Effect of Circuit Training on Speed Agility and Explosive Power among Volleyball Players

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Abstract

The purpose of the present study was to find out the effect of circuit training on speed, agility and explosive power among volleyball players. To achieve the purpose of the study thirty college volleyball players in an age group of 19 to 24 were selected as subjects. All the subjects were played volleyball in inter collegiate levels. The selected subjects were divided in to two equal groups of fifteen subjects each as experimental group and control group. Both the group underwent their routine volleyball training and in addition of the above training the experimental group underwent specified circuit training morning one hour before starting the their routine volleyball training in a schedule of weekly three days in alternative days for all the eight weeks. The collected data's were statistically analyzed by using ANCOVA to find out the significant difference between the groups if any. It was concluded from the result of the study that the experimental group significantly shown better performance in the speed, agility and explosive power.

Key words: Physical fitness, Speed, Agility, Explosive Power

Introduction

The circuit training was developed by R.E. Morgan and G.T. Anderson in 1953 at the University of Leeds in England. Circuit training is a workout routine that combines cardiovascular fitness and resistance training. It was first proposed in the late 1950s as a method to develop general fitness. The initial routines were arranged in a circle, alternating between different muscle groups. By allowing only a short rest interval of 30-90 seconds between stations, cardiovascular fitness is gained along with the benefits of resistance training. The different exercises in different stations are fixed depends on the trainees training state, age and demand to improve physical fitness and physiological qualities."Circuit training is a method of fitness training that is designed to develop general, all-round physical and cardiovascular fitness" (Scholich, 1990). It is an excellent training program for improving different type of physical fitness abilities based on the program in different stations.

In sports training the coaches are applying various means and methods to make their players to improve various physical fitness qualities to achieve higher sports performance. Present study is undertaken to find out the effect of specified circuit training onspeed, agility and explosive power. Circuit training has gained popularity as a training strategy due to its improvement in different physical fitness qualities. SudhakarBabu and Paul Kumar (2013) conducted a study on the effect of selected circuit training on Sprinters of High school girls. They have found out that the experimental group improved the physical fitness qualities as well as sprinting performance. Manohar M. Mane and Sarvesh Kumar Yadav (2011) conducted a study on the effects of circuit training for the development of

vertical jumping ability, endurance, agility and skill ability in Football players' boys aged 10 to 12 Years. It was found out the circuit training had benefited in improving all the selected physical fitness qualities.

Circuit training is one of the well-known training methods to improve the physical fitness efficiency due to its nature of the activity. The present study was intended to assess the effect of circuit training on the selected physical fitness qualities among college volleyball players.

Methodology

The purpose of the present study was to find out the effect of circuit training on speed, agility and explosive power among volleyball players. To achieve the purpose of the study thirty college volleyball players in an age group of 19 to 24 were selected as subjects. All the subjects were played volleyball in inter collegiate levels. The selected subjects were divided in to two equal groups of fifteen subjects each as experimental group and control group. Both the group underwent their routine volleyball training and in addition of the above training the experimental group underwent specified circuit training morning one hour before starting the their routine volleyball training in a schedule of weekly three days in alternative days for all the eight weeks.

Circuit Training Procedure

The eight weeks circuit training was designed in emphasizes the necessity of the needs of fitness development of volleyball players. The following combination of eight different exercises Skipping, Push-ups, Jumping jack, Step ups, Sit ups, Shuttle run, Squat jump and sprint were performed.

The above circuit training was performed weekly three days in alternative days. Each exercise was carried out 3 to 5 repetitions. Rest intervals were 10 seconds between pairs and 3 to 4 minutes between sets for the duration of one hour.

Administration of Tests

The pre and post tests were administered before and after the eight weeks training period. The test administered were physical fitness variables of speed (50 mts dash), agility (4x10 mts shuttle run) and explosive power (vertical jump). All the tests were administered through standardized testing procedure.

Statistical Procedure

The collected data were statistically examined by using analysis of covariance (ANCOVA) and the results have been presented in Table I, II and III.

Results and Discussions

The analysis of covariance on the data obtained for speed, agility and explosive power of pre and post tests were tabulated and presented in the tables I, II and III respectively.

Table-I

Computation of Analysis of Covariance on Speed

Test	Group		sv	Sum of Squares	df	Mean Square	F value
	Exp.	Con.					
Pre test	6.94	7.09	B	0.159	1	0.159	0.321
			W	13.838	28	0.494	
Post test	6.31	6.99	B	4.692	1	4.692	7.119*
			W	18.468	28	0.659	
Adjusted Mean	6.66	7.11	B	3.489	1	3.489	10.113 *
			W	9.324	27	0.345	

*Significant at 0.05 level of confidence

It was observed from the Table-I that there was no significant difference in the pretest (F=0.321<4.20). A significant difference were observed in the post test (F=7.119<4.20) for df 1 and 28 and adjusted posttest (F=10.113>4.21) for df 1 and 27 at 0.05 level of confidence. It clearly indicated that there was a significant difference in speed. Further the mean value indicated that the experimental group was higher performance in speed the control group due to eight weeks circuit training.

Table-II

Computation of Analysis of Covariance on Agility

Test	Group		sv	Sum of Squares	df	Mean Square	F value
	Exp.	Con.					
Pre test	13.506	13.762	B	0.853	1	0.853	2.423
			W	9.856	28	0.352	
Post test	11.816	12.684	B	1.904	1	1.904	4.417*
			W	12.086	28	0.431	
Adjusted Mean	12.472	12.054	B	1.462	1	1.462	4.889*
			W	8.084	27	0.299	

*Significant at 0.05 level of confidence

It was observed from the Table-II that there were no significant difference in the pretest (F=2.423<4.20). The significant differences were observed in posttest (F=4.417<4.20) for df 1 and 28 at 0.05 level of confidence and adjusted posttest (F=4.889< 4.21) for df 1 and 27 at 0.05 level of confidence. It clearly indicated that there was a significant difference in agility. Further the mean value indicated that the experimental group was higher improvement in agility then control group.

Table-III

Computation of Analysis of Covariance on Explosive power

Test	Group		sv	Sum of Squares	df	Mean Square	F ratio
	Exp.	Con.					
Pre test	47.36	48.09	B	1.151	1	1.151	0.930
			W	34.65	28	1.237	
Post test	50.54	49.32	B	14.428	1	14.428	4.573*
			W	88.345	28	3.155	
Adjusted Mean	50.48	48.39	B	14.098	1	14.098	5.645*
			W	67.421	27	2.497	

*Significant at 0.05 level of confidence

It was observed from the Table-III that there was no significant difference in the pretest (F=0.930<4.20) for df 1 and 28 at 0.05 level of confidence. But significant difference were observed in posttest (F=4.573<4.20) for df 1 and 28 at 0.05 level of confidence and also adjusted posttest (F=5.645> 4.21) for df 1 and 27 at 0.05 level of confidence. It clearly indicated that there was a significant difference in explosive power due to circuit training among volleyball players. Further the mean value indicated that the experimental group was higher improvement on standing vertical jump than control group.

Conclusions

On the basis of the results and discussions the following conclusions are drown.

1. Circuit training was proved a best training method to improve the physical fitness qualities of speed, agility and explosive power.

2. Circuit training may be included in the development of physical fitness program of volleyball players.

3. It was concluded that circuit training is a useful and perhaps optimal training strategy to do the exercise with interest due to different stations and different in nature

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