



Effects of Circuit and Plyometric Training on Endurance of torso muscles of Kabaddi Players

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Abstract : The purpose of the study was Effects of Circuit and Plyometric Training on Blood Pressure of Kabaddi Players. Male players of Kabaddi selected at school level in Nadiad were selected in the present study. Total 90 male players were selected as subjects for the sample of the present study, in which 30 players were included in the plyometric training group, 30 in circuit training group and 30 players were included in the control group. The male players of 13 to 17 years age group were included in the present study. Endurance of torso muscles was measured by Bent knee sit-ups. Statistical technique such as analysis of covariance was applied to know the effects on Circuit training group and Plyometric training group. Mean difference was examined at 0.05 levels by using Least Significant Difference (Post Hoc) Test. Conclusion are as under Remarkable higher improvement was found in performance of endurance of torso muscles of subjects of circuit training group and plyometric training group because of circuit training and circuit training.

Introduction :

The term 'Training' has remained a part of human language since ancient times, which indicates preparation of beginning any work. The process goes on for days, months and years. The word 'training' is widely used in sports. Coaches of sports and sports scientists differ to the true meaning of training. Some experts take it as connected to medical science and consider sports and games as training. They consider training as physical exercises, e.g. strength training, interval training, physical exercises, maneuver etc. There is no guarantee of increase or development in performance by its regular and gradually practice. Some other aspects such as sports tools, materialistic vision, reparation, tools of performance and evaluation, projection and psychological tools should also be taken into consideration in order to attain better results. So, training should be provided to individual by co-ordination of process of preparation and other causative aspects. Beside these tools, other sport sciences such as medical science, sports science, dietetics, physical treatment, sports psychology, sports biopsychology etc are also helpful for advance training. So it can be concluded when the role of theoretical is less and training is more, the performance of players will be more natural.

Definition:

“Sport training is a complex process, by which the player is prepared for higher performance.”

Circuit training is very important for development of elements necessary for muscular fitness. Trainee has to do 8 to 12 exercises in this circuit training. The cycles for each type of exercise are also fixed. The sequence of exercises is also fixed. The resting time after finishing one exercise is also fixed. After completing the first exercise, 8 to 12 exercises are to be taken in sequence of second, third and next without stopping for a while. In this way, one cycle of circuit training is completed. Generally, three to five cycles are planned according to need of the players in the circuit training. After the player had finished the first cycle, the rest is given according to training weightage. Weight lifting exercises, other obstructive exercises, calisthenics, race, swimming or stretching exercises etc. are included in the circuit training.

To form the structure of the circuit training, the coach measures characteristics of physical fitness of layers by giving a physical fitness test and decides which competencies they lack. Then, the coach constructs the training programme for development of lacking competencies. For example, if the coach sees less strength of shoulder muscles, he will include the exercise helpful to increase the strength of shoulder muscles in the

circuit training. If the coach finds less speed, one or two exercises for increasing speed will be selected. In the same way, if developing the muscles of thigh or abdomen, some exercises for development of muscles of thigh or abdomen can be selected. Thus, one or two exercises for muscular power, flexibility, endurance etc are to be included in the circuit training and the structure of the training programme is prepared. Selections of exercises, exercise cycles, duration of training, density of exercise etc. are to be determined while preparing structure for the circuit training.

The Europeans knew only training of jumping when some limited exercises were existed in Europe. Before 1970, unimaginative influence of Eastern European athletes (players) was found on sports all over the world. At that time, Fedvilt had tossed the first coin in 1975. Only American coaches were predominating in the field of sports and games. The term 'Plyometric' was derived from Latin language, which means 'more tough and burly'. It was believed that aim of plyometric was to provide exercise to athletes (players) and to provide disciplined training. Power is produced by joining force with speed while doing movement. In plyometric training, the important thing was that the player jumped, lifted or threw.

All motor components contribute directly and indirectly for better performance. General Motor Fitness Test is prepared after analyzing twenty-eight components. The main components among them are strength, velocity and muscular co-ordination. The other components like shape, height and weight of body, force, endurance, balance and ability are also important.

