



Effect of two methods of circuit training combined with asanas and pranayama practice on speed and agility of school girls

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Abstract

The present study was to find out the effect of two methods of circuit training combined with asanas and pranayama practice on speed and agility of school girls. The study was formulated as a true random group design, consisting of a pre test and post test. The subjects (n=60) were randomly assigned to three equal groups of twenty school girls in each group. The groups were assigned as Experimental Groups I, II, and control group respectively. Experimental group I was assigned as Continuous Method Circuit Training with Asana and Pranayama Group (CMCTAP), experimental group II was assigned as Interval Method Circuit Training with Asana and Pranayama Group (IMCTAP) and the control group was strictly under control not involving any special training. Pre tests were conducted for all the subjects on speed and agility. The experimental groups participated in their respective training protocols for a period of twelve weeks. After the experimental period, the post tests were conducted on the above said dependent variables for all the three groups. The difference between the initial and final scores on each variable was considered the effect of respective treatments. The effects of CMCTAP, IMCTAP on selected variables were tested through ANCOVA. In all cases 0.05 level was fixed to test the hypothesis.

Keywords: speed and agility

Introduction

“Sport is an important ingredient of physical education and is a worldwide phenomenon today. The unprecedented popularity and better organization of sports activities and competitions would have been impossible without the recognition of the importance of sports competitions in the world. The world has realized the importance of sports for the modern civilizations.” (Coakley, Jay J., 1998)

In recent times, the field of sports has become popular, since youth in quite large members from developed, developing and under developed countries are participating in large numbers with a recreational and professional approach. The outcome of their quantitative participations is the resultant performance and vast improvement in the sports and games standard. The impact of knowledge of science on sports has raised the standard of sports manifold during the passed century. The improvement in performance as taken place due to the application of the science at various levels, such as improvement in facilities, training methods, conditioning, nutrition, psychological intervention strategies and professionalization of sports itself.

Statement of the problem

The present study was to determine the effect of two methods of circuit training combined with asanas and pranayama practice on speed and agility of school girls

Delimitations

1. To achieve the purpose of the study, sixty (N=60) school girls' students Zilla Parishad High School, NR Pally Panagalur Mandal, Kadappa District, Andrapardesh.

2. The age of the subjects will be ranged from 13 to 15 years.
3. The subjects will be divided at random into three groups of twenty each (n=20). Group-I will undergo interval method of circuit training combined with asana and pranayama (IMCTAP), Group-II will experience the continuous method of circuit training combined with asana and pranayama, (CMCTAP) and Group III will act as a control group (CG).
4. The duration of the training period will be restricted to twelve weeks, and the number of sessions per week will be confined to three alternative days.

Limitations

The following limitations will be considered in our research.

1. The previous experience of the subjects in sports and games, which might influence the training and data, will not be considered.
2. Psychological factors, food habits, rest period, lifestyle, etc., cannot be controlled.
3. The weather conditions such as atmospheric temperature, humidity, and meteorological factors will not be considered during testing and training periods.
4. Though the subjects will be motivated verbally, no attempt will be made to differentiate the motivation levels during the period of training and testing

Selection of subjects

The present study was designed to find out the effect of two methods of circuit training combined with asanas and pranayama practice on speed and agility of school girls. To execute this investigation the research scholar randomly select sixty (N=60) school girls student from Zilla Parishad

High School, NR Pally Penagalur Mandal, Kadappa District, Andrapardesh, India, at random as subjects. Their age was between 13 to 15 years. The subjects were randomly divided into three groups and each group consists of twenty subjects. Group one acted as experimental group I and Group two acted as experimental II and group three as control group. Control Group underwent routine activities and care was taken that they should not involve in special exercise programmes. Experimental group I underwent continuous circuit training with asana and prayanama and experimental group II under went interval circuit training with asana and pranayama training for twelve weeks. The requirements of the experimental procedures, testing as well as exercise schedules were explained to them so as to avoid any ambiguity of the effort required on their part and prior to the administration of the study, the investigator got the individual consent from each subject.

