



RELATIVE EFFECTS OF ISOLATED AND COMBINED INTERVAL TRAINING AND CONTINUOUS RUNNING ON SELECTED ENDURANCE COMPONENTS AMONG STATE LEVEL WOMEN KABADDI PLAYERS

R.Suresh Kumar¹ & Dr.K.Angamuthu²

¹Ph.D., Research Scholar, Department of Physical Education, Periyar University, Salem, Tamilnadu, India.

²Director of Physical Education, Periyar University, Salem, Tamilnadu, India.

Abstract

The purpose of the study was to find out the relative effects of isolated and combined interval training and continuous running on selected endurance components among state level women Kabaddi players. The study was formulated as a true random group design, consisting of a pre-test and post-test. Sixty state level women Kabaddi players from Tamilnadu, India was selected as subjects at random and their ages ranged from 18 to 25 years. The subjects (N=60) were randomly assigned to four equal groups of fifteen subjects each. Pre test was conducted for all the subjects on selected speed and endurance components. This initial test scores formed as pre test scores of the subjects. The groups were assigned as Experimental Group I, Experimental Group II, Experimental Group III and Control Group in an equivalent manner. Experimental Group I was exposed to interval training, Experimental Group II was exposed to continuous training, Experimental Group III was exposed to combined interval and continuous training and Control Group underwent no training. The duration of experimental period was 12 weeks. After the experimental treatment, all the sixty subjects were tested on their selected endurance components. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to statistical analysis using Analysis of Covariance (ANCOVA) to find out the significance among the mean differences, whenever the 'F' ratio for adjusted test was found to be significant, Scheffe's post hoc test was used. In all cases 0.05 level of significance was fixed to test hypotheses. The combined interval & continuous training group had shown better performance on endurance components among the state level women kabaddi players than the interval training, continuous training and control groups.

Keywords: Interval Training, Continuous Training, Kabaddi, Women.

Introduction

Interval training is a form of progressive conditioning in which the intensity of the activity, the duration of each bout, the number of bouts, the time or kind of rest periods between bouts or the order of the bouts are varied. The variables associated with interval training include the number of repetitions, the duration of effort, work intensity and duration of recovery (Dhayanithi, 1991). Continuous training means the trainee uses 60-80% of his maximum heart rate for at least 30-60 minutes at least four or five times a week. This method suits long distance runners as well as tennis players, because it means that their endurance levels will increase. It is the way which they would normally compete. It is a good way for an athlete to build up their cardio-vascular endurance levels. It also forms the basis for all other training methods both anaerobic and aerobic. The game, known as Hu-Tu-Tu in Western India, Ha-Do-Do in Eastern India & Bangladesh, Chedugudu in Southern India and Kaunbada in Northern India, has undergone a sea change through the ages. Modern Kabaddi is a synthesis of the game played in its various forms under different names.

Methodology

The purpose of the study was to find out the relative effects of isolated and combined interval training and continuous running on selected endurance components among state level women Kabaddi players. The study was formulated as a true random group design, consisting of a pre-test and post-test. Sixty state level women Kabaddi players from Tamilnadu, India was selected as subjects at random and their ages ranged from 18 to 25 years. The subjects (N=60) were randomly assigned to four equal groups of fifteen subjects each. Pre test was conducted for all the subjects on selected speed and endurance components. This initial test scores formed as pre test scores of the subjects. The groups were assigned as Experimental Group I, Experimental Group II, Experimental Group III and Control Group in an equivalent manner. Experimental Group I was exposed to interval training, Experimental Group II was exposed to continuous training, Experimental Group III was exposed to combined interval and continuous training and Control Group underwent no training. The duration of experimental period was 12 weeks. After the experimental treatment, all the sixty subjects were tested on their selected endurance components. This final test

scores formed as post test scores of the subjects. The pre test and post test scores were subjected to statistical analysis using Analysis of Covariance (ANCOVA) to find out the significance among the mean differences,

whenever the 'F' ratio for adjusted test was found to be significant, Scheffe's post hoc test was used. In all cases 0.05 level of significance was fixed to test hypotheses.

