A Comparative Study of Running Agility, Jumping Ability and Throwing Ability among Cricket Players

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Abstract

Thus the aim of this study was to determine the role of running agility, jumping ability and throwing ability among cricket players. To obtain data, the investigators had selected For the purpose of present study, One Hundred Seventy Seven (N=177), Male District, State and National Level Cricket Players between the age group of 21-25 years (Mean ± SD: age 22.89±1.76 years, height 176.04±4.18 cm, body mass 73.76±4.63 kg) were selected. The subjects were purposively assigned into three groups: Group-A: District Level Cricket Players (n₁=80); Group-B: State Level Cricket Players (n₂=65); Group-C: National Level Cricket Players (n₃=32). The Statistical Package for the Social Sciences (SPSS) version 14.0 was used for all analyses. In all the analyses, the 5% critical level (p<0.05) was considered to indicate statistical significance. The differences in the mean of each group for selected variable were tested for the significance of difference by One-way Analysis of Variance (ANOVA). For further analysis Post-Hoc Test (Scheffe's Test) was applied. It is concluded from the above findings that significant differences were found among district, state and national level cricket players on the sub-variables; running agility, jumping ability and throwing ability.

Introduction

Games of cricket, batting and bowling require a unique set of skills, and these are popular sports in several Western countries. Common exercises involved with cricket, batting and bowling include standing for long periods of time, bending, stooping and squatting. These exercises can burn a significant number of calories per hour and are a low to moderate-paced fitness activity. Anthropometry, Physical Fitness, and Physiological profiles play an important role in performance in various Sports and Games. Some games may not be affected by physique, physiological Profile or Physical fitness but they may be much affected by psychological Status such as Chess. Prediction in human performance and sports has long been a popular topic of debate. Is there such a thing as natural athletes? What physical attributes are most important for high level of athletic performance? Is it possible to measure athletic potential and predict future athletics success[1]? Early researcher operated on the theory that as there were tests for assessing the innate ability of intelligence in the cognitive domain, there must also be a way to measure innate motor ability in the psychomotor domain. Male players were taller, leaner, and had greater speed, agility, muscular power, and estimated maximal aerobic power than female players[2]. Based on our review in the study of physical and physiological attribute of female volleyball players, it was found that players of a higher skill level are taller, somewhat heavier, and have higher vertical jump values than players of a lower level[3]. This promoted us to undertake this study with the

aim to determine the running agility, jumping ability and throwing ability among cricket players.

Methodology

Selection of subjects: For the purpose of present study, One Hundred Seventy Seven (N=177), Male District, State and National Level Cricket Players between the age group of 21-25 years (Mean ± SD: age 22.89±1.76 years, height 176.04±4.18 cm, body mass 73.76±4.63 kg) were selected. The subjects were purposively assigned into three groups: Group-A: District Level Cricket Players (n₁=80), Group-B: State Level Cricket Players (n₂=65), Group-C: National Level Cricket Players (n₃=32)

Subject's Demographics of District Level Cricket Players (n₁=80), State Level Cricket Players (n₂=65) and National Level Cricket Players (n₃=32) are displayed in table-1.

Selection of Variables: With the above criteria's in mind, following the following variables was selected for the present study: Running Agility and Jumping Ability, Throwing Ability

Statistical Technique Employed: The Statistical Package for the Social Sciences (SPSS) version 14.0 was used for all analyses. In all the analyses, the 5% critical level (p<0.05) was considered to indicate statistical significance. The differences in the mean of each group for selected variable were tested for the significance of difference by One-way Analysis of Variance (ANOVA)

(ANOVA). For further analysis Post-Hoc Test (Scheffe's Test) was applied.

Results and Discussion

It can be judged from table 2 that significant differences were found with regard to the sub-parameter Running Agility among District, State and National level Cricket Players as the P-value (Sig.) .000 was found smaller than 0.05 level of significance (P<0.05). Since the obtained F-ratio 118.994 was found significant, therefore, Scheffe's post-hoc test was employed to study the direction and significance of differences between paired means among District, State and National level Cricket players on the sub-parameter Running Agility. The results of Scheffe's post hoc test have been presented in Table-3.

From table 3, the following conclusions can be drawn: i. It has been observed from the table-3 that mean difference between District and State level Cricket Players was found .82221[*]. The State level Cricket Players (16.7615) had exhibited significantly better on Running Agility than their counterpart District level Cricket Players (17.5838). ii. The mean difference between District and National level Cricket Players was found 1.73062[*]. The National level Cricket Players (15.8531) had exhibited significantly better on Running Agility than their counterpart District level Cricket Players (17.5838). iii. The mean difference between State and National level Cricket Players was found .90841. The National Level Cricket Players (15.8531) had exhibited significantly better on Running Agility than their counterpart State level Cricket Players (16.7615). The graphical representation of responses has been exhibited in (figure-1).

