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EFFECT OF ISOLATED AND PARALLEL CORE STRENGTH TRAINING AND MOBILITY TRAINING ON PSYCHOMOTOR VARIABLE AMONG UNIVERSITY MEN CRICKET PLAYERS

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ABSTRACT

The purpose of the study was to find out the Effect of Isolated and Parallel Core Strength Training and Mobility Training on Psychomotor Variable among University Men Cricket Players. Forty eight male university students (n = 48) were randomly selected as subjects and their age ranged between 20 and 25 years. The selected subjects were randomly assigned into four equal groups such as experimental groups and control group with twelve subjects each (n = 12). The experimental groups underwent their respective experimental treatment for twelve weeks three days per week and a session on each day. Control group was not undergone any specific training apart from their regular activities. Reaction time was taken as dependent variable for this study and it was measured by reaction time ruler test. The collected data was analyzed by using analysis of covariance (ANCOVA). The result revealed that the experimental training groups produced significant improvement ($p \leq 0.05$) on psychomotor as compare to control group.

KEYWORDS: *isolated and parallel strength training, Reaction time.*

INTRODUCTION

Core strength training is a term that denotes building the strength of the muscles of the body in such a manner that the entire body is fully balanced and supported. The core is the centre of gravity in the body surrounding the centre of the abdomen. The main focus of core strength training is on muscle groups that stabilize spine and pelvis. During several sporting activities these muscle groups are responsible to transfer energy from massive to little body elements. Weak or poorly controlled core muscles are related to low back pain (Hodges & Richardson, 1996; Hodges & Richardson, 1999).

Mobility training involves exercises, which aim to stretch muscles and their connective tissues. It is muscle and the tissues which surround and attach muscle to bone that limit the range of movement of the various joint actions which facilitate the running and hurdling actions

Psychomotor is pertaining to a response involving both the brain and motor activity. The enhancement of motor skills, regulations and psychomotor processes are the special requirements for all the success in various group and individual sports. There is a need to quench the thirst of athletes that they require an intensive training load, in order to face dynamic sports like cricket. It requires special skills like bowling, batting, and fielding. Psycho-physiological research has helped to withstand the relationship between physiological activity and psychomotor efficiency (Bazonava & Shtark, 2007).

Balance is an even distribution of weight enabling someone or something to remain upright and steady. Balance is also defined as being able to remain upright and walk gracefully, or a state of equality, an emotionally and mentally stable mind or the presentation of both sides of an issue.

MATERIALS AND METHODS

The purpose of the study was to find out the effect of core strength on psychomotor variable among university men cricket players. Forty eight male university students (n = 48) were randomly selected as subjects from Department of Physical Education and Sports Sciences and their age ranged between 20 and 25 years. The selected subjects were randomly assigned into four equal groups such as experimental groups and control group with twelve subjects each (n = 12). Experimental group-I was given the packages of mobility training, experimental group-II was given the packages of core strength training, experimental group-III was given the packages of parallel mobility training and core strength training and group IV acted as control group The experimental group underwent their respective experimental treatment for twelve weeks three days per week and a session on each day. Control group was not undergone any specific training apart from their regular activities. Reaction time was taken as dependent variable for this study and it was measured by reaction time ruler test. The following six Swiss ball exercises such as Swiss ball back extension, supine pelvic raises, Swiss ball dips, prone fly, supine side rolls and incline push-ups were fully instructed and demonstrated by a specialist to ensure the understanding of the proper mechanics. The training load was progressively increased once in two weeks. The rest interval of two minutes between exercises and five minutes between sets was given. The collected data was analyzed by using analysis of covariance (ANCOVA). The result revealed that the core strength training group produced significant improvement ($p \leq 0.05$) on psychomotor as compare to control group.

DATA ANALYSIS

Mean, Standard deviation analysis of covariance (ANCOVA) were used for the analysis of data, and statistical significance was fixed at 0.05 levels.