Results

Table 1

Computation of analysis of covariance of interval training continuous training combined interval and continuous training and control groups on muscular endurance

	ITG	CTG	CICTG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	34.93	34.66	35.06	34.33	BG	4.717	3	1.572	0.826
					WG	106.533	56	1.902	
Post-Test Means	40.20	39.66	42.53	35.06	BG	439.533	3	146.511	67.031*
					WG	122.400	56	2.186	
Adjusted Post-Test Means	40.22	39.65	42.56	35.02	BG	431.245	3	143.748	65.235*
					WG	121.194	55	2.204	

An examination of table 1 indicated that the pre test means of interval training, continuous training, combined interval and continuous training and control groups were 34.93, 34.66, 35.06 and 19.56 respectively. The obtained F-ratio for the pre-test was 0.826 and the table F-ratio was 2.76. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 56. This proved that there were no significant difference between the experimental and control groups indicating, that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test means of the interval training, continuous training, combined interval and continuous training and control groups were 40.20, 39.66, 42.53 and 35.06 respectively. The obtained F-ratio for the post-test was 67.031 and the table F-ratio was 2.76. Hence the post-test mean F-ratio was significant at

0.05 level of confidence for the degree of freedom 3 and 56. This proved that the differences between the post-test means of the subjects were significant. The adjusted post-test means of the interval training, continuous training, combined interval and continuous training and control groups were 40.22 and 19.54 respectively. The obtained F-ratio for the adjusted post-test means was 65.235 and the table F-ratio was 2.77. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 55. This proved that there was a significant difference among the means due to the experimental trainings on muscular endurance. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's post hoc test. The results were presented in table 2.

Table 2

The scheffe's test for the differences between the adjusted post-test means on muscular endurance

Adjusted Post-Test Means				Mean Difference	Confidence Interval
ITG	CTG	CICTG	CG		
40.22	39.65	---	---	0.57	1.56
40.22	---	42.56	---	2.34*	
40.22	---	---	35.02	5.20*	
---	39.65	42.56	---	2.91*	
---	39.65	---	35.02	4.63*	
---	---	42.56	35.02	7.54*	

* Significant at 0.05 level

The multiple comparisons showed in table 2 proved that there existed significant differences between the adjusted means of interval training and combined

interval and continuous training (2.34), interval training with control group (5.20), continuous training with combined interval and continuous training (2.91),

continuous training with control group (4.63) and combined interval and continuous training and control group (7.54). There was no significant difference between interval training and continuous training group (0.57) at 0.05 level of confidence with the confidence interval

value of 1.56. The pre, post and adjusted means on muscular endurance were presented through bar diagram for better understanding of the results of this study in figure I.

Figure 1

Pre post and adjusted post-test differences of the, interval training continuous training combined interval and continuous training and control groups on muscular endurance