Table-1
Subject's Demographics of District Level Cricket Players (n_1=80), State Level Cricket Players (n_2=65) and National Level Cricket Players (n_3=32).

Variables	Sample Size (N=177)			
	Total (N=177)	District Level Cricket Players (n_1=80)	State Level Cricket Players (n_2=65)	National Level Cricket Players (n_3=32)
Age	22.89±1.76	22.88±1.183	22.72±1.18	23.25±1.060
Body Height	176.04±4.183	175.33±3.94	176.16±4.08	177.87±4.23
Body Mass	73.76±4.63	73.92±4.60	73.6±4.77	73.68±4.38

Table-2
Analysis of Variance (ANOVA) results with regard to Psychomotor Abilities among District, State and National level Cricket Players on the sub-parameter Running Agility

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value	P-value (Sig.)
Between Groups	72.877	2	36.438		
Within Groups	53.282	174	.306	118.994	.000
Total	126.159	176			

*Significant at 0.05. $F_{0.05}$ (2,174)

Table-3
Analysis of Scheffe's post hoc test with regard to Psychomotor Abilities among District, State and National level Cricket Players on the sub-parameter Running Agility

Means		Mean Difference	P-value (Sig.)
District Level Cricket Players (17.5838)	State Level Cricket Players (16.7615)	.82221[*]	.000
	National Level Cricket Players (15.8531)	1.73062[*]	.000
State Level Cricket Players (16.7615)	District Level Cricket Players (17.5838)	-.82221[*]	.000
	National Level Cricket Players (15.8531)	.90841[*]	.000
National Level Cricket Players (15.8531)	District Level Cricket Players (17.5838)	-1.73062[*]	.000
	State Level Cricket Players (16.7615)	-.90841[*]	.000

*Significant at 0.05

Discussions: The results of table 2 that significant differences were found with regard to the sub-parameter Running Agility among District, State and National level Cricket Players as the P-value (Sig.) .000 was found smaller than 0.05 level of significance (P<0.05). Since the obtained F-ratio 118.994 was found significant, therefore, Scheffe's post-hoc test was employed to study the direction and significance of differences between paired means among District, State and National level Cricket on the sub-parameter Running Agility. In table-3 paired mean value of national level cricket players was found better than other two groups thereby, showing that national level cricket players were exhibited significantly than the district and state level cricket players. The findings of the present study were supported by Kumar[4] who concluded in his study and they found that agility variable in relation to kho-kho players were better and it was significant difference as compare with kabaddi

players. Kumar[4] the result showed that there were significant difference in all the selected physical fitness components among boxers, wrestlers and judokas. The boxers showed a better capability in agility in relation to wrestlers.

It can be seen from table-4 that significant differences were found with regard to the sub-parameter Jumping Ability among District, State and National level Cricket Players as the P-value (Sig.) .000 was found smaller than 0.05 level of significance (P<0.05). Since the obtained F-ratio 76.751 was found significant, therefore, Scheffe's post-hoc test was employed to study the direction and significance of differences between paired means among District, State and National level Cricket players on the sub-parameter Jumping Ability. The results of Scheffe's post hoc test have been presented in table-5.
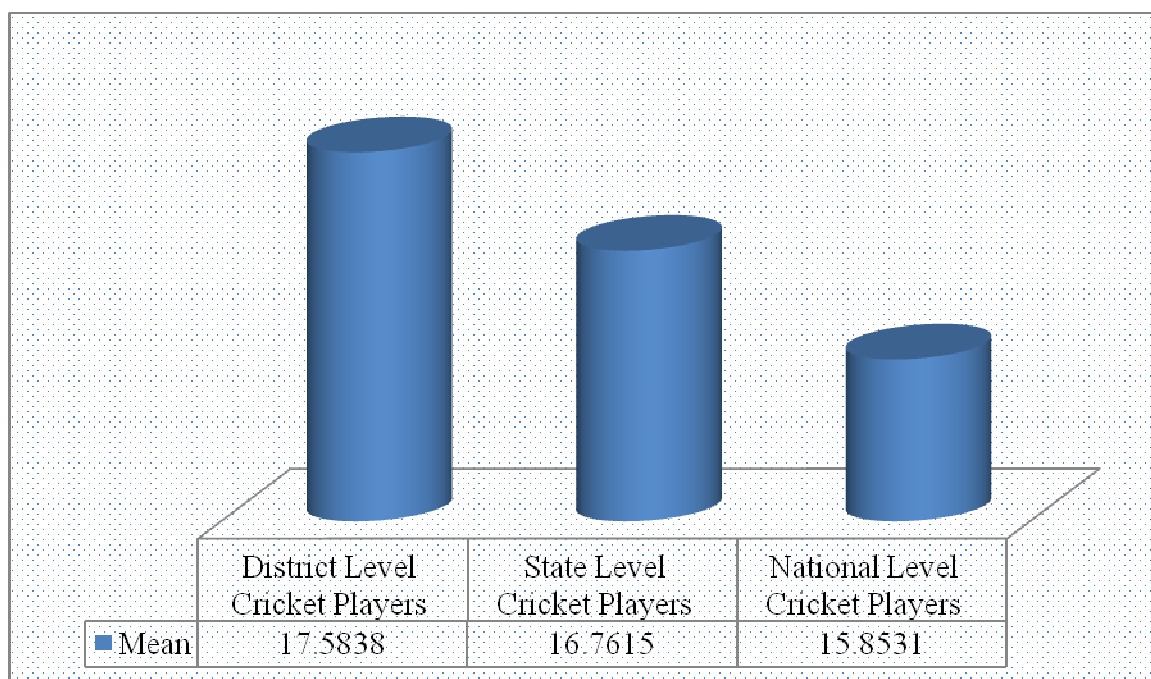

