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Effects of Core Circuit Training Using Aerobic Dance and Yogic Practices on Speed and Endurance of World Beaters Talent Test among Overweight Girls

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Abstract

The purpose of the present study was to find out the "Effects of varied combinations of core circuit training using yogic practices and aerobic dance on speed and endurance of world beaters talent test among overweight girls". To achieve the purpose, as samples, initially 175 girls studying in schools were selected as subjects and measured their weight and height. The age of the subjects ranged from 10 to13years. Using the collected data on body weight and height, Body Mass Index (BMI) was calculated. From the selected subjects (N=175), based on the BMI>29, 45 subjects were randomly selected and segmented into three groups equally. Thus each group was consisting of 15 subjects. Among those two experimental groups and one control group were formed. Group -1 was named as Circuit Core Package Training with Aerobic Dance (CCPTAD) and Group -2 was named as Circuit Core Package Training with Yoga (CCPY). As variables, endurance and speed were selected for this study. The selected subjects of experimental groups and control group were measured endurance and speed which was considered as pre-test score. After completion of pre-test measure on variables used in the study, subjects of both experimental group were underwent the respective training program five days a week for about 12 weeks. The subjects of control group practiced with their own traditional training program other than any specific training which underlies the training program used for this study. Following the treatment of Circuit Core Package Training with Aerobic Dance (CCPTAD) and Circuit Core Package Training with Yoga (CCPY), the subjects of experimental and control groups were further tested on variables of endurance and speed as such in the pre- test and the collected data were considered as post test score. The collected data on endurance and speed before and after the training program were treated with Analysis of Covariance so as to study the comparative effects of Core circuit training practiced with aerobic dance and when practiced with yogic practices on speed and endurance of world beaters talent tests. Results of analysis of covariance explained that significant mean difference was observed on endurance and speed among the three groups. Further to test paired means to find out the source for such significant mean difference on endurance and speed, results of post hoc test was favored to the subjects practiced core circuit training with aerobic dance compared to the other groups. From the results it was concluded that the physical exercises specifically to strengthen the core stability and selected aerobic dance underlie the development of endurance and speed related aspects might be the source for the dominance of core circuit training with aerobic dance on endurance and speed.

Keywords: Circuit training, Aerobic exercise, Endurance, Speed, Ancova.

Introduction

Achieving resilience through physical fitness promotes a vast and complex range of health related benefits. Being physically fit regulates body weight, insulin resistance, sex hormones, inflammation, and a healthy immune system. Individuals who keep up physical fitness levels generally regulate their distribution of body fat and stray away from obesity. Abdominal fat, specifically visceral fat, is most directly affected by engaging in aerobic exercise. Strength training has been known to increase the amount of lean muscle in the body; however it can also reduce body fat [Westerlind, K. C. 2003]. Sex steroid hormones, insulin, and an appropriate immune response are factors that mediate metabolism in relation to the abdominal fat. Therefore, physical fitness provides weight control through regulation of these bodily functions [Westcott, W.L.; La Rosa Loud, R. 2014].

The muscles of the trunk and torso act to stabilize the spine, pelvis and shoulder girdle. From this solid, balanced base the limbs can be moved powerfully and under control. In fact before rapid movements of the extremities can take place, the central nervous system stabilizes the spine in anticipation (Hodges PW 1997).The rate at which the core muscles stabilize the spine may have a direct effect on the power of limb movement (Hodges PW,

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Richardson CA 1997). Core strength training differs from many traditional weight training routines by working both the lower back and abdominals in unison. The same is true for the upper and lower body. All athletic movements incorporate the core in some way. Very few muscle groups are isolated. Instead the whole body works as a unit and core strength training endeavors to replicate this.

It is a physical exercise of relatively low intensity that depends primarily on the aerobic energy-generating process [Sharon A 2007]. Aerobic literally means "living in air“, and refers to the use of oxygen to adequately meet energy demands during exercise via aerobic metabolism", [Kenneth H. Cooper 1972, William D. McArdle2006]. Generally, light-to-moderate intensity activities that are sufficiently supported by aerobic metabolism can be performed for extended periods of time [Sharon A 2007].

Methodology

Forty five overweight school girls from suburban society schools, Coimbatore district Tamilnadu, were selected as subjects at random. The age of the subjects ranged from 10 to13 years. The selected subjects were divided into two experimental groups and a control group. Group -1 underwent circuit core package training with aerobic dance (CCPTADG) Group – 2 underwent circuit core package training with yogic practices (CCPYPG), and Group –3 served as control participants. The endurance and speed was selected as dependent variable. All the subjects of three groups were tested the selected dependent variable at prior and immediately after the program of twelve weeks. The data collected for all the groups on endurance was measured by using the 600mts run test and the score was recorded in minutes, speed was measured by 50mts dash and the score was recorded in seconds. The data were collected from the three groups before and after the training program. The control group was not exposed to any specific Training. However, they were participating in their regular activities. The experimental groups 1 and 2 were treated to twelve week of circuit core package training with aerobic dance and circuit core package training with yogic practices respectively. Then the training was given for five days per week. Every training session lasted for 40 minutes.

