ISSN: 2349 - 4891

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

Effect of Circuit Training on Selected Physical Fitness Variables among School Children of Karnataka State

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Received 13th February 2015, Accepted 8th May 2015

Abstract

The purpose of the study was to investigate the effect of circuit training on selected physical fitness variables among school children of Karnataka state. It was hypothesized that there would be significant differences on selected physical fitness variables due to the effect of circuit training among school children of Karnataka state. For the present study the 30 male school children from Karnataka state were selected at random and their age was 14 to 16 years. For the present study pre test – post test random group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B'. Group 'A' underwent circuit training for 12 weeks and Group 'B' has not undergone any training. Speed was assessed by 30 meters standing start, agility was assessed by shuttle run (10 meters x 4) and explosive power was assessed by standing broad jump test. The data was collected before and after twelve weeks of training. The data was analyzed by applying Analysis of Co-Variance (ANCOVA). The level of significance was set at 0.05. The circuit training had positive impact on speed, agility and explosive power among school children of Karnataka state. The experimental group showed better improvement on speed, agility and explosive power among school children of Karnataka state than the control group.

Keywords: Circuit Training, School Children, Speed, Agility, Explosive Power.

Introduction

Circuit training employs a series of exercises stations that consist of weight training, flexibility, calisthenics, and brief aerobic exercises. In circuit training the subjects can move rapidly from one station to the next and perform weather exercises are to be done at that station within a specified time period. A circuit would consist of 8 to 12 stations and the entire would be repeated within three or four times, concentrating on the legs, abdomen, back, arms, shoulders and trunk. Each exercise is performed for a specified number of repetitions or for a set time before moving on to the next exercise. The exercises within each circuit are separated by a short rest period and each circuit is separated by a longer rest period. These exercises should be organized so the subjects move from one muscles group to another. This method allows working hard on a muscles group and then resting it while the other groups have then to workout. Circuit training can provide vigorous activity in a number of fitness and motor ability activities and is aimed at developed all the basic physical fitness components performed in a interesting and imaginative fashion.

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Methodology

The purpose of the study was to investigate the effect of circuit training on selected physical fitness variables among school children of Karnataka state. It was hypothesized that there would be significant differences on selected physical fitness variables due to the effect of circuit training among school children of Karnataka state. For the present study the 30 male school children from Karnataka state were selected at random and their age level was 14 to 16 years. For the present study pre test – post test random group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B'. Group 'A' underwent circuit training and Group 'B' has not undergone any training. Speed was assessed by 30 meters standing start, agility was assessed by shuttle run (10 meters x 4) and explosive power was assessed by standing broad jump test. The data was collected before and after twelve weeks of training. The data was analyzed by applying Analysis of Co-Variance (ANCOVA). The level of significance was set at 0.05.

Results

The findings pertaining to analysis of co-variance between experimental group and control group on selected physical fitness variables among school children of karnataka state for pre-post test respectively

have been presented in table I to III.

Table I. ANCOVA between Experimental Group and Control Group on Speed of School children of karnataka state for Pre, Post and Adjusted Test

	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Pre Test Mean	5.29	5.36	BG	0.09	1	0.09	0.04
			WG	51.96	28	1.85	
Post Test Mean	4.92	5.32	BG	154.13	1	154.13	56.36*
			WG	76.56	28	2.73	
Adjusted Post Mean	4.92	5.33	BG	142.56	1	142.56	74.97*
			WG	51.34	27	1.90	

*** Significant at 0.05 level.** **df: 1/27= 4.21**

Table I revealed that the obtained 'F' value of 74.97 was found to be significant at 0.05 level with df 1, 27 as the tabulated value of 4.21 required to be significant at 0.05 level. The same table indicated that there was a significant difference in adjusted means of speed of school children of karnataka state between experimental group and control group.

Table II. ANCOVA between Experimental Group and Control Group on Agility of School children of karnataka state for Pre, Post and Adjusted Test

	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Pre Test Mean	11.21	11.19	BG	12.16	1	12.16	2.18
			WG	155.76	28	5.56	
Post Test Mean	10.53	11.17	BG	259.32	1	259.32	33.84*
			WG	214.56	28	7.66	
Adjusted Post Mean	10.51	11.16	BG	168.21	1	168.21	20.53*
			WG	221.20	27	8.19	

*** Significant at 0.05 level.** **df: 1/27= 4.21**

Table II revealed that the obtained 'F' value of 20.53 was found to be significant at 0.05 level with df 1, 27 as the tabulated value of 4.21 required to be significant at 0.05 level. The same table indicated that there was a significant difference in adjusted means of agility of school children of karnataka state between experimental group and control group.

