



Influences of Functional Training and Plyometric Training Packages on Selected Physiological Variables among Cricketers

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Abstract

The purpose of the study was to find out the influences of functional training and plyometric training packages on selected physiological variables namely VO_2 max, vital capacity and forced vital capacity among male cricketers. To achieve this study, thirty male Cricketers were randomly selected from Anna University, BIT Campus, Tiruchirappalli, Tamilnadu State, India. The age of subjects were ranged from 18 to 21 years. The subjects had past experience of at least two years in cricket at the Inter-collegiate level and only who those represented their respective college teams were taken as subjects. Physiological fitness tests were carried out on each participant. These included VO_2 max assessed by 12 min run/walk, vital capacity and forced vital capacity assessed by Spiro meter. The subjects were randomly assigned into three groups of fifteen each, such as two experimental and control groups. The experimental group participated functional training and plyometric training packages for 3 days a week, one session every alternate day and for 8 weeks each session lasted up to 60 minutes excluding warm up and cool down. The control group carried out their daily routine activities and there was no special training was given to them. The subjects of the three groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The results of the study showed that there was significant level differences exist between functional training, plyometric training and control groups. Functional training group showed significant level improvement on VO_2 max, vital capacity and forced vital capacity and plyometric training group showed significant level vital capacity and forced vital capacity when compared to control group.

Keywords: Functional training, Plyometric training, VO_2 max, vital capacity and forced vital capacity.

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Introduction

Functional training is a system that encourages the training of balance and the balancing training. It is characterized by actions such as squatting and lunging or pushing and pulling. Functional training is best described as a continuum of exercise that teaches athletes to handle their own body weight in all planes of movement Boyle, (2004). One of the most recent and so-called sports training is "functional training". Although this topic has been addressed and taught for many years in sports training and rehabilitation, it is only now that some coaches appear to consider that this form of training is a unique discovery that will automatically change the sporting performances of all who implemented it Siff, (2002). Functional training, if performed correctly can lead to better joint mobility and stability, as well as more efficient motor patterns. Improving these factors decreases the potential for an injury sustained during an

athletic endeavour performance in a sport. Functional training attempts to adapt or develop exercises which allow individuals to perform the activities of daily life more easily and without injuries Cannone, (2007). Functional training exercises could serve as an alternative and potentially more creative method for improving performance in college student and as well as to be applied to all the sports persons of all elementary level to international levels Shaikh and Mondal, (2012). An exercise continuum involving balance and proprioception, performed with the feet on the ground such that strength is displayed in unstable conditions and body weight is managed in all movement planes. Functional training may lead to better muscular balance and joint stability, possibly decreasing the number of injuries sustained in an individual's performance in a sport Steven Plisk- NSCA. Functional training increasing the strength, speed, endurance, and flexibility has a major factors influence on performance Cannone, (2003). Plyometric exercise refers to those activities that enable a muscle to reach maximal force in the shortest possible time. Plyometric is a combination of Greek word that literally means to increase measurement (plio

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= more; metric = to measure). A practical definition of plyometric exercise is a quick, powerful movement using a pre-stretch, or countermovement, that involves the stretch shortening cycle Baechle & Earle, (2000). The fundamental principle of the plyometric method lies in the speed of the shift from and to the eccentric and concentric muscle contractions. "The key to this lies in the time needed for one muscle to shift from a state of flexibility (the stretch) into a state of shortening (the return to its original position). This points to the fundamental principle of plyometric training: the measurement, the extent of the stretch (the degree), determines the use of the strength that allows flexibility and the transformation of chemical energy into energy used to move muscles" Kostic, (1999).

