



Construction of Physical Fitness Test Norms for Under 19 Cricketers in Central Zone

KEYWORDS

Central Zone, Fitness Norms, Junior Cricket Players

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ABSTRACT

The aim of the study was to construction of physical fitness test norms for under19 cricketers in Central Zone (Vidarbha Cricket Association, Rajasthan Cricket Association, Madhya Pradesh Cricket Association, Chhattisgarh State Cricket Sangh and Uttar Pradesh Cricket Association) between 17-19 years of age were randomly selected. The performance of under 19 male cricket players in physical fitness test of deferent variables of cricket were chosen as the criterion measures. The pre test only random group design was used for analysis of the data. Means and Standard Deviation were calculated for all subjects and deferent fitness test. Statistically Percentile Scale have been classified into five intervals Excellent (above 80%), Very Good (79% - 60%), Good (59% - 40%), Average (39% - 20%) and Below Average (below 20%) then Z-Scores Scale have been classified into five grades i.e. Excellent, Very Good, Good, Average and Below Average constructed for the both statically tests.

INTRODUCTION

The present study was undertaken to construction of physical fitness test norms for under19 cricketers in Central Zone (VCA, RCA, MPCA, CSCS and UPCA) serves this purpose in a meaningful way. Anaerobic capacity, muscular strength, muscular endurance, power, speed, agility, core stability and anthropometric measure as dependent variables and various test performances as independent variables. The goal of this research was to provide a better vision to the experts in field of cricket. This research will be also provide beneficial information for cricketers and strength and conditioning coaches, as it will detail physical fitness test norms that should be made specifically for central zone cricketers.

METHODS: Subjects; one seventy three (n = 255) junior level under 19 male cricket players of Central Zone were randomly selected. The methodology and procedure used in this study were approved by NCA (National Cricket Academy). All subjects received a clear explanation of the study, including the risk and benefits of participation were obtained prior to testing. **Criterion Measures;** the performance of junior level under 19 male cricket players in physical fitness test of deferent variables of cricket namely, Anthropometric Test (height, weight & seven sites of skinfold), Power Test (vertical jump), Speed Test (20m & 40m Sprint), Agility Test (run a three), Anaerobic Capacity (sprint repeat), Strength

Test (squats, pushups & chin ups) & Core Stability, Balance, & Static Strength (prone hold) were chosen as the criterion measures. The pre test only random group design was used for analysis of the data. **Testing Procedure;** three days, six sessions were used for players of each cricket association for testing during summer coaching camps or off session camps of various cricket associations of central zone. All the cricket related physical fitness test was administer on different cricket field, indoors & gym, prior to data tasting, all players completed a standardized warm-up. This consisted of five minutes of jogging followed by five minutes of dynamic stretching of the full body and specific warm up before deferent fitness test. **Statistical Analyses;** means and standard deviation were calculated for all subjects and deferent fitness test. Statistically Percentile scale have been classified into five intervals Excellent (above 80%), Very Good (79% - 60%), Good (59% - 40%), Average (39% - 20%) and Below Average (below 20%) then Z-Scores scale have been classified into five grades i.e. Excellent, Very Good, Good, Average and Below Average constructed for the both statically tests. All statistical analyses were processed using the Statistical Package for Social Sciences (SPSS) version 20.0 for Windows and Microsoft Excel 2013.

RESULTS: Mean and standard deviations of the study test items are presented in **Table 1**.

