



EFFECT OF FOUR WEEKS CORE STRENGTH TRAINING ON AGILITY, ABDOMINAL STRENGTH- ENDURANCE AND EXPLOSIVE STRENGTH

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ABSTRACT :

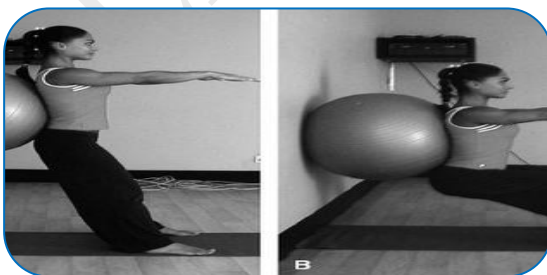
The purpose of this study was to determine the effects of core strength training on Agility, Abdominal Strength-Endurance and Explosive Strength of college sportsmen. To achieve the purpose 20 male college sportsmen (10 subjects are in Experimental group and 10 in control group) in the age group 19 to 25 years were selected from Lucknow university. Duration of core strength training was four weeks. The core strength training was selected as independent variable and Agility, Abdominal Strength Endurance and Explosive Strength were selected as dependent variables for the present study. The pre-test and post test data were collected and analysis of covariance (ANCOVA) was used to analyze the obtained data. The results of post tests have proved significance differences in relation to explosive strength ($F=19.399$), abdominal strength endurance ($F=21.179$), agility ($F=11.820$) and the obtained value has found higher than the calculated value $F=4.45(df 1,17)$ at the 0.05 level of significance in the case of experimental group. There was no significant difference found in the result of control group.

KEYWORDS : Core Strength training, Agility, Abdominal strength-endurance, Explosive strength.

INTRODUCTION:

It is believed that a strong core allows an athlete the full transfer of forces generated with the lower extremities, through the torso, and to the upper extremities and sometimes an implement. A weak core is believed to interrupt the transfer of energy, resulting in reduced sport performance and risk of injury to a weak or underdeveloped muscle group. For this reason, there is an assumption that an increase in core strength will result in increased sport performance. Therefore, training the core has become popular among strength coaches and personal trainers as a means to improve performance and reduce the chance for injury despite the lack of research to support such findings.

Researchers have identified the importance of a strong core in relation to back pain and



rehabilitation and developed tools used to measure core strength and stability. While the importance of the core and methods of training and assessing it have been largely publicized, few studies have been completed which quantitatively demonstrate core strength's role in strength and performance. Scibek et al. (15) tested swimming performance and core strength in high school level

swimmers. Tse et al. (18) tested rowing performance and core strength in college aged rowers, and Stanton et al. (16) reviewed running performance and economy, and core strength in high school aged touch football and basketball athletes. So it is cleared from the above study that core strength training is essential for sportsperson and sports performances. For this study, core strength is defined as an individual's ability to stabilize the torso from the hips to the shoulders for the purpose of force production, control and transfer to one or more extremities. However, literatures in this regard have been found to be scanty.

OBJECTIVE

The purpose of the present study was to analyze the effect of four weeks core strength training on Agility, Abdominal Strength-Endurance and Explosive strength of sportspersons

METHODS

Selection of subjects

The 20 male sportspersons were randomly selected from Lucknow University those who have participated in the Inter University tournaments. The age of the subjects were ranged between 19 to 25 years.

Selection of variables:

The core strength training was selected as independent variable and agility, abdominal strength and explosive strength were selected dependent variables of the present study.

Criterion measures

In the present study abdominal strength-endurance was measured by 60 sec sit ups, Agility was measured by 4×10 yards shuttle run and Explosive strength was measured by Standing Vertical jump.

Administration of training:

The core strength training was given at the training Yoga hall Lucknow University. The core strength training was progressively introduced to the experimental group. The experimental period consisted of four weeks. The subjects attained core strength training three sessions (alternate days) in a week and one session consisted of 60 to 90 minutes. The load parameter (ratio of work and recovery) was determined as 1:2 in the first week, 2:1 in second week and 3:1 in the third week.

