IMPACT OF CONTRAST TRAINING ON SELECTED STRENGTH VARIABLES AMONG HOCKEY PLAYERS

[1]Kavikumar R. & [2]Dr.S.Arumugam

[1] Ph.D. Research Scholars (Reg.No:12461) & [2]Assistant Professor

Department of Physical Education and Sports, Manonmaniam Sundaranar University,

Abishekapatti, Tirunelveli, Tamilnadu, India, Pin Code: 627012

Abstract: The purpose of the study was to find out the impact of contrast training on selected strength variables among hockey players. To achieve the purpose of the study, 28 male hockey players were selected as participants randomly from Anna stadium, Palayamkottai, Tirunelveli District, India. The age of the subjects' were ranged from 18-22 years. The selected subjects were randomly (simple random sample) assigned to one of two groups of fourteen (n=14) each, such as one experimental group and a control group. The group I (n=14) underwent contrast training for a duration of 6 weeks and the number of sessions per week was confined to 3 alternative days per week and Group II (n=14) acted as control. The criterion variables selected for this study were abdominal strength and shoulder strength. The selected criterion variables abdominal strength was assessed by bent knee sit-ups and shoulder strength was assessed by push ups. The selected variables were assessed prior to and immediately after the training period by using the standardized test items. Hence, to make adjustments for difference in the initial means and test the adjusted posttest means for significant differences, the analysis of covariance (ANCOVA) was used. All the statistical analysis tests were computed at 0.05 level of significance ($p < 0.05$). the result of the study shown that there was significant improvement on the selected strength variables as abdominal strength and shoulder strength due to the impact of contrast training. However the control group had not shown any improvement on any of the selected variables abdominal strength and shoulder strength.

Index Terms: Contrast Training, Abdominal Strength, Shoulder Strength, Hockey Players

I. INTRODUCTION

The general training strategy is the main methodological concept, which determines the priorities in the organization of all the phases of the training process. Training is not a recent discovery. In ancient times, people systematically trained for military and Olympic endeavors [1]

Contrast training is an incredible tool for improving raw strength, power and overall athletic performance, but it seems relatively underappreciated and unknown in gyms up and down the country. Contrast training can be described as a set of heavy resistance repetitions followed directly by an unloaded, explosive exercise utilizing the same movement pattern [2].

Contrast training is an example of strength and power training which aims to stress both ends of the force-velocity curve within the same session [3].

Field hockey can be described as a competitive sport, in which the players attempt to attack the opponents and defence their goal consecutively within 70 minutes. Players carry out various activities such as walking, jogging, sprinting and standing during the game [4]. They also perform other explosive actions such as intermittent sprinting, changing directions frequently, cruising and dribbling [5]. Field hockey as a field-based team sports categorized as an intermittent sport which requires a high degree of physical fitness [6].

II. PURPOSE OF THE STUDY

The purpose of the study was to find out the impact of contrast training on selected strength variables among hockey players.

III. METHODOLOGY

To achieve the purpose of the study, 28 male hockey players were selected as participants randomly from Anna stadium, Palayamkottai, Tirunelveli District. The age of the subjects' were ranged from 18-22 years. The selected subjects were randomly (simple random sample) assigned to one of two groups of fourteen (n=14) each, such as one experimental group and a control group. Group I (n=14) underwent contrast training for a duration of 6 weeks and the number of sessions per week was confined to 3 alternative days per week and Group II (n=14) acted as control. The criterion variables selected for this study were abdominal strength and shoulder strength. The selected criterion variables abdominal strength was assessed by bent knee sit-ups test and shoulder strength was assessed by push-ups test. The selected variables were assessed prior to and immediately after the training

period by using the standardized test items. Hence, to make adjustments for difference in the initial means and test the adjusted posttest means for significant differences, the analysis of covariance (ANCOVA) was used. All the statistical analysis tests were computed at 0.05 level of significance ($p<0.05$).

IV. ANALYSIS OF DATA

The results of analysis of covariance on the criterion measures were given in the following tables.

