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A STUDY OF MOTOR FITNESS OF COLLEGE LEVEL CRICKET PLAYERS AND ITS RELATIONSHIP WITH GAME PERFORMANCE

Vishwanath Annarao[1] and Dr. C. R. Bhairaddy[2]
[1]Physical Cultural Instructor,
Government First Grade College,
Kamalapur Taluk, Gulbarga District.
[2]Associate Professor (Rtd.),
Department of Physical Education
Gulbarga University, Gulbarga, Karnataka State, India.

ABSTRACT:

This study was examined to know the Motor Fitness of college level Cricket players (Batsman, Bowlers and Wicket Keeper) and find out the relationship of motor fitness variables of Cricket players with their game performance. For this purpose college level cricket players who had represented intercollegiate level, their age ranged from 18-25 years. The subjects were taken from Degree Colleges studying in Bachelor Degrees in B.A., B.Sc. and B.Com. affiliated to Gulbarga University only. The motor fitness components such as muscular strength & endurance of arms and shoulder (Push Ups in nos.), muscular strength & endurance of trunk (Bent Knee Sit Ups in Nos.); Speed (50 Meters run in secs.); Agility (Shuttle Run in secs.); Explosive Strength (Standing Broad Jump in meters) and Cardio Respiratory Endurance (600 Meters Run/Walk in minutes) were selected and administered according to standardized tests. The ten point rating scale was employed to assess the game performances of Cricket players during game situations. Data in the three skills namely batting, bowling and wicket keeping were rated on a scale from one to ten. The rating of the players was done by three experienced and well known judges as per the rating scale during match situations. To find out the significant differences among the groups, One-way analysis of variance (ANOVA) was used. Further the Scheffe's Post Hoc test was used to find out the significant difference in the paired mean scores and also used Karl Pearson Product Moment Coefficient of Correlation. The ANOVA results found that there was a significant difference in the Muscular Strength & Endurance, Speed and Explosive Strength among Cricket Players (Batsman, Bowler and Wicket Keeper). Batsman had more arm muscular strength and explosive strength and bowlers had more speed and the correlation results found that there exists a positive correlation between game performance with muscular strength & endurance of arm & shoulder ('r'=0.276; P<0.01); speed ('r'=-0.357; P<0.01) and explosive strength ('r'=0.249; P<0.05). It was concluded that there is a need to improve the motor fitness to enhance the game performance of the Cricket players. The study suggests that modern demands in one-day competitions, especially for training of fast bowlers, batsman, fielders and wicket-keepers adequate emphasis is given for the development Physical characteristics.

KEYWORDS: *Motor Fitness, Cricket, Game Performance, Degree College.*

INTRODUCTION

Fitness is that state which characterizes the degree to which the person is able to function. Fitness is an individual matter. It implies the ability of each person to live most effectively with his potential. Ability to function depends upon physical, mental, emotional & social components of fitness, all of which are related to each other

& mutually interdependent. Exercise Scientists have identified nine elements that comprise the definition of strength, power, agility, balance, endurance, flexibility, co-ordination. Larson (1951) defined motor ability as the ability of the individual in the elements, which underline motor performance, such as muscular strength, muscular power, muscular endurance, co-ordination ability and balance etc.

Motor fitness plays an important role in sports performance. Fielding in cricket is no exception. Motor fitness variables tend to execute fielding skills superbly with great accuracy. Motor fitness is an important ingredient of sports activity. Since cricket needs optimum Motor fitness variables to execute proper technique in fielding and give best performance.

Cricket is a deceivingly demanding sport; players spend a long day on their feet, there are periodic fast sprints when batting, chasing down a ball, and bowling, plus various dynamic movements such as leaping, throwing, and turning quickly. It really is vital that all players should increase their base levels of fitness because that will allow them to realize their potential. It will allow them to maintain their level of performance for longer, increasing their concentration and endurance, and that is something each player will have to do if they want to do themselves justice on the world's biggest cricketing stage.

In different playing positions such as bowling, fielding and batting, a great amount of strength of the back muscles is required. Mechanical factors play an important role in the etiology of degenerative processes and injuries to the lumbar spine. Especially in fast bowling, where a player must absorb vertical and horizontal components of the ground reaction force that are approximately five and two times body weight at front-foot and rear-foot impact respectively, thus, assessment of back strength is essential (Elliott, 2000). The maximum capacity of the back muscles must be known and subsequently muscle endurance, if assessments are to be made of muscle fatigue during playing conditions (Mannion et al., 1999).

