



P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (ISRA): 5.38
IJPESH 2016; 3(4): 133-136
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www.kheljournal.com
Received: 27-05-2016
Accepted: 28-06-2016

Chandu G Lamani
Physical Education Instructor,
In Charge SAC & Sports BITS,
Pilani – K.K. Birla Goa Campus
Deemed University Zuarinagar
Goa-India Research Scholar,
Karnatak University, Dharwad,
India.



Dr. Pratap Singh Tiwari
Retired / Director of Physical
Education and Sports &
Research Guide Department of
Physical Education and Sports,
Karnatak University, Dharwad,
India.

International Journal of Physical Education, Sports and Health

A comparative analysis on speed, running between the wicket and strength among batsman and bowler of Goa

Chandu G Lamani and Dr. Pratap Singh Tiwari

Abstract

The main purpose of the study was to analyze the relationship of general and specific cricket speed and physical tests, which included 20, leg strength and shoulder strength, to differentiate Batsman with that of Bowlers of Goa, total 50 Cricket players were selected for the study and were examined accordingly further they were divided in to Two groups Batsman n=25 and Bowler n=25, their age was above 18 and below 22 years of age. All the cricketers had competed at least at the state level and national level. Mean, Standard Deviation and independent t-test was used. Significant Level was set at 0.05 Levels. Statistical investigation revealed that there is a difference among Batsman and Bowler in Speed Tests and strength test. It is recommended that these tests should be made fundamental tests in any physiological and Physical assessment of cricket players.

Keywords: Sprint Speed and Agility Testing, shoulder strength, leg strength, and Cricket Players

Introduction

In the early years cricket was considered as a battle between bat and ball and obviously fitness and type of Body was not given due importance, With the introduction of One day cricket recently, the game has gone through major changes and the physical demand made on cricketer's body have also increased dramatically. Depending upon the version of the game played and role played by the player in the team. (Simpson, Bob. 1996).

With modern cricket, players can be expected to tour for up to eleven months of the year; therefore, physical fitness is increasingly important. The only study that focused specifically on the calorific energy demand of cricketers was performed in 1955, and its validity in representing the demands of modern players would seem problematic. Structure and functions are two inseparable entities with respect to human performance in elite competitive Sports. When all functional factors such as Anthropometrical, Morphological, Physiological, Psychological and Motor fitness variables are equal, structure to a large extent determines the degree of success of an adult elite athlete (Nadgir, Anand 1986).

Strength of Upper body in Cricket

(Johnstone and Ford) The results of studies on strength and power profiles of cricketers have, thus far, been ambiguous and seem to lack logical or face validity. Johnstone and Ford for example, measured upper-body strength and power using a medicine ball throw and timed press-up tests. There were marked differences between batsmen and bowlers; the batsmen were superior in the timed press-up tests, but the bowlers produced greater backward throws. However, the significance of these results and their relation to performance is unclear. There is no research on specific fielding positional demands, nor have normative data for each fielding position been established. Nevertheless, it appears that different strength requirements may be needed for different fielding positions (e.g. the throwing demands of an outfielder, slip fielder).

Explosive Power in Lower body in cricket

Leg strength and power are important for cricket Players as they contribute to the speed and agility required for fielding. However, there has been little research on the lower-body strength profile of cricketers.

Correspondence
Chandu G Lamani
Physical Education Instructor,
In Charge SAC & Sports BITS,
Pilani – K.K. Birla Goa Campus
Deemed University Zuarinagar
Goa-India Research Scholar,
Karnatak University, Dharwad,
India.

Johnstone and Ford tested lower-body strength and explosive power using a counter-movement jump and repeated vertical jump test. The authors suggested that tests such as the counter-movement jump give an indication of slow stretch-shortening cycle performance, and found that there were negligible differences between bowlers and batsmen. (Bourdon) also recommended a series of tests for profiling the physical fitness of elite cricketers; the lower-body tests included a vertical double-leg jump, abdominal strength stage test, straight sprint speed (10, 20 and 40 m) and a run 3 agility test. While the abdominal stage test is lauded as particularly important for fast bowlers, the authors noted that batsmen and fielders would benefit from good abdominal strength during long periods in the field or at the batting crease.

