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Effect Of Circuit Training Ladder Training And Combined Training On Selected Bio Chemical Variables Among University Hockey Players

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Abstract

Background: To develop the Bio chemical variables among university hockey players to practice the circuit training and ladder training.

Purpose: This study persevered in determining whether the circuit and ladder training effect physical variables such as Low-Density Lipoprotein (LDL) and High-Density Lipoprotein (HDL) among university level Hockey players. For this study 60 hockey players were randomly chosen from Arts & Science Colleges affiliated to Alagappa University were selected as subjects and their age range between 18 to 25 years.

Methods: There were four groups of 15 players each, total subject were 60 University hockey players. The group A Circuit training is followed by group B ladder training is followed by group C Combined training and the control group D have not Underwent any training and the data was before and after twelve weeks of training. A pre-test was administered two days before the training period began, and a post-test was administered after the training period concluded. The following variables namely Low-Density Lipoprotein and High-Density Lipoprotein were selected as criterion variables. All the subjects of four groups were tested on selected dependent variables at prior to and immediately after the training programme by using standardize testing tool respectively.

Conclusion: Combined Circuit training, ladder training has been beneficial to university level hockey players because it refines better Low-density Lipoprotein (LDL) and High-density Lipoprotein (HDL)

Keywords: Circuit, ladder, Hockey, Low Density Lipoprotein, High Density Lipoprotein

Introduction

"A method of physical conditioning in which one moves from one exercise to another, usually in a series of different stations or pieces of equipment". In circuit Training each of several stations has a designated task. The student moves from station to station, generally in a prescribed order, completing the designated fitness task at each station. Activities should contribute to various components of physical fitness (strength, power, endurance, Agility and flexibility) (Morgan and

Anderson (1953). 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. Circuit training is a continuous series of exercises attempting to improve as many components of physical fitness as possible especially endurance. Generally, six to twelve stations are up. Selection and sequence of the activities within a lap of circuit is made with consideration given to the continuous nature of the performance. A group of individuals spends two minutes at each station (Mathews, 1971). Ladder training is the multi-directional training, because the elements of strength, power, balance, agility, co-ordination, proprioception, core and joint stability, foot speed, hand eye coordination, reaction time and mobility. Each component should be integrated in to daily training session. Ladder skills are fun and functional ways to teach movement skills. By training, the mind and body to understand a verity of foot combinations. There are 4 basic skills is used when training with ladder. Runs, skips, shuffles and jump/hops. Ladder agility drills are an excellent way to improve foot speed, agility, coordination and overall quickness. They are an integral part of many SAQ programs and compliment many different sports and events. Speed ladder drills are about quality and form rather than producing overload. The drills are not meant to leave you fatigued or breathless in the way that shuttle runs might ("Ladder agility drills", 2014).

Methodology

The purpose of the study was to investigate effect of Circuit training, ladder training and combined training on selected bio chemical variables among university hockey Players. It was hypothesized that there would be significant differences on selected dependent variables namely as Low-Density Lipoprotein (LDL) and High-Density Lipoprotein (HDL) due to the effect of circuit training ladder training and combined training among university hockey Players. For the present study, sixty hockey players from Arts & Science Colleges affiliated to Alagappa University, were chosen as the subjects was selected as subjects at random and their age ranged from 18 to 25 years. The subjects were divided into four equal groups of fifteen each. The subjects were randomly assigned to three equal groups of twenty each and named as Group 'A' -Circuit training, Group 'B' - Ladder Training, Group 'C' - Combined Training and Group D - Control group have not undergone any training programme. Low-Density Lipoprotein and High-Density Lipoprotein was assessed by Boehringer Mannheim Kit. The data were collected before and after twelve weeks of training. Initially descriptive statistics and paired 't' test was applied to test the significance of mean gains made in each of the variables by the experimental groups. The analysis of covariance (ANCOVA) was also used to analyze the significant difference, if, any among the groups. Since four groups were compared whenever the obtained 'F' ratio for adjusted post test was found to be significant.