Singh and Singh (Jan., 2017) found relationship of Running between the wickets performance of the Cricket players with selected Physical fitness variables (Speed, Agility and Flexibility). The findings of the study shows that there are significant relationships of running between the wickets performance selected physical fitness variables Speed, Agility and Flexibility. Boora (2016) investigated the significant mean difference between Batsmen and Bowlers on physical fitness variable agility which are participating at District level. The result indicates that there exists a significance difference between Batsmen and Bowlers on physical fitness variable agility. Batsmen were found to be better than Bowlers on this physical fitness variable. Das and Mitra (2016) compared the selected motor fitness variables Speed, Flexibility, Reaction ability, Coordination and Cardio-respiratory Endurance between batsman and bowlers in cricket. The result showed that there was no significant difference between batsman and bowlers in the selected variables.

Kumar and Venkatesh (2014) compared the relationship between motor abilities with performance of select cricket players. It was found that game performance was significantly related to Arm Power, Leg Power, Speed, Agility, Abdominal Strength and Endurance and it was found that Speed, Leg Power and Agility were the major predictors of the cricket performance. Goswami and Samraj (2015) examined the study of relationship among selected motor ability components Speed, Agility and Explosive Power and bowling skill ability and bowling ability of cricketers. The results of the study show that there was a positive correlation between the explosive power and bowling ability of cricketers. Other variables were not shown any significant relationship with the bowling ability.

A cricket player ought to possess specific speed, strength, power, agility, flexibility and endurance in abundance so as to learn and master the techniques of the game. Modern demands in one-day competitions, especially for training of bowlers, batsman, fielders and wicket-keepers adequate emphasis is given for the development of Physical characteristics. In this paper, the researcher compares the motor fitness of Cricket Players with different play positions and also found the relationship between game performance and motor fitness.

2.PURPOSE AND OBJECTIVE:

The purpose of the study is to know the Motor Fitness among Cricket players with different play positions and also to find out the relationship between Game Performance and Motor Fitness of Cricket Players.

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3.STATEMENT OF HYPOTHESES

1.It is hypothesized that there was no significant difference in the Motor Fitness of Cricket Players with different play positions (Batsman, Bowler and Wicket Keeper).
2.It is hypothesized that there was no significant relationship between Game Performance and Motor Fitness of Cricket Players.

4.METHODOLOGY

4.1 Method: Descriptive Survey Method

4.2 Selection of Sample: The present study was carried out on hundred college men Cricket players who have represented intercollegiate level, their age ranged from 18-25 years. The subjects were taken from Degree colleges studying Bachelor Degree in B.A., B.Sc. and B.Com stream coming affiliated to Gulbarga University.

4.3 Selection of Variables: The following variables selected for the study with tests and criterion measures

Sl. No.	Variables	Equipment/Tests	Criterion Measures
1.	Muscular Strength and Endurance (Arms & Shoulder)	Push ups	Max. No. of repetition.
2.	Muscular Strength & Endurance (Trunk)	Bent Knee Sit ups	Max. No. of repetition.
3.	Speed	50 Meters Run Test	In Seconds
4.	Agility	Shuttle Run	In Seconds
5.	Explosive Strength	Standing Broad Jump	In Meters
6.	Cardio Respiratory Endurance	600 Meters Run/Walk	In Minutes
7.	Game Performance	Coach Rated Performance Evaluation	In points

4.4 Statistical Procedure

One-way Analysis of Variance (ANOVA) was used to find out the significant difference among the three groups. Further, Scheffe's Post Hoc test was used to find the significant difference in the paired means and also used Karl Pearson's Product Moment Coefficient of Correlation to find out the relationship between game performance and motor fitness of Cricket players. The level of significance was fixed at 0.05 level.

5. RESULTS AND DISCUSSION

5.1 ANOVA RESULTS

The One-way ANOVA (F test) results on Motor Fitness scores of college level men Cricket players with different play positions (Batsman, Bowlers and Wicket Keeper).

Table-1

Table shows One-Way ANOVA Analysis on Motor Fitness scores of college level men Cricket players with different play positions (Batsman, Bowlers and Wicket Keeper).

