



EFFECT OF COMBINED TRAINING PROGRAMMES ON SPEED OF SECONDARY LEVEL HOCKEY PLAYERS

Kiran G. N.¹ and Dr. R. Srinivasa²

¹Research Scholar, University College of Physical Education, Bangalore University, Bangalore .

²Professor, University College of Physical Education, Bangalore University, Bangalore .

ABSTRACT

The purpose of the study was to evaluate the effectiveness of combined circuit and interval training on speed of secondary school hockey players. To achieve this purpose, sixty secondary school Hockey players in the age group of 14-16 years were selected as subjects. The selected subjects were divided into four equal groups, in which, Group-I: Circuit Training Group (CTG) (n=15) underwent resistance and plyometric training in the form of circuit; Group-II: Interval Training Group (ITG) (n=15) underwent aerobic and anaerobic training in the form of interval; Group-III: Combined Circuit and Interval Training Group (CCITG) (n=15) underwent combined training both in the form of circuit & interval form and Group-IV: Control Group (CG) (n=15) acted as control which did not participate any training but allowed to take part in their regular Hockey training and playing game. The training programme was carried out for this



study was five days per week for twelve weeks. Prior to and after the training period the subjects were tested for speed. This was assessed by administering 50 meters run. The statistical tool used for the present study ANCOVA along with Scheffe's Post Hoc Analysis. After applying ANCOVA, it was found that there was significant improvement in the speed for Circuit Training Group, Interval Training Group and Combined Circuit and Interval Training Group (CCITG) when compared with control group. Based on the results it was concluded that the CCITG experimental group was significantly improved the Speed of secondary school Hockey players when compared with Interval Training Group (ITG) and Circuit Training Group (CTG)

KEYWORDS: Combined Training Programmes, speed, Hockey.

INTRODUCTION :

Hockey is one of the world greatest ball game. Present days this hockey is being played by adopting new techniques and, methods during training schedules. The motor abilities are considered as one of the important

factors affecting on every game and the availability of motor abilities for the Hockey players sufficiently enable them to achieve better performance and high achievement.

The various resistance and plyometric training programmes offer new and different ways to improve anaerobic and aerobic conditioning. Interval training is the physical training consisting of alternating periods of high and low intensity activity. Circuit training is a form of body conditioning resistance training using high-intensity aerobics. It targets explosive strength building and muscular endurance. Both Circuit and Interval trainings are most popular form of fitness sessions used by various sports teams. These training will improve both aerobic fitness, thus this is very useful conditioning method. Hockey game requires high level of motor fitness to excel at different levels of competitions. The speed plays an important role in improving the fitness level of players.

Interval training refers to organization of any cardiovascular workout and is famous in training routines for numerous sports. This method of training may be more effective at inducing fat loss than simply training at a moderate intensity level for the same duration. Interval training has become increasingly attractive, mostly because it is assumed to build both speed and stamina. A circuit is a collection of stations or areas where specific tasks/exercises are executed. Circuits are planned to provide exercise to groups of soldiers at intensities which are suitable for each person's fitness level. Circuits can uphold fitness in a broad range of physical and motor fitness areas. In this speed is also one of them. The combined effect of both interval and circuit training is more effective in developing speed among the athletes.

According to Cratty and Hutton (1969) "speed is designed as capacity of an individual to perform successive movement of the same pattern at a faster rate". Circuit training is the programme in which an athlete moves from one exercise station to another in a planned sequence and in the shortest possible time (Neal, 1969). Sebastian (1998) "Performance in speed improved significant for both progressive and alternate high and low intensity training when compared to the control group, and no significant difference existed between the training groups." Kannan; Chittibabu & Tripathy (2015) found intensive sports specific endurance circuit training for 12 weeks was effective adequate in maintaining speed of handball players. Manikandan (2014) found effect of conventional resistance training on speed among university athletes. Anuradha and Gandhi (2015) found that interval training had positive impact on speed among school children of Karnataka state than the control group. The above studies proved that both circuit and interval training are developing speed of the subjects.

