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Effect of Specific Physical Fitness Programme on Lower Body Explosive Power of Male Cricketers

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Abstract

The study was planned to investigate the effect of selected fitness training program on explosive power of lower body in male cricket players. To conduct the study, 40 male cricket players (Ave. age 18.03 yrs) from Christian Eminent Cricket Academy in Indore (M.P) were selected as sample. Selected subjects were then divided into two groups i.e. Experiment Group and Normal Control Group with equal number of subjects assigned randomly in each group. The subjects of experimental group received three weeks specific physical fitness training program while subjects grouped into control group did not receive such programme apart from their routine exercise. To assess lower body explosive power, vertical jump test protocol of Logan et al. was chosen. The vertical jump test scores were assessed before and after the completion of study period for both the groups i.e. experimental and control group. Results indicate that lower body explosive power of male cricket players belonging to experimental group has improved significantly as compared to their counterparts belonging to control group. Therefore it may be concluded that specific physical fitness training program of certain duration is beneficial for improving the lower body explosive power of male cricket players.

Keywords: Fitness training, lower body, explosive power, cricket.

Introduction

Cricket is one of the most popular games in India. The Indian cricket team (Men's) has excelled not only in shorter version but also in longer version of the game i.e. test cricket in recent past. In cricket batsman, bowlers and fielders have to perform intermittent activity which consist of jumping, running sprinting and striding[1-3]. All requires a cricket player to possess lower body explosive power. The lower body explosive power is the ability to raise one's centre of gravity higher in a plane which is vertical with the help of muscles. In general terms it is also known as vertical jump[4] Muscular strength and anaerobic power is a measurable parameter by Vertical jump Test[5].

Although few studies by researchers namely Soni and Sharma[6], Meswaniya[7], Kanaujia et al.[8], Kamran and Khan[9] have focused on aspects such as physical fitness, psychomotor, psychological and physiological variables in cricket but the effect of specific physical fitness program on lower body explosive power of cricket players has not been explored so far, hence the present study was planned.

Hypotheses: In was hypothesized that three weeks specific physical fitness programme will improve lower body explosive power in selected male cricket players.

Methodology

Procedure: Sample: To conduct the study, 40 male cricket players (Ave. age 18.03 yrs) from Christian Eminent Cricket Academy in Indore (M.P) were selected as sample. Selected subjects were then divided into two groups i.e. experimental and normal control group with equal number of subjects assigned randomly in each group. The subjects of experimental group received three weeks specific training program while subjects grouped into control group did not receive such programme apart from their routine exercise.

Tools: To assess lower body explosive power, vertical jump test protocol of Logan et al.[10] was chosen. After sufficient warm-up, the subject stands sideward a wall (Either left side or right side is permitted) with flat feet and the body close to the wall. Keeping heels on the Floor the subject chalks the fingertips, elevates the Forelimb, and stretches out the arm and hand closest to the board, and marking at the height of full stretch. The position of the initial mark is recorded. An arm swing and countermovement was used to jump as high as possible, by a chalk mark on the measuring board with the inner hand. Three attempts and rest interval of ≤ 30 seconds was allowed between trials. Initial mark and the highest Jump distance were recorded to the nearest 1 cm.

Collection of Data: Vertical jump test protocol was performed by each subject from experimental and control group before the start of study period. Then male sportspersons from experimental group were subjected to 03 weeks physical fitness programs which includes conditioning, strength, aerobic exercises of 40 minutes with desired repetition and rest in between. The intensity of exercises was 60-70%. The subjects

performed these exercise one by one in each day of week under the supervision of fitness expert. Subjects from control group were not subjected to any other program apart from their usual exercise routine. After study period subjects from both groups once again were made to perform on vertical jump test protocol. Gain score (Post-pre test) was computed for experimental as well as control group to find out the changes in scores on vertical jump performance during study period. The obtained gain scores for both the groups were then compared with the help of paired't' test. The results were presented in table no. 1 and 2 respectively.

Analysis of Data: Statistical entries depicted in table 1 indicate significant change in vertical jump scores of male cricket players of both the study groups. It shows that explosive strength of male cricket players belonging to experimental ($t=5.55$, $p<.01$) as well as control group ($t=3.11$, $p<.01$) has increased significantly during study period.

Table-1
Pre and Post-Test Statistics of Vertical Jump Scores in Selected Male Cricket Players of Experimental and Normal Control Group

Groups	Before Study Period Mean ±S.D.	After Study Period Mean ±S.D.	Mean Difference	't'
Experimental (N=20)	44.95 ± 6.23	54.10 ± 6.18	9.15	5.55**
Control (N=20)	42.40 ± 6.31	46.55 ± 6.01	4.15	3.11**

** Significant at .01 level; NS - Not Significant

The changes in vertical jump scores of male cricket players belonging to experimental and control group during study period was tested with the help of gain score (Post test-pre test). The statistical calculation is presented in table-2.

Table-2
Comparison of Gain Score on vertical jump Experimental and Normal Control Group

	Experimental Group (N=25)	Control Group (N=25)	't'	Sig.
Gain Score	9.15	4.15	4.07	.01

A perusal of entries reported in table-2 indicate that explosive strength of male cricket players belonging to experimental group has improved significantly more during study period (M=9.15) as compared to explosive strength of male cricket player belonging to control group during study period (M = 4.15).
In order to verify this result and as a way to exerting statistical control over pre-existing difference, ANCOVA technique was also applied to find out the efficacy of specific physical fitness training program on lower body explosive power of selected male cricket players belonging to experimental and control group. The ANCOVA results are presented in table-3 and 4 respectively.

Table-3
Analysis of Co-variance of Subjects Post Test Performance on Vertical Jump on the Basis of their Pre-Test Scores

Source	Df	Sum of Squares	Mean Squares	F	Sig.
Pre	243.334	1	243.334	7.68	.01
Groups	407.687	1	407.687	12.87	.01
Error	1171.416	37	31.660		
Total	103239.000	40			

Table-4
Adjusted Mean Scores of Male Cricket Players on Vertical Jump Test after Controlling Pre-Test Scores

Groups	Adjusted Mean
Experimental Group	53.58
Control Group	47.06

Co variants appearing in the model are evaluated at the following values Pre test = 43.67. A closer look at entries shown in table 3 and 4 clearly indicate a statistically significant difference in adjusted mean scores in vertical jump performance between experimental (M=53.58) and control group (M=47.06). This fact is verified by obtained F=12.87 which is statistically significant at .01 level. [F(1,37)=15.64 at .01 level] The results also justify the findings presented in table 3 in the form of gain score.

Results and Discussion

On the basis of statistical analysis it was observed that lower body explosive power in male cricket players belonging to experimental group in which three weeks of specific fitness program was imparted, have improved significantly as compared to male sportspersons of control group who did only regular routine exercises.

The results clearly indicate a beneficial effect of specific physical fitness program of certain duration on lower body explosive power of male cricket players. In the past also researchers have highlighted the importance of difference fitness training programs on vertical jump performance of athletes[11,12]. Hence a well structured physical fitness program for male cricketers is also beneficial in terms of their vertical jump performance.

Conclusion

It was concluded that lower body explosive power can be improved with the help of specific physical fitness training regime of certain duration.

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