	District Level Cricket Players	State Level Cricket Players	National Level Cricket Players
■ Mean	17.5838	16.7615	15.8531

Figure-1
Graphical representation of mean scores with regard to Psychomotor Abilities among District, State and National level Cricket Players on the sub-parameter Running Agility

Table-4
Analysis of Variance (ANOVA) results with regard to Psychomotor Abilities among District, State and National level Cricket Players on the sub-parameter Jumping Ability

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value	P-value (Sig.)
Between Groups	4874.515	2	2437.257		
Within Groups	5525.462	174	31.756	76.751	.000
Total	10399.977	176			

*Significant at 0.05 $F_{0.05}$ (2,174)

Table-5
Analysis of Scheffe's post hoc test with regard to Psychomotor Abilities among District, State and National level Cricket Players on the sub-parameter Jumping Ability

Means		Mean Difference	P-value (Sig.)
District Level Cricket Players (41.5125)	State Level Cricket Players (46.6000)	-5.08750*	.000
	National Level Cricket Players (15.8531)	-14.55000*	.000
State Level Cricket Players (46.6000)	District Level Cricket Players (41.5125)	5.08750*	.000
	National Level Cricket Players (56.0625)	-9.46250*	.000
National Level Cricket Players (56.0625)	District Level Cricket Players (41.5125)	14.55000*	.000
	State Level Cricket Players (46.6000)	9.46250*	.000

*Significant at 0.05

From table 5, the following conclusions can be drawn: i. It has been observed from the table-5 that mean difference between District and State level Cricket Players was found 5.08750*. The State level Cricket Players (46.6000) had exhibited significantly better on Jumping Ability than their counterpart District level Cricket Players (41.5125). ii. The mean difference between District and National level Cricket Players was found 14.55000*. The National level Cricket Players (15.8531) had exhibited significantly better on Jumping Ability than their counterpart District level Cricket Players (41.5125). iii. The mean difference between State and National level Cricket Players was found 9.46250. The National Level Cricket Players (56.0625) had exhibited significantly better on Jumping Ability than their counterpart State level Cricket Players (46.6000). The graphical representation of responses has been exhibited in (figure- 2).

Discussions: The results of table-4 that significant differences were found with regard to the sub-parameter Jumping Ability among District, State and National level Cricket Players as the P-value (Sig.) .000 was found smaller than 0.05 level of significance (P<0.05). Since the obtained F-ratio 76.751 was found significant, therefore, Scheffe's post-hoc test was employed to study the direction and significance of differences between paired means among District, State and National level Cricket on the sub-parameter Jumping Ability. In table 5 paired mean value of national level cricket players was found better than other two groups thereby, showing that national level cricket players were exhibited significantly than the district and state level cricket players. The findings of the present study were supported by Theoharopoulos et al.[5] who concluded in his study that significant difference between soccer and basketball athletes at flexibility and jumping ability, mostly at the age of 15 years. In another study conducted by Singh[6] when comparison made on chin-up dimension, tribal male football players having more arm strength (M=17.84) compared to non-tribal players (M=13.23), indicates that both the groups are differ at 0.01 level of significance. When same groups again compared on vertical jump item i.e. explosive leg strength, result indicate that non-tribal players having better leg strength (M=25.78) compared to tribal players (M=22.41) 't' value is 3.56 shows that there is significant difference at .01 level.