Methods

The purpose of the study was packages to find out the influences of functional training and plyometric training on selected physiological variables namely VO_2 max, vital capacity and forced vital capacity among Cricketers. To achieve the purpose of the study forty five male cricketers have been selected from Anna University, BIT Campus, Tiruchirappalli, Tamilnadu

state, India. The age of subjects were ranged from 18 to 21 years. The subjects had past experience of at least two years in cricket at Inter-collegiate level and only those represented their respective college teams were taken as subjects. Physiological fitness tests were carried out on each of participant before and after experimental treatment. These included VO_2 max assessed by 12 min run/walk, vital capacity and forced vital capacity assessed by Spiro meter. The subjects were randomly assigned into three groups of fifteen each, such as experimental group-I, experimental-II and control groups. The experimental group participated functional training and plyometric training package for 3 days a week, one session every alternate day and for 8 weeks each session lasted 60 minutes excluding warm up and cool down. The control group maintained their daily routine activities and no special training was given. The subjects of the three groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups.

Table I. Criterion measures

S.No	Criterion measure	Test items / Testing equipment used	Unit of measurement
1	VO_2 max	12 min run/walk	In seconds (1/100)
2	Vital capacity	Spiro meter	In litres
3	Forced vital capacity	Spiro meter	In litres

Table II. Descriptive analysis of selected physiological variables among control and experimental groups

S.No	Variables	Group	Pre-Test Mean	SD (\pm)	Post –Test Mean	SD (\pm)	Adjusted Mean
1	VO_2 max	FTG	37.75	1.90	37.55	1.996	37.73
		PTG	38.89	1.95	39.13	2.123	38.21
		CG	37.15	1.76	37.31	1.915	38.05
2	Vital capacity	FTG	2.81	.100	2.82	.103	2.82
		PTG	2.80	.064	2.80	.055	2.82
		CG	2.83	.082	2.82	.102	2.80
3	Forced capacity vital	FTG	3.82	.092	3.88	.122	3.85
		PTG	3.76	.083	3.81	.146	3.84
		CG	3.78	.087	3.79	.065	3.79

PTG= Plyometric training group, FTG= Functional training group, CG= Control group

The tables-II represents the pre, post-test means, standard deviations and adjusted means on selected physiological variables of male Cricketers. The analysis

of covariance on selected variables of functional training, plyometric training and control groups was presented in table III.

Table III. Analysis of covariance computed for Functional, Plyometric and control groups for selected dependent variables

S.no	variables	Source of Variation	SS	df	MS	F ratio
1	VO ₂ max	Groups	1.74	2	0.87	3.87*
		Error	34.98	41	0.85	
2	Vital capacity	Groups	0.002	2	0.001	3.34*
		Error	0.13	41	0.003	
3	Forced vital capacity	Groups	0.03	2	0.01	3.51*
		Error	0.36	41	0.01	

*Significant at 0.05 level of confidences

(Table value for df 2 and 42 was 3.21, Table value for df 2 and 41 was 3.22)

The obtained F-ratio of 3.87 for adjusted mean was greater than the table value 3.22 for the degree of freedom 2 and 41 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant level difference among control and experimental groups on VO₂ max. The obtained F-ratio of 3.34 for adjusted mean was greater than the table value 3.22 for the degree of freedom 2 and 41 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant level difference among control and experimental groups on

standing vital capacity. The obtained F-ratio of 3.51 was greater than the table value 3.22 for the degree of freedom 2 and 41 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant level difference among control and experimental groups on forced vital capacity. Since the F value was significant, the scheffe’s post hoc test was further computed to find out which pair of group was high among the others and the results are tabulated in the table no. IV.