Table – 1
ANALYSIS OF COVARIANCE ON REACTION TIME OF EXPERIMENTAL AND CONTROL GROUPS

	Core Strength Training Group	Mobility Training Group	Parallel Training Group	Control Group	S o V	Sum of Squares	df	Mean squares	'F' ratio
Pre test Mean	0.201	0.208	0.193	0.202	B	0.001	3	0.0001	0.70
SD	0.033	0.031	0.027	0.024	W	0.037	44	0.001	
Post test Mean	0.168	0.170	0.148	0.206	B	0.021	3	0.007	9.74*
SD	0.027	0.031	0.022	0.025	W	0.031	44	0.001	
Adjusted Post test Mean	0.168	0.164	0.155	0.205	B	0.018	3	0.006	51.26*
					W	0.005	43	0.0001	

Table F-ratio at 0.05 level of confidence for 3 and 44 (df) = 2.82, 3 and 43 (df) = 2.82
**Significant 0.05*

Table – 1 shows that the pre-test means and standard deviation on reaction time of core strength training, mobility training, parallel training and control groups are 0.201 $\pm$ 0.033, 0.208 $\pm$ 0.031, 0.193 $\pm$ 0.027 and 0.202 $\pm$ 0.024 respectively. The obtained 'F' value 0.70 of reaction time is lesser than the required table value of 2.82 at 3, 44 df at 0.05 level of confidence. This proved that the random assignment of the subjects was successful and their scores on reaction time before the training were equal and there was no significant difference among groups.

The post test means and standard deviation on reaction time of core strength training, mobility training, parallel training and control groups are 0.168 ± 0.027, 0.170 ± 0.031, 0.148 ± 0.022 and 0.206 ± 0.025 respectively. The obtained 'F' value of 9.74 on reaction time is greater than the required table value of 2.82 at 3, 44 df at 0.05 level of confidence. It implied the existence of significant difference among four groups during the post test on reaction time.

The adjusted post-test means on reaction time of core strength training, mobility training, and parallel training and control groups are 0.168, 0.164, 0.155 and 0.205 respectively. The calculated 'F' value of 51.26 on reaction time is very much greater than the expected table value of 2.82 of 3, 43 df at 0.05 level of confidence. Hence, it is concluded that significant differences existed between the adjusted post test means of parallel training, core strength training, mobility training and control groups on reaction time.

Scheffe's test is applied as post hoc test to determine the paired mean difference. This test is preferred as the obtained 'F' value in the adjusted post test means is found to be highly significant. The values obtained are listed in table 2.

Table 2
SCHEFFE'S POST HOC TEST FOR THE DIFFERENCES AMONG PAIRED MEANS OF EXPERIMENTAL AND CONTROL GROUPS ON REACTION TIME

Core strength Training Group	Mobility Training Group	Parallel Training Group	Control Group	Mean Difference	Confidence Interval
0.168	0.164			0.004	0.012
0.168		0.155		0.013*	0.012
0.168			0.205	0.037*	0.012
	0.164	0.155		0.009*	0.012
	0.164		0.205	0.041 *	0.012
		0.155	0.205	0.050*	0.012

**Significant at .05 level*

As shown in table 2 the Scheffe's post hoc analysis proved that significant mean differences existed between core strength and parallel training groups, core strength training and control groups, mobility and parallel training groups, mobility training and control groups, parallel training and control groups on reaction time since, the mean differences 0.013, 0.037, 0.009, 0.041 and 0.050 are higher than the confident interval value of 0.012 at 0.05 level of significance. However, there was no significant difference between core strength and mobility training groups, since, the mean differences 0.004 is lesser than the confident interval value of 0.012 at 0 .05 level of significance.

Hence, it is concluded that due to the effect of isolated and parallel core strength and mobility training the reaction time of the subjects is significantly improved. It is also concluded that parallel training is better than isolated training in improving reaction time however, there is no significant differences found between isolated core strength and mobility training.

The pre test, post test and adjusted post test mean values of experimental and control groups on reaction time are graphically represented in figure I.