It can be judged from table 6 that that significant differences were found with regard to the sub-parameter Throwing Ability among District, State and National level Cricket Players as the P-value (Sig.) .000 was found smaller than 0.05 level of significance (P<0.05). Since the obtained F-ratio 67.087 was found significant, therefore, Scheffe's post-hoc test was employed to study the direction and significance of differences between paired means among District, State and National level Cricket players on the sub-parameter Throwing Ability. The results of Scheffe's post hoc test have been presented in table-7.

From table 7, the following conclusions can be drawn: i. It has been observed from the table-7 that mean difference between District and State level Cricket Players was found 1.76058*. The State level Cricket Players (13.7231) had exhibited significantly better on Throwing Ability than their counterpart District level Cricket Players (11.9625). ii. The mean difference between District and National level Cricket Players was found 2.78750*. The National level Cricket Players (14.7500) had exhibited significantly better on Throwing Ability than their counterpart District level Cricket Players (11.9625). iii. The mean difference between State and National level Cricket Players was found 1.02692*. The National Level Cricket Players (14.7500) had exhibited significantly better on Throwing Ability than their counterpart State level Cricket Players (13.7231). The graphical representation of responses has been exhibited in (figure-3).
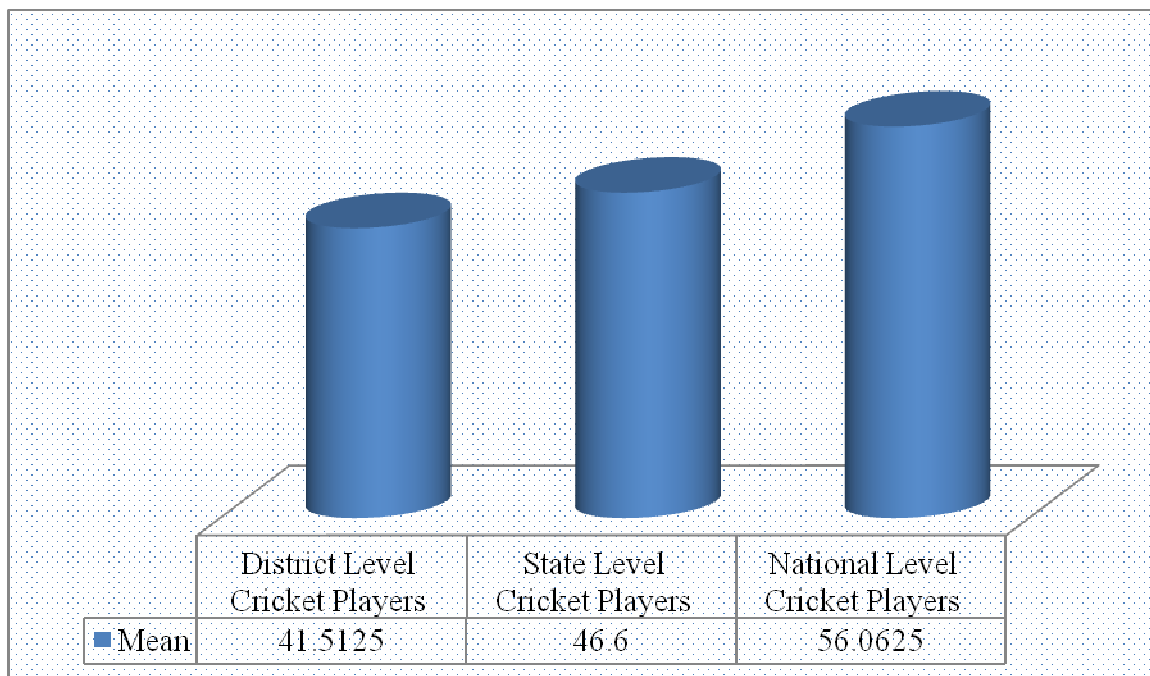
Figure-2
Graphical representation of mean scores with regard to Psychomotor Abilities among District, State and National level Cricket Players on the sub-parameter Jumping Ability

Table-6
Analysis of Variance (ANOVA) results with regard to Psychomotor Abilities among District, State and National level Cricket Players on the sub-parameter Throwing Ability

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value	P-value (Sig.)
Between Groups	215.837	2	107.919	67.087	.000
Within Groups	279.903	174	1.609		
Total	495.740	176			

*Significant at 0.05 $F_{0.05}$ (2,174)

