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An Impact of circuit training on selected skill related fitness parameters among engineering professional sportsmen

[1] Pardeep Kumar, [2] Parul
[1] Assistant Professor, Jat College, Rohtak, Haryana, India
[2] Junior Lecturer, Shri Baba Mastnath Public Sr. Sec. School, Rohtak, Haryana, India

Abstract
To achieve the purpose of these study sixty sportsmen were selected from various departments of Shri Baba Mastnath Engineering College, Rohtak. The selected subjects were the participants of inter-college tournaments in various team sports studying in Shri Baba Mastnath Engineering College, Rohtak. The age of the subjects was ranged between twenty to twenty five years. The selected sixty subjects were randomly divided into two equal groups consisting of thirty in each. Experimental group I named as Circuit Training and Group II acted as Control Group. All the three groups were tested on selected skill related fitness parameters such as Speed, power, Agility, Balance and coordination and the readings were recorded in their respective units as pre-test scores. After pre-test, the experimental group I was treated with circuit training for 45 minutes duration per day for six days a week in the morning session and Group II was not treated with any specific training. After twelve weeks of training all the subjects were tested on selected skill related fitness parameters such as Speed, Power, Agility, Balance and coordination and the readings were recorded in their respective units as post-test scores. The significance on difference of group means was tested for significance by applying paired't' test. Hence, the circuit training had a significant improvement on speed power, agility, balance and coordination from base line to post treatment.

Keywords: Circuit Training, Speed, power, Agility, Balance and coordination.

Introduction
Circuit training is an excellent way to improve mobility, strength and stamina. The circuit training comprises of 6 to 10 strength exercises that are completed one exercise after another. Each exercise is performed for a specified number of repetitions or for a set time before moving on to the next exercise. The exercises within each circuit are separated by a short rest period, and each circuit is separated by a longer rest period. The total number of circuits performed during a training session may vary from two to six depending on your training level (beginner, intermediate, or advanced), your period of training (preparation or competition) and your training objective.

Circuit training is an efficient and challenging form of conditioning. It works well for developing strength, endurance (both aerobic and anaerobic), flexibility and coordination.

Its versatility has made it popular with the general public right through to elite athletes. For sports men and women, it can be used during the closed season and early pre-season to help develop a solid base of fitness and prepare the body for more stressful subsequent training.

A well-designed circuit can help to correct the imbalances that occur in any sport played to a high level. It can also be one of the best types of training for improving strength endurance be it for a sport such as soccer or a classic endurance event like the triathlon.

If you haven't quite reached "elite athlete" status yet, circuit training is superb for general fitness and caters for a wide variety of fitness levels. A great time saver, it can be a refreshing and fun change from the more monotonous types of exercise.

The articles in this section of the website cover a wide variety of circuits for different performance outcomes. Circuit training in itself is not a form of exercise per se, but the way an exercise session is structured. Routines can be developed purely for or for improving or some combination of the two.

Circuit classes often seen in gyms and boot camps typically consist of about ten exercises stations completed for sixty seconds in sequence with thirty-sixty seconds rest between. While this is a great structure for some individuals it's only one of many potential circuit programs and may not be the best approach for endurance athletes.

Statement of the Problem
To achieve the purpose of the study effect of circuit training on selected skill related fitness parameters among engineering professional sportsmen.

Hypothesis
It was hypothesized that the circuit training on selected skill related fitness parameters among engineering professional sportsmen.

Methodology
All the three groups were tested on selected skill related fitness parameters such as Speed, power, Agility, Balance and coordination and the readings were recorded in their respective units as pre-test scores. After pre-test, the experimental group I was treated with circuit training for 45 minutes duration per day for six days a week in the morning session and Group II were not treated with any specific training. After twelve weeks of training all the subjects were

tested on selected skill related fitness parameters and the readings were recorded in their respective units as post-test scores. The significance difference of group mean was tested by applying paired 't' test.

Selection of variables and criterion measures

S.No.	Criterion Variables	Test Items	Units of Measurement
1	Speed	50 meter dash	In Second
2	Muscular Power	Standing Broad Jump	In Meters
3	Agility	Illinois agility test	In Second
4	Balance	Dynamic Balance test	In Points
5	Coordination	Wall Toss test	In Points

Training protocol on circuit training

The training programme was lasted for 45 minutes for session in a day, 3 days in a week for a period of 12 weeks duration. These 45 minutes included 10 minutes warm up, Circuit training 25 minutes and 10 minutes warm down allotted for a training programme. Every three weeks of training 5% of intensity of load was increases from 60% to 75% of work load. Volume of circuit training is prescribed based on the number of sets and repetition. The equivalent in circuit training is the length of the time each action is held for and the number action in total 6 sessions per weeks at morning the exercise namely Skipping, Step-ups, Squat thrust, Push-ups, Double knee Duck jumps, Sit-ups, Shuttle run and Jump and turn.