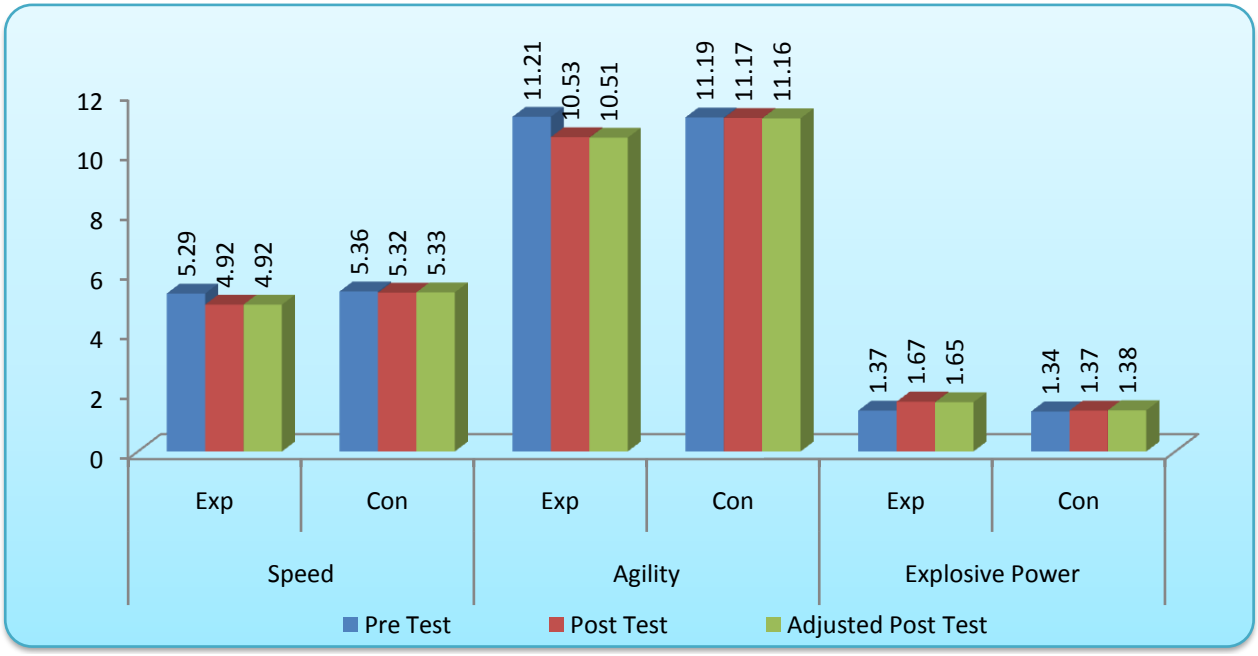
Table III. ANCOVA between Experimental Group and Control Group on Explosive power of School children of karnataka state for Pre, Post and Adjusted Test

	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Pre Test Mean	1.37	1.34	BG	7.08	1	7.08	1.81
			WG	109.26	28	3.90	
Post Test Mean	1.67	1.37	BG	161.39	1	161.39	36.27*
			WG	124.56	28	4.44	
Adjusted Post Mean	1.65	1.38	BG	111.28	1	111.28	22.89*
			WG	131.21	27	4.85	

*** Significant at 0.05 level.** **df: 1/27= 4.21**

Table III revealed that the obtained 'F' value of 22.89 was found to be significant at 0.05 level with df 1, 27 as the tabulated value of 4.21 required to be significant at 0.05 level. The same table indicated that there was a significant difference in adjusted means of explosive power of school children of karnataka state between experimental group and control group. The graphical representation of data has been presented in figure I.

Figure I. Comparisons of Pre – Test Means Post – Test Means and Adjusted Post – Test Means for Control group and Experimental Group in relation to Physical Fitness Variables



Discussions on Findings

In case of physical fitness variables i.e. speed, agility and explosive power the results between pre and post (12 weeks) test has been found significantly higher in experimental group in comparison to control group. This is possible because due to regular circuit training which may also bring sudden spurt in physical fitness variables in school children of karnataka state. The findings of the present study have strongly indicates that circuit training of twelve weeks have significant effect on selected physical fitness variables i.e., speed, agility and explosive power of school children of karnataka state. Hence the hypothesis earlier set that circuit training programme would have been significant effect on selected physical fitness variables in light of the same the hypothesis was accepted.

Conclusions

On the basis of findings and within the limitations of the study the following conclusions were drawn:

1. The circuit training had positive impact on speed, agility and explosive power among school children of karnataka state.
2. The experimental group showed better improvement on speed, agility and explosive power among school children of karnataka state than the control group.

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