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EFFECT OF ISOLATED AND PARALLEL CORE STRENGTH AND MOBILITY TRAINING ON SELECTED BIO MOTOR VARIABLES AMONG CRICKET PLAYERS

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Abstract:- The aim of this study is to find out the effect of isolated and parallel core strength and mobility training on selected bio motor variables among cricket players. 60 male school level cricket players from Tamil Nadu were selected randomly as the subjects and their age ranged between 14 to 16 years. The selected subjects were divided into four groups, namely, isolated core strength training group (ICST), isolated mobility training group (IMT), parallel training (combination of both core strength and mobility training) group (PTG) and control group consisting of 15 cricket players in each group. The experimental period was 12 weeks. The experimental groups were given the respective treatments. The results indicated that there was a significant improvement in bio motor variables, abdominal strength after isolated and parallel core strength and mobility training among school level cricket players. And the results further proved that there was significant difference between the treatment groups, in favour of PTG than IMT on abdominal strength. The bio motor variable agility was significantly improved due to all the three treatment groups and comparisons between the treatment groups it was found that there was no significant dif¬ference after training on bio motor variable agility. It was concluded that core strength and mobility training may be extensively practiced by school cricket players as they improve bio motor abilities abdominal strength and agility.

Keywords: Isolated, Parallel, Core Strength, Mobility Training, Abdominal Strength, Agility.

INTRODUCTION

Noakes, and Durandt, (2000) reported that the demands of cricket may not be underestimated citing a study of the 1999 South African world cup players, a number of physiological tests for explosive power and aerobic endurance capacity showed they were as 'fit' as the South African national rugby players. Strength training and conditioning plays an important role in chronic and acute injury prevention, particularly in asymmetrical sports such as cricket (i.e. batting, bowling and throwing are performed with a dominant arm or stance). Conditioning for cricket should not only be sport specific but also position specific. Fast bowlers require different preparation from spin bowlers for example. Of course, there are many aspects of cricket training applicable to all players as each individual will be required to bat and field during a game.

In the development of fitness, coaches and athletes have understood the value of core strength training for many years. The core region consists of far more than just the abdominal muscles. In fact core strength training aims to target all the muscles groups that stabilize the spine and pelvis. It's these muscle groups that are critical for the transfer of energy from large to small body parts during many sporting activities. Because of these facts every cricket player is interested to improve their core strength.

In core strength training the muscles of the trunk and torso act to stabilize the spine, pelvis and shoulder girdle. From this solid, balanced base the limbs can be moved powerfully and under control. In fact before rapid movements of the extremities can take place, the central nervous system stabilizes the spine in anticipation (Hodges and Richardson, 1997) . The rate at which the core muscles stabilize the spine may have a direct effect on the power of limb movement (Hodges and Richardson,1997b). As cricket involve forceful, strenuous activity, and mobility

exercises and mobility drills stimulate nervous system, muscles, tendons, and joints in a very dynamic manner in which one not only moving around at all but are simply elongating a particular muscle or group of muscles.

As the overhead sports like cricket, characterized by predominant movements of the hands above the head, are associated with very dynamic, often acyclic movements and require strong muscles of humero-scapular regions with high mobility of the shoulder joint as well as flexibility and ability to relax these muscles. Kacanski, et.al. 2011) selected 100 "overhead" sports male athletes, who were randomly divided into the experimental and control group, aged 14 to 18 years. The range of motion was measured in degrees by goniometer to analyse the shoulder mobility on overhead sports before and after experimental treatment and found statistically significant difference inflexion, extension, abduction, adduction, external and internal rotation at the final measure in favor of the experimental group at the level of significance $p<0.001$. Prieske, et.al. (2015) found trunk muscle strength, sprint, and kicking performance improved following core strength training performed on unstable (CSTU) compared with stable surfaces (CSTS) in youth soccer players. Sandrey and Mitzel, (2013) determined the effects of a 6-week core-stabilization-training program for high school track and field athletes on dynamic balance and core endurance and found significant improvement in dynamic balance and core endurance among high school student athletes. Stuber, et al. (2014) after making a systematic review of literature concluded that quantity and quality of literature on the use of core stability exercises in athletes is low. The existing evidence has been conducted on small and heterogeneous study populations using interventions that vary drastically with only mixed results and short-term follow-up. This precludes the formulation of strong conclusions, and additional high quality research is clearly needed. Thus, the theoretical foundations laid so far proved that there was further scope for research to find out the effect of isolated and parallel core strength and mobility training on selected bio motor variables, abdominal strength and agility among cricket players.

METHODOLOGY

To achieve the purpose of this study, 60 male school level cricket players from the area of Annamalai University, Tamil Nadu were selected randomly as the subjects and their age ranged between 14 to 16 years. The selected subjects were divided into four groups, namely, isolated core strength training group (ICST), isolated mobility training group (IMT), parallel training (combination of both core strength and mobility training) group (PTG) and control group consisting of 15 cricket players in each group. The experimental period was 12 weeks. The experimental groups were give the respective treatments. The control group was not exposed to any treatments and was strictly under control. The selected biomotor variable abdominal strength was measured through sit ups test and agility was measured through shuttle run test. The difference between the initial and final means on selected variables was the effect of respective experimental treatment of the groups concerned. The obtained data were subjected to statistical treatment using ANCOVA. In all cases 0.05 level was fixed to test the hypothesis of this study.