Objective of the Study

The objective of the study was to determine the effect of combined circuit and interval training on speed of secondary school Hockey players.

Hypothesis of the Study

It is hypothesized that there would be a significant difference in the speed of experimental group by practicing combined circuit and interval training.

METHODOLOGY

The purpose of the study was to investigate the effect of combined circuit and interval training on speed among secondary school Hockey players. For this purpose, sixty secondary school Hockey players in the age group of 14-16 years were selected as subjects. The selected subjects were divided into four equal groups, in which, Group-I: Circuit Training Group (CTG) (n=15) underwent resistance and plyometric training in the form of circuit; Group-II: Interval Training Group (ITG) (n=15) underwent aerobic & anaerobic training in the form of interval; Group-III: Combined Circuit and Interval Training Group (CCITG) (n=15) underwent combined training both in the form of circuit & interval form and Group-IV: Control Group (CG) (n=15) acted as control which did not participate any training but allowed to take part in their regular Hockey training and playing game. The training programme was carried out for this study was 3 alternate days per week for twelve weeks. Prior to and after the training period the subjects were tested for speed. This was assessed by administering 50 Meters Run. The data was analyzed by applying Analysis of Co-Variance (ANCOVA). The level of significance was set at 0.05.

ANALYSIS OF DATA

The findings pertaining to analysis of covariance between experimental groups and control group on speed among school Hockey players for pre-post test respectively.

Table-1

ANCOVA for the pre-test and post-test data on Speed (In Secs.) of Circuit Training Group (CTG), Interval Training Group (ITG), Combined Circuit and Interval Training Group (CCITG) and Control Group (CG).

Tests		CG	CTG	ITG	CCITG	SV	df	Sum of square	Means square	'F' ratio
Pre-test	Mean	7.990	7.933	7.915	7.904	B	3	0.067	0.022	0.28 ^{NS}
	S.D.	0.250	0.313	0.301	0.242	W	56	4.359	0.078	
Post-test	Mean	8.016	7.664	7.492	7.378	B	3	3.492	1.164	15.70*
	S.D.	0.245	0.241	0.290	0.305	W	56	4.152	0.074	
Adjusted Post-test	Mean	7.990	7.666	7.503	7.394	B	3	2.994	0.998	17.66*
						W	55	3.109	0.057	

Note: SV: Source of Variance; B-Between Groups; W- Within Groups; S.D.- Standard Deviation

Table value at 0.05(df-3, 56) =2.76; at 0.01(df-3, 56) =4.13

**Significant at 0.01 level; *Significant at 0.05 level; NSNot Significant

As shown in Table-1, the pre-test mean values of speed of Control Group, Circuit Training Group; Interval Training Group and Combined Circuit & Interval Training are 7.990, 7.933, 7.915 and 7.904 respectively. The obtained 'F' ratio of 0.28 for pre-test mean is less than the table value 2.76 for df 3 and 56 required for significance at 0.05 level. The post-test means value of speed of Control Group, Circuit Training Group; Interval Training Group and Combined Circuit & Interval Training are 8.016, 7.664, 7.492 and 7.378 respectively. The obtained 'F' ratio of 15.70 on post-test mean is greater than the table value 4.13 for df 3 and 56 required for significance at 0.01 level. The same table also indicated that there was a significant difference in adjusted mean of speed of secondary school Hockey players. The obtained 'F' ratio of 17.66 on adjusted post-test means is greater than the table value 4.13 for df 3 and 55 required for significance at 0.01 level.

Table-2

Scheffe's Test for the differences between the adjusted post-test paired means of Speed.

Adjusted post-test mean				Mean Difference (MD)	Critical Difference (CD)
CG	CTG	ITG	CCITG		
7.990	7.666			0.324*	0.172
7.990		7.503		0.487*	
7.990			7.394	0.596*	
	7.666	7.503		0.163	
	7.666		7.394	0.272*	
		7.503	7.394	0.109	

*Significant at 0.05 of confidence.