Motor Fitness Variables	Groups	Sum of Squares	df	Mean Squares	F Value	Level of Sig.
Muscular Strength & Endurance (Arm & Shoulder)	Between Groups	106.103	2	53.051	5.493 (P=0.005)	Significant at 0.01 level
	Within Groups	936.887	97	9.659		
	Total	1042.990	99			
Muscular Strength & Endurance (Trunk)	Between Groups	363.857	2	181.929	2.466 (P=0.090)	Not Significant
	Within Groups	7157.453	97	73.788		
	Total	7521.310	99			
Speed	Between Groups	19.870	2	9.935	15.451 (P=0.000)	Significant at 0.01 level
	Within Groups	62.372	97	0.643		
	Total	82.242	99			
Agility	Between Groups	0.720	2	0.360	0.687 (P=0.506)	Not Significant
	Within Groups	50.853	97	0.524		
	Total	51.573	99			
Explosive Strength	Between Groups	0.523	2	0.262	3.882 (P=0.024)	Significant at 0.05 level
	Within Groups	6.539	97	0.067		
	Total	7.062	99			
Cardio Respiratory Endurance	Between Groups	0.687	2	0.343	1.820 (P=0.167)	Not Significant
	Within Groups	18.296	97	0.189		
	Total	18.982	99			

Groups: Batsman (N=43); Bowlers (N=46); Wicket Keeper (N=11)
Table value at 0.05(df-2, 97); 3.09; Table value at 0.01(df-2, 97) =4.82

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From the above table, it was observed that the obtained 'F' values 2.466, 0.687 and 1.820 are less than table value of 3.09 for df '2 and 97' required for the significance at 0.05 level of confidence and it is not found to be statistically significant even at 0.05 level of significance. Hence, the stated hypothesis is accepted that "there is no significant difference in the Muscular Strength & Endurance (Trunk), Agility and Cardio respiratory Endurance of college level Men Cricket players of different play positions." This indicates Cricket players with different play positions had similar type of muscular strength & endurance (trunk), agility and cardio respiratory endurance.

The table-1 also shows that the obtained 'F' ratios 5.493 for Muscular Strength & Endurance (Arm & Shoulder); 15.451 for Speed and 3.882 for Explosive Strength were greater than the table values of 3.09 (0.05 level) and 4.82 (0.01 level) for df '2 and 97' required for the significance level of confidence. Hence, the stated hypothesis was rejected and in its place an alternate hypothesis has been accepted that "there was significant difference in the Muscular Strength & Endurance (Arm & Shoulder), Speed and Explosive Strength of College level Men Cricket players of different play positions." To determine the significant difference in the playing ability among these paired means, the 'Scheffe's test was applied as the Post hoc analysis and the results were presented in Table-2.

Table-2
Scheffe's Post Hoc Analysis on Motor Fitness of Cricket players with different play positions.

Variable	Play Positions			Mean Difference	Critical Difference
	Batsman	Bowler	Wicket Keeper		
Muscular Strength & Endurance	11.953	10.652	-	1.301	1.638
	-	10.652	8.636	2.015	2.592
	11.953	-	8.636	3.317*	2.610
Speed	8.172	7.246	-	0.926*	0.423
	-	7.246	7.980	0.733*	0.669
	8.172	-	7.980	0.192	0.673
Explosive Strength	2.100	2.153	-	0.053	0.136
	-	2.153	1.910	0.242*	0.216
	2.100	-	1.910	0.189	0.217

*Significant at 0.05 level

The table-2 shows significant paired mean difference on the muscular strength & endurance (Arm & Shoulder) between batsman and wicket keeper and the value is 3.317 which is greater than the critical difference value at 0.05 level of confidence. It was concluded that there was a significant difference in the muscular strength & endurance (Arm & Shoulder) between batsman and wicket keeper and no different exists between the batsman & bowler and bowler & wicket keeper. The batsman had better muscular strength & endurance (arm & shoulder) followed by bowler and wicket keeper.

The table-2 also shows significant paired mean differences on speed between batsman & bowler; bowler & wicket keeper and the values are 0.926 and 0.733 which are greater than the critical difference value at 0.05 level of confidence. It was concluded that there was a significant difference in the speed between batsman & bowler; bowler & wicket keeper and no different exists between the batsman & wicket keeper. The bowler had better speed followed by wicket keeper and batsman.

The table-2 further shows significant paired mean differences on explosive strength between bowler & wicket keeper and the value is 0.242 which is greater than the critical difference value at 0.05 level of confidence. It was concluded that there was a significant difference in the explosive strength between bowler & wicket keeper and no different exists between the batsman & bowler and batsman & wicket keeper. The bowler had better explosive strength followed by batsman and wicket keeper.