The leg-power demands of fielding are little understood; however, a study comparing cricketers with rugby players found no significant differences in leg press, bench press and 35 m sprints. For example, there is little logic in using only a vertical jump test when research and observation show that fielders need to move in all directions and consequently need multi-directional lower-leg strength and power. Correctly assessing the multi-planar movement ability of fielders should lead to better training programmes.

Running between the wickets in Cricket

(Johnstone and Ford- 2010) found English professional bowlers to be faster when compared to batsmen in a run-a-three sprint test, although the magnitude of the difference was small. Nonetheless, these results indicate that there are certain cricketers who are superior in the sprint action of the run-a-three. This is important, as specific speed tests can be used to delineate between athletes of different ability levels. Despite the importance of the run-a-three for cricket, there has been no analysis of speeds that are actually achieved during this action. This is despite research stating that superior team sport athletes tend to exhibit higher running velocities in specific tests of speed. Furthermore, defining the sections of the run-a-three that contribute to superior performance would be of great benefit to cricket and strength and conditioning coaches. Therefore, this research will document the velocities attained by faster and slower batsmen during the run-a-three, using the standard run-a-three testing protocol.

Purpose of the study

The main purpose of the present study was to compare general and the Specific Speed fitness profiles of Bowlers and Batsman of Goa Cricket team, who actively participating in state, Inter University and BCCI Batsman and senior Domestic Tournaments. Since the term Motor Fitness is a broad concept,

General and Specific testing variables were selected for the investigation, and Specific Hypothesis involving some of the Motor Fitness Profile was formulated

To find out the difference in shoulder strength among Bowler with that of Batsman of Goa state?

To find out the difference in leg strength among Bowler with that of Batsman of Goa state?

To find out the difference in general speed variable (20 meter dash) among Bowler with that of Batsman?

To find out the difference in specific speed variable Run-a-three among Bowler with that of Batsman?

Significance of the Study

The findings for the research study will be directly applicable to contemporary cricket players. The outcome should assist coach to formulate game tactic, and provide conditioning coaches with the evidential base to enhance the physical demands of players, using formal and specific training program. Finally this research study should help sports scientists in their design of preparation strategies for designing new training models.

Limitations of the study

It is assumed that the cricket players who play for Goa state are selected through a rigorous selection process and are of high standard.

All the cricketers were expected to have taken sufficient rest and proper food the previous night.

It was assumed that all the players gave their 100% effort while testing.

Delimitations of the study

The concept of Physical Fitness involves many abilities, however only few motor abilities, which are deemed to be essential to effective performance, are measured and recorded. Because of paucity of time, only the players who have represented for Goa in the 2013-14 seasons are considered for the study.

Methodology - Subjects

Total 50 subjects were selected for this study, 25 Bowlers (Spin & Fast both) and 25 Batsman (Wicket Keepers were considered as Batsman) from cricket game as sample for the study. The subjects were recruited as per experience all the players were had experience of playing minimum 3 years of BCCI, University and college Matches. Necessary Permission was taken from Goa Cricket Association, and respective coaches of the team.

Table 1: Variables

Sr. No	Subjects	Numbers	Type of Test	Equipments / measurements
01	Batsman	N=25	Speed General 20 Meter Dash	Stop Watch Nearest 0.001 seconds
	Bowler	N=25		
02	Batsman	N=25	Shoulder Strength Pull Ups	Number of Repetitions
	Bowler	N=25		
03	Batsman	N=25	Leg strength – Standing Broad jump	Distance in CM
	Bowler	N=25		
04	Batsman	N=25	Run-a-Three	Stop Watch Nearest 0.001 seconds
	Bowler	N=25		