The table-2 shows that the adjusted post-test means difference on speed between speed between Circuit Training Group & Control Group; Interval Training & Control Group: and Combined Circuit & Interval Training and Control Group; Circuit Training Group & Combined Circuit & Interval Training Group are 0.324, 0.487, 0.596 and 0.272 which are higher than the critical difference of 0.172 at 0.05 level of confidence and the obtained adjusted post-test mean difference on speed between Circuit Training Group & Interval Training Group; and Interval Training Group and Combined Circuit & Interval Training Group are 0.163 and 0.109 are less than the critical difference of 0.172 at 0.05 level of confidence.

It may be concluded from the results that there was significant difference on speed between Circuit Training Group and Control Group; Interval Training & Control Group; Combined Circuit & Interval Training and

Control Group; Circuit Training group & combined circuit and interval training. The combined circuit and interval training had better speed than interval training and circuit training respectively.

The comparison of pre, post and adjusted post-test mean values on speed among various experimental and control groups are graphically depicted in Fig. 1.

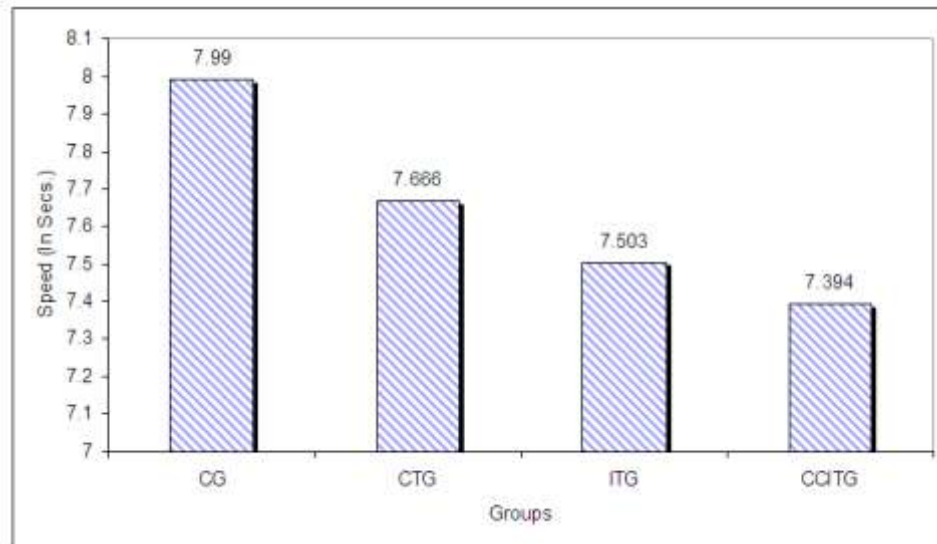


Fig.1: Bar diagram of Pre, Post and Adjusted Post-test Means on Speed among various groups.

DISCUSSIONS ON FINDINGS

The finding of the study shows that there was a significant difference in the Speed of experimental group by practicing interval training, circuit training and combined circuit and interval training. The speed results between pre and post (12 weeks) tests have been found significantly higher in experimental groups when comparison to control group. This is possible because due to practice of regular circuit and interval training which may also bring sudden spurt in speed. The findings of the present study have strongly indicates that combined circuit and interval training of twelve weeks have significant effect on speed. Hence the hypothesis earlier set that circuit training programme would have been significant effect on speed in light of the same the hypothesis was accepted. The above studies proved that both circuit and interval training are developing speed of the subjects. The following studies are supporting with my study results. Sudhakar and Paul (2014) stated that the significantly improvement was found in speed among the experimental group when compared with control group. Kumarasan and Saravanan (2015) found that 8 weeks of both interval and circuit training influence to increase the speed of the experimental groups when compare to the control group, even though the interval training is better than the circuit training to improve the speed of the subjects.

CONCLUSION

On the basis of findings and within the limitations of the study the following conclusions were drawn:

1. The combined circuit training, interval training and circuit training had positive impact on speed among secondary school Hockey players.
2. The combined circuit and interval training group showed better improvement on speed among secondary school Hockey players than interval training and circuit training.

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