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Comparison of run-a-three test between batsmen and bowlers in cricket

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Abstract

Background: The new era in the game of the cricket requires fitness in the sense of speed, agility and quickness for better performance depending on the cricketing format as well as their playing positions. When checking the on field cricketing performance in the game of cricket, different positioned players should also understand the batting performance. Run-a-Three test is the newest test in the cricketing world. This test is batsmen specific test which tends to check the performance and/or fitness of the cricketers while they are supposed to come for batting.

Methods: Cross sectional study was conducted on a total of 80 participants, adult male cricket players from two different cricketing settings were taken for the study as per inclusion and exclusion criteria. Purposive sampling was done. They were assigned into two different groups according to their types playing positions in cricket, Batsmen n = 40, Bowlers n = 40. The performance was assessed using Run-a-Three Test.

Results: A total of 80 participants were screened to compare Run-a-Three test performance between Batsmen and Bowlers. The statistical analysis was done. The descriptive result of Independent T-test shows no significant difference in terms of taken time to complete the Run- a-Three test. Though taken time (in seconds) by the Batsmen were slightly better than the Bowlers for completion of the test but it was not significantly differed. ($p > 0.05$).

Conclusion: A difference of Run-a-Three test was checked and analysed. The results of the study concludes that, there is no significant difference in the performance between the Batsmen and the Bowlers.

Keywords: batsmen, bowlers, taken time, quick single, performance

Introduction

Cricket is a game played between two teams each comprising of 11 players. The Players play with the ball and a bat on the cricket pitch which is of 22 yards in the centre of the cricketing ground. There is a crease on each end of the pitch and the distance between both the creases is 17.68m. Cricket is a unique sport in which, there are number of different formats like Test format, One day internationals, T-20 internationals.

In early years, cricket was not assumed or focused as a sport of fitness, but just a play of bat and ball so the type and body built of players were neglected and not considered. As the introduction of T-20 cricket and One day internationals match, the game has gone through major changes and physical demands made on cricketer's body have also increased dramatically [1].

Limited over cricket requires the batter to score runs quickly, in test match format the shot played by the batter might yield a single run, where in limited overs format the same shot is to be converted into 2 or 3 runs, so running between the wickets becomes crucial in limited overs cricket [2].

Shorter the format (T-20) more the efforts required by the players to take runs between the wickets compared to larger format (Test). The speed of running between the wickets has become a major importance in cricket due to third umpiring in modern cricket, so the precise measurement can be done through TV and multiple replays, that whether the batsmen has crossed the crease or not and whether the batsmen is safe or run out even with a small margin [2].

A "quick single" involves batsmen sprinting maximally over the 17.68m crease to crease distance in an attempt to score a run. Given that the running speed is main contributor to a player's performance in running between the wickets and significantly lead to greater score, correctly assessing the cricketer's ability to run between the wickets is essential [3].

The Run-a-Three test is a modern cricketing fitness test. This test is a cricket fitness test that assesses both speed and agility in a very specific cricket situation. This test not only assesses speed but also technique on the turn and running the bat in at the end [4].

The Run-a-three stimulates the movement of completing 3 runs on a full-length cricket pitch and incorporates the use of bat and various protective equipment such as gloves and pads. The bat can be used to reach the crease

in between the first 2 runs and slide through crease while completing the final run. Cricketers should also practice the skill of starting sprints with the bat, and using the bat to facilitate turns while running between the wickets [3]. Johnstone and ford in 2010 found English professional bowlers to be faster when compared to batsmen in a Run-a-three sprint test [1].

Run-a-three Test can be tested over the player in cricket in order to know the speed and agility as well as to correct the method to steal a quick single between the wickets.

When it comes to batting in cricket usually the batting orders are settled up as per 3 categories by the coach of the respective team. This batting orders are divided into 3 subgroups like, Upper order of batting, Middle order of batting and lower order of batting.