Results and Discussion

Table I. Analysis of covariance on endurance of different groups (Scores in Minutes)

Test	Group 1	Group 2	Group 3	SV	SS	df	MS	'F' Ratio
Pre Test								
Mean	5.80	5.94	5.63	Between	0.752	2	0.38	0.71
S.D.	0.70	0.72	0.75	Within	22.224	42	0.53	
Post Test								
Mean	4.79	5.88	5.08	Between	0.0222	2	4.78	8.29*
S.D.	0.66	0.85	0.75	Within	0.0427	42	0.58	
Adjusted post test								
Mean	4.80	5.72	5.24	Between	6.29	2	3.14	46.52*
				Within	2.77	41	0.68	

* Significant at .05 level of confidence.

Results on Endurance

Pre - Test: The AM± SD pretest endurance scores of G1, G2, and G3 were, 5.80± 0.70, 5.94± 0.72and 5.63± 0.75 respectively. The obtained pretest F value of 0.71 was lesser than the required Table F value of 2.76. Hence the pretest means value of circuit core package training with aerobic dance, circuit core package training with yoga and control group on endurance before start of the respective treatments were found to be insignificant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus this analysis confirms that the random assignment of subjects into three groups were successful. Post - Test: The AM± SD post- test endurance scores of G1, G2, G3 and are 4.79± 0.66, 5.88± 0.85, and 5.08± 0.75 respectively. The obtained post-test F value of 8.29 was greater than the required Table F value of 2.76. Hence the post- test means value of endurance show significant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus the results obtained proved that the interventions namely circuit core package training with aerobic dance, circuit core package training with yogic practice on endurance produced significantly different improvements among the three groups. Adjusted Post - test: The AM± SD post - test endurance scores of G1, G2, and G3 are 4.80, 5.72, and 5.24 respectively. The obtained adjusted post - test F value of 46.52 was greater than the required Table F value of 2.02. Hence the post - test means value of endurance show significant at 0.05 level of confidence for the degrees of freedom 2 and 41. Since the observed

F value on adjusted post-test mean among the groups such as circuit core package training with aerobic dance, circuit core package training with yogic practice on endurance produced significantly different improvements among the three groups. In order to find out which intervention programme used in the present study was the source for the significance of adjusted mean, differences on endurance among three groups was tested by Scheffe's post hoc test. The results of the same are presented in the table- I (a).

TABLE I (a). Scheffe's post hoc test mean differences on endurance among three groups (Scores in Minutes)

Group I	Group II	Group III	Mean Differences	Confidence Interval Value
4.80	5.24	-	0.44 *	0.28
4.80	-	5.72	0.92*	0.28
-	5.24	5.72	0.48*	0.28

* Significant at .05 level of confidence.

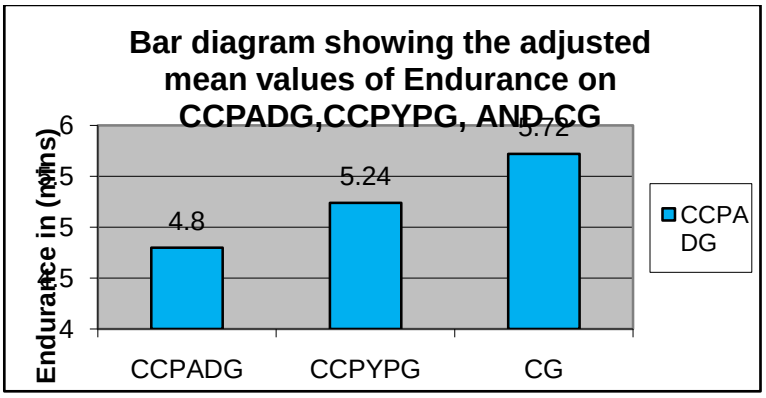

Table I (a) shows the significant difference of paired adjusted post-test means of circuit core package training with aerobic dance, circuit core package training with yoga and Control group on endurance. The obtained mean differences among circuit core package training with aerobic dance, circuit core package training with yoga and control group, were similar than the mean differences because of the confidential values 0.28. All the remaining group comparisons was greater than the confidential interval value on endurance.