RESULTS

The descriptive statistics showing mean and standard deviation of data obtained are presented in Table I.

Tab 1: Descriptive Statistics on Abdominal Strength and Speed due to Isolated and Parallel Core Strength Training and Mobility Training among Cricket Players

ABDOMINAL STRENGTH				
Tests	ICST	IMT	PTG	Control Group
Pre Test Mean	31.27	31.40	32.00	32.3
Std Dev	+ 6.06	+ 5.51	+ 4.11	+ 4.51
Post Test Mean	33.93	33.73	36.60	31.7
Std Dev	+ 5.09	+ 4.74	+ 4.39	+ 4.61
Adjusted Post Test Mean	34.32	34.01	36.38	31.3
Mean Difference	2.67	2.33	4.60	-0.53

AGILITY				
Tests	ICST	IMT	PTG	Control Group
Pre Test Mean	11.14	11.03	10.58	10.9
Std Dev	+ 0.52	+ 0.54	+ 0.33	+ 0.44
Post Test Mean	10.25	10.32	10.07	10.9
Std Dev	+ 0.17	+ 0.56	+ 0.30	+ 0.39
Adjusted Post Test Mean	10.16	10.27	10.20	10.9
Mean Difference	-0.89	-0.70	-0.51	0.00

ICST : Isolated Core Strength Training; IMT : Isolated Mobility Training PTG: Parallel Training Group

The results presented in Table I proved that there existed differences and the calculation of ANCOVA is presented in Table II.

Tab II: Effect of Isolated and Parallel Core Strength Training and Mobility Training on Bio Motor Variables, Abdominal Strength and Agility among Cricket Players

Test	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
ABDOMINAL STRENGTH					
Pre Test Mean	Between	10.27	3	3.42	
	Within	1461.47	56	26.10	0.13
Post Test Mean	Between	179.60	3	59.87	
	Within	1244.40	56	22.22	2.69
Adjusted Mean	Between	196.61	3	65.54	
	Within	217.72	55	3.96	16.56*
AGILITY					
Pre Test Mean	Between	2.65	3	0.88	
	Within	12.03	56	0.21	4.12*
Post Test Mean	Between	5.26	3	1.75	
	Within	8.26	56	0.15	11.89*
Adjusted Mean	Between	5.16	3	1.72	
	Within	6.29	55	0.11	15.04*

Required F¬(0.05), (df 3,76) =2.77
* Significant at 0.05 level of confidence

Since significant F values were obtained, the scores were further subjected to post hoc analysis using Scheffe's post hoc analysis and the results are presented in Table III.

Tab III: Multiple Comparisons of Paired Adjusted Means of the Experimental and Control Group on Abdominal Strength and Speed

ICST	IMT	PTG	Control Group	MEAN DIFF	Required C.I.
ABDOMINAL STRENGTH					
34.32	34.01			0.31	2.09
34.32		36.38		2.05	2.09
34.32			31.29	3.04*	2.09
	34.01	36.38		2.36*	2.09
	34.01		31.29	2.73*	2.09
		36.38	31.29	5.09*	2.09
AGILITY					
10.16	10.27			0.12	0.36
10.16		10.20		0.04	0.36
10.16			10.88	0.72*	0.36
	10.27	10.20		0.08	0.36
	10.27		10.88	0.60*	0.36
		10.20	10.88	0.68*	0.36

* Significant

DISCUSSIONS

The results indicated that there was a significant improvement in bio motor variables, abdominal strength after isolated and parallel core strength and mobility training among school level cricket players. And the results further proved that there was significant difference between the treatment groups, in favour of PTG than IMT on abdominal strength. The bio motor variable agility was significantly improved due to all the three treatment groups and comparisons between the treatments groups it was found that there was no significant dif¬ference after training on bio motor variable agility. Cricket is one associated with very dynamic, often acyclic movements with high mobility of the shoulder joint as well as flexibility and ability to relax these muscles. Kacanski, et.al. (2011) found the statistically significant difference inflexion, extension, abduction, adduction, external and internal rotation. Prieske, et.al. (2015) found trunk muscle strength, sprint, and kicking performance improved following core strength training performed on unstable (CSTU) compared with stable surfaces (CSTS) in youth soccer players. Sandrey and Mitzel, (2013) found the effects of a 6-week core-stabilization-training program for high school track and field athletes on dynamic balance and core endurance and found significant improvement in dynamic balance and core endurance among high school student athletes. These reviews proved that mobility training and core strength training contributed for core strength, core endurance, muscle strength and range of motion. In this study comparative effect of isolated and parallel core strength training and mobility training were tested among school level cricket players and noted significant improvement due to selected experimental treatments. Thus, the findings of this study were in agreement with the previous researches cite.

CONCLUSIONS

It was concluded that core strength and mobility training may be extensively practiced by school cricket players as they improve bio motor abilities abdominal strength and agility.

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