The whole cricketing team is divided under this 3 orders as per their playing abilities for example, Upper (Top) batting order suggests a pair of openers and other 2 batsmen come right after the opening pair if the wickets are fallen down, middle order suggests the batsmen who are coming after the Upper orders which are playing multiple roles in cricket like Wicket-Keeper and All-Rounders, and the Lower order batsmen termed as tail enders in cricket which are usually bowlers who have to bat if the team struggles to rotate their strike. Comparison of batsmen and bowler in a Run-a-three Test is done because sometimes bowlers which are down in the batting order have to come and bat if the Upper order batter fails to stay for longer duration. Aim of the study is to compare the performance in cricketers by using the run-a-three test. Objectives of the study are; to assess the performance of the batsmen as well as bowlers between the wickets and to evaluate the results of the run-a-three test by comparing between the batsmen and the bowlers.

Materials and Methods

- Source of data
- Lalbhai Contractor Cricket Stadium
- Srimad Rajchandra School of Sports
- Study design - Cross-Sectional Study
- Sample Size - 80 (Calculated by using the G*Power software)
- Study population - Cricket Players
- Sampling method - Purposive sampling
- Material used

- **Stopwatch**
- Non-slip running surface
- Tape
- Cone markers
- Bat
- Pads
- Gloves
- Helmet/Cap (Optional)
- Inclusion and Exclusion Criteria:

- **Inclusion criterion**
- Batsman
- Bowlers
- Male
- Age- 18 and above

- **Exclusion criterion**
- Allrounders
- Females
- Age less than 18 years
- Athletes not willing to participate

Outcome Measures: The outcome measure of the study is to determine the speed, acceleration and agility of the player by calculating the “time” to complete the Run-a-Three Test.

Procedure

80 numbers of players out of which 40 will be batsmen and 40 will be bowlers. Testing was undertaken outdoor on a grass surface (5) and/or cricketing pitch. Measures should be marked out the test area with cone markers 17.68 meters (22 yards) apart as per authentic distance between the two creases. Explain the test procedure to the participants. (As per standard script) Standard script which is given below to use when explaining and introducing the test, particularly for those performing the test for the first time.

Introducing the test:

“You will be performing the Run-a-Three Test.”

"The aim of the test is to run as fast as possible back and forth between the creases/markers like you're running to get the 3 runs as fast as you can without getting run-out."
"It is important that you start being behind the crease."
"During the test, if you're not crossing/touching the crease then your test is over".
"During the test, if you're slipped while running or you feel breathlessness then you have to terminate your test".
"During the test, if you lost your bat while running then you have to terminate the test".
"As we are recording and noting the taken time for completing the test so, as said earlier that you have to run as fast as you can."
"This is an on-field performance test which simulates the in game successive quick 3 run, so you will need to push yourself as hard as you can to get your best performance." "Do your best and good luck!".
A thorough warm up should be given, including some practice starts, accelerations and turns. The player needs to be equipped with pads, gloves and a bat. (Helmet-optional). Timer should be started when the athlete starts running and stops when he completes the third run. Both ends should be checked if the bat is crossed throughout the crease, if not, then the scores of the player is not considered and will be terminated from the test. If the player slips while running, then the scores of the player is not considered and will be terminated from the test. Scores (time measurements in seconds) will be noted in the recording sheet.