Table-7
Analysis of Scheffe's post hoc test with regard to Psychomotor Abilities among District, State and National level Cricket Players on the sub-parameter Throwing Ability

| Means		Mean Difference	P-value (Sig.)
District Level Cricket Players (11.9625)	State Level Cricket Players (13.7231)	-1.76058[*]	.000
	National Level Cricket Players (14.7500)	-2.78750[*]	.000
State Level Cricket Players (13.7231)	District Level Cricket Players (11.9625)	1.76058[*]	.000
	National Level Cricket Players (14.7500)	-1.02692[*]	.001
National Level Cricket Players (14.7500)	District Level Cricket Players (11.9625)	2.78750[*]	.000
	State Level Cricket Players (13.7231)	1.02692[*]	.001

*Significant at 0.05
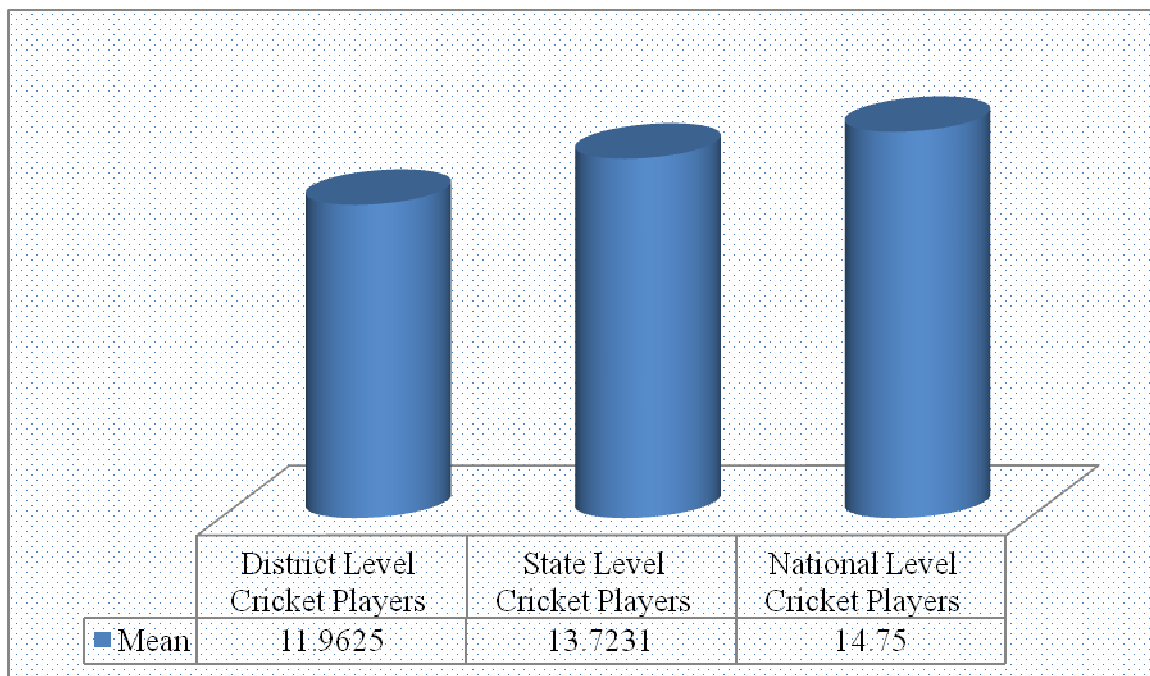
Figure-3
Graphical representation of mean scores with regard to Psychomotor Abilities among District, State and National level Cricket Players on the sub-parameter Throwing Ability

Discussions: The results of table 6 that that significant differences were found with regard to the sub-parameter Throwing Ability among District, State and National level Cricket Players as the P-value (Sig.) .000 was found smaller than 0.05 level of significance (P<0.05). Since the obtained F-ratio 67.087 was found significant, therefore, Scheffe's post-hoc test was employed to study the direction and significance of differences between paired means among District, State and National level Cricket on the sub-parameter Throwing Ability. In table 7 paired mean value of national level cricket players was found better than other two groups thereby, showing that national level cricket players were exhibited significantly than the district and state level cricket players. The findings of the present study were supported by Thakur et al.[7] they were concluded that volleyball group was superior to football group in medicine ball throw and standing broad jump. In another study conducted by Ghuman and Singh[8] showed with regards to gross motor proficiency on the sub-variables; throwing ability between district and state level volleyball players. When compared the mean values of both the groups, it has been found that state level players have performed significantly better on throwing ability.

Conclusion

Based on the findings of this study, the following conclusions were drawn: It is concluded from the above findings that significant differences were found among district, state and national level cricket players on the sub-variables; running agility, jumping ability and throwing ability.

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