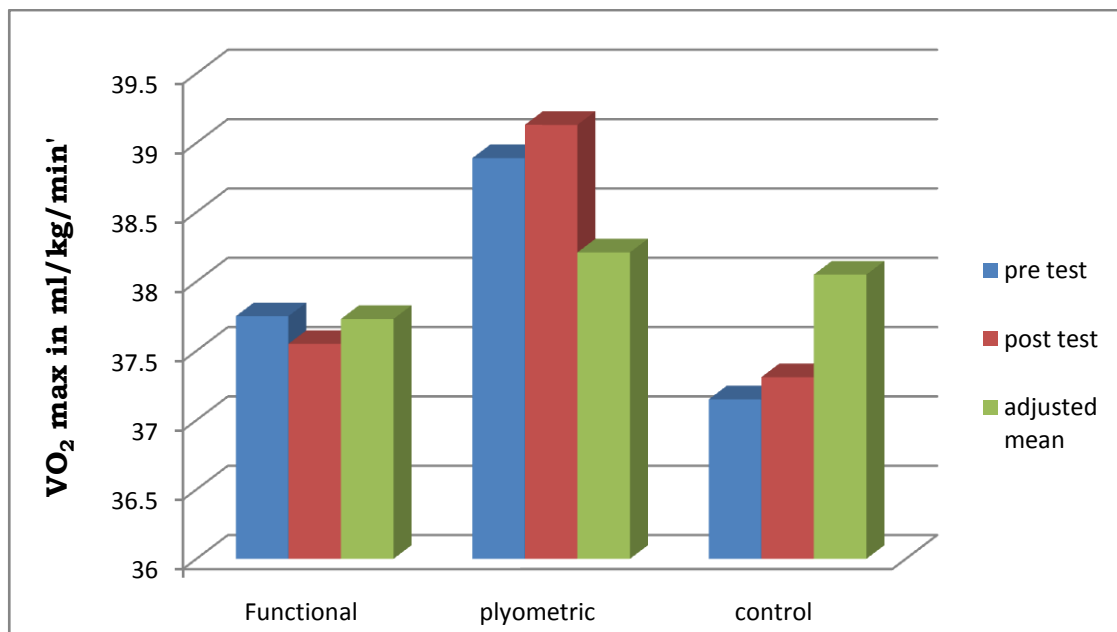


Figure I. The pre, post and adjusted mean values of VO₂ max of both experimental and control groups are graphically represented in the figure - I