Table II. Analysis of covariance on speed of different GROUPS (Scores in seconds)

Test	Group 1	Group 2	Group 3	SV	SS	df	MS	'F' Ratio
Pre Test								
Mean	15.34	15.34	15.27	Between	.044	2	.022	.026
S.D.	0.98	0.98	0.82	Within	36.32	42	.865	
Post Test								
Mean	13.00	14.97	13.81	Between	29.69	2	14.85	27.25*
S.D.	0.68	0.68	0.84	Within	22.88	42	.545	
Adjusted post test								
Mean	12.99	14.97	13.84	Between	29.59	2	14.79	45.48*
				Within	13.34	41	.325	

* Significant at .05 level of confidence.

Results on Speed

Pre - Test: The AM± SD pretest speed scores of G1, G2, and G3 were, 15.34± 0.98, 15.34± 0.98and 15.27± 0.82 respectively. The obtained pre-test F value of .026 was lesser than the required Table F value of **2.76**. Hence the pre-test means value of circuit core

package training with aerobic dance, circuit core package training with yogic practices and control group on speed before start of the respective treatments were found to be insignificant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus this analysis confirms that the random assignment of subjects into three groups were successful. Post - Test: The AM± SD post- test speed scores of G1, G2, G3 and are 13.00± 0.68, 14.97± 0.68, and 13.81± 0.84 respectively. The obtained post-test F value of 27.25 was greater than the required Table F value of 2.76. Hence the post- test means value of speed show significant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus the results obtained proved that the interventions namely circuit core package training with aerobic dance, circuit core package training with yogic practices on speed produced significantly different improvements among the three groups. Adjusted Post - Test: The AM± SD post - test speed scores of G1, G2, and G3 are 12.99, 14.97, and 13.84 respectively. The obtained adjusted post - test F value of 45.48 was greater than the required Table F value of 2.02. Hence the post - test means value of speed show significant at 0.05 level of confidence for the degrees of freedom 2 and 41. Since the observed F value on adjusted post-test mean among the groups such as circuit core package training with aerobic dance, circuit core package training with yogic practices on speed produced significantly different improvements among the three groups. In order to find out which intervention programme used in the present study was the source for the significance of adjusted means was tested by Scheffe's post hoc test. The results of the same are presented in the table- II (a)

Table II (a). Scheffe's post hoc test mean differences on speed among three groups (Scores in seconds)

Group I	Group II	Group III	Mean Differences	Confidence Interval Value
12.99	13.84	-	0.85 *	0.60
12.99	-	14.97	1.98*	0.60
-	13.84	14.97	0.13	0.60

* Significant at .05 level of confidence.

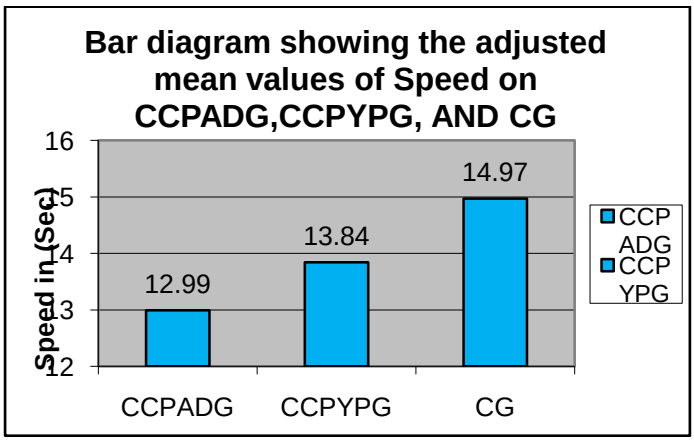

Table II (a) shows the significant difference of paired adjusted post-test means of circuit core package training with aerobic dance, circuit core package training with yogic practices and Control group on speed. The obtained mean differences between circuit core package training with aerobic dance, circuit core package training with yogic practices and control group, were similar than the mean differencesbecause of the confidential values 0.28. All the remaining group comparisons were greater than the confidential interval value on speed.

Findings

There was a significant difference among the different circuit core training with aerobic dance and circuit core training with yogic practices and control Group on endurance and speed. Significant improvement was noticed on endurance and speed, due to three method of circuit core Training program among overweight school girls.

Conclusion

The two experimental training groups namely, circuit core package training with aerobic dance (CCPADG) and circuit core package training with yogic practices (CCPYPG) significantly improved the endurance and speed of the overweight school girls. Circuit core package training with aerobic dance (CCPADG) has greater influence on endurance and speed, on overweight girls than the other groups. Circuit core package training with yogic practices (CCPYPG)

has next best training. There was no development on endurance and speed of control group.

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