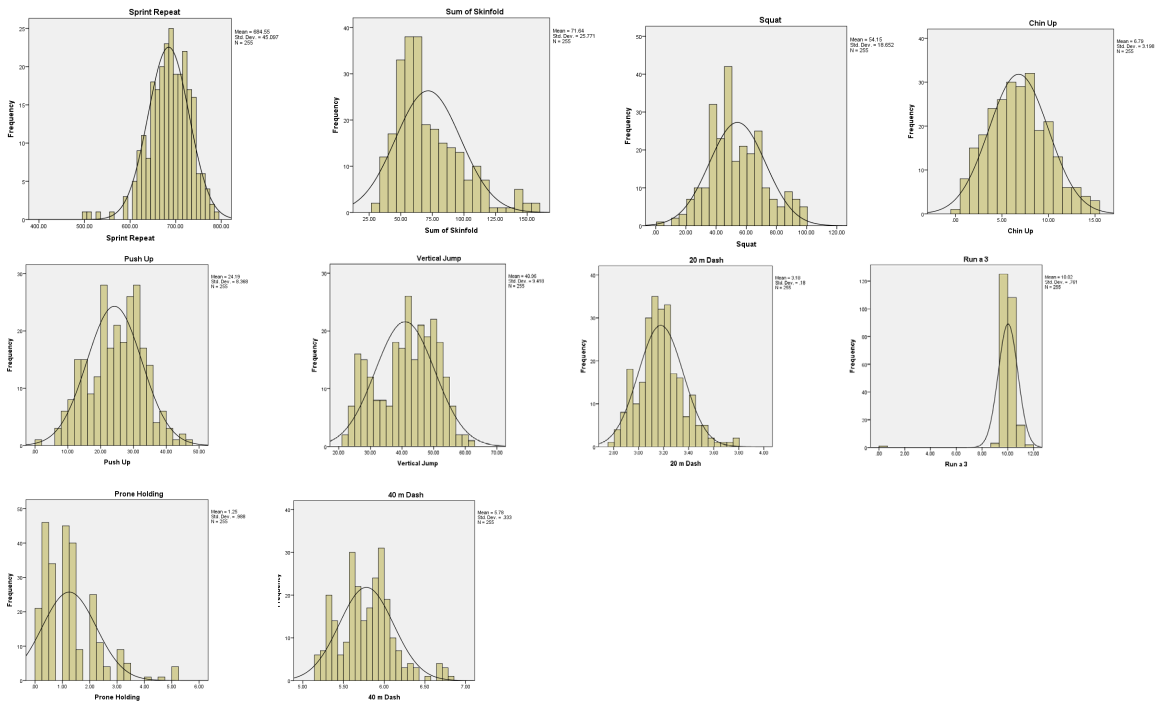
Table 1: Mean and Standard Deviation of test items of under 19 junior male of central zone

Test Items	SumofSkin Fold	Sprint Repeat	Chin Up	Push Up	Squats	Vertical Jump	RunA Three	20mt Sprint	40mt Sprint	Prone Hold
Mean	71.64	684.55	6.79	24.19	54.15	40.96	10.06	3.18	5.78	1.25
SD	25.77	45.10	3.20	8.37	18.65	9.42	0.43	0.18	0.33	0.99

Means and Standard Deviation of different age group have been shown in above table 1 and different graph shown represent test variables mean and standard deviation be-

low from figure 1 represent under 19 junior level male cricket players in central zone in India.

Figure No.1: Mean and SD of all tests of under 19 male cricket player of central zone



Percentile Scale; the percentile scale for under19 junior male cricket players of central zone as employed in this study. Percentile Scale of physical fitness test has been presented in the **Table 2**.

Table 2: Percentile Scale of the under19 junior male cricket players of central zone

Percentile Score	Sum of Skinfold	Sprint Repeat	Chin Ups	Push Ups	Squats	Vertical Jump	Run A Three	20m Dash	40m Dash	Prone Hold
100	30	785	15	47	98	62	8.78	2.64	4.78	5.01
90	42	740	11	34	87	51	9.20	2.81	5.15	2.39
80	50	725	9	31	70	49	9.40	2.91	5.24	2.03
70	54	712	8	29	65	46	9.72	3.07	5.46	1.42
60	59	700	8	26	58	44	9.86	3.14	5.61	1.26
50	64	690	7	24	51	42	10.06	3.21	5.77	1.08
40	69	675	6	22	48	40	10.30	3.28	5.95	0.55
30	81	660	5	19	42	38	10.38	3.34	6.01	0.43
20	93	650	4	15	39	36	10.73	3.48	6.28	0.31
10	108	630	3	12	32	29	11.04	3.59	6.55	0.23
0	159	555	0	1	3	22	11.93	3.79	6.81	0.09

Table 2 shows that cricket related different variable physical fitness test result of under 19 junior male cricket players of central zone says, in the Skinfold Test highest performance scores were 30mm and lowest performance score were 159mm, in the Sprint Repeat Test highest performance scores were 785mt and lowest performance score were 555mt, in the Chin Up Test highest performance scores were 15 and lowest performance score were 0, in the Push Up Test highest performance scores were 47 and lowest performance score were 1, in the Squats Test highest performance scores were 98 and lowest performance score were 3, in the Vertical Jump Test highest performance scores were 62cm and lowest performance score

were 22cm, in the Run A Three Test highest performance scores were 8.78sec and lowest performance score were 11.93 sec, in the 20M Dash Test highest performance scores were 2.64 sec and lowest performance score were 3.79 sec, in the 40M Dash Test highest performance scores were 4.78 sec and lowest performance score were 6.81 sec., at last for the Prone Hold Test highest performance scores were 5.01 min and lowest performance score were 0.09 min respectively.