5.2 CORRELATION RESULTS

The relationship of game performance and selected motor fitness variables of college level Cricket

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players was ascertained by the obtained values of coefficient of correlation. The result is presented in Table-3.

Table-3
Table shows relationship of game performance with motor fitness variables of college level Cricket players. (N=100, df=98).

Game Performance and Motor Fitness		Mean	Standard Deviation	'r' value and level of sig.	Sig.
Game Performance	Muscular Strength & Endurance (Arm & Shoulder)	10.990	3.246	0.276**	P=0.019
	Muscular Strength & Endurance (Trunk)	34.870	8.716	0.020^{NS}	P=0.840
	Speed	7.725	0.911	-0.357**	P=0.000
	Agility	9.968	0.722	0.029^{NS}	P=0.773
	Explosive Strength	2.104	0.267	0.249**	P=0.013
	Cardio Respiratory Endurance	2.390	0.438	0.015^{NS}	P=0.884
	Game Performance	7.120	1.225		

** Significant at 0.01 level.

The table-3 shows the analysis of the game performance with the selected motor fitness variables. The above table illustrates that there exists positive correlation between game performance with muscular strength & endurance of arm & shoulder ('r'=0.276; P<0.01); speed ('r'=-0.357; P<0.01) and explosive strength ('r'=0.249; P<0.05) and no significant relationship with muscular strength & endurance (trunk) ('r'=0.020; P>0.05); agility ('r'=0.029; P>0.05) and cardio respiratory endurance ('r'=0.015; P>0.05).

6. FINDINGS OF THE STUDY

The findings of the study:

1.There is a significant difference in Muscular Strength & Endurance (Arm & Shoulder), Speed and Explosive Strength of college level Cricket players of different play positions.
2.There is no significant difference in Muscular Strength & Endurance (Trunk), Agility and Cardio-respiratory Endurance of college level Cricket players of different play positions.
3.There is a significant relationship of Game Performance with Muscular Strength & Endurance (Arm & Shoulder), Speed and Explosive Strength of college level Cricket Players.
4.There is no significant relationship of Game Performance with Muscular Strength & Endurance (Trunk), Agility and Cardio-respiratory Endurance of college level Cricket Players.

7.CONCLUSION

The study concludes that muscular strength & endurance (arm and shoulder), speed and explosive strength of the college level Cricket players correlated with their game performance and also shows that there was a significant difference in muscular strength & endurance (arm and shoulder), speed and explosive strength of college level men Cricket players of different play position. Batsman had more arm muscular strength and explosive strength and bowlers had more speed. The similar results in line with studies conducted by Singh and Singh (Jan., 2017); Boora (2016); Das and Mitra (2016); Kumar and Venkatesh (2014); and Goswami and Samraj (2015). The study suggests that modern demands in one-day competitions, especially for training of fast bowlers, batsman, fielders and wicket-keepers adequate emphasis is given for the development of Physical characteristics.

8. REFERENCES

1.Koul, Lokesh. "Methodology of Educational Research", Third revised Edition, Vikas Publishing Housing Pvt. Ltd.
2.Krishna Kumar H.S. and Dr. C. Venkatesh. "Relationship between Anthropometric and Motor Abilities with Performance of Select Cricket Players." International Journal of Engineering Research and Sports Science (2014),

Vol.1(6): 1-4.
3.Kunvar Singh and Dr. Ratnesh Singh. "An Association of Anthropometric and Physical Fitness Variables of Cricket Players with the Performance of Running between the Wickets." International Journal of Physical Education, Sports and Health (Jan., 2017), Vol.4(1): 141-145. www.kheljournal.com
4.Milon Kumar Das and Dr. Sentu Mitra. "Comparative Analysis on the Selected Motor Fitness Variables between Batsman and Bowlers in Cricket." PARIPEX - Indian Journal of Research (2016), Vol.5(5): 202-203.
5.Rajesh Boora. "Comparison of Batsmen and Bowler on Physical Fitness Variable Agility." International Journal of Physical Education, Sports and Health (2016), 3(3): 01-02. www.kheljournal.com
6.Sukanta Goswami and P. Samraj. "Relationship among Selected Motor Ability Components and Bowling Ability of Cricketers." Indian Streams Research Journal (2015), Vol.5(6): 1-7.