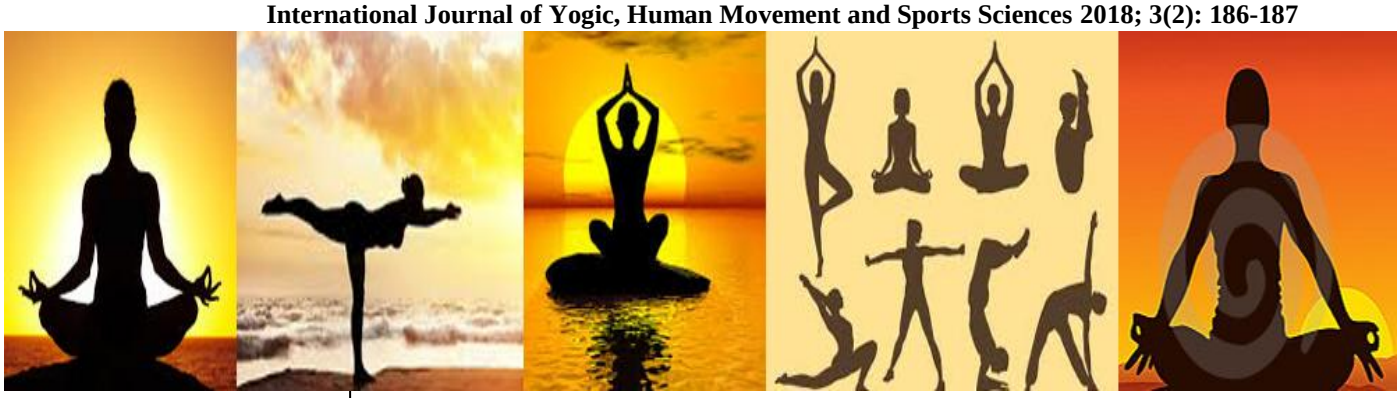
International Journal of Yogic, Human Movement and Sports Sciences 2018; 3(2): 186-187



ISSN: 2456-4419
Impact Factor: (RJIF): 5.18
Yoga 2018; 3(2): 186-187
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www.theyogicjournal.com
Received: 24-05-2018
Accepted: 25-06-2018

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Effect of interval and circuit training on Vo2 max of kabaddi players

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Abstract
The aim of this study is to find out the effect of interval and circuit training on Vo2 max of kabaddi players. Forty five male kabaddi players selected from the Anna University V zone colleges, Tamil Nadu. They were divided into three groups, namely, interval training (group – I), circuit training (group – II) and control (group – III). The two groups were experimented with interval and circuit training respectively for 12 weeks. The collected data from the three groups prior to and post experimentation were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Since three groups were involved, the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases statistical significance was fixed at 0.05 levels. Twelve weeks of interval and circuit training had significant increase on Vo2 max of kabaddi players.

Keywords: Interval and circuit training and Vo2 max

Introduction
Interval training adheres to the principle of adaptation. Interval training leads to many physiological changes including an increase in cardiovascular efficiency the ability to deliver oxygen to the working muscles as well as increased tolerance to the build-up of lactic acid. These changes result in improved performance, greater speed, and endurance. Special interval training technique involves carrying out intervals in two completely different aerobic activities within a single workout. The impact of interval training on VO2 max, lactate threshold and economy, it's important to recognise that interval training can also have a strong influence on the development of strength and power. It is assumed so far that interval workouts consist only of running at various speeds.

Circuit training is an efficient and challenging form of conditioning that develops strength, endurance both aerobic and anaerobic, flexibility and coordination all in one exercise session. It is one of the few forms of fitness training that has been shown to effectively develop both strength and cardiovascular fitness in the same exercise session. The term "circuit training" describes the way a workout is structured rather than the type of exercise performed. It typically consists of a series of exercises or stations completed in succession with minimal rest in between. Circuit routines allow the athlete or coach to create an endless number of workouts and add variety to routine training programs.

Methodology
Subjects and Variable
To achieve the purpose of this study, forty five male kabaddi players from the Anna University V zone colleges, Tamil Nadu, were selected randomly as the subjects and their age ranged between 21 to 28 years. The selected subjects were divided into three groups, namely, interval training group and circuit training group and control group consisting of 15 kabaddi players in each group. The experimental period was fixed for 12 weeks. VO2 max was measured by the Astrand – Astrand Nomogram test and the unit of measurement is L/min.

