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Effect of Ballistic Exercises on Selected Bio-chemical Variables among Badminton Players

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Abstract

The purpose of the study was to find out the effect of ballistic exercises on selected bio-chemical variables among shuttle badminton players. It was hypothesized that there would be significant differences on selected bio-chemical variables due to the effect of ballistic exercises among shuttle badminton players. For the present study the 30 male shuttle badminton players from Trivendrum, Kerala, India were selected at random and their age ranged from 18 to 25 years. For the present study pre test – post test random group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B'. Group 'A' underwent ballistic exercises and Group 'B' has not undergone any training. LDL and HDL was assessed by using enzymatic calorimetric method. The data was collected before and after six weeks of training. The data was analyzed by applying dependent 't test. The level of significance was set at 0.05. The ballistic exercises group had positive impact on LDL and HDL among shuttle badminton players.

Keywords: HDL, LDL, Badminton, Ballistic Exercises.

Introduction

Ballistic training was first used among elite athletes who were looking for a method to develop explosiveness. The word ballistic comes from the Greek word ballein, which means "to throw." In this type of training the athlete accelerates and releases the weight into "free space." Common ballistic training exercises are bench throws, jump squats, cleans, snatches, and push presses. Ballistic training forces the athlete's body to recruit and trigger fast twitch muscle fibers. This is important because these muscle fibers have the greatest potential for growth and strength. Ballistic training requires the muscles to adapt to contracting very quickly and forcefully. This training requires the central nervous system to coordinate and produce the greatest amount of force in the shortest time possible.

In traditional weight training the athlete accelerates the weight on the concentric portion over the first third of the lift. During the other two-thirds of the lift, the weight is being slowed, decelerated and then stopped. With ballistic training, the weight is accelerated through the whole range of motion and only starts to decelerate after the athlete has released the bar. The National Strength and Conditioning Association's Basic Guidelines for the Ballistic exercises of Athletes states that "performing speed repetitions as fast as possible with light weight (e.g., 30-45% of 1-RM) in exercises in which the bar is held on to and must be decelerated at the end of the joint's range of motion (e.g., bench press) to protect the joint does not produce power or speed training but teaches the body how to decelerate, or slow down. If the load can be released into the air (i.e., the bar be let go at the end of the range of motion) the negative effects are eliminated (Flannagan, 2001). Badminton is a game that somewhat resembles tennis and volleyball and involves the use of a net, lightweight rackets, and a shuttlecock, a cork ball fitted with stabilizing feathers. It is played by two or four players, either indoors or outdoors, on a marked-out area 44 ft (13.41 m) long by 17 ft (5.18 m) wide for the two-player game and 20 ft (6.10 m) wide for the four-player game. A net is fixed across the middle of the court, with the top edge of the net set to a height of 5 ft (1.52 m) from the ground at the center and 5 ft 1 in (1.55 m) at the posts. The players hit the shuttlecock back and forth over the net with the rackets (Dewney & Brodie, 1980).

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Methodology

The purpose of the study was to find out the effect of ballistic exercises on selected bio-chemical variables among shuttle badminton players. It was hypothesized that there would be significant differences on selected bio-chemical variables due to the effect of ballistic exercises among shuttle badminton players. For the present study the 30 male shuttle badminton players from Trivendrum, Kerala, India were selected at random and their age ranged from 18 to 25 years. For the present

study pre test – post test random group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B'. Group 'A' underwent ballistic exercises and Group 'B' has not undergone any training. LDL and HDL was assessed by using enzymatic calorimetric method. The data was collected before and after six weeks of training. The data was analyzed by applying dependent 't test. The level of significance was set at 0.05.

Results

The findings pertaining to analysis of dependent 't' test between experimental group and control group on selected bio-chemical variables among shuttle badminton players for pre-post test respectively have been presented in table I to II.