4.1 Abdominal Strength

Table 4.1: Summary of mean and dependent 't'-test for the pre and post tests on abdominal strength of experimental and control groups (numbers)

Criterion variables	Test	Experimental Group Mean	Control Group Mean
Abdominal strength	Pre test	28.33	28.06
	Post test	31.24	28.40
	't'test	17.55*	0.26

Significant at .05 level. The table value required for 0.05 level of significance with df 13 is 4.23

The table 4.1 shows that the pre-test mean value of experimental and control groups are 28.33 and 28.06 respectively and the post test means are 31.24 and 28.40 respectively. The obtained dependent t-ratio values between the pre and post test means of experimental and control group are 17.55 and 0.26 respectively. The table value required for significant difference with df 13 at 0.05 level is 4.23. Since, the obtained 't' ratio value of experimental group are greater than the table value, it is understood that experimental group had significantly improved the abdominal strength. However, the control group has not improved significantly. The 'obtained t' value is less than the table value, as they were not subjected to any contrast training.

The analysis of covariance on abdominal strength of experimental and control groups have been analysed and presented in Table 4.2.

Table 4.2 Adjusted post test mean scores and analysis of covariance on abdominal strength of experimental and control groups

Adjusted Post Test Means		Source of Variance	Sum of Square	df	Means Square	F-ratio
Experimental Group	Control Group					
31.50	28.45	Between	111.33	1	111.33	17.26*
		With in	161.25	25	6.45	

Significant at .05 level. The table value required for significance at 0.05 level with df 1 and 25 is 4.22.

Table 4.2 shows that the adjusted post test means of experimental and control groups are 31.50 and 28.45 respectively. The obtained F-ratio value is 17.26 which is greater than the table value 4.22 with df 1 and 25 required for significance at 0.05 level. Since the value of F-ratio is greater than the table value, it indicates that there is a significant difference among the adjusted post-test means of experimental and control groups on abdominal strength.

The mean values of experimental and control groups on abdominal strength were graphically represented in the figure 4.1.
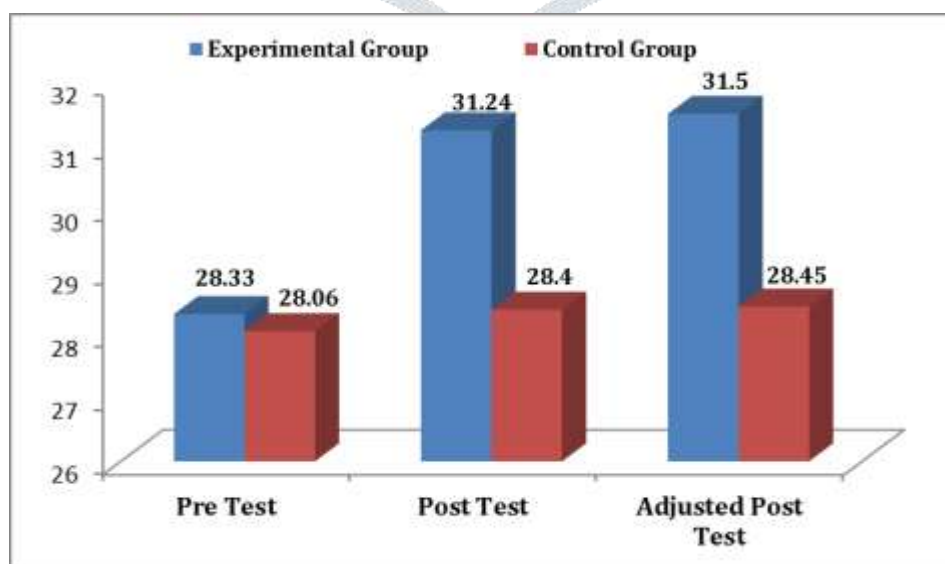

Fig-4.1: Mean value and adjusted post test mean values of experimental and control groups on abdominal strength

4.2 Shoulder Strength

Table 4.3: Summary of mean and dependent 't'-test for the pre and post tests on shoulder strength of experimental group and control group (numbers)

Criterion variables	Test	Experimental Group Mean	Control Group Mean
Shoulder strength	Pre test	26.42	25.12
	Post test	30.19	25.69
	't'test	26.91*	0.98

Significant at .05 level. The table value required for 0.05 level of significance with df 13 is 4.23.

The table 4.3 shows that the pre-test mean value of experimental and control groups are 26.42 and 25.12 respectively and the post test means are 30.19 and 25.69 respectively. The obtained dependent t-ratio values between the pre and post test means of experimental and control groups are 26.91 and 0.98 respectively. The table value required for significant difference with df 13 at 0.05 level is 4.23. Since, the obtained 't' ratio value of experimental group are greater than the table value, it is understood that experimental group had significantly improved the shoulder strength. However, the control group has not improved significantly. The 'obtained t' value is less than the table value, as they were not subjected to any contrast training.