Selection of variables

Dependent Variables

1. Speed
2. Agility

Independent Variables

1. Twelve weeks continuous circuit training with asanas and pranayamas
2. Twelve weeks interval circuit training with asanas and pranayamas

Experimental design

The study was formulated as a true random group design, consisting of a pre test and post test. The subjects (n=60) were randomly assigned to three equal groups of twenty school girls in each group. The groups were assigned as Experimental Groups I, II, and control group respectively. Experimental group I was assigned as Continuous Method

Circuit Training with Asana and Pranayama Group (CMCTAP), experimental group II was assigned as Interval Method Circuit Training with Asana and Pranayama Group (IMCTAP) and the control group was strictly under control not involving any special training. Pre tests were conducted for all the subjects on Speed and agility The experimental groups participated in their respective training protocols for a period of twelve weeks. After the experimental period, the post tests were conducted on the above said dependent variables for all the three groups. The difference between the initial and final scores on each variable was considered the effect of respective treatments. The effects of CMCTAP, IMCTAP on selected variables were tested through ANCOVA. In all cases 0.05 level was fixed to test the hypothesis.

Table 1: Variable and Their Measure

S. No	Parameters	Test	units
1	Speed (AAHPERD,1975)	50 Meters Run	Seconds
2	Agility (Yobu, 2000)	T- test	Seconds

Table 2: Intra Class Correlation Coefficient of Test – Retest Scores

S. No	Variables	Test	Obtained ‘r’
1	Speed	50 Meters Run	0.78*
2	Agility	T- test	0.79*

* Significant at 0.05 level

Results on speed

The statistical analysis comparing the initial and final means of Speed due to continuous method of circuit training with asanas and pranayamas (CMCTAP) and interval method of circuit training with asanas and pranayamas (IMCTAP) compared with control group among school girls is presented in Table 3

Table 3: computation of analysis of covariance of speed

	CMCTAP group	INCTAP group	Control GROUP	Source of Variance	Sum of Squares	D f	Mean Squares	Obtained F
Pre Test Mean	9.01	9.32	9.13	Between	0.97	2	0.49	0.67
				Within	41.70	57	0.73	
Post Test Mean	8.27	8.54	9.07	Between	6.64	2	3.32	5.91*
				Within	32.03	57	0.56	
Adjusted Post Test Mean	8.39	8.40	9.09	Between	6.39	2	3.20	54.76*
				Within	3.27	56	0.06	
Mean Diff	-0.73	-0.78	-0.06					

CMCTAP: Continuous Method of Circuit Training with Asana and Pranayama

INCTAP: Interval Method of Circuit Training with Asana and Pranayama

Table F-ratio at 0.05 level of confidence for 2 and 57 (d f) =3.10, 2 and 56 (d f) =3.10.

*Significant

As shown in Table III, the obtained pre test means on Speed on CMCTAP group was 9.01, CICTAP group was 9.32 was and control group was 9.13. The obtained pre test F value was 0.67 and the required table F value was 3.10, which proved that there was no significant difference among initial scores of the subjects.

The obtained post test means on Speed on CMCTAP group

was 8.27, IMCTAP group was 8.54 was and control group was 9.07. The obtained post test F value was 5.91 and the required table F value was 3.16, which proved that there was no significant difference among post test scores of the subjects.

Taking into consideration of the pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 54.76 was greater than the required value of 3.16 and hence it was accepted that there was significant differences among the treated groups.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s Confidence Interval test. The results were presented in Table 4.

Table 4: Scheffe’s Confidence Interval Test Scores on Speed

MEANS				Required. C I
CMCTAP Group	IMCTAP Group	Control Group	Mean Difference	
8.39	8.40		-0.01	0.19
8.39		9.09	-0.70*	0.19
	8.40	9.09	-0.69*	0.19

* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between CMCTAP group and control group (MD: -0.70). There was significant difference between IMCTAP group and control group (MD: -0.69). There was no significant

difference between treatment groups, namely, CMCTAP group and IMCTAP group. (MD: -0.01). The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Fig 1.

