A Comparative Study of Core-Stability among the Medium Pace Bowlers of Various Age Groups

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Abstract

The core strength of an athlete could be a very strong reason for stability and effectiveness as core exercises train the muscles of pelvis, lower back, hips and abdomen to contract and relax in harmony, which ultimately leads to better balance and stability. The objective of this study was to compare the core - stability of medium pace bowlers of various age groups, representing the national teams in Under 19, Under 25 and Ranji trophy. A total of 150 medium pace bowlers (50 of Under 19 age group, 50 from Under 25 age group and 50 from Ranji trophy category) from 5 teams namely Madhya Pradesh, Uttar Pradesh, Rajasthan, Railway and Vidarbha were selected as subjects for the study. Static hold test was selected and administered as criterion measure for the study. Findings revealed that Under 19 group performed best with a mean of 143.22 sec. while the Ranji Bowlers performed last with mean of 126.6. A significant difference (F = 5.083, p value = 0.004) was found. The LSD found Under 19 group significantly better than Ranji bowlers (p value =0.001). Even Under 25 found to be significantly better with p value 0.16, than Ranji bowlers. No significant difference existed among Under 19 and Under 25 group.

Keywords: Core-stability, bowling, static-hold, physical fitness, medium pace.

INTRODUCTION

The demand of real fast bowlers has always been in India, at national, state and university level. The necessity of good fast bowlers is really important for early break-through, building pressure and to keep the spirit and beauty of the game alive. It is unavoidable to pay attention toward talented potentials for fast bowling in cricket, which is having abilities to bowl fast. The need of the hour is to search the variables on which bowling speed of the bowlers depend which can ultimately lead to the further spotting, training and performance of genuine fast bowlers in the country.

There can be many physical, physiological, anthropometric, technical and psychological variables which ultimately affect the bowling performance in cricket. When it comes to fast bowling the speed of bowling is one of the most important and charming factor influencing and motivating the fast bowler. Among a lot many variables there is core stability or core strength of the bowlers which is variable to study among many physical variables. The core strength of an athlete could be a very strong reason for stability and effectiveness as core exercises train the muscles of pelvis, lower back, hips and abdomen to contract and relax in harmony, which ultimately leads to better balance and stability. The fast bowling demands strength from pelvis, lower back and abdomen to deliver the bowl and core stability plays an important role in coordinated result of speed enhancement and consistent speed over a long period of time.

Hung, Chung and Wah Yu [1] investigated effect of core strength on running endurance and came to conclusion that 8 week core training may improve endurance and running economy. The core group of muscles connects the upper body and lower body and makes

them work in harmony and balance, deriving great results in terms of economy, balance and speed.

The objective of this study is to compare the core - stability of medium pace bowlers of various age groups, representing the national teams in Under 19, Under 25 and Ranji trophy, which will provide a data base for the core strength at national level and variation of core strength among the groups. The significance of the study could be justified for selection, training and performance indicator at national level medium pace bowlers.

METHODOLOGY

For a comparative study of single variable that is core – stability, the subjects selected were medium pace bowlers representing or probable's of their teams from Madhya Pradesh, Uttar Pradesh, Rajasthan, Railways and Vidarbha in the categories of Under 19, Under 25 and Ranji trophy. 10 medium pace bowlers from each category that is (Under19,Under 25 and Ranji trophy) from each team made a significant sample size of 50 medium pace bowlers in each group and a total of 150 medium fast bowlers contributed for the study.

The criterion measure selected for measuring the core stability was static hold. The reliability coefficient 0.83 was found significantly satisfactory for the study. The detailed description of the static hold test for measuring core stability is as following:

Description of static hold test to measure core stability

This is a test to determine a player's core stability. To start the player assumes a prone position on the floor, they support the weight of their body by balancing on their elbows and toes, elbows must be positioned on the floor directly below the shoulders. The body position must be held straight there should not be excessive lordosis in the lumbar area and the hips should not be flexed. The score was recorded in seconds. Once they achieve the following position the time starts and the test is terminated when:

- The player cannot maintain the correct position.
- Shifts his body weight on the elbows or toes.

Players were given two warnings regarding incorrect body position before a test is terminated.

Statistical Techniques used to analyze the data is the following.

1. Descriptive statistics, showing mean and standard deviation.
2. ANOVA, to find the difference among the means.
3. L.S.D. method was employed to find out the exact location of difference in means.
4. The level of significance was taken at 0.05.

FINDINGS

The statistical analysis of collected data revealed that not all the groups were same in core stability. The mean scores and standard deviations have been shown in table-1

Table – 1: Mean Scores and Standard Deviations of U-19, U-25, & Ranji Level Fast Bowlers on Core Stability

Age Groups	Mean	Standard Deviation
Under-19	143.2200	27.86358

Under-25	138.9000	20.95403
Ranji	126.6000	26.58141

Table-1 reveals that the mean score of Ranji is the lowest while Under-19 has the highest mean value on Static Hold. Standard deviation on Core Stability Under-25 has the lowest value while Under-19 has the highest standard deviation in scores.

