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Research Paper

Efficacy of Circuit Training and Continuous Training on Selected Endurance Parameters Among Soccer Players

Physical Education

KEYWORDS : Circuit training, Continuous training, Strength Endurance, Cardio respiratory Endurance and Soccer.

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ABSTRACT

The aim of this research is to find out the effect of circuit training and continuous training on selected endurance parameters such as strength endurance and cardio respiratory endurance among soccer players. For this purpose, randomly selected thirty football players from different departments of Annamalai University were divided into three groups, circuit training group and continuous training group and control group. Statistical analysis of pre and post test means through ANCOVA and Scheffe's post hoc test proved that there was significant improvement in selected endurance variables, due to circuit training and continuous training. The result of the study shows that there was a significant improvements in strength endurance and cardio respiratory endurance. It was concluded that continuous training can be better utilized for improving endurance variables than circuit training among soccer players.

INTRODUCTION

A circuit training program can be used to develop either short-term or long-term strength endurance. Short-term muscular endurance is required for sports and events that last between 30 seconds and 2 minutes. Certain swimming and running events fall under this duration and strength endurance is required to maintain a high level of work throughout the race. But sports that last much longer than 2 minutes like soccer, field hockey, rugby, boxing, wrestling and martial arts also demand similar short-term strength endurance. Games like these consist of short,repetitive bouts of high intensity activity, often with little rest periods in between.

"Physical Fitness provides capacity for doing all types of activities" Willgoose(1961). Currently there is wide interest to identify the most effective methods of training for strength and endurance development and this is of special significance for physical education programmes in schools and colleges. Training is usually defined as systematic process of repetitive, progressive exercise or work involving the learning process and acclimatization. (Lawrence Gray Kumar, 2002).

The purpose of this research is to find out the effect of circuit training and continuous training on endurance parameters such as strength endurance and cardio respiratory endurance among soccer players.

METHODOLOGY

The aim of this research is to find out the effect of circuit training and continuous training on selected endurance parameters such as strength endurance and cardio respiratory endurance among soccer players. To achieve the purpose random group research design was adapted and thirty soccer players from various departments of Annamalai University, were randomly selected and their age group was between 18 to 25 years. The were divided into three groups (n = 10) as Group I, Group II and Group III, in which Group I underwent circuit training and Group II underwent continuous training for a period of twelve weeks and Group III acted as control group. Circuit training exercise group after a warm up for 5 minutes underwent circuit having 8 stations with different types of exercise for the improvement of lower extremity and upper extremity alternatively and finished each session with cool down exercises. Continuous training group, after a warm up for 5 minutes underwent continuous running with usual recovery and finished each session with cool down exercises and the sessions lasted for 40 minutes in each day, on alternate days, forming three days a week.

The investigator selected criterion variables Strength endurance, assessed by Bent knee sit ups, and Cooper's 12 minutes run / walk test for measuring cardio respiratory endurance of the subjects were selected as endurance variables. The collected data prior to and after completion of the experimental period on selected variables were statistically examined by applying Analysis of Covariance (ANCOVA). In all the cases to test the significance, 0.05 level of confidence was fixed. Since three groups were involved, whenever significant results were found, Scheffe's post-hoc test was used to find out the significant difference between the paired means of groups.

Calculation of Analysis of Covariance on Strength Endurance								
	Circuit Training Group	Continuous Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	39.10	40.80	40.70 Within	Between	18.2	2	9.10	
					412.6	27	15.28	0.60
Post Test Mean	44.40	43.10	41.50 Within	Between	42.2	2	21.10	
					423.8	27	15.70	1.34
Adjusted Post Test Mean	45.40	42.55	41.04 Within	Between	94.5	2	47.25	
					80.6	26	3.10	15.24*
Mean Diff	5.30	2.30	0.80					
Calculation of Analysis of Covariance on Cardiorespiratory Endurance								
Pre Test Mean	1994	2059	2086 Within	Between	44727	2	22363	
					473370	27	17532	1.28
Post Test Mean	2245	2185	2109 Within	Between	92907	2	46453	
					455390	27	16866	2.75
Adjusted Post Test Mean	2285	2175	2078 Within	Between	196986	2	98493	
					172391	26	6630	14.85*
Mean Diff	251	126	23					

RESULTS

TABLE– 1-: Results on Calculation of Analysis of Covariance on Endurance Variables

Required $F_{(0.05)\,(2,27)} = 3.354$, $F(0.05)_{,\,(2,26)} = 3.369$ *Significant

Post Hoc Analysis for Strength Endurance				
Circuit Training Group	Continuous Training Group	Control Group	Mean Difference	Reqd. C.I
45.40	42.55		2.85*	2.04
45.40		41.04	4.36*	2.04
	42.55	41.04	1.51	2.04
Post Hoc Analysis for Cardiorespiratory Endurance				
2285.46	2175.21		110.26*	94.53
2285.46		2078.33	207.13*	94.53
	2175.21	2078.33	96.88*	94.53

TABLE – 2 - : Scheffe's Post Hoc Analysis Results

DISCUSSION

The results presented in Table 1 and 2 proved that circuit training has significantly improved strength endurance, as measured by bent knee sit ups than continuous training and control groups. It was also found that continuous training and circuit training were significantly improved strength endurance and cardio respiratory endurance comparing to control group. While comparing between the treatment groups, it was found that circuit training is better than continuous training.

CONCLUSION

It was concluded that the Circuit training and continuous training programs has resulted in significant improvement on selected criterion variables as compared to control group.It was concluded that circuit training can be better utilized for improving endurance variables than continuous training, especially among soccer players

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