



COMBINED IMPACT OF RESISTANCE EXERCISES – AGILITY DRILLS AND PLYOMETRIC CIRCUIT – SPRINT TRAINING ON DRIBBLING OF MEN HOCKEY PLAYERS

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ABSTRACT

The present study was undertaken to analyze the combined impact of resistance exercises –agility drills and plyometric circuit –sprint training on dribbling performance of men hockey players. Total N=54 male intercollegiate level participated men Hockey players age ranging from 18-22 years selected from various colleges of Visakhapatnam of Andhra Pradesh. The hockey players chosen for the study were randomly divided into three groups each group n=18 hockey players i.e. one empirical group hockey players underwent: combined resistance exercises –agility drills [CRAHG], second empirical group hockey players underwent: plyometric circuit –sprint training [CPCSHG] and one control hockey players group [CON]. CON were restricted to participate in any activities. The training period was for a twelve weeks. The data were collected before and after the training by conducting Shooting from 16 yards test. The obtained data's were analyzed by Analysis of Covariance (ANCOVA). The level of significant was fixed at 0.05 levels. The results of the study showed that combined impact of resistance exercises –agility drills and plyometric circuit –sprint training significantly improved Zig Zag dribbling performances of experimental group hockey players when comparative with control group hockey players.



KEYWORDS : resistance, agility, plyometric and circuit.

INTRODUCTION:

A field hockey player requires a combination of strength, speed, and endurance. Resistance training can improve these qualities (Parul 2014). Resistance exercise is an anaerobic exercise making muscles work against a weight or force. Resistance exercises also called as (strength training) is a type of exercise that causes your muscles to contract against an outside resistance (body weight, weight machines, medicine balls, resistance bands or dumbbells). Therefore benefit of resistance are Increased muscle mass, Stronger bones, Joint flexibility, weight control, balance, improve sleep, control blood sugar, reductions in cancer-related fatigue and anxiety and depression. Hockey players perform resistance exercises in different ways which include free weights, weight machine, medicine ball, resistance band and own body weight. Resistance exercises mainly target muscular strength, muscular power, muscles hypertrophy and muscular endurance (Hanjabam and Jyotsna 2018).

Today, hockey is a highly demanding game, to perform successively the hockey players require to do numerous actions that needed overall muscular strength and power production, speed, agility, balance, flexibility, stability and endurance. Agility is very important when it comes to hockey players. Agility drills training required to out maneuver the opposition but it also helps in preventing injuries [muscle tears, joint injuries etc] (Jovanovic et al., 2011). A jumping/explosive exercise typically consists of stretch-shortening cycle exercises characterized by multipoint actions, rapid eccentric phases and explosive concentric muscular contractions potentiated by stretch reflex to improve explosive sports that mainly rely on moving speed and power of hockey player (Bobbert, 1990 & Miller et al., 2002).

STATEMENT OF THE PROBLEM:

The purpose of the study was to investigate the “combined impact of resistance exercises – agility drills and plyometric circuit –sprint training on dribbling performance of men hockey players”.

HYPOTHESIS:

- It was hypothesis that there will be a significant improvement on dribbling performance of hockey players after the twelve weeks impact of combined impact of resistance exercises –agility drills and plyometric circuit –sprint training when compared with control group hockey players.
- There would be no significant changes between two combined impact of resistance exercises – agility drills and plyometric circuit – sprint training on dribbling performance level of hockey players.

METHODOLOGY:

The purpose of this study was to analyze the combined impact of resistance exercises –agility drills and plyometric circuit –sprint training on goal shooting performance of men hockey players. Total N=54 male intercollegiate level participated men Hockey players age ranging from 18-22 years selected from various colleges of Visakhapatnam of Andhra Pradesh . The hockey players chosen for the study were randomly divided into three groups each group n=18 hockey players i.e. one empirical group hockey players underwent: combined resistance exercises –agility drills [CRAHG], second empirical group hockey players underwent: plyometric circuit –sprint training [CPCSHG] and one control hockey players group [CON]. CON were restricted to participate in any activities. The training period was for a twelve weeks. The data on dribbling were collected before and after the training by conducting Zig Zag dribbling test. The obtained data's were analyzed by Analysis of Covariance (ANCOVA). The level of significant was fixed at 0.05 levels.

Table - I
Analysis of Covariance for dribbling performance on Pre Test and Post Test Data of
Experimental groups and Control Groups Hockey players (In seconds)

Groups	CRAHG	CPCSHG	CON	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F'
Pre Test Mean	9.00	9.05	8.79	Between	0.49	2	0.24	0.93
SD	0.50	0.55	0.48	Within	13.41	51	0.26	
Post Test Mean	7.91	7.89	9.18	Between	19.83	2	9.91	41.14*
SD	0.52	0.50	0.44	Within	12.29	51	0.21	
Adjusted Post Test Mean	7.85	7.83	9.31	Between	24.96	2	12.48	470.51*
				Within	1.32	50	0.027	
Mean Diff	-1.09	-1.16	0.39	-	-	-	-	-

Table F-ratio value at 0.05 level of confidence for 2 and 51 (df) =3.18, 2 and 50 (df) =3.18

*Significant

The above table-I shows that there is a significant difference on goal shooting performance among the three groups such combined resistance exercises –agility drills group hockey players [CRAHG], plyometric circuit –sprint training group hockey players [CPCSHG] and control hockey players group [CON]. Since the calculated 'F' value required being significant at 0.05 level for 2, 51 d/f and 2, 50 are 3.18 and 3.18, but the calculated values of dribbling performance post and adjusted posttest 'F' values are 41.14 and 470.51 respectively. Which are higher than the tabulated value. Since the obtained 'F' ratio is found significant.