Table - 1The Summary of Mean and Dependent 'T' Test for The Pre and Post Tests on LDL of Experimental Groups

Mean	Circuit Training Group -A	Ladder Training Group - B	Combined Training Group - C	Control Group - D
Pre-Test Mean	130.27	129.93	130.33	128.33
Post test Mean	107.53	109.33	100.33	127.73
't' test	5.28*	3.91*	5.67*	0.10

*Significant at .05 level

(Table value required for significance at .05 level for 't'-test with df 14 is 2.15)

Table – 1.2 Analysis of Covariance of Adjusted Post- Test Means on LDL for Experimental groups and Control Group

Tests	Adjusted Post test Means				Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
	Circuit Training Group	Ladder Training Group	Combined Training Group	Control Group					
Pre Test	130.27	129.93	130.33	128.33	Between	39.65	3	13.22	0.04
					With in	18464.53	56	329.72	
Post Tests	107.53	109.33	100.33	127.73	Between	6125.40	3	2041.80	7.73*
					With in	14795.33	56	264.20	
Adjusted post Test	107.18	109.20	99.94	128.61	Between	6739.42	3	2246.47	16.94*
					With in	7295.41	55	132.64	

* Significant at.05 level of confidence (LDL Scores in mg/dL)

(The table value required for Significance at 0.05 level with df 3 and 56 & 3 and 55 is 2.76 and 2.77)

Table – 2 The Summary of Mean and Dependent 'T' Test for The Pre and Post Tests on HDL of Experimental Groups

Mean	Circuit Training Group	Ladder Training Group	Combined Training Group	Control Group
Pre-Test Mean	42.13	41.87	41.87	41.00
Post test Mean	46.87	50.33	51.27	40.73
't' test	2.71*	4.71	5.88*	0.16

*Significant at .05 level

(Table value required for significance at .05 level for 't'-test with df 14 is 2.15)

Table – 2.1 Analysis of Covariance of Adjusted Post- Test Means on HDL for Experimental groups and Control group

Tests	Adjusted Post test Means				Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
	Circuit Training Group	Ladder Training Group	Combined Training Group	Control Group					
Pre Test	42.13	41.87	41.87	41.00	Between	10.98	3	3.66	0.21
					With in	959.20	56	17.13	
Post Tests	46.87	50.33	41.27	40.73	Between	1023.67	3	341.22	24.10*
					With in	792.93	56	14.16	

Adjusted post Test	**46.60**	**50.24**	**51.17**	**41.18**	**Between**	**916.71**	**3**	**305.57**	**40.67***
					With in	**413.27**	**55**	**7.51**	

* Significant at.05 level of confidence (HDL scores in mg/dL)

(The table value required for Significance at 0.05 level with df 3 and 56 & 3 and 55 is 2.76 and 2.77)

Discussion on Findings

This study confirms that Circuit training, ladder training and combined training has positive improvement on Low-Density Lipoprotein (LDL) and High-Density Lipoprotein (HDL).From the results of the present investigation, it is also concluded that significant difference on Circuit training, Ladder training and combined training in developing dependent variables Low-Density Lipoprotein (LDL) and High-Density Lipoprotein (HDL) hence the hypothesis was accepted.

Conclusions:

Based on findings and within the limitations of the study the following conclusions were drawn:

1. The present study explains clearly that bio chemical variables the observed results significantly favored the experimental groups namely Circuit training, ladder Training and combined training as compared to control group.
2. Similarly, the Effect of experimental group of was found as significantly difference than control group on Low-Density Lipoprotein (LDL) and High-Density Lipoprotein (HDL).
3. It was concluded that university level hockey players should practice both circuit training and ladder training for positive enhancement of performance.
4. Thus, based on the result, it was concluded that combined training methods shows positive result and would be recommended for developing the Bio chemical variables of the study.

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