Test and Procedure

For measurement of selected physical fitness variables Of Bowlers and Batsman on cricket players standard physical fitness test Protocols was utilized. Data of subject's were

collected start of the season in the month of August-September 2014.Two testing sessions were completed by all the subjects, separately by 48 hours. The first testing involved general speed testing 20 meter dash, followed with run-a-three and

other two fitness test. The subjects did not wear any protective gear or other necessary equipments during the tests the tests were conducted when they were practicing and preparing for the Cooch Behar u-19 and u-23 Col. C.K. Nayudu Trophy National tournament organized by BCCI. Their age ranged between 18- 22 years. All the subjects received a clear explanation of the study, including the risk and benefits of participation, the entire Test on Players was conducted at BITS Pilani Goa Campus Cricket Ground, The subject were allowed to consume water and sports drinks throughout the testing sessions. Measurements were recorded in metric system

Statistical Procedure

For analysis of the data, collected from 50 cricketers Cricket 25 Bowlers and 25 Batsman and of Goa State, Mean and Standard Deviation was computed. Comparison was made on the basis of activity i.e. Bowler and Batsman. For this purpose 'T' test was applied. For testing the hypothesis the Level of confidence was set at .05 Level of significance.

Results of the Study

Table 2: Mean and Standard Deviation table of Batsmen and Bowlers of Goa State cricket team in 20 meter dash

Variable	Specialized position of the player	N	Mean	Std. Deviation
20 Meter Dash in Sec	Batsman	25	3.1232	.17693
	Bowler	25	3.1392	.14333

From above descriptive table we can see that mean and standard deviation of batsmen and bowlers in 20 meters. Batsman has better timings in 20 meter dash. To investigate whether they are significantly different, further data is subjected to independent sample t-test.

Table 3: Furnished in the table-3 is T-test score for 20 Meter Dash

		t	df	Sig.(2tailed)
20 Meter Dash in Sec	Equal variances assumed	-.497	98	.620
	Equal variances not assumed	-.497	93.952	.620

From above independent sample t-test table we can see that although there is mean difference in Batsmen and Bowler in 20 meters dash but their mean difference is not at significant level. So from t-test we can conclude that although Batsmen are having better mean timings than Bowlers in 20 meters Dash but there is no mean difference between Bowlers and Batsmen of Goa Cricketers regarding their 20 meter Dash.

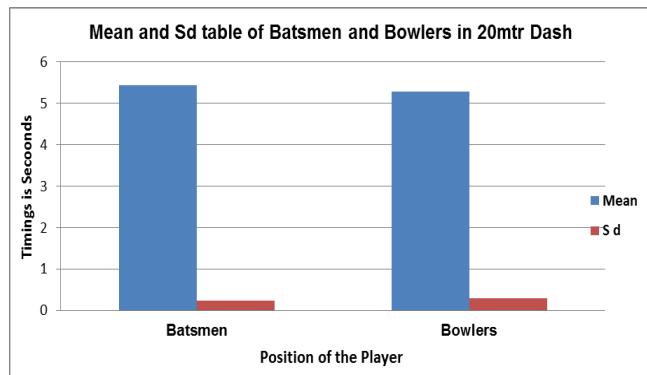


Fig 1: Mean and Standard Deviation of Bowlers and Batsman in 20 meter Dash

Table 4: Comparison of shoulder strength among Batsman and Bowler

Group	Mean	SD	SE	MD	Ot	df	Tt
Batsman	14.65	3.100	0.939	0.500	0.532	38	2.02
Bowler	14.05	2.834					

Level of significance = 0.05, tabulated 't' 0.05 (38) = 2.02

Table 4 reveals that there is difference between means of batsman and bowler because mean of batsman is 14.65 which are slightly greater than the mean of bowlers which is 14.15 and therefore mean difference is 0.500 to check the significant difference between batsman and bowler data was again analyzed by applying 't' test. Before 't' test standard deviation was calculated between batsman and bowler which is 3.100 and 2.834 respectively and then the 't' test is found as 0.532, is less than tabulated 't' which is 2.02 at 0.05 level of significance.