The analysis of covariance on shoulder strength of experimental and control groups have been analysed and presented in Table 4.4

Table 4.4: Adjusted post test mean scores and analysis of covariance on shoulder strength of experimental group and control group

Adjusted Post Test Means		Source of Variance	Sum of Square	df	Means Square	F-ratio
Experimental Group	Control Group					
31.62	25.69	Between	142.84	1	142.84	28.74*
		With in	124.25	25	4.97	

Significant at .05 level. The table value required for significance at 0.05 level with df 1 and 25 is 4.22.

Table 4.4 shows that the adjusted post test means of experimental and control groups are 31.62 and 25.69 respectively. The obtained F-ratio value is 28.74 which is greater than the table value 4.22 with df 1 and 25 required for significance at 0.05 level. Since the value of F-ratio is greater than the table value, it indicates that there is a significant difference among the adjusted post-test means of experimental and control groups on shoulder strength.

The mean values of experimental and control groups on shoulder strength were graphically represented in the figure 4.2.
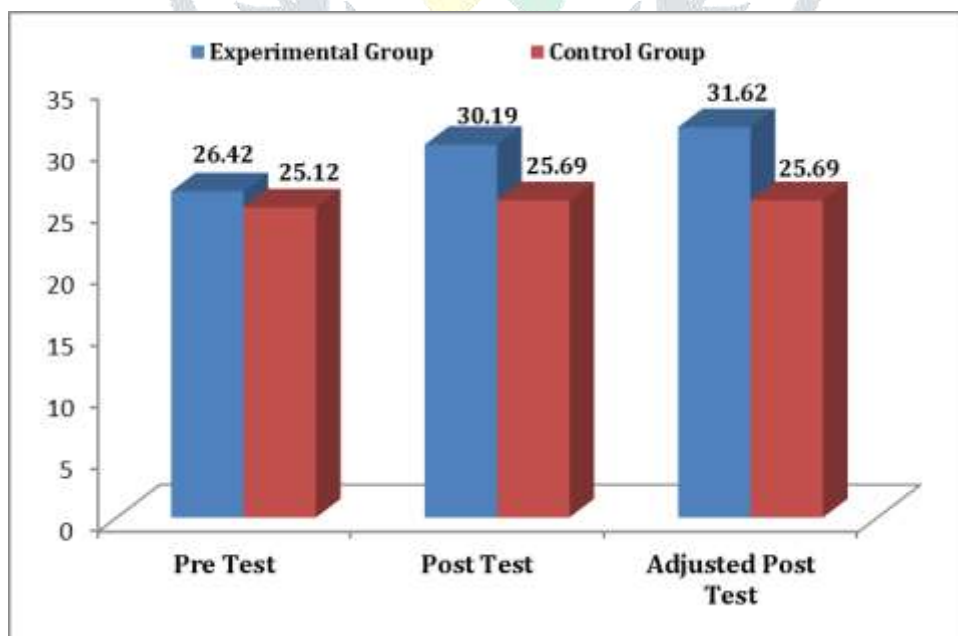

Fig-4.2: Mean value and adjusted post test mean values of experimental and control groups in shoulder strength

V. DISCUSSION AND FINDINGS

The results of the study indicate that the experimental group which underwent contrast training had showed significant improved in the selected variables namely such as abdominal strength and shoulder strength when compared to the control group.

Satheesh Kumar, K. & Arumugam, S. (2017) connected the study on Influence of Plyo Push-ups Exercises on Shoulder Strength and Explosive Power among Sports Participants. They concluded his study on the shoulder strength and explosive power was significant improvement on his training schedule.

Barun Hanjabam & Jyotsna Kailashiya (2014) conducted the study on Effects of Addition of Sprint, Strength and Agility Training on Cardiovascular System in Young Male Field Hockey Players: An Echocardiography Based Study. They were finding on his study the training significant improvement on strength variables among hockey players.

VI. CONCLUSIONS

1. There was significant improvement on abdominal strength and shoulder strength due to the impact of contrast training among hockey players.

2. The experimental group had achieved significant difference due to contrast training on selected strength variables such as abdominal strength and shoulder strength among hockey players when compared to control group.

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