerobic Exercise, Muscular Endurance, Anaerobic Capacity and School Boys.

Introduction

World Health Organization (WHO), "Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. A crude population measure of obesity is the body mass index (BMI), a person's weight (in kilograms) divided by the square of his or her height (in meters). A person with a BMI of 30 or more is generally considered obese. A person with a BMI equal to or more than 25 is considered as overweight. Overweight and obesity are major risk factors for a number of chronic diseases, including diabetes, cardiovascular diseases and cancer. Once considered this problem is in high income countries, overweight and obesity are now dramatically on the rise in low and middle - income countries, particularly in urban settings".

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The benefits of recreation activity and aerobics are numerous, including improved physical fitness, stress control, general wellbeing, mental clarity and greater self-understanding. People of all ages can do recreation activity, and it can also be adapted for people with disabilities or special needs. The poses enhance muscle strength, coordination, flexibility and agility and can help a bad back feel better. Regular practice of recreation activity and aerobics helps to keep our body fit, controls cholesterol level, reduces weight, normalizes blood pressure and improves heart performance. According to the National Institutes of Health, when people actively seek to reduce the stress in their levels by quieting the mind, the body often works to heal itself. In this sense recreation activity and aerobic can be seen not only as a way to get into shape on several levels, but also as a tool for self-healing.

Hypotheses

1. It was hypothesized that there would be a significant improvement between pre and post-test due to 12 weeks of Recreation Activity and

Aerobic Exercise on Muscular Endurance and Anaerobic Capacity Variables of School Boys with Overweight.

2. It was hypothesized that there would not be a significant improvement between pre and post-test for control group on Muscular Endurance and Anaerobic Capacity Variables of School Boys with Overweight.
3. It was hypothesized that there would be a significant difference between experimental and control group on Muscular Endurance and Anaerobic Capacity Variables of School Boys with Overweight.

Delimitations

1. The following delimitations are considered in this study. 60School Boys with Overweight, were selected randomly.
2. The experimental group was given Recreation Activity and Aerobic Exercise for a period of 12 weeks.
3. The subject's age group ranged from 14 - 17 years.
4. The study was restricted to muscular endurance and anaerobic capacity.

Methodology

Sixty overweight school boys from the various schools in Thirunelveli District were selected at random. Their age ranged between 14 and 17. The selected subjects were randomly divided to three equal groups of 20 each, namely recreation activity group (group A), aerobic exercise group (group B) and control group (group C). The recreation activity and aerobic exercise were designed in consultation with the experts and were administered for a period of twelve weeks, five days a week; a session each day in the morning, session lasted an hour. The recreation activity and aerobic group underwent their respective experimental treatment, whereas the control group maintained their routine activities and no special training was given. Recreation Activity for Experimental Group A and Selected Aerobic Exercise for Experimental Group B. Muscular Endurance by using Push - Ups and Anaerobic Capacity by using stop watch were selected variables for this investigation. The pretest, posttest and adjusted posttest were analyses by Analysis of Covariance (ANCOVA). The level of significance for the study was chosen as 0.05.

Results

Table 1. *Computation of 't' ratio between pre and post test scores of experimental group and control group*

Variables	**Group Name**	**Mean**		**SD**		**SD Error**	DF	**'t' ratio**
		Pre	**Post**	**Pre**	**Post**			
Muscular Endurance	Experimental Group I	40.00	44.75	7.73	6.63	0.41	24	11.58*
	Experimental Group II	40.12	43.85	7.89	6.58	0.40		10.26*
	Control Group	39.91	39.25	3.36	3.07	0.43		1.56
Anaerobic Capacity	Experimental Group	121.20	134.73	15.40	17.11	0.914	24	14.80*
	Experimental Group II	121.10	134.58	15.28	17.08	0.907		13.78*
	Control Group	121.03	119.23	15.41	14.41	0.86		2.08

*level of significance was fixed at 0.05 with df 24 table value is 2.001

The table 1 shows that the mean values of pre-test and post-test of experimental group I & II in muscular endurance were 40.00, 40.12 and 44.75, 43.85 respectively. The obtained't' ratio was 11.58& 10.26* since the obtained 't' ratio was greater than the required table value of 2.001 for significance at 0.05 level of with 24 degrees of freedom it was found statistically significant. The mean values of pre-test and post-test of control group in muscular endurance were 39.91 and 39.25 respectively. The obtained't' ratio was 1.53 which was lesser than the table value of 2.001 for significance at 0.05 level of with 24 degrees of freedom it was found statistically insignificant. The result of this study statistically proved that the experimental group showed significant improvement on muscular endurance due to Recreation Activity and Aerobic Exercise on School Boys with Overweight. The table 1 shows that the mean values of pre-test and post-test of experimental group I & II in anaerobic capacity were 121.20, 121.10 and 134.73, 134.58 respectively. The obtained't' ratio was 14.80& 13.78* since the obtained 't' ratio was greater than the required table value of 2.001 for significance at 0.05 level of with 24 degrees of freedom it was found statistically significant. The mean values of pre-test and post-test of control group in anaerobic capacity were 121.03 and 119.23 respectively. The obtained't' ratio was

2.08 which was lesser than the table value of 2.001 for significance at 0.05 level of with 24 degrees of freedom it was found statistically insignificant.