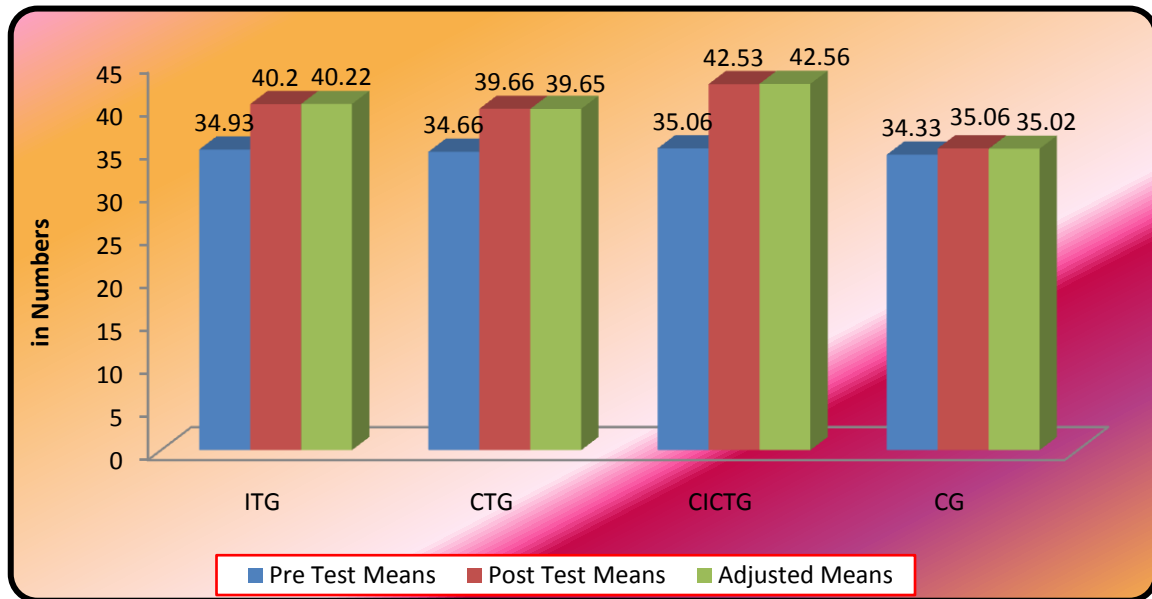


Table 3

Computation of analysis of covariance of interval training continuous training combined interval and continuous training and control groups on cardio respiratory endurance

	ITG	CTG	CICTG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	1547.33	1535.33	1527.06	1536.00	BG	3119.133	3	1039.711	1.588
					WG	36673.600	56	654.886	
Post-Test Means	1684.33	1700.33	1737.00	1539.66	BG	337713.333	3	112571.111	216.781*
					WG	29080.000	56	519.286	
Adjusted Post-Test Means	1685.44	1700.22	1736.04	1539.62	BG	335338.516	3	111779.505	214.245*
					WG	28695.458	55	521.736	

An examination of table 3 indicated that the pre test means of interval training, continuous training, combined interval and continuous training and control groups were 1547.33, 1535.33, 1527.06 and 1536.00 respectively. The obtained F-ratio for the pre-test was 1.588 and the table F-ratio was 2.76. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 56. This proved that there were no significant difference between the experimental and control groups indicating, that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test means of

the interval training, continuous training, combined interval and continuous training and control groups were 1684.33, 1700.33, 1737.00 and 1539.66 respectively. The obtained F-ratio for the post-test was 216.781 and the table F-ratio was 2.76. Hence the post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 56. This proved that the differences between the post-test means of the subjects were significant. The adjusted post-test means of the interval training, continuous training, combined interval and continuous training and control groups were 1685.44, 1700.22, 1736.04 and 1539.62 respectively. The obtained

F-ratio for the adjusted post-test means was 214.245 and the table F-ratio was 2.77. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 55. This proved that there was a significant difference among the means due

to the experimental trainings on cardio respiratory endurance. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s post hoc test. The results were presented in table 4.

Table 4

The scheffe’s test for the differences between the adjusted post-test means on cardio respiratory endurance

Adjusted Post-Test Means				Mean Difference	Confidence Interval
ITG	CTG	CICTG	CG		
1685.44	1700.22	---	---	14.78	24.04
1685.44	---	1736.04	---	50.60*	
1685.44	---	---	1539.62	145.82*	
---	1700.22	1736.04	---	35.82*	
---	1700.22	---	1539.62	160.60*	
---	---	1736.04	1539.62	196.42*	