Collection of data:

Male students participating in the study were at first brought to the Yoga Hall of Lucknow University to make understand about the aims and objectives of the study and also for taking pre test of abdominal strength-endurance, agility and explosive strength. After the four weeks experimental period was over the post tests were conducted to measure the dependent variables in the same manner as pre test.

Design of the study:

Pre-test-Post-test randomized group design was used where subjects were divided in to two groups randomly i.e. experimental and control groups, for the purpose of present study. The experimental group was gone through the core strength training program for four weeks and control group was participating only in their routine training program. The pre-tests and post tests of both the groups were conducted before and after the four weeks treatment period.

Statistical technique:

To determine the effect of four weeks core strength training program on agility, abdominal strength-endurance and explosive strength of sportsperson Analysis of covariance (ANCOVA) was used, the significance level was set at 0.05.

Results and finding of the study:

The results obtained after the analysis of pre and post test data of the experimental and control groups are presented in the tables I to Table III.

Table-I
Analysis of Variance of Experimental and Control Group in Relation to Explosive Strength

	Source of Variance	Sum of Squares	df	Mean Square	F	Sig.
Pre Test	Between Groups	1.80	1	1.80	.048	.829
	Within Groups	678.00	18	37.667		
Post Test	Between Groups	273.80	1	273.80	17.576*	.001
	Within Groups	280.40	18	15.578		
Adjusted post test	Between Groups	260.985	1	260.985	19.399*	.000
	Within Groups	228.713	17	13.454		

F 0.05(1,17)=4.45*

Table I reveals that the value of calculated $F(1,17) = 19.399 > 4.45$ in the case of experimental group and found significant, where as it was not found significant in case of control group.

Table II
Analysis of Variance of Experimental and Control Group in Relation to Abdominal Strength Endurance.

	Source of Variance	Sum of squares	df	Mean Square	F	Sig.
Pre Test	Between Groups	140.450	1	140.450	3.001	.100
	Within Groups	842.500	18	46.806		
Post Test	Between Groups	768.800	1	768.800	21.179*	.000
	Within Groups	653.400	18	36.300		
Adjusted post test	Between Groups	322.249	1	322.249	23.170*	.000
	Within Groups	236.435	17	13.908		

F 0.05(1,17)=4.45*

Table II reveals that the value of calculated $F(1,17) = 23.170 > 4.45$ in the case of experimental group and found significant, where as it was not found significant in case of control group.

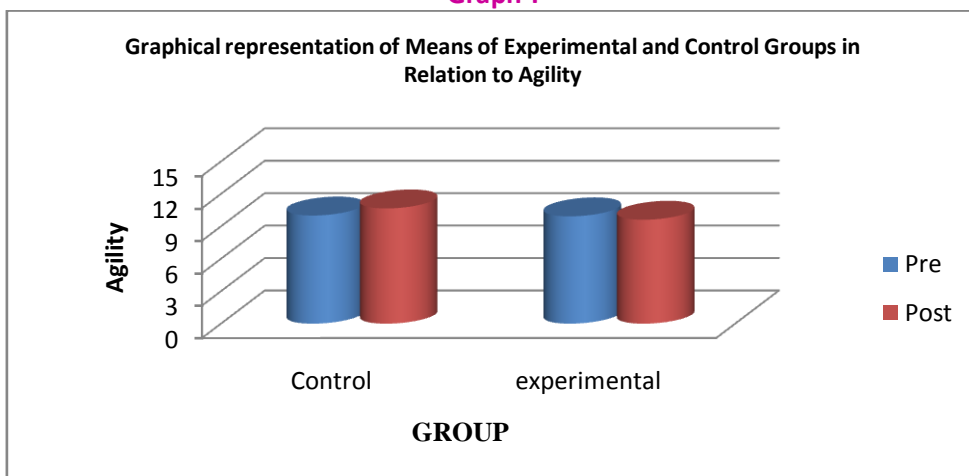
Table III
Analysis of Variance of Experimental and Control Group in Relation to agility:

	Source of Variance	Sum of Squares	df	Mean Square	F	Sig.
Pre Test	Between Groups	.029	1	.029	.185	.672
	Within Groups	2.811	18	.156		
Post Test	Between Groups	5.460	1	5.460	9.754*	.006
	Within Groups	10.076	18	.560		
Adjusted post test	Between Groups	4.561	1	4.561	11.820*	.003
	Within Groups	6.560	17	.386		

