



ISSN: 2456-0057
IJPNPE 2017; 2(2): 1018-1020
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www.journalofsports.com
Received: 25-05-2017
Accepted: 26-06-2017

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Influence of complex training on skill related physical fitness variables among hockey players

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Abstract

Complex training has been recommended as a method of incorporating plyometrics, sport-specific movement with strength training little data exists on systemic training programs to improve skill related physical fitness in hockey players. The purpose of this study is to evaluate the effectiveness of a complex training program on skill related physical fitness in hockey players. To find out among the effect of complex training, the investigator selected 40 intercollegiate level Hockey players who were randomly divided into two groups. One group was formed as the experimental group and the other group was called control group. The experimental group was given complex I training for six Weeks, consisting of Squats, Bench Press, Barbell Curls, Lying Triceps Extension, Leg Press, Jump to Box, Medicine ball chest pass, Bounding, Medicine ball overhead pass, Lateral Hurdle Jump and the control group was not provided with any experimental treatment. Initial scores on selected skill related physical fitness variables, agility, speed, and coordination of the subjects were collected using standard tests. The complex training program intervention for 6 weeks improved their skill related physical fitness of the hockey players. Based on the following fact we should consider the need and importance of skill related physical fitness in sports of hockey.

Keywords: Hockey, complex training, Plyometric training, sport-specific movement and Biomotor.

Introduction

Many aspects of a strength and conditioning program center on power development with complex training being commonly used. Complex training involves maximal or high-intensity dynamic exercises before performing a lighter-resistance ballistic movement with similar biomechanical characteristics. Speed is considered to be the combination of two factors - stride rate and stride length. Greater forces increase the stride length and decrease the contact time so stride rate increases. These workouts were greeted with great acclaim as research indicated that they could significantly enhance fast-twitch muscle fiber power and, therefore, dynamic sports performance.

Grieco CR, Cortes N, Greska EK, Lucci S, and Onate JA. (2012) Successful athletic performance and any training method that improves impulse and power production may improve sports performance, particularly in jumping aspects of sport.

Pete McCall (2015) Athletic performance is based on a number of skills that can be developed through a sports conditioning program. This particular program focuses on improving both muscular strength and power using a technique called post-activation potentiation (PAP), also commonly referred to as complex training

John Shepherd (2015) Designing a periodised training programme to enhance speed and power can be mentally taxing – so much so that those on the hunt for these prized attributes may even develop a Complex training describes a power-developing workout that combines weights and plyometric exercises

In view of the above and similar research findings, the research question posed by the investigator in this study, was whether complex training could be successfully Used for the improvement of skill related physical fitness of intercollegiate level Hockey players, which warrants high level of speed, agility, coordination fitness. The purpose of this study is to find out the effect of complex training on selected skill related physical fitness variables among intercollegiate Hockey players.

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Methodology

Pre and post-test random group research design was followed in this study. The selected subjects, 40 intercollegiate level Hockey players were randomly divided into two groups. One group formed experimental group and the other group was control group. The experimental group was given complex training for six weeks, consisting of Squats, Bench Press, Barbell Curls, Lying Triceps Extension, Leg Press, Jump to Box, Medicine ball chest pass, Bounding, Medicine ball overhead pass, Lateral Hurdle Jump and the control group was not provided with any experimental treatment. Initial scores on selected Fitness variables, agility and speed and coordination of the subjects were collected using standard tests. After the experimental period of six weeks, the subjects were again tested on selected. The difference between initial and final scores formed the effect of complex training on selected criterion variables. The obtained data were subjected to statistical analysis using Analysis of Covariance (ANCOVA).

Results and Discussion

The results presented in Table 1 and Fig. 1 proved that six

weeks complex training significantly improved the skill related physical fitness variable agility and speed and coordination. The results presented in this study, the complex training, namely, Squats, Bench Press, Barbell Curls, Lying Triceps Extension, Leg Press, Jump to Box, Medicine ball chest pass, Bounding, Medicine ball overhead pass, Lateral Hurdle Jump were given for six weeks. The number of repetitions that the individual was able to sustain for different pause durations and the intensities used in this study, enabled the experimental group subjects to absorb the changes in maximal dynamic power during successive exercise periods which resulted in associated metabolic changes in muscle, which resulted the experimental group to improve the fitness agility, speed, coordination significantly than the control group which was not provided with these complex training. The results of this study is in agreement with the findings of Harris *et al.* (2008) ^[10], Ingle *et al.* (2006) and Thompson *et al.* (2007) ^[8] who found functional training programme resulting in significant improvements in speed and several components of functional fitness. The complex training would thus, increase the power out put among the experimental group.

