



INFLUENCE OF PLYOMETRIC TRAINING PROGRAM ON PERFORMANCE RELATED VARIABLES AMONG CRICKET PLAYERS

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Abstract

The purpose of the study was to find out the effect of plyometric training on selected performance related variables among male cricketers. To achieve this purpose, 40 male students studying in various classes were randomly selected as subjects from the Department of Physical Education and Sports Sciences, Annamalai University. The age of the subjects were ranged from 18 to 25 years. The subjects were further classified at random into two equal groups of 20 subjects each. Group - I underwent plyometric training for three days per week for twelve weeks and group - II acted as control. The selected criterion variables namely speed, shoulder strength, muscular endurance, explosive strength and cardiovascular endurance were assessed before and after the training period. The collected data were statistically analysed by using Analysis of Covariance (ANCOVA). From the results of the study it was found that there was a significant improvement on speed, muscular endurance, shoulder strength, cardio respiratory endurance and explosive strength among the plyometric training group when compared with the control group.

Keywords: Plyometric training, Performance related variables, Speed, Explosive strength, muscular endurance, shoulder strength, cardio respiratory endurance.

INTRODUCTION

Physical fitness is one of the basic requirements of life and total fitness is essential (fitness) for healthy living (Hick, 1972). Fitness is determined by what we do twenty four hours a day to live, work, sit, walk, think, eat, sleep and fitness helps to enjoy the life (Davis, 2000). Physical fitness is not a static factor and it varies from individual to individual and in the same person from time to time depending on various factors (Lawrence, 2002). The concept of physical fitness in general athletic terms means the capability of the individual to meet the varied physical and physiological demands made by a sporting activity without reducing the person to an excessively fatigued state. Such a state would be one in which he/she can no longer perform the skill of the activity accurately and successfully (Boucher, 1993). Physical training is any bodily activity that enhances or maintains physical fitness and overall health and wellness. It is performed for various reasons including strengthening muscles and the cardiovascular system, honing athletic skills, weight loss or maintenance, as well as for the purpose of enjoyment (Hardayal, 1991). Plyometrics is a type of exercise training designed to produce fast, powerful movements, and improve the functions of the nervous system, which in turn improves performance in sports. Plyometric movements, in which a muscle is loaded and then contracted in rapid sequence, uses the strength, elasticity and innervations of muscle and surrounding tissues to jump higher, run faster, throw farther or hit

harder, depending on the desired training goal. Plyometrics are training techniques used by athletes in all types of sports to increase strength and explosiveness (Chu, 1998). Plyometrics consists of a rapid stretching of a muscle (eccentric action) immediately followed by a concentric or shortening action of the same muscle and connective tissue (Baechle and Earle, 2000). Plyometrics is used to increase the speed or force of muscular contractions, providing explosiveness for a variety of sport-specific activities.

Plyometrics has been shown across the literature to be beneficial to a variety of athletes. Benefits range from injury prevention, power development and sprint performance amongst others. Plyometric training involves movements to toughen tissues and train nerve cells to stimulate a specific pattern of muscle contraction so the muscle generates as strong a contraction as possible in the shortest amount of time. A plyometric contraction involves first a rapid muscle lengthening movement (eccentric phase), followed by a short resting phase (amortization phase), then an explosive muscle shortening movement (concentric phase), which enables muscles to work together in doing the particular motion. Plyometric training engages the myotatic reflex, which is the automatic contraction of muscles when their stretch sensory receptors are stimulated. Plyometric training bridges the gap between strength and speed. Plyometric training, although easy to perform must be treated with care. Cricket occupies a significant place among all other sports and games. In

some respects it is unique as a sport. It is an ideal sport and is a grand energetic game, giving enjoyment demanding fitness and dedication. Performance in cricket is determined by several factors namely skill, technique, tactics, fitness and training. Both physical and mental fitness play vital role in performance. Modern day cricket demands higher level of fitness and the modern sporting managers are on the lookout for training modalities to keep the players fit to perform and to avoid injuries. Very few studies were done on the effect of plyometric training on performance related variables among cricketers.