FIGURE I

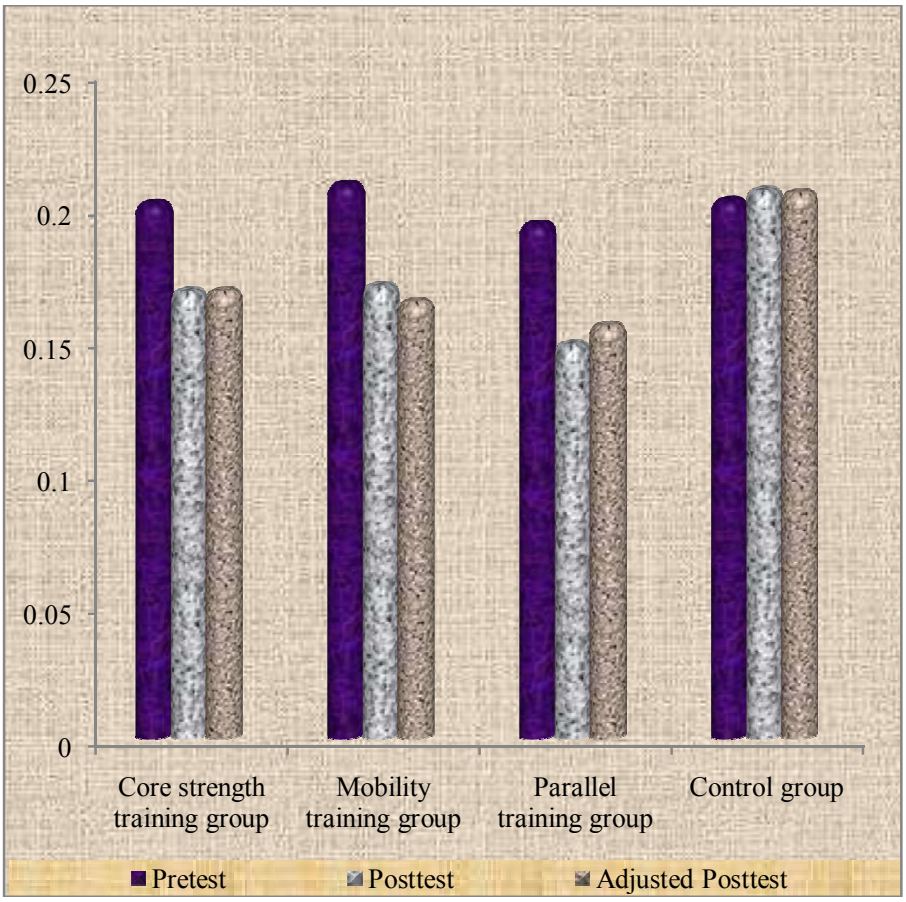

FIGURE I. THE MEAN VALUES ON REACTION TIME OF EXPERIMENTAL AND CONTROL GROUPS

DISCUSSION

The result of the present study pointed out that there was a significant difference in reaction time due to eight weeks of core strength training. The current study also utilized twelve weeks programme duration with five sessions per week and found that reaction time increases due to core strength training. Core strength training is widely used in the strength and conditioning, health and fitness, and rehabilitation industries with claims of improving performance and reducing the risk of injuries (McGill, 2001; Olmsted et al., 2002). Core strength training may be an effective training method for improving performance in runners (Sato & Mokha, 2009). Nine-week strategic core strengthening exercise program increases trunk stability and in turn improves vertical jump parameter (Sharma et al., 2009). Martuscello et al., (2013) suggested that strength and conditioning specialists should focus on implementing core-specific exercises, to adequately train the core muscles in their athletes and clients.

CONCLUSION

Due to the effect of isolated and parallel core strength and mobility training the reaction time of the subjects is significantly improved. It is also concluded that parallel training is better than isolated training in improving reaction time however, there is no significant differences found between isolated core strength and mobility training.

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