Percentile grading scale of physical fitness test has been presented in the **Table 3**.

Table 3: Percentile Grading Scale for under 19 male cricket player of central zone under normal distribution

Percentile Grade	Excellent	Very Good	Good	Average	Below Average
Scale	above 80%	79% - 60%	59% - 40%	39% - 20%	below 20%
Skin Fold (mm)	below 50	50 - 59	60 - 69	70 - 93	above 93
Sprint Repeat (mt)	above 725	720 - 700	695 - 675	670 - 650	below 650
Chin Up (no)	above 09	09 - 08	07 - 06	05 - 04	below 04
Push Up (no)	above 31	31 - 26	25 - 22	21 - 15	below 15
Squats (no)	above 70	70 - 58	57 - 48	47 - 39	below 39
Vertical Jump (cm)	above 49	49 - 44	43 - 40	39 - 36	below 36
Run A Three (mt)	below 9.40	9.40 - 9.86	9.87 - 10.30	10.31 - 10.73	above 10.73
20m Dash (mt)	below 2.91	2.91 - 3.14	3.15 - 3.28	3.29 - 3.48	above 3.48
40m Dash (mt)	below 5.24	5.24 - 5.61	5.62 - 5.95	5.96 - 6.28	above 6.28
Prone Hold (sec)	above 122	122 - 76	75 - 33	32 - 17	below 17

Table 3 shows that the performance of all test of under 19 male cricket players of central zone has been divided into five categories namely, excellent (above 80%), very good (79% - 60%), good (59% - 40%), average (39% - 20%) and below average (below 20%) were below result of Skin Fold Test results were below 50mm, 50mm to 59mm, 60mm to 69mm, 70mm to 94mm and above 93mm respectively. In Sprint Repeat Test result were above 725mt, 720mt to 700mt, 695mt to 675mt, 670mt to 650 and below 650mt respectively. In Chin Up Test result were above 09, 09 to 08, 07 to 06, 05 to 04 and below 04 respectively. In Push Up Test result were above 31, 31 to 26, 25 to 22, 21 to 15 and below 15 respectively. In Squat Test result were above 70, 70 to 58, 57 to 48, 47 to 39 and below 39 respectively. In Vertical Jump Test result were above 49cm, 49cm to 44cm, 43cm to 40cm, 39cm to 36cm and below

36cm respectively. In Run a Three Test result were below 9.40sec, 9.40sec to 9.86sec, 9.87sec to 10.30sec, 10.31sec to 10.73sec and above 10.73sec respectively. In 20mt Dash Test result were below 2.91sec, 2.91sec to 3.14sec, 3.15sec to 3.28sec, 3.29sec to 3.48sec and above 3.48sec respectively. In 40mt Dash Test result were below 5.24sec, 5.24sec to 5.61sec, 5.62sec to 5.95sec, 5.96sec to 6.28sec and above 6.28sec respectively. In Prone Hold Test result were above 122sec, 122sec to 76sec, 75sec to 33sec, 32sec to 17sec and below 17sec respectively.

The Z-Score and grading scale for under 19 junior male cricket players of central zone as employed under normal distribution in this study. Z-Score and grading scale of physical fitness test has been presented in the Table 4.