Methodology flow chart

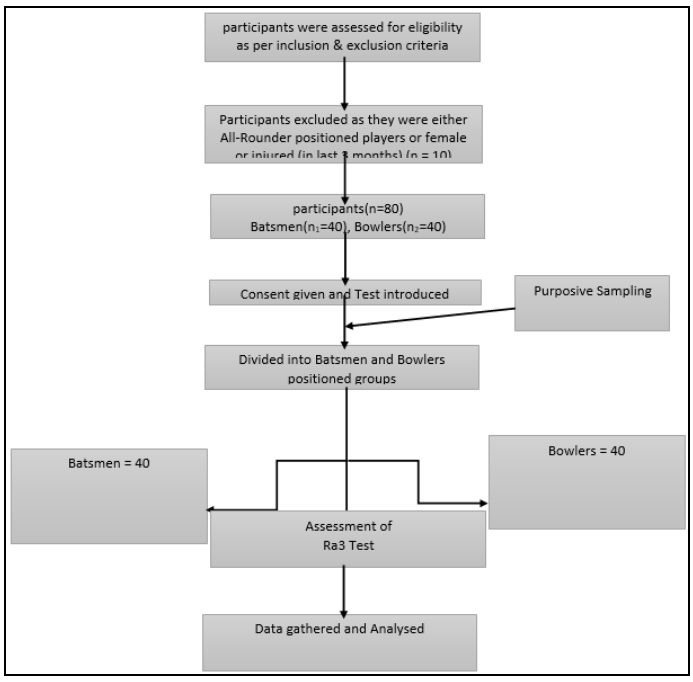

Fig 1

Test Layouts

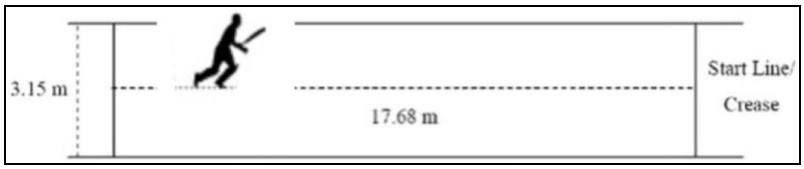

Fig 2: Test layout-1 (measurement of the pitch to perform the test)

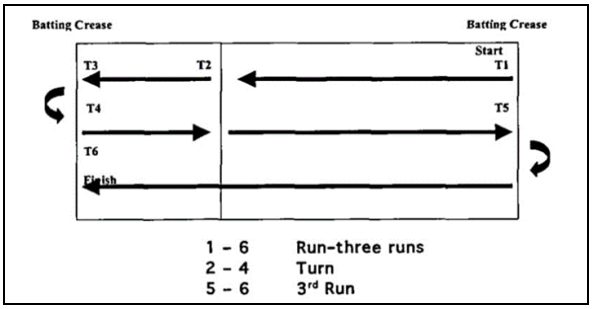

Fig 3: Test layout-2[(2)]

Fig 4: Measuring tape and cone markers

Fig 5: Testing equipment

Fig 6-7: Starting Position for the test

Fig 8: Beginning of the test

Fig 9: During the test

Fig 10: Player is approaching towards the crease during Ra3 test

Fig 11: Player is reaching towards the crease to complete the test.

Data analysis and Results

The data obtained were analysed with IBM SPSS v16® statistical software.

Table 1: Group statistics for Time taken of group 1(Batsmen) and group 2(Bowlers).

Group Statistics					
	group	N	Mean	Std. Deviation	Std. Error Mean
Time	1	40	12.0835	1.25402	.19828
	2	40	12.2980	1.02995	.16285

Table 2: Comparison between the significant difference of Time for group 1(Batsmen) and group 2(Bowlers).

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Time	Equal variances assumed	3.585	.062	-.836	78	.406	-.21450	.25658	-.72532	.29632
	Equal variances not assumed			-.836	75.161	.406	-.21450	.25658	-.72562	.29662

Above mentioned table suggests parametric test which is T independent test at 95% of confidence interval. There were statistically "NO" significant differences found as per time taken for completing test between group 1 (Batsmen) (sig. difference = 0.406) and group 2 (Bowlers) (sig. difference = 0.406)