Table 1: Computation of analysis of 't' ratio on selected skill related parameters among engineering professional sportsmen on circuit training group

Group	Variables	Pre-test ± S.D	Post-test ± S.D	M.D	T ratio
Circuit Training Group	Speed	6.36 ± 0.46	5.74 ± 0.38	0.62	11.68
	Power	1.83 ± 0.01	2.21 ± 0.01	0.38	8.31
	Agility	12.58 ± 0.42	10.88 ± 0.31	1.70	7.26
	Balance	43.84 ± 4.71	55.24 ± 5.98	11.40	9.22
	Coordination	22.12 ± 3.02	25.75 ± 2.89	3.63	6.39

Table-I shows the results of circuit training on speed, power, agility, balance and coordination The mean and standard deviation value of pre-test were (6.36 ± 0.46, 1.83 ± 0.01, 12.58 ± 0.42, 43.84 ± 4.71, 22.12 ± 3.02) and post-test were (5.74 ± 0.38, 2.21 ± 0.01, 10.88 ± 0.31, 55.24 ± 5.98 and 25.75 ± 2.89) respectively. The mean difference is (0.62, 0.38, 1.70, 11.40 and 3.63). The obtained t ratio (11.68, 8.31, 7.26, 9.22 and 6.39) was greater than the table value of 2.09 with the degrees of freedom 29 at 0.05 level of significance. Hence, the circuit training had a significant improvement on speed, power, agility, balance and coordination. The mean values of pre-test and post test scores were given in figure-I.

Table 2: Computation of analysis of 't' ratio on selected skill related parameters among engineering professional sportsmen on control group

Group	Variables	Pre-test ± S.D	Post-test ± S.D	M.D	T ratio
Control Group	Speed	6.34 ± 0.38	6.38 ± 0.37	0.04	0.19
	Power	1.79 ± 0.02	1.82 ± 0.02	0.03	0.01
	Agility	12.64 ± 0.44	12.69 ± 0.43	0.05	0.79
	Balance	43.80 ± 4.66	43.79 ± 4.63	0.01	1.12
	Coordination	22.00 ± 2.99	22.02 ± 2.77	0.02	0.94

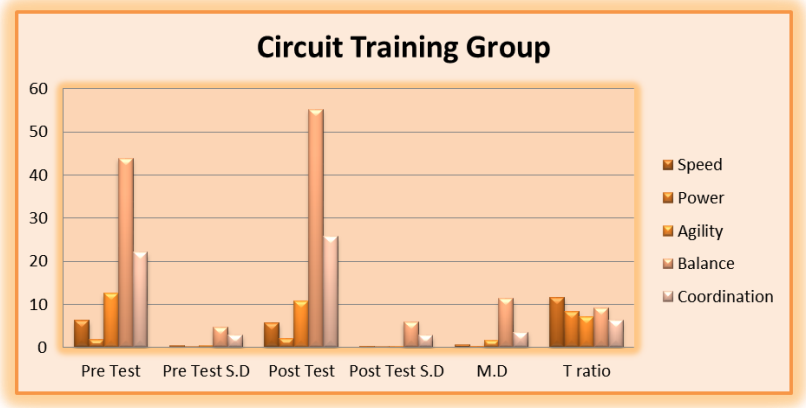

Fig 1: Graphical representation on selected skill related parameters among engineering professional sportsmen on circuit training group

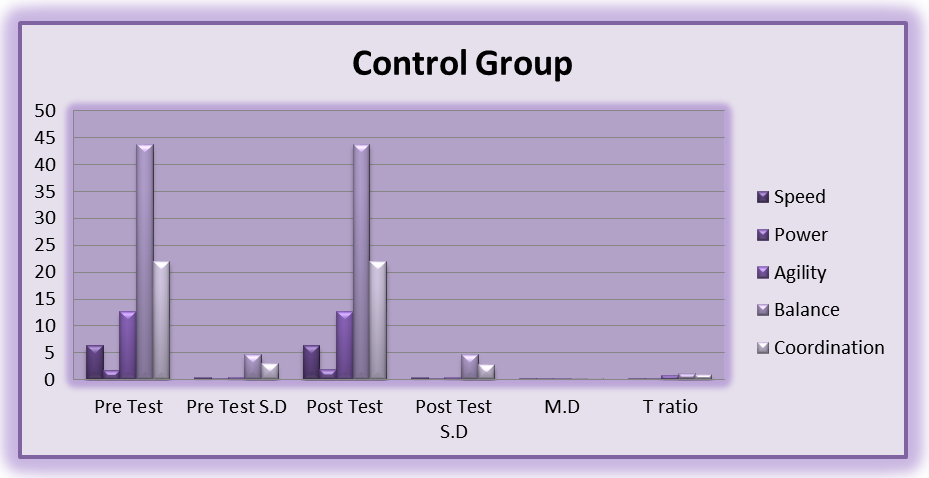

Fig 2: Graphical representation on selected skill related parameters among engineering professional sportsmen on control group

Table-II shows the results of circuit training on speed, power, agility, balance and coordination The mean and standard deviation value of pre-test were (6.34 ± 0.38, 1.79 ± 0.02, 12.64 ± 0.44, 43.80 ± 4.66 and 22.00 ± 2.99) and post-test were (6.38 ± 0.371.82 ± 0.02, 12.69 ± 0.43, 43.79 ± 4.63 and 22.02 ± 2.77) respectively. The mean difference is (0.04, 0.03, 0.05, 0.01 and 0.02). The obtained t ratio (0.19, 0.01, 0.79, 1.12 and 0.94) was lesser than the table value of 2.09 with the degrees of freedom 29 at 0.05 level of significance. Hence, the circuit training had insignificant improvement on speed, power, agility, balance and coordination. The mean values of pre-test and post test scores were given in figure-II.

Conclusion

Based on the result the conclusion was made that the circuit training had significant improvement on the selected skill related physical fitness parameters namely speed, power, agility, balance and coordination than the control group among engineering professional sportsmen.

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