Table 1: Result of analysis of covariance on the Skill Related Physical Fitness variables between Experimental and Control Group

SPEED							
	Complex Training	Control	Source of Variance	Sum of Squares	Df	Mean Squares	Obtained F
Pre Test Mean	7.09	7.13	Between	0.009	1	0.005	0.15
			Within	1.335	38	0.032	
Post Test Mean	6.90	7.11	Between	0.395	1	0.198	5.14
			Within	1.613	38	0.038	
Adjusted Post Test Mean	6.92	7.09	Between	0.294	1	0.147	29.97
			Within	0.201	37	0.005	
Mean Diff	-0.19	-0.02					
AGILITY							
Pre Test Mean	10.80	10.90	Between	1.1	1	0.55	2.66
			Within	8.7	38	0.21	
Post Test Mean	10.76	10.88	Between	1.2	1	0.60	2.57
			Within	9.7	38	0.23	
Adjusted Post Test Mean	10.71	10.73	Between	0.0	1	0.01	0.13
			Within	2.2	37	0.05	
Mean Diff	-0.04	-0.02					
COORDINATION							
Pre Test Mean	22.93	22.93	Between	0.2	1	0.10	0.08
			Within	49.7	38	1.18	
Post Test Mean	22.87	22.87	Between	29.1	1	14.56	9.71*
			Within	63.0	38	1.50	
Adjusted Post Test Mean	22.82	22.82	Between	24.2	1	12.11	62.02*
			Within	8.0	37	0.20	
Mean Diff	-0.07	-0.07					

R Table F-ratio at 0.05 level of confidence for 1 and 38 (df) =4.01, 1 and 37(df) =4.01 Indicate significance of values at P=0.05, respectively

Results

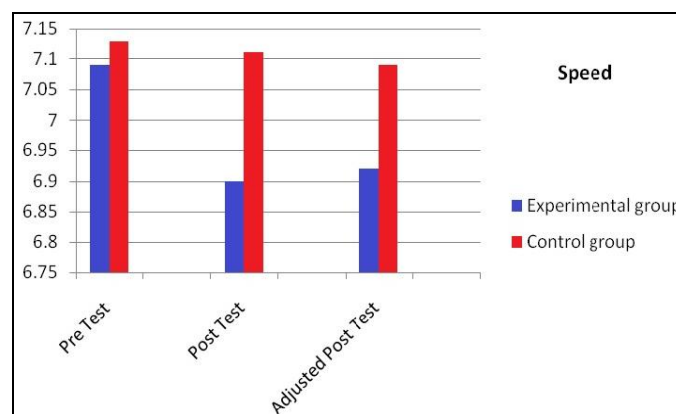


Fig 1: Treatment effects on different stages

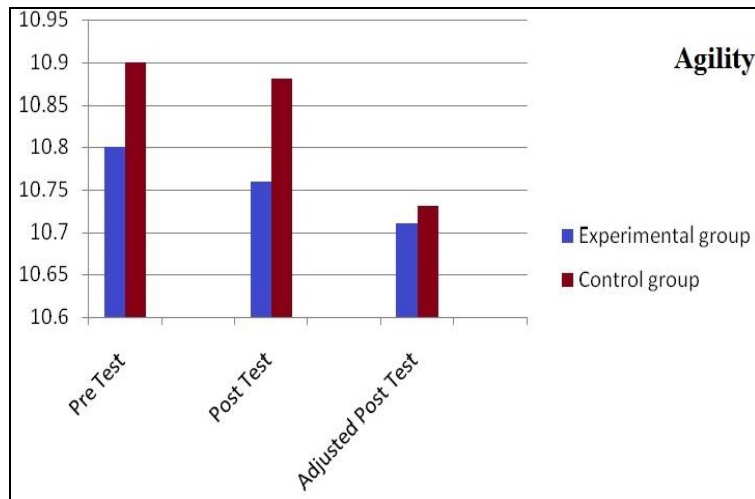


Fig 2: Treatment effects on different stages

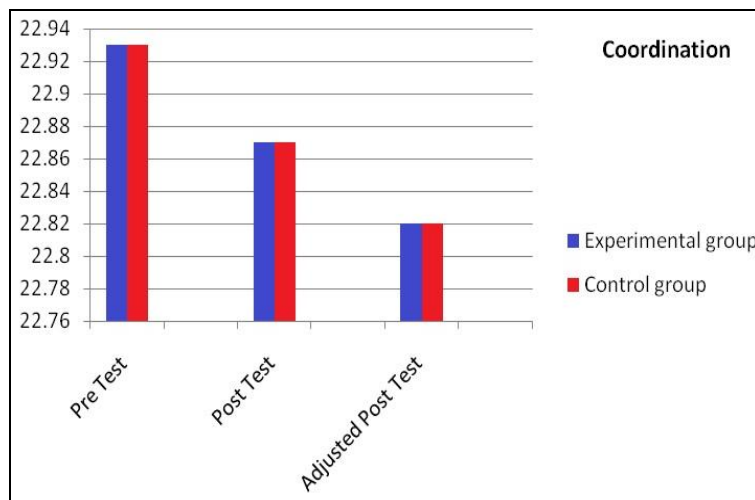


Fig 3: Treatment effects on different stages

Conclusion

Complex training may be an efficient or-generational strategy, allowing incorporation of resistance training, plyometric training and sport-specific movement in the same facility at the same time. Finally, results of the current study suggest that the effect of complex training is similar for men and women athletes as well as athletes with varying strength levels. Muscular power, improved with complex training. However, agility, speed, and coordination showed a significant improvement in this study. Hence, Hockey players of intercollegiate level can be safely underwent complex training whenever necessary.

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