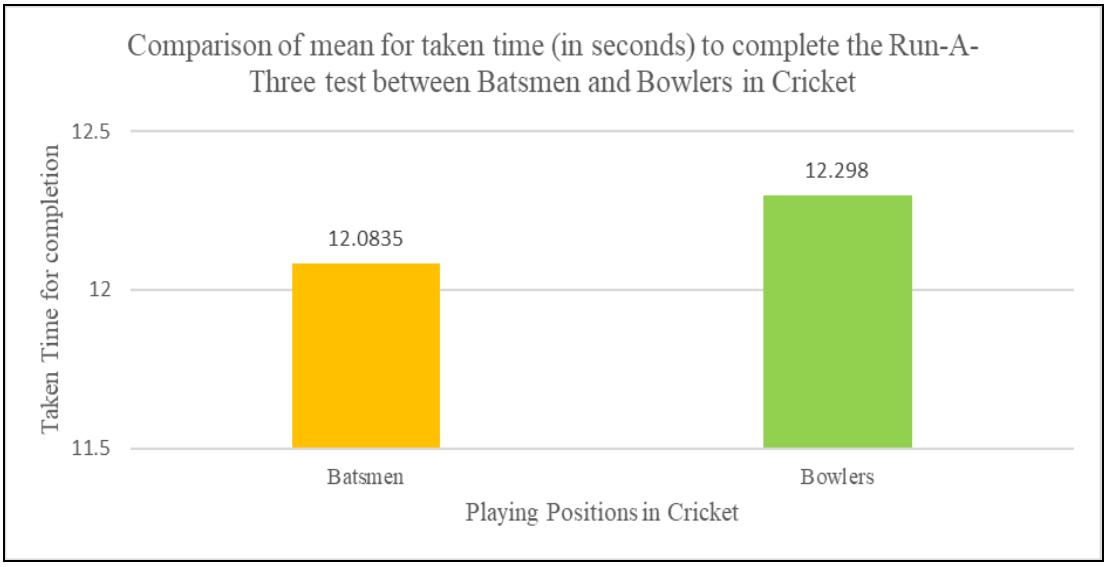

Fig 12

This bar chart shows the comparative results of mean for taken time to complete the Run-A-Three test where the mean of bowlers is slightly higher than the mean of batsmen.

Discussion

Ra 3 test is basically time and field-based test which can be used to determine the performance by overviewing fitness and agility component in study. The Run-a-three test stimulates the movement of completing "3 repetitive quick singles and/or runs" on a full-length cricket pitch.

Within a cricket team, players have particular roles they perform, which dictates what the players' primary responsibilities are during a game. Cricketers can be defined as batsmen, bowlers, and fielders. All players will bat and field; however, only select players will bowl. A batsman's primary responsibility is to score as many runs as possible in the allocated overs. For example, in T20 cricket, this requires batsmen to attempt scoring shots which accumulate multiple runs (i.e., 4's and 6's), while also ensuring that some form of run is scored off each delivery [6].

A bowler's primary goal is to dismiss the batsman for as few runs as possible, and fielders are expected to aid in this task (e.g., catching a ball on the full or performing a run-out). Out of all cricket bowlers (e.g., fast and spin bowlers), fast bowlers will typically perform a greater number of sprint efforts within a match [7]. Due the greater volume of high-intensity running performed by this sub-group of cricketers, this could have implications upon their quick single performance. More sprinting in the field could provide a training effect that may influence running between the wickets when batting. Therefore, despite batsmen typically possessing greater skill in accumulating runs and potentially completing a greater number of quick singles, fast bowlers could be more efficient in the mechanisms of a quick single [8].

With the use of technology and television replays the run-out decision in test and one-day international matches is no longer made by an umpire on the field of play but is referred to third umpire to make decision. If there was any doubt about the decision, he had to give the batsmen the benefit of doubt. However, the third umpire has the benefit of replay from multiple angles, slow motion, single frame advancement and freeze frame to assist in making decision. This resulted in small differences in time being vital in determining whether a batsman has been run out or not.

As this study depended upon time taken to complete the test, the performance checked and noted as per players capability to complete it as fast as possible by equipping the cricketing equipment. It is obvious that running speed is main contributor to player's performance in running between the wickets. The ability to run with pads on and the techniques of running between the wickets play a key role in elite performance. Run-a-three is potentially valuable test for assessing cricket specific speed. A more specific change of direction speed test that has been used for cricketers named as run-a three test [3].

In this study test on subjects were supposed to examine the performance by including time as a component to complete the ra3 test.

For this study 90 adult cricketers as participants were taken. As mentioned in methodology, the inclusion and exclusion criteria were strictly followed in accordance of the sampling. As per the purposive sampling 80 participants were eligible for ra3 test. This test not only assesses speed but also technique on the turn and running the bat in at the end [3]. The subjects were also able to familiarize themselves with the test during warm-

up sessions. Appropriate markings were done and they were instructed to sprint as fast as they could to complete 3 runs, running from "crease" to "crease".