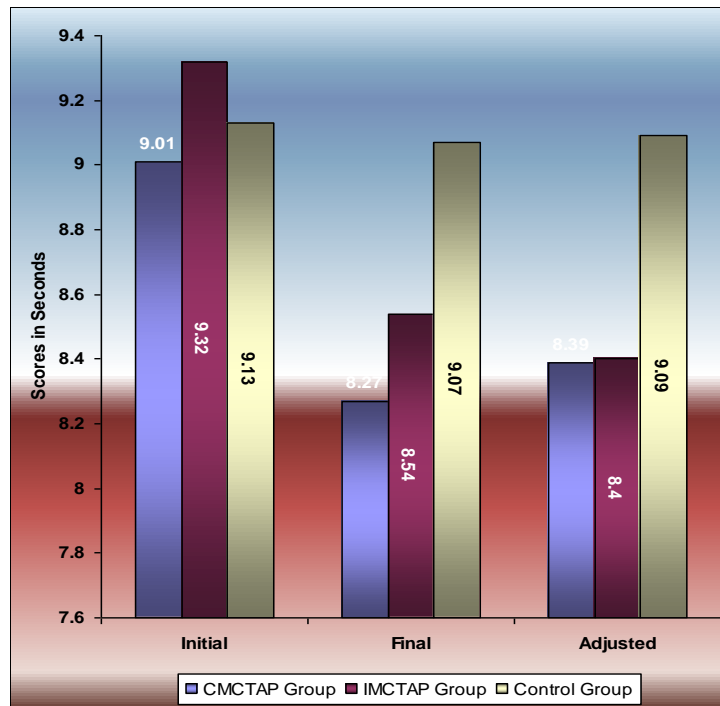


Fig 1: Bar diagram on ordered adjusted means on speed

Discussions on findings on speed

The effect of Continuous Method of Circuit Training with Asana and Pranayama (CMCTAP) and Interval Method of Circuit Training with Asana and Pranayama (IMCTAP) on Speed is presented in Table III. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value 54.76 was greater than the required table F value to be significant at 0.05 level.

Since significant F value was obtained, the results were further subjected to post hoc analysis and the results presented in Table IV proved that there was significant difference between CMCTAP group and control group (MD: -0.70) and IMCTAP group and control group (MD: -

0.69). Comparing between the treatments groups, it was found that there was no significant difference between CMCTAP and IMCTAP group among school girls. Thus, it was found that CMCTAP group and IMCTAP group were significantly better than control group in reducing Speed time thereby improving speed of the school girls.

Results on agility

The statistical analysis comparing the initial and final means of Agility due to continuous method of circuit training with asanas and pranayamas (CMCTAP) and interval method of circuit training with asanas and pranayamas (IMCTAP) compared with control group among school girls is presented in Table 5

Table 5: computation of analysis of covariance of agility

	CMCTAP group	INCTAP group	Control GROUP	Source of Variance	Sum of Squares	D f	Mean Squares	Obtained F
Pre-Test Mean	12.65	12.71	12.82	Between	0.29	2	0.15	0.77
				Within	10.71	57	0.19	
Post Test Mean	12.38	12.51	12.82	Between	2.08	2	1.04	7.68*
				Within	7.73	57	0.14	
Adjusted Post Test Mean	12.44	12.53	12.75	Between	1.03	2	0.52	20.04*
				Within	1.44	56	0.03	
Mean Diff	-0.27	-0.20	0.00					

CMCTAP: Continuous Method of Circuit Training with Asana and Pranayama

IMCTAP: Interval Method of Circuit Training with Asana and Pranayama

Table F-ratio at 0.05 level of confidence for 2 and 57 (df) =3.10, 2 and 56 (df) =3.10.

*Significant

As shown in Table V, the obtained pre test means on Agility on CMCTAP group was 12.65, IMCTAP group was 12.71 and control group was 12.82. The obtained pre test F value was 0.77 and the required table F value was 3.10, which proved that there was no significant difference among initial scores of the subjects.