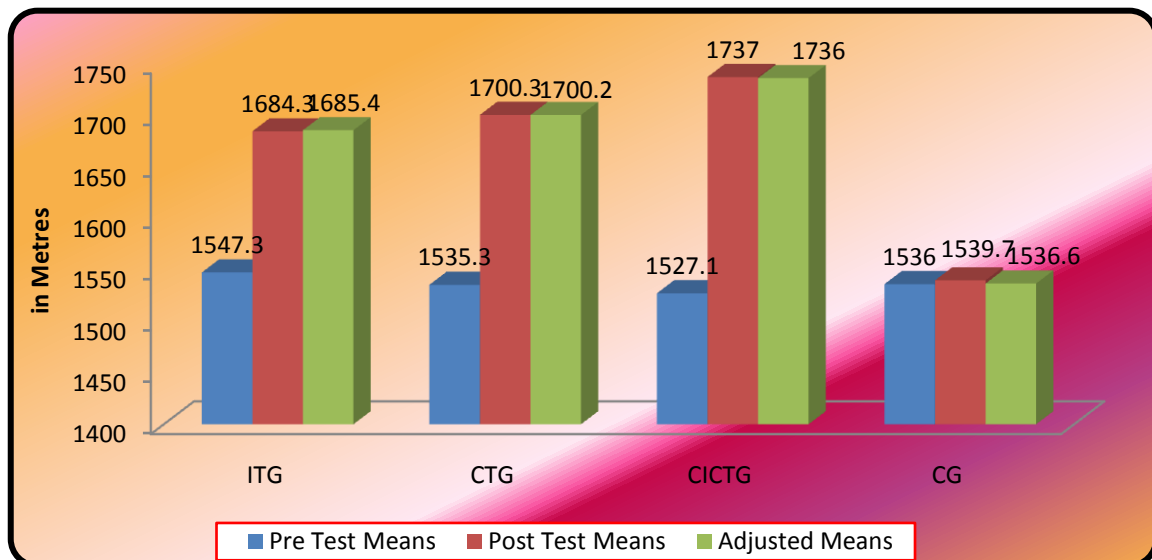
* Significant at 0.05 level

The multiple comparisons showed in table 4 proved that there existed significant differences between the adjusted means of interval training and combined interval and continuous training (50.60), interval training with control group (145.82) continuous training with combined interval and continuous training (35.82), continuous training with control group (160.60) and combined interval and continuous training and control

group (196.42). There was no significant difference between interval training and continuous training group (14.78) at 0.05 level of confidence with the confidence interval value of 24.04. The pre, post and adjusted means on cardio respiratory endurance were presented through bar diagram for better understanding of the results of this study in figure II.

Figure II

Pre post and adjusted post-test differences of the, interval training continuous training combined interval and continuous training and control groups on cardio respiratory endurance



Conclusions

From the analysis of the data, the following conclusions were drawn:

1. The interval training group had shown significant improvement in all the selected endurance components among state level women kabaddi players after undergoing interval training group for a period of twelve weeks.
2. The continuous training group had shown significant improvement in all the selected endurance components among state level women kabaddi players after undergoing the continuous training group for a period of twelve weeks.
3. The combined interval & continuous training group had shown better performance on endurance components among the state level women kabaddi

players after undergoing the interval & continuous training group for a period of twelve weeks.

4. The combined interval & continuous training group had shown better performance on endurance components among the state level women kabaddi players than the interval training, continuous training and control groups.

References

1. Alkahtani S. (2014). Comparing fat oxidation in an exercise test with moderate-intensity interval training. *J Sports Sci Med.* 13(1):51-8.
2. Alkahtani, S.A., Byrne, N.M., Hills, A.P. & King, N.A. (2014). Interval Training Intensity Affects Energy Intake Compensation in Obese Men. *Int J Sport Nutr Exerc Metab.* 2014 Mar 25
3. Arul, S. (2014)..Effects of Continuous and Interval Running on Selected Strength and Endurance Parameters. *International Journal of Recent Research and Applied Studies*, 2014, 1, 7(13), 51 - 55.
4. Baechle, T.R. and Earle, R.W. (2000). "Essentials of Strength Training and Conditioning, 2nd Edition, Champaign", IL: Human Kinetics
5. Baumgartner, T, A., Andrew, S. Jackson, Matthew, T. Mahar & Rowe, D.A. (2003). "Measurement for Evaluation in Physical Education & Exercise Science", *New York: Mc-Graw Hill.*
6. Berger, N.J., Tolfrey, K., Williams, A.G. & Jones, A.M. (2006). Influence of continuous and interval training on oxygen uptake on-kinetics. *Medicine and Science in Sports and Exercise.* 38(3):504-512.
7. Bompa, O.T. (1999) "Periodization training for sports", *Champaign, Illinois: Human Kinetics.*
8. Dhayanithi, R. (1991). Comparative Analysis of Continuous Running, Interval Running and the Combined Effects on Cardio respiratory Endurance", *Unpublished M.Phil., Dissertation, Pondicherry University, Pondicherry.*
9. Dick, Frank.W. (1997). "Sports training Principles" (3rd Ed), *London; A7 c Publishers, PP,69-70.*