According to victor, motor fitness is a constant going on process. Motor fitness depends on physical organs and skills of the person. Each person needs certain minimum degree of motor fitness. Maximum motor fitness depends on how the individual works. Physically healthy person can remain active for a long time without feeling tiredness. Motor fitness is very important in viewpoint of sports.

Motor fitness is taken into consideration while selecting players of any sport, so that higher results can be attained.

Objective of the study :

Effects of Circuit and Plyometric Training on Blood Pressure of Kabaddi Players

Selection of Subjects

Male players of Kabaddi selected at school level in Nadiad were selected in the present study. Total 90 male players were selected as subjects for the sample of the present study, in which 30 players were included in the plyometric training group, 30 in circuit training group and 30 players were included in the control group. The male players of 13 to 17 years age group were included in the present study.

Criterion measurement :

No.	Variable	Test	Measurement
1	Endurance of torso muscles	Bent knee sit-ups	Number

Statistical Process

Statistical technique such as analysis of covariance was applied to know the effects on Circuit training group and Plyometric training group. Mean difference was examined at 0.05 levels by using Least Significant Difference (Post Hoc) Test.

Result of the study :

Table – 9

Analysis of covariance of mean scores of endurance of torso muscles of two experimental groups and a control group

Test	Groups			Analysis of variance				
	Circuit	Plyometric	Control	Sum of classes (SS)		df	MSS	'F'
Pretest mean	17.200	16.367	16.300	A	15.089	2	7.544	2.450
				W	486.067	87	5.587	
Post-test mean	18.800	18.600	16.733	A	77.956	2	38.978	11.250*
				W	329.867	87	3.792	
Adjusted mean	19.452	19.754	17.929	A	57.148	2	28.574	15.262*
				W	152.039	86	1.768	

*Significance criterion at 0.05 levels 'F' = 0.05 (2,87) = 3.101 & (2,86) = 3.103

In table – 2 detail of mean scores of pretest and post test, analysis of covariance and all statistical data of 'F' is mentioned. The mean scores on endurance of abdomen muscles pretest of circuit group, plyometric group and control group was found 17.200, 16.367 and 16.300 respectively. 'F'- ratio was found 2.450, which was not significance with the tabular value (3.101) at 0.05 levels. So the distribution of subjects into experimental group and control group was found successful.

The mean scores on endurance of abdomen muscles final test of circuit group, plyometric group and control group was found 18.800, 18.600 and 16.733 respectively. 'F'- ratio was found 11.250, which was significance with the tabular value (3.103) at 0.05 levels. It proved that performance of subjects was improved at significant level by the training given to them. Moreover, adjusted mean of circuit group, plyometric group and control group was found 16.451, 19.755 and 17.928 respectively. 'F'- ratio was found 16.163, which was significance with the tabular value (3.103) at 0.05 levels. Significance between adjusted means of all three groups was found significance. Effectiveness of experimental treatments on circuit training group and plyometric group and adjusted mean difference were examined with critical difference. The detail is presented in table – 2.

Table – 2
Critical difference of mean scores of endurance of torso muscles of two experimental groups and a control group

Mean			Mean difference	Critical difference
Circuit Training	Plyometric Training	Control Group		
19.452	19.754		0.302	0.682
19.452		17.929	1.523*	
	19.754	17.929	1.825*	

* Significance at 0.05 levels

Difference between adjusted mean scores of endurance of torso muscles of two experimental groups and a control group is seen clearly in table – 2. The difference is found out between circuit group and plyometric group, circuit group and control group and plyometric group and control group and it was compared with critical difference. It is observed in table – 10 that higher significant improvement (1.825) was found in plyometric group with compared to the control group. Then, higher significant improvement (1.523) was found in circuit group with compared to the control group. Significant effect of experimental treatment was found higher in circuit training group and plyometric training group with compared to control group, whereas significant effect of experimental treatment was not found between circuit group and plyometric group.

Conclusion :

- Remarkable higher improvement was found in performance of endurance of torso muscles of subjects of circuit training group and plyometric training group because of circuit training and circuit training.

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