This study was done to observe and compare the performance level between batsmen and bowlers with the overall taken time for completion of the Run-a-Three test. In this study, cricket players were compared who were trained to play in proper playing positions which were batting position (batsmen) (group 1) and bowling position (bowlers) (Group 2). As mentioned in statistical analysis, for checking the significant difference of total taken time measurements in seconds, Independent T test as parametric test was used.

As per result, Independent Test at 95% of confidence interval, there was statistically no significant difference ($p>0.05$) found as per Total taken time to complete between batsmen (sig. difference = 0.406) and bowlers (sig. difference = 0.406).

There were two studies done on the physiological profile in the professional cricketers where series of field-based fitness assessment and body composition and/or anthropometric and skill related fitness assessments were noted. Results showed some positive physical fitness differences existed between playing positions as well as between professional and normal population cricket players [9, 10]. Still physiological profile for the cricketers not defined clearly where the performance differences fairly based on the playing position.

As compared to above noted study, this study showed the speed performance as per Run-a-Three test but not as the whole physiological profile in analysis.

There was one study done analysis of specific speed testing in cricketers where Run-a-Three test was used in it. Study stated that with use of time beams at the creases and between the testing area at specific places where speed was analysed. Test showed significant difference between where with bat and without bat run were done as well as 2 turns between the test were also noted with time and analysed [3].

As compared to above mentioned study, this study also checked the test as per time component but the overall test completion time was noted. Timing for 2 turns were not noted as the focus of this study was fairly based upon the completion of total taken time to complete the test between the groups of batmen and bowlers.

Also, in comparison with above noted study, this study was done with the use of the bat. Test participants were instructed to run by carrying the bat and test was analysed. There was another study noted the fastest technique to run between the wickets.

It stated that running between the wickets or making the quick single run could be done faster by carrying the bat with the dominant hand rather than carrying the bat in the non-dominant hand [5].

As compared to above-described study, the participants were not instructed to carry in specific/dominant hand. They were strictly instructed to carry the bat but they were also allowed to carry it however they like regardless of the dominancy of the hand because the goal was to get the best performance from the participants and noted no significant difference in comparison of completion of test in time between batsmen and bowlers.

In the scenario of the speed analysis, there was one study stated that performance of Run-a-Three test as per speed analysis showed significant difference between batsmen and bowlers. It concluded that performance in the regards of the speed was noted faster in batsmen with the comparison of bowlers. The mean difference batsmen and bowlers for taken time to complete the test were 9.70+0.47 and 10.43+0.73 respectively [1].

With the comparison of above-mentioned study this study showed no significant difference in the performance in a taken time component look out between batsmen and bowlers. As bar chart as well as group statistics in result showed the mean difference between batsmen's and bowlers' performance for completing the test in seconds which were noted with means and standard deviation 12.08+1.25 and 12.29+1.29 respectively.

As participants were informed and instructed with the test even though they were familiar with the in game 3 run technique to score three runs, so the performance in this test was fairly depended upon participants' capability in a skill related component which noted as a speed in seconds.

For the betterment of the test in the field of cricket, future scope should be done by calculating the time for 2 turns between the creases be measured and the reliability and validity should be found out in the performance criteria.

Conclusion

This study states that there is no significant difference in a lookout of performance between taken time for completing the Run-a-Three test by the Batsmen and the Bowlers.

A significant difference could have been found as per performance in Professional Cricket players while they are specifically divided in their wider roles like Batsmen, Keeper-Batsmen (Wicketkeeper-Batsmen), All-Rounders (who can bowl and the bat efficiently), Spin Bowlers, Fast Bowlers.

Future scope

For the future scope in this study, time and speed gates can be placed at the creases and motion analysis sensors with portable EMG markers can be placed for measuring the muscular activities, motion analysis as well as performance analysis as per the set-ups.

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Conflicts of interest
None declared

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