METHODOLOGY

The purpose of the study was to find out the effect of plyometric training on performance related variables among cricket players. To achieve this purpose, 40 male students were randomly selected as subjects from the Department of Physical Education and Sports Sciences, Annamalai University studying in various classes. The age of the subjects ranged from 18 to 25 years. The subjects were further classified at random into two equal groups of 20 subjects each. Group - I underwent plyometric training for three days per week for twelve weeks. The duration of the sessions was 60 minutes which includes 10 minutes each for warm up and warm down. In the active duration of 40 minutes, Group - I underwent upper body plyometric exercises

such as over head through, side through, over back toss pushups..., etc and lower body plyometric exercises such as depth jump, lateral jump, multiple jumps, bounding, box jumps..., etc and group - II acted as control. The subjects were assessed on selected criterion variables namely speed, muscular endurance, cardio respiratory endurance, shoulder strength and explosive strength before and after the training period. The selected variables were measured by using standard testing procedures (Speed: 50 mts dash, Muscular Endurance: Sit ups Test, Explosive strength: Sergeant Jump, shoulder strength: cricket ball throw, Cardio respiratory Endurance: Coopers 12 Minutes run). The data collected from plyometric training and control groups before and after completion of the training period on selected variables were statistically examined by applying analysis of covariance (ANCOVA). All the data were analyzed using SPSS statistical package. The level of confidence was fixed at 0.05 level of significance.

RESULTS

The Analysis of covariance on speed, explosive strength, muscular endurance, shoulder strength and cardio respiratory endurance of the pre test and post test scores of plyometric training and control group have been analyzed and presented in the below table.

TABLE I
ANALYSIS OF CO VARIANCE ON SELECTED VARIABLES
AMONG PLYOMETRIC AND CONTROL GROUPS

Variable name	Group Name	Control Group	Plyometric training group	'F' Ratio
Speed	Pre-test Mean \pm S.D	7.97 \pm 0.32	8.05 \pm 0.31	0.28
	Post-test Mean \pm S.D.	7.99 \pm 0.32	7.61 \pm 0.33	13.32*
	Adj. Post-test Mean	8.03	7.57	499.38*
Explosive strength	Pre-test Mean \pm S.D.	50.80 \pm 5.37	51.50 \pm 5.05	0.180
	post-test Mean \pm S.D.	51.30 \pm 5.12	63.25 \pm 5.43	51.30*
	Adj. Post-test Mean	51.63	62.92	401.77*
Muscular endurance	Pre-test Mean \pm S.D	33.85 \pm 3.94	34.15 \pm 4.66	0.048
	Post-test Mean \pm S.D.	34.45 \pm 3.83	38.35 \pm 4.46	8.79*
	Adj. Post-test Mean	34.59	38.21	551.55*
Shoulder strength	Pre-test Mean \pm S.D	63.07 \pm 3.82	62.75 \pm 3.05	0.084
	Post-test Mean \pm S.D.	62.75 \pm 3.77	64.75 \pm 3.09	3.37
	Adj. Post-test Mean	62.61	64.89	25.18*

Cardio respiratory endurance	Pre-test Mean \pm S.D	1888.50 \pm 115.95	1883.50 \pm 114.03	.019
	Post-test Mean \pm S.D.	1886.50 \pm 117.62	2017.50 \pm 109.68	13.27*
	Adj. Post-test Mean	1884.09	2019.92	304.30*

*Significant at .05 level of confidence (The table value required for significance at .05 level of confidence for df 1 and 38, 1 and 37 was 4.098 and 4.107 respectively)

RESULTS

The findings of the study shows that significant difference exists between plyometric training and control group on speed, explosive strength, muscular endurance, shoulder strength and cardio respiratory endurance, since the obtained 'F' ratio of 449.38, 401.77, 551.55, 25.18 and 304.30 respectively for adjusted post test means were greater than the required table value 4.107 for significance at 0.5 level of confidence with df 1 and 37. The result of the study shows that plyometric training has its influence in the performance related variables among cricketers.

CONCLUSIONS

Based on the results of the study, it is concluded that there was a significant difference between plyometric training group and control group on speed, explosive power, muscular endurance, shoulder strength and cardio vascular endurance. There was a significant improvement on selected criterion variables namely speed, explosive power, muscular endurance, shoulder strength and cardio vascular endurance.

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