Table I. Significance of mean gains & losses between pre and post test scores on selected variables of ballistic exercises group

S.No	Variables	Pre-Test Mean	Post-Test Mean	Mean difference	Std. Dev (±)	σ DM	't' Ratio
1	LDL	115.61	109.40	1.05	2.72	0.72	11.26*
2	HDL	64.88	72.30	0.89	3.33	0.88	6.13*

An examination of table-I indicates that the obtained't' ratios were 11.26 and 6.13 for LDL and HDL respectively. The obtained't' ratios were found to be greater than the required table value of 2.14 at 0.05 level of significance for 14 degrees of freedom. So it was found to be significant. The results of this study showed that statistically significant and explained its effects positively. The graphical representation of data has been presented in figure I.

Figure I. Comparisons of pre – test means and post – test means for experimental group in relation to bio-chemical variables

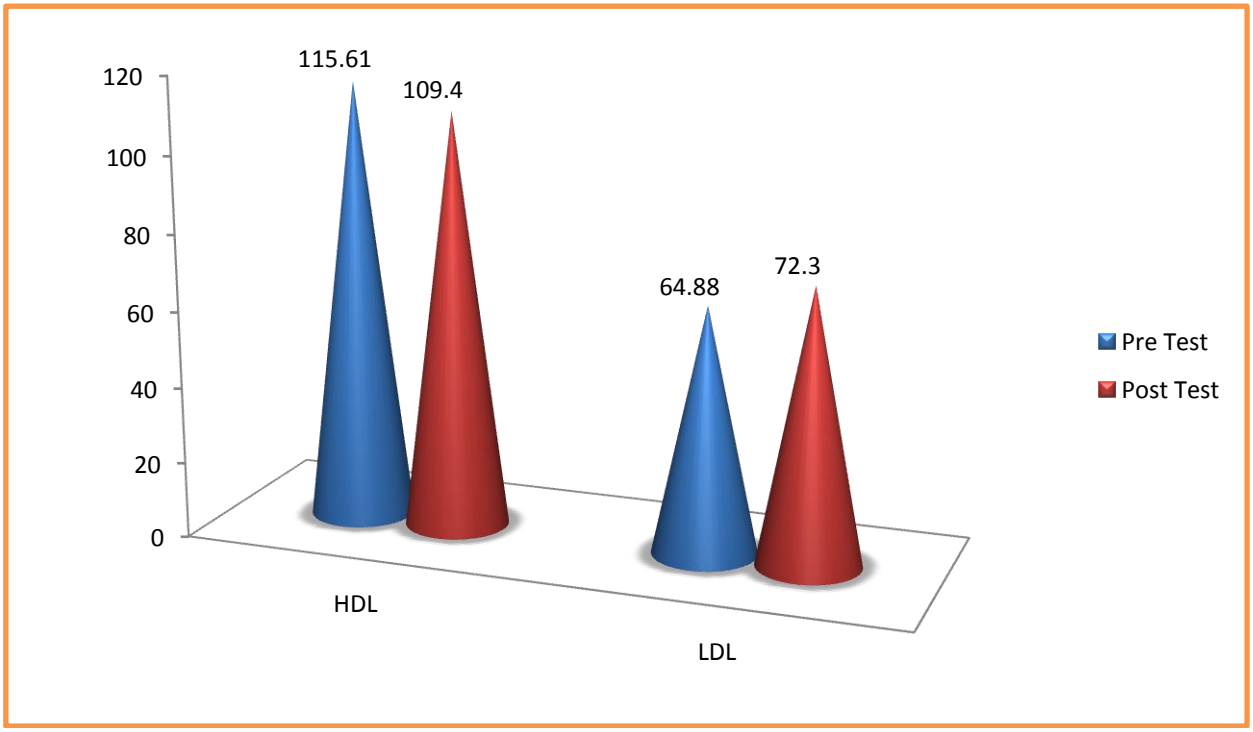
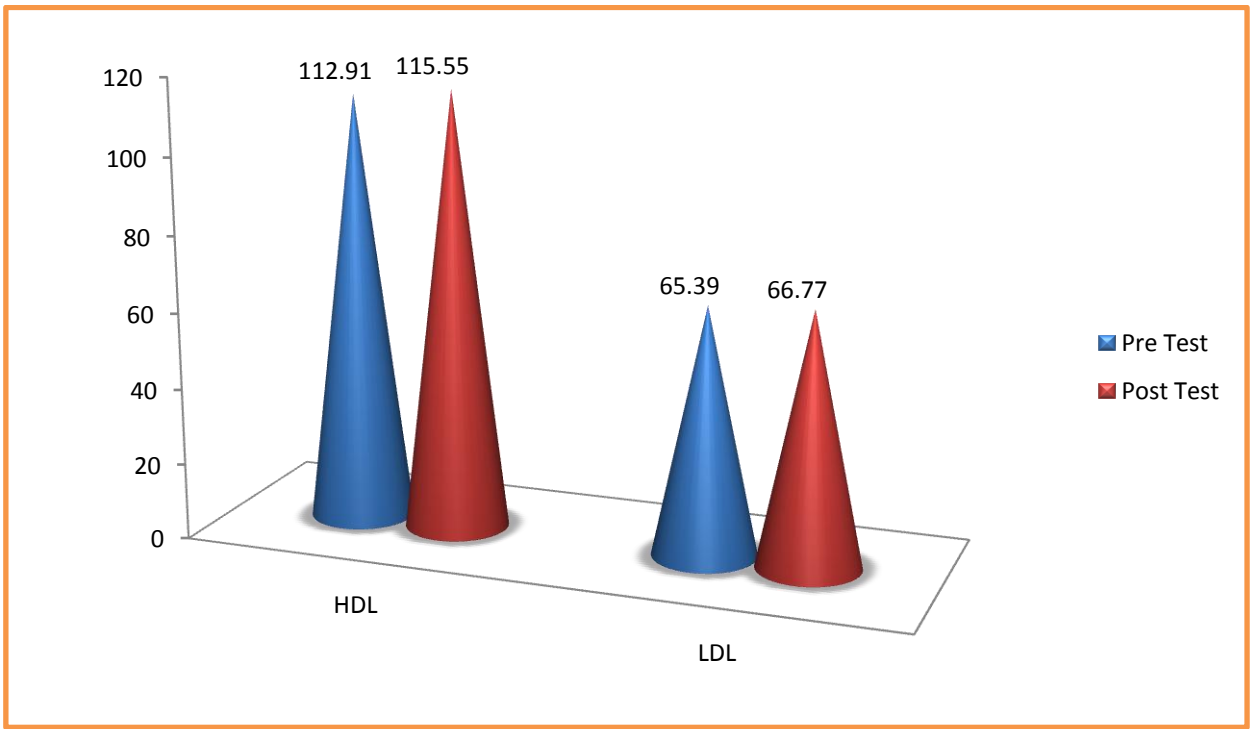


Table II. Significance of mean gains & losses between pre and post test scores on selected variables of control group

S.No	Variables	Pre-Test Mean	Post-Test Mean	Mean difference	Std. Dev (±)	σ DM	't' Ratio
1	LDL	112.91	115.55	0.97	3.01	0.72	1.70
2	HDL	65.39	66.77	0.98	3.42	0.91	0.39

An examination of table-II indicates that the obtained't' ratios were 1.70 and 0.39 for LDL and HDL respectively. The obtained't' ratios were found to be lesser than the required table value of 2.14 at 0.05 level of significance for 14 degrees of freedom. So it was found to be insignificant. The graphical representation of data has been presented in figure II.

Figure II. Comparisons of pre – test means and post – test means for control group in relation to bio-chemical variables



Conclusions

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

1. The ballistic exercises group had positive impact on LDL and HDL among shuttle badminton players.
2. The experimental group showed better improvement on LDL and HDL among shuttle badminton players than the control group.

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