Table 4: Z-Score Scale grading for under 19 male cricket player of central zone under normal distribution

Z-Score Scale	Excellent	Very Good	Good	Average	Below Average
Skin Fold (mm)	below 25.27	25.27 - 56.20	56.20 - 87.13	87.13 - 118.06	above 118.06
Sprint Repeat (mt)	above 770	770 - 715	715 - 660	660 - 605	below 605
Chin Up (no)	above 13	13 - 10	09 - 06	05 - 02	below 02
Push Up (no)	above 39	39 - 30	29 - 20	19 - 10	below 10
Squats (no)	above 88	88 - 66	65 - 44	43 - 22	below 22
Vertical Jump(cm)	above 58	58 - 47	46 - 35	34 - 23	below 23
Run A Three (mt)	below 9.29	9.29 - 9.80	9.80 - 10.31	10.31 - 10.82	above 10.82
20m Dash (mt)	below 2.85	2.85 - 3.07	3.07 - 3.29	3.29 - 3.51	above 3.51
40m Dash (mt)	below 5.18	5.18 - 5.58	5.58 - 5.98	5.98 - 6.38	above 6.38
Prone Hold (sec)	above 181	181 - 110	110 - 39	39 - 32	below 32

Table 4 shows that the performance has been divided into five categories under normal distribution namely, excellent, very good, good, average and below average. In Skinfold Test the performance under five categories were below 25.27mm, 25.27mm to 56.20mm, 56.20mm to 87.13mm, 87.13mm to 118.06mm and above 118.06mm respectively. In Sprint Repeat Test the performance under five categories were above 770mt, 770mt to 715mt, 715mt to 660mt, 660mt to 605mt and below 605mt respectively. In Chin Up Test the performance under five categories starting were above 13, 13 to 10, 09 to 06, 05 to 02 and below 02 respectively. In Push Up Test the performance under five categories were above 39, 39 to 30, 29 to 20, 19 to 10 and

below 10 respectively. In Squat Test the performance under five categories starting were above 88, 88 to 66, 65 to 44, 43 to 22 and below 22 respectively. In Vertical Jump Test the performance under five categories were above 58cm, 58cm to 47cm, 46cm to 35cm, 34cm to 23cm and below 23cm respectively. In Run a Three Test the performance under five categories starting were below 9.29sec, 9.29sec to 9.80sec, 9.80sec to 10.31sec, 10.31sec to 10.82sec and above 10.82sec respectively. In 20mt Dash Test the performance under five categories starting were below 2.85sec, 2.85sec to 3.07sec, 3.07sec to 3.29sec, 3.29sec to 3.51sec and above 3.51sec respectively. In 40mt Dash Test the performance under five categories

starting were below 5.18sec, 5.18sec to 5.58sec, 5.58sec to 5.98sec, 5.98sec to 6.38sec and above 6.38sec respectively. In Prone Hold Test the performance under five categories starting were above 181sec, 181sec to 110sec, 110sec to 39sec, 39sec to 32sec and below 32sec respectively.

DISCUSSION

This is one of the first studies to investigate physical fitness test norms specific for under 19 junior male cricketers of central zone. Furthermore, this is the first study to giving two grading scale under normal distribution (percentile & Z-score scale). Percentile Scales for all physical fitness test variables of under 19 junior male cricket players were constructed. Percentile Scale seems to be appropriate because the highest performance in physical fitness test receives the maximum scores whereas the lowest performance in the test items receives a score of 0. This type of scale is only suitable for the sample selected as in future an excellent player may exhibit better performance than the maximum performance of the scale in comparison to the given sample. In that case, still the performance will be given the maximum score. This seems to be lacuna in the percentile scale as this is only suitable for the given group and it does not take into consideration any performance i.e. either good or bad in future. Further, the other drawback noted in the percentile scale was that the similar performance credits different score which seems inappropriate.

Keeping the drawbacks of percentile scale in mind, it was thought appropriate to construct Z-Score scale. This scale is appropriate for all the test items as a specific performance got a specific score. However, it was noted that was a slight difficulty in giving at extreme ends of the scale because for a lowest performance in different variable scores could be credited. This happened because of the individual differences in body type, history of training, history of injury or illness and recovery pattern of the test as any performance cannot be change score in permissible outcomes of skin fold, prone hold and chin up test.

Keeping the drawback of percentile and Z-score scale in mind, it was thought appropriate to categories players into five grades/categories i.e. excellent, very good, good, average and below average. The result revealed that performance can be easily divided into five grades/categories without encountering any difficulty. Hence, grading under normal distribution proved to be the most suitable way of categorizing players as the drawback of the percentile and Z-score scale were eliminated. Keeping in educational reform in mind, there is a trend to award grades rather than the score in order to reduce stress and anxiety among the players. Thus, grading under normal distribution yielded a suitable scale.

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