Statistical Technique

The collected data from the three groups prior to and post experimentation were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Since three groups were involved the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases statistical significance was fixed at 0.05 levels

Results

The adjusted post-test means of interval and circuit training and control groups are 3.00, 2.85 and 2.21 respectively. The obtained "F" ratio of 15.06 for adjusted post test scores is greater than the table value of 3.23 for df 2 and 41 required for significance at 0.05 level of confidence on Vo2 max.

The results of the study indicated that there was a significant difference among the adjusted post- test means of interval and circuit training and control groups on Vo2 max. To determine the significance difference among the three paired means, the Scheffe's test was applied as post-hoc test and the results are presented in Table – II.

Table 1: Analysis of Covariance on Vo2 Max of Experimental and Control Groups

	Interval Training Group	Circuit Training Group	Control Group	SoV	Sum of Squares	df	Mean square	'F' ratio
Pre test Mean SD	2.18	2.23	2.19	B	0.022	2	0.011	1.41
	0.08	0.10	0.07	W	0.33	42	0.008	
Post test Mean SD	3.01	2.85	2.21	B	5.21	2	2.60	15.40*
	0.32	0.57	0.26	W	7.11	42	0.16	
Adjusted Post test Mean	3.00	2.85	2.21	B	5.21	2	2.61	15.06*
				W	7.11	41	0.17	

(The required table value for significance at 0.05 level of confidence with degrees of freedom 2 and 42 is 3.22 and degree of freedom 2 and 41 is 3.23.)

*Significant at .05 level of confidence

Table 2: Scheffe's Post Hoc Test for the Differences among Paired Means of Interval and Circuit Training Groups and Control Group on Vo2 Max

Interval Training Group	Circuit Training Group	Control Group	Mean Difference	Confidence Interval
3.00	2.85		0.15	0.38
3.00		2.21	0.79*	0.38
	2.85	2.21	0.64*	0.38

*Significant

From table-II shows that the mean difference values between interval training and control groups; circuit training and control groups 0.79 and 0.64 respectively on Vo2 max which are greater than the confidence interval value 0.38 required for significance at .05 level of confidence.

The results of the study also showed that between the interval and circuit training groups no significant differences on Vo2 max. Both experimental groups had significant difference when compared to control group. Hence, it was concluded from the results both training groups were better improvement on Vo2 max when compared to control group.

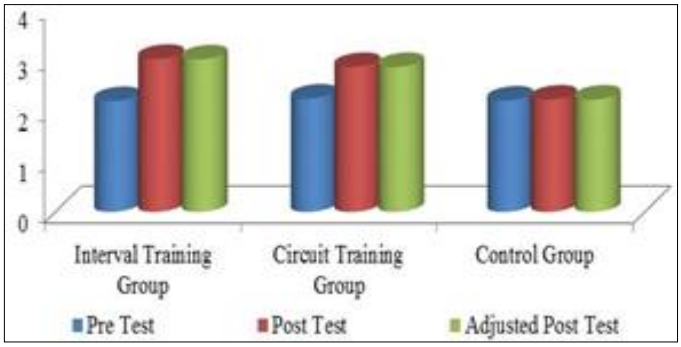

Fig 1: Cylinder Diagram Showing the Mean Value on Vo2 Max of Experimental and Control Groups

Discussion

Investigations linked circuit training with enhancement of VO2 max. Vivekananda *et al*., (2010) [3] stated that high intensity interval training is an effective endurance training tool in non-athletic school going male population and provides better improvement in VO2 max than slow continuous training. Andrew *et al*., (2013) [1] study result showed that the meta-analysis is that interval training produces improvements in VO2 max. Knuttgen *et al*., (1973) [2] concluded that interval training in combination with continuous training and shown more robust increases in VO2 max with at least some evidence of marked responses in all subjects.

Conclusion

The result of the study concluded that interval training and circuit training groups had significant improvement on VO2 max compared to control group. And also there are no significant differences among the Interval training and circuit training groups but interval training group had better increase on VO2 max.

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