Figure - 1 The graphical Mean Scores and Standard Deviations of U-19, U-25, & Ranji Level Fast Bowlers on Core Stability
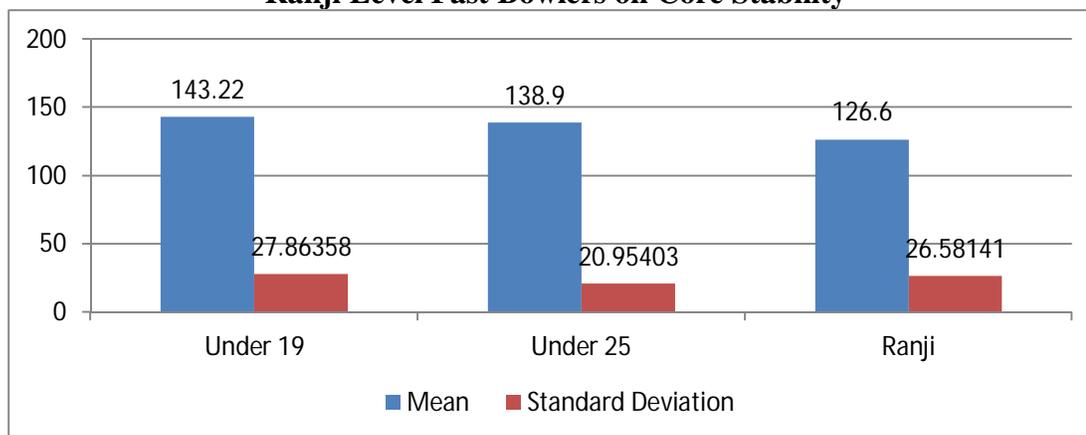
The one way analysis of variance on Core Stability among the male cricket fast bowlers of various cricket associations is presented in table- 2

Table – 2: One Way Analysis of Variance (ANOVA) of Scores on Core Stability among Various level (U-19, U-25 & Ranji) Fast/Medium Pace Bowlers

Source Of Variation	Sum Of Square	df	Mean Sum Of Square	F- Ratio Calculated	F- Ratio Tabulated	Sig.(p value)
Between Groups	7436.280	2	3718.140	5.803	3.06	.004
Within Groups	94179.080	147	640.674			

The table-2 clearly shows that the calculated F-ratio (5.803) is more than the tabulated value of F (3.06) at 0.05 levels. Therefore it is evident that significant difference exits among the mean values of Core Stability of cricket fast/medium pace bowlers of various cricket associations.

To find the exact location of difference where F-Ratio is significant, pair wise mean compression (Post-Hoc) was done by using least significant difference test. Data pertaining to this has been presented in table-3

Table -3: Post Hoc (LSD) on Core Stability among U-19, U-25, & Ranji level Fast Bowlers

Dependent Variable	(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig. (p value)
Core Stability	UNDER-19	UNDER 25	4.32000	5.06231	.395
		RANJI	16.62000	5.06231	**.001***

		TEAM			
	UNDER-25	RANJI TEAM	12.30000	5.06231	**.016***

*Significant at 0.5 level

The table-3 shows the pair-wise mean comparison, Post-hoc by LSD of the variable Core Stability among the fast bowlers of different levels. The p values which are less than 0.05 in bold figures with * denote the significant difference between the mean values at 0.05 level of significance. It can be noted from the table that the mean value of Under-19 and Under-25 group is significantly higher than the mean values of Ranji group on this variable. No significant difference exists between means of Under-19 and Under-25.

DISCUSSION OF FINDINGS AND CONCLUSIONS

This is evident from table 1,2 and 3 that the core stability is decreasing as we move from Under19 category through to Under 25 and Ranji level medium fast bowlers. The mean scores of Ranji level fast bowlers is 126.6 seconds is though a reasonably good time to hold the static contraction of the core muscles but its significantly less than that of the Under 19 group mean value of Under 19 group having a score of 143.22 which is excellent time for the test. Therefore it can be concluded that a range of 126.6 to 143.22 could be a reasonable score for the selection of the talent in fast bowling. The reason for the decreasing of score as we move from Under 19 group to Ranji group, might be the decreasing fitness workout for the core group muscles. The other reasons could be more emphasis of the senior players on technical and tactical parts of the bowling departments and match temperament and wicket taking skills or precision of bowling.

RECOMMENDATIONS

On the basis of the above findings it is clear that the core stability is decreasing as we move from the Under 19 group through to Under 25 and Ranji level medium pace bowlers. On behalf of results of the study the following recommendations can be made:

1. A detailed study with larger sample size can to done and norm for the medium fast bowlers can be prepared.
2. An experimental study can be taken to Understand the effect of core stability and bowling speed.
3. A study of relationship between core stability and bowling speed is recommended for review of the present study.

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