Table - II
The Scheffes Test for the Mean Differences Between Paired Mean of Groups on dribbling performance (In seconds)

ADJUSTED MEANS VALUES				Required "C I"
CRAHG	CPCSHG	CON	Mean Difference	
7.85	7.83	-	0.02	0.42
7.85	-	9.31	1.46*	0.42
	7.83	9.31	1.48*	0.42

**Significant at 0.05 level of confidence*

Table:-II shows adjusted means values differences between combined resistance exercises –agility drills group hockey players [CRAHG], plyometric circuit –sprint training group hockey players [CPCSHG] and control hockey players group [CON]. The adjusted mean differences between combined resistance exercises –agility drills group hockey players [CRAHG] and control hockey players group [CON] and combined plyometric circuit –sprint training group hockey players [CPCSHG] and control hockey players group [CON] were 1.46 and 1.48 is higher than the confidence interval value 0.42. Its means there is significant differences exist.

The adjusted mean differences between combined resistance exercises –agility drills group hockey players [CRAHG] and combined plyometric circuit –sprint training group hockey players [CPCSHG] is 0.02 higher than the confidence interval value 0.42. Its means there is significant differences exist and both training were effective to improve the dribbling performance level of hockey players.

The graphical illustration of the pre-test, post-test and adjusted post-test mean values of the experimental groups and control group on goal shooting performance of hockey players were presented in figure 1.

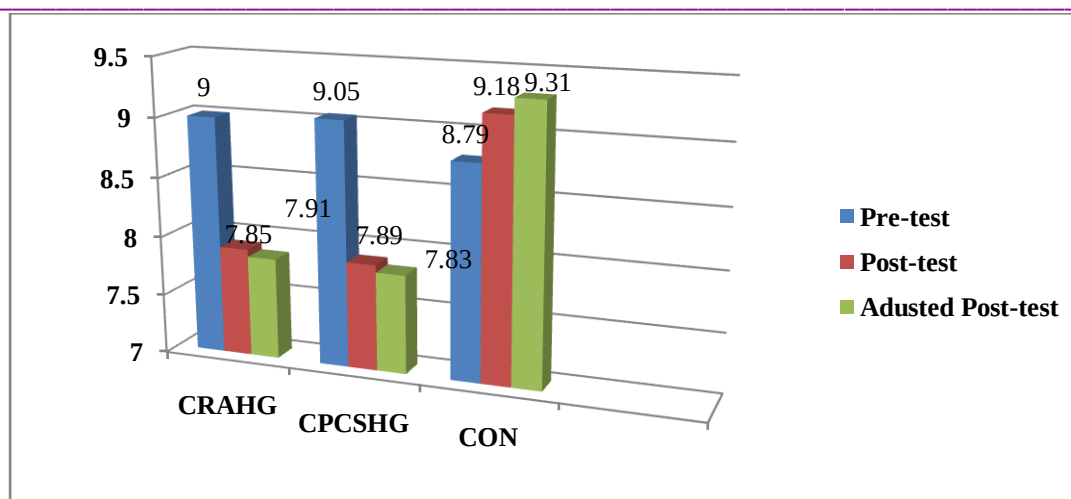


Figure 1: Graphical Illustration Showing the Pre-Test Post-Test and Adjusted Post-Test Mean Values on goal shooting performance of Hockey players

DISCUSSION ON HYPOTHESIS:

- In the first hypothesis it was stated that there will be a significant improvement on dribbling performance level of hockey players after the twelve weeks impact of combined impact of resistance exercises –agility drills and plyometric circuit –sprint training when compared with control group hockey players. The result of the study found that experimental group's hockey players dribbling performance level improved when compared with control group hockey players. Hence the research hypothesis is accepted.
- In the second hypothesis it was stated there would be no significant changes between two combined impact of resistance exercises – agility drills and plyometric circuit – sprint training on dribbling performance level of hockey players. The result of the study found no significant differences. Hence the research hypotheses are accepted.

DISCUSSION AND FINDINGS:

The analysis report on dribbling and goal shooting [Zig Zag dribbling in seconds]of hockey players found that 12-weeks impact of combined resistance exercises – agility drills [Package I] and combined plyometric circuit – sprint training [Package II] significantly improved empirical groups hockey players. The studies on improved hockey skill related performance parameters with empirical treatment were Shelvam and Baljit (2016) concluded that the specific hockey training program had positive impact on improving dribbling performance measures of hockey players. Ramya and Rajalakshmi (2019) concluded that the fartlek training program program had positive impact on improving receiving, ball control and driving the ball performance measures of hockey players. Govarathanan and Vaithianathan (2019) study concluded that conventional and specific hockey skill training had positive impact to improving the playing ability of the hockey players. Arunkumar (2013) concluded that the circuit training skill training and combined training program had positive impact on improving dribbling, hitting and trapping performance measures of hockey players. Meenatchi and Amsa (2013) concluded that the isolated and combined aerobic and anaerobic training packages registered positive impact on improving dribbling performance measures of hockey players.

CONCLUSIONS:

The study found that combined resistance exercises – agility drills [Package I] and combined plyometric circuit – sprint training [Package II] were significantly effective to enhance the hockey dribbling performance [Zig Zag dribbling in seconds] of hockey players comparative to control hockey

players groups. Whereas study found no significant differences between combined resistance exercises – agility drills [Package I] and combined plyometric circuit – sprint training [Package II] to enhance the hockey dribbling performance of hockey players.

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