The obtained post test means on Agility on CMCTAP group was 12.38, IMCTAP group was 12.51 and control group was 12.82. The obtained post test F value was 7.68 and the required table F value was 3.16, which proved that there was no significant difference among post test scores of the subjects.

Taking into consideration of the pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 20.04 was greater than the required value of 3.16 and hence

it was accepted that there was significant differences among the treated groups.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s Confidence Interval test. The results were presented in Table 6.

Table 6: Scheffe’s Confidence Interval Test Scores on Agility

Means				Required . C I
CMCTAP Group	IMCTAP Group	Control Group	Mean Difference	
12.44	12.53		-0.09	0.13
12.44		12.75	-0.32*	0.13
	12.53	12.75	-0.23*	0.13

* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between CMCTAP group and control group (MD: -0.32). There was significant difference between IMCTAP group and control group (MD: -0.23). There was no significant difference between treatment groups, namely, CMCTAP group and IMCTAP group. (MD: -0.09).

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Fig 2.

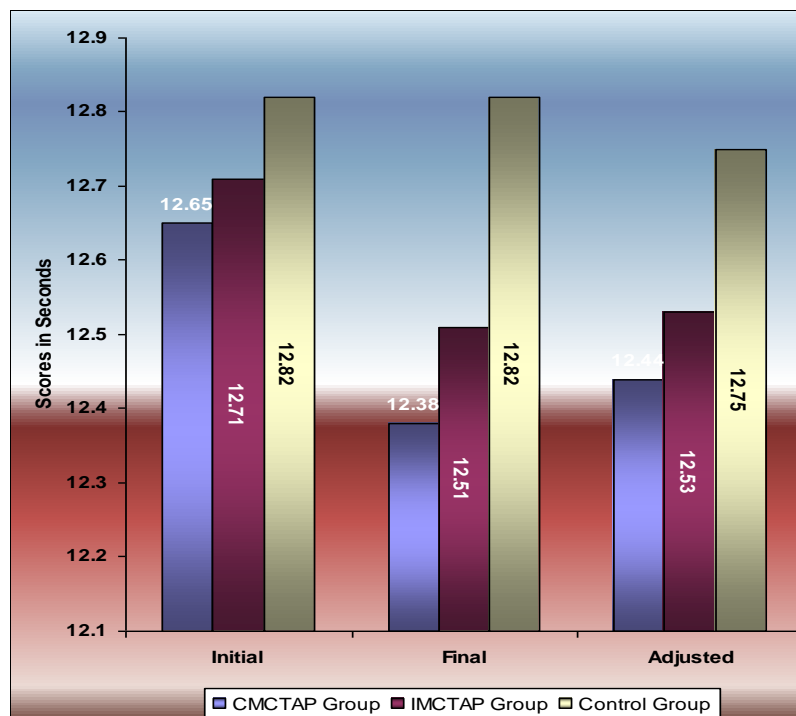


Fig 2: bar diagram on ordered adjusted means on agility

Discussions on findings on agility

The effect of Continuous Method of Circuit Training with Asana and Pranayama (CMCTAP) and Interval Method of Circuit Training with Asana and Pranayama (IMCTAP) on Agility is presented in Table V. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value 20.04 was greater than the required table F value to be significant at 0.05 level.

Since significant F value was obtained, the results were further subjected to post hoc analysis and the results

presented in Table VI proved that there was significant difference between CMCTAP group and control group (MD: -0.32) and IMCTAP group and control group (MD:-0.23). Comparing between the treatments groups, it was found that there was no significant difference between CMCTAP and IMCTAP group among school girls.

Thus, it was found that CMCTAP group and IMCTAP group were significantly better than control group in reducing Agility time, thereby improving the agility of the school girls.

Conclusions

Within the limitations and delimitations of the study, the following conclusion were drawn.

1. It was concluded that continuous method of circuit training with asana and pranayama and interval of circuit training with asana and pranayama can significantly improve selected variables, speed and agility school girls compared to control group.

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