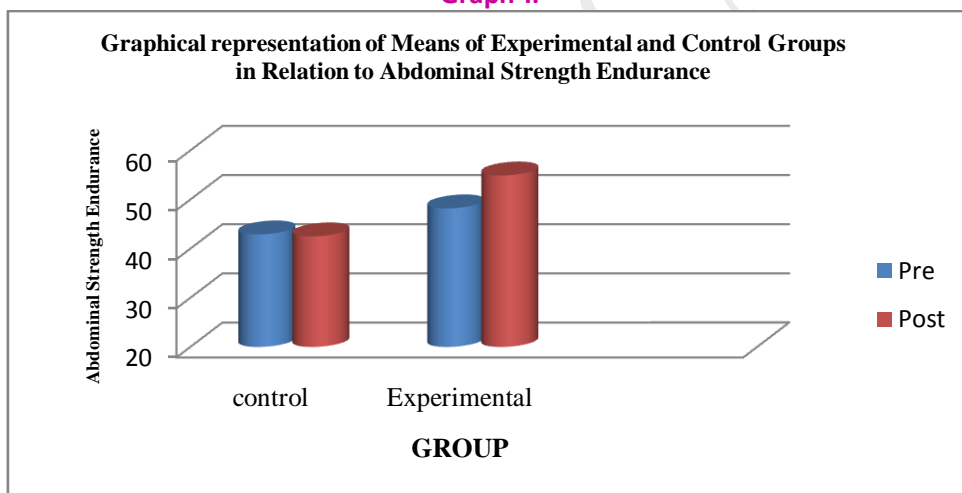
F 0.05(1,17)=4.45*

Table III reveals that the value of calculated $F(1,17) = 11.820 > 4.45$ in the case of experimental group and found significant, whereas it was not found significant in case of control group.

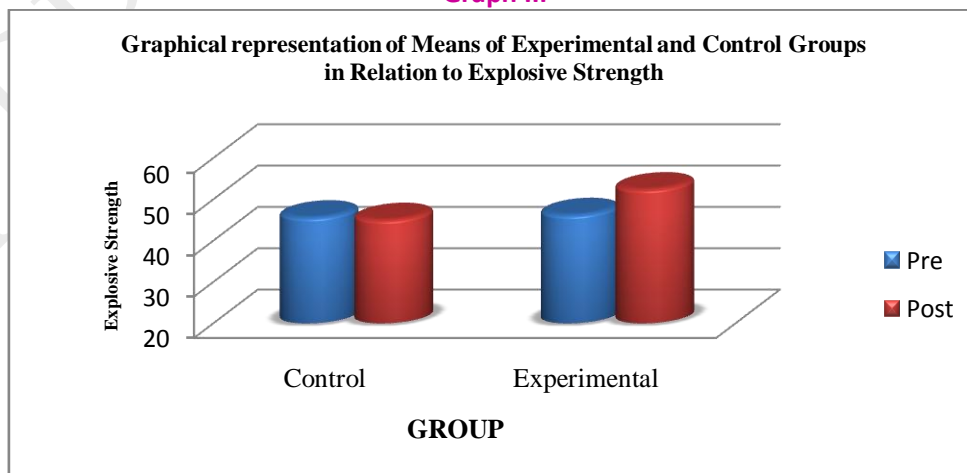
Graph-I



Graph-II



Graph III



DISCUSSION AND CONCLUSION

The results shows the increment in performance of agility, abdominal strength endurance and explosive strength abilities of sportsmen those who are gone through the treatment of core strength training but the increment in performance of above abilities were not shown significantly in the control group. This increment is due to the development of core muscles involved in the actions as well as development of technical movements due to this training program. On the basis of findings of the present study, the conclusions drawn that participation in four weeks of core strength training program resulted in increase of Agility, Abdominal strength endurance and Explosive Strength among college sportsmen. This is why because Core strength training is the power or ability to control the position and movement of the central section of the body such as, the spine, pelvis and shoulders. This central section of the body assists in the maintenance of good posture and also provides the foundation for all arm and leg movements.

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