Table 2. *Computation of analysis of co-variance on muscular endurance among experimental group and control group*

Test	Experimental Group - I	Experimental Group - II	Control Group	SSV	SS	DF	MS	'F'
Pre-test mean	40.00	40.12	39.91	BG	0.042	2	0.021	0.001
Pre-test SD	7.73	7.89	3.36	WG	782.917	57	13.735	
Post-test mean	44.75	43.85	39.25	BG	181.5	2	90.75	8.79*
Post-test SD	6.63	6.58	5.78	WG	588.5	57	10.32	
Adjusted posttest Mean	45	43	39.28	BG	176.87	2	88.43	176.16*
				WG	28.319	56	0.50	

*Significant at 0.05 level of confidence Table value at 0.05 level of significance for 2 and 57 degrees of freedom is 3.15 and 2 and 56 degrees of freedom is 3.16.

Table 2 shows that the pre-test mean value on speed of Experimental Group I &II and Control Group were 40.00, 40.12 and 39.91 respectively. The obtained 'F' ratio of pre-test mean was 0.001, which was lesser than the required table value of 3.15 for df2 and 56 at 0.05 level of confidence on muscular endurance. The post-test mean value on speed of experimental group and control group were 44.75, 43.85 and 39.25 respectively. The obtained 'F' ratio of post-test mean was 8.79 which were greater than the required table value of 3.15 for df 2 and 57 at 0.05 level of confidence on muscular endurance. The adjusted post-test mean value on muscular endurance of experimental group I & II and control group were 45, 43 and 39.28 respectively. The obtained 'F' ratio of adjusted post-test mean was 176.16 which were greater than the required table value of 3.16 for df 2 and 56 at 0.05 level of confidence on muscular endurance. The result of the study indicates that there was a significant difference between the adjusted post-test mean of combined Recreation Activity and Aerobic Exercise on School Boys with Overweight on muscular endurance.

Table 3. *Computation of analysis of co-variance on anaerobic capacity among experimental group and control group*

Test	Experimental Group - I	Experimental Group - II	Control group	SSV	SS	DF	MS	'F'
Pre-test mean	121.20	121.10	121.03	BG	0.167	2	0.083	0.009
pre-test SD	15.40	15.28	15.41	WG	5223.50	57	91.64	
Post-test mean	134.73	134.58	119.23	BG	1441.19	2	720.59	7.45*
Post-test SD	17.11	17.08	14.41	WG	5506.97	57	96.61	
adjusted post test mean	134.6	132.7	119.3	BG	1409.98	2	704.99	221.13*
				WG	169.07	56	3.19	

Table value at 0.05 level of significance for 2 and 57 degrees of freedom is 3.15 and 2 and 56 degrees of freedom is 3.16.

Table 3 shows that the pre-test mean value on anaerobic capacity of Experimental Group I &II and control group were 121.20, 121.10 and 121.03 respectively. The obtained 'F' ratio of pre-test mean was 0.009, which was lesser than the required table value of 3.15 for df 2 and 57 at 0.05 level of confidence on anaerobic capacity. The post-test mean value on anaerobic capacity Experimental Group I &II and control group were 134.73, 134.58 and 119.23 respectively. The obtained 'F' ratio of post-test mean was 7.45 which were greater than the required table value of 3.15 for df2 and 57 at 0.05 level of confidence on anaerobic capacity. The adjusted post-test mean value on anaerobic capacity of Experimental Group I & II and control group were 134.7, 132.7 and 119.3 respectively. The obtained 'F' ratio of adjusted post-test mean was 221.13 which was greater than the required table value of 3.16 for df 2 and 56 at 0.05 level of confidence on anaerobic capacity. The result of the study indicates that there was a significant difference between the adjusted post-test mean of

Recreation Activity and Aerobic Exercise on School Boys with Overweight on anaerobic capacity.

Discussion on findings

Muscular Endurance

The result of the study reveals that there is a significant difference in muscular endurance of Recreation Activity and Aerobic Exercise between pre and post-test. But there is no significant difference in the muscular endurance of control group between pre and post-test. Regarding statistical analysis it is observed that there is a significant difference in muscular endurance between adjusted post-test means of experimental group (Recreation Activity and Aerobic Exercise) and control group. It is concluded that the Recreation Activity and Aerobic Exercise group showed significant improvement in muscular endurance of School Boys with Overweight.

Anaerobic capacity

The result of the study reveals that there is a significant difference in anaerobic capacity of Recreation Activity and Aerobic Exercise group between pre and post-test. But there is no significant difference in the anaerobic capacity of control group between pre and post-test. Regarding statistical analysis it is observed that there is a significant difference in anaerobic capacity between adjusted post-test means of experimental group (Recreation Activity and Aerobic Exercise group) and control group. It is concluded that the Recreation Activity and Aerobic Exercise group showed significant improvement in anaerobic capacity of School Boys with Overweight.

Conclusion

1. The Recreation Activity and Aerobic Exercise group had shown significant improvement in muscular endurance and anaerobic capacity among School Boys with Overweight.
2. The control group had not shown any significant changes on muscular endurance and anaerobic capacity among School Boys with Overweight.
3. The result of the study showed that there is a significant difference among the adjusted post-test mean of the experimental group and control group on muscular endurance and anaerobic capacity among School Boys with Overweight.

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Please cite this article as: . Subramanian, Dr. A. Kalebrajan & Dr. D. Sathiakumar (2020). Influence of Recreation Activity and Aerobic Exercise on Muscular Endurance and Anaerobic Capacity Variables of School Boys with Overweight. *International Journal of Recent Research and Applied Studies*, 7, 3(3), 8-11.