Table 5: Comparison of Leg strength among Batsman and Bowler

Group	Mean	SD	SE	MD	Ot	df	Tt
Batsman	233.55	21.847	7.752	16.100	02.154	38	2.02
Bowler	216.85	26.918					

Level of significance = 0.05, tabulated 't' 0.05 (38) = 2.02

Table no-5: Reveals that there is difference between means of batsman and bowler because mean of batsman is 233.55 which is greater than the mean of bowler which is 216.85 and therefore mean difference is 16.700 to check the significant difference between batsman and bowler data was again analyzed by applying 't' test. Before that, standard deviation was calculated among batsman and bowler which was 21.847 and 26.918 respectively and then the calculated value of 't' is found as 2.154, is greater than tabulated 't' which is 2.02 at 0.05 level of significance. This shows those batsmen are having more leg strength than bowlers.

Table 6: Furnished in the table are Mean, SD and Univariate F- Ratio of Run-a-three of Bowlers (n=25) and Batsman (n=25) of Goa

Sr. No	Variables	Bowler N=25	Batsman N=25	F-Ratio
1.	Run - a-Three	10.43±0.73	9.70±0.47	34.572*

There was significant difference found among Batsman and Bowler of Goa in Run-a-three test, the batsman were significantly faster in run-a-three test as significant level was achieved

Discussion

The study analyzed the relationship between general 20, dash and Specific test leg strength and shoulder strength in experienced cricketers of Goa,

- In 20 meter dash batsman having better mean timing than Bowlers but it failed to reach the significance level, it may because the 20 meter test is a linear sprint and the 20 meter sprint resembling the shorter distance (17.68) covered to complete a quick single.
- In shoulder strength there was no significance difference was found among Batsman and Bowler of Goa state reason may be as all play the same standard of cricket and the training module may be the same as compared to both categories
- In leg strength there was a significant difference was found statistically among Batsman and Bowlers, Batsman were greater than Bowlers reason may be batsman stand for a long time on the crease with their stance and

- maximum of their moments been done on the same stance
- There was significant difference found among Batsman and Bowler of Goa in Run-a-three test, the batsman were significantly faster in run-a-three test as significant level was achieved

Conclusion

Due to rapid ongoing development of cricket in regards to the shorter formats, namely T/20 and One-day Cricket running (Speed) and explosive power and strength in hitting the ball has become a fundamental physiological and physical characteristics of the modern-day-player. As a result it is essential that general test like 20 meter dash can be used for monitoring and talent identification purposes need to replicate the demands of the sport as closely as possible and it is recommended shoulder strength, leg strength and run-a-three tests should be made fundamental tests in any physical assessment of cricket players.

Practical Applications

The ongoing One-day and T/20 cricket has made running speed an essential physiological trait for modern day cricketers. It is vital that cricket and strength and conditioning coaches properly test and monitor running speed in their athletes.

- The assessment used for talent identification and squad selection, and the monitoring of physical conditioning, should best represent the requirement of the sport. The research clearly demonstrates the need for specific speed and physical testing in cricket.

Recommendation for Future Research work

Extensive research have been undertaken in several sports disciplines to identify Fitness characteristics of young cricket players which enables coaches to identify promising talent in their respective sports disciplines. However, no research is traceable which identify Fitness and other characteristics of young cricketers. Therefore it is recommended to undertake research which might identify the fitness profiles of young cricketers from normal population or other sporting population.

- In the present study sample size of young cricketers was very small. Therefore, it is recommended to replicate such an investigation with larger sample size.
- Within each sports disciplines the demands placed on various specialists differs. Therefore Investigation of Motor Fitness profiles of cricketers specializing in bowling, batting, wicket keeping is recommended.
- The present investigation involved cricketers at state level. The Fitness profile at national and international level may be accentuated for various reasons. Therefore an investigation involving cricketers of national and international repute may be undertaken.

Recommendation for Coaches and Administrators

- Therefore it is recommended that either training regime be made demanding or select candidates with Fitness Profiles.
- On the research findings involving young children in sports, identify talented cricketers at early age and coach them right.
- It is recommended that coaches based on their knowledge of Motor Fitness profile required for various departments of the game of cricket

Acknowledgments

The author would like to acknowledge the subjects for their contribution to the study. The research study received no external financial assistance. None of the authors have any conflict of interest. Appreciation is extended to Mr. Gururaj Puranik for his statistical help.

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