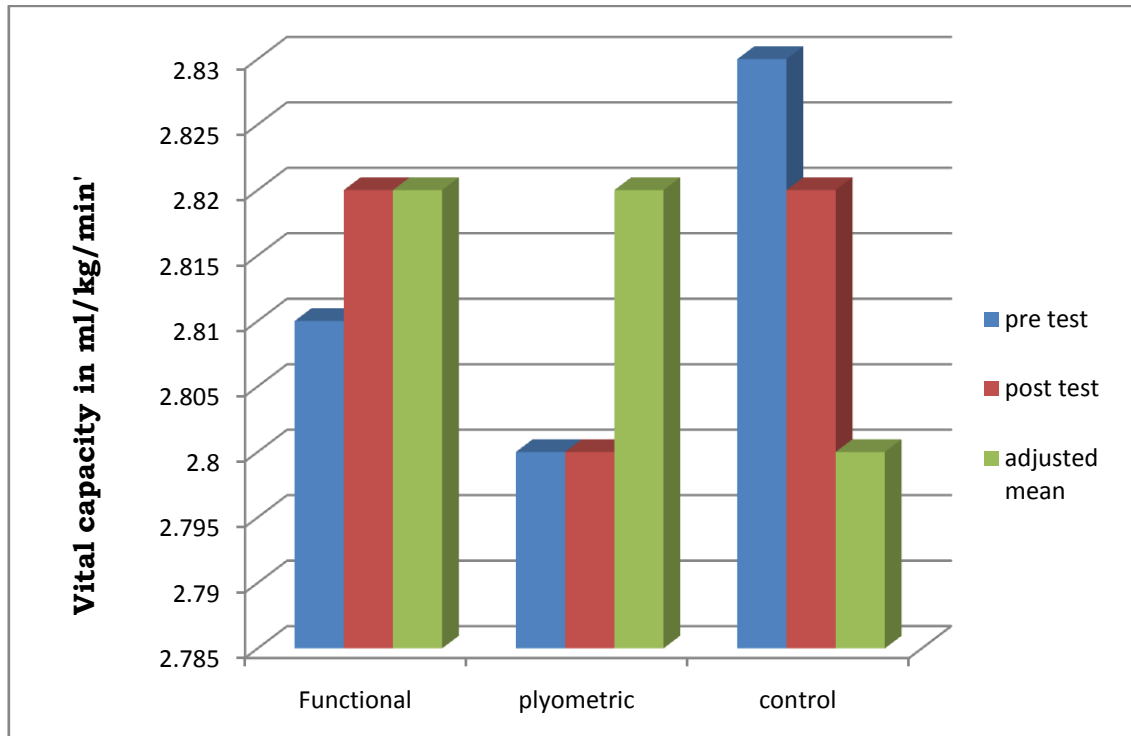


Figure II. The pre, post and adjusted mean values of vital capacity of both experimental and control groups are graphically represented in the figure-II

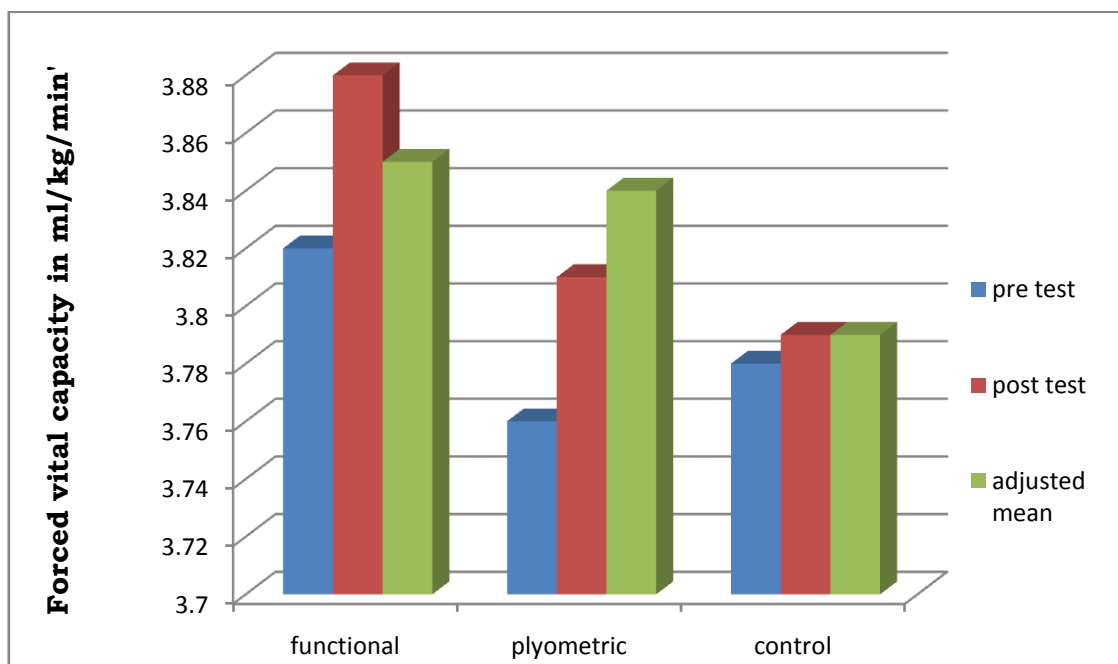


Figure III. The pre, post and adjusted mean values of forced vital capacity of both experimental and control groups are graphically represented in the figure –III.

Discussion of findings

The results of the study indicate that the experimental group which underwent functional training showed significant different on VO₂ max and vital capacity. Plyometric training group also showed significant level difference on forced vital capacity when

compared to control group. The control group did not show significant improvement in any of the selected variables.

Conclusions

From the analysis of data, the following

conclusions were drawn.

1. The experimental group Cricketers showed significant different in all three selected physiological variables namely VO₂ max, vital capacity and forced vital capacity.
2. The control group Cricketers did not show significant improvement in any of selected variables.

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