

Motor Educability and Skill Related Fitness among Male Cricket Players

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ABSTRACT

The purpose of the study was to find out the significant difference of motor educability among district, state and national level cricket players. For the purpose of the study, forty five (N=45) male subjects representing district, state and national level in cricket, the age group of 16-18 years were selected as subjects. The subjects were purposively assigned into three groups: Group-A: District (N₁=15); Group-B: State (N₂=15) and Group-C: National (N₃=15). All the subjects were informed about the objective and protocol of the study. Metheny-Johnson Motor Educability Test was administered on participants to measure motor educability. One way Analysis of Variance (ANOVA) to find out the intra-group differences and where the 'F' ratio found significant then Scheffe's Post-hoc test was applied to find out the direction and degree of differences. To test the hypothesis, the level of significance was set at 0.05.

1. Introduction

Today Sports and games are competitive in nature; Sports performance has taken a great leap over the last twenty years. Technology has enhanced our level of performance greatly through improved equipment and nutritional product. Back in the 1980's it was good enough to be fitter than your opponent that would secure the win. Today however, everybody is as fit, as technically and tactically advanced as their opponent. The playing field has been leveled once again. What possibly could give us the edge that we are desperately looking for to give us the one up on our opponents. The performance of players is influenced by many factors such as level of physical fitness, physiological and psychological abilities, technique, tactics, physique, body size, body composition and application of bio-mechanical principles (Ortega F.B.et. al.2008). Physical fitness refers to the organic capacity of the individual to perform to normal task of daily living without undue tiredness or fatigue having reserves of strength and energy available to meet satisfactorily and emergency demands suddenly placed upon him. Cricket is a deceptively demanding sport; players spend a long day on their feet, there are periodic fast sprints when batting, chasing down a ball, and bowling, plus various dynamic movements such as leaping, throwing, and turning quickly. In the sport of cricket, batting is the act or skill of hitting the cricket ball with a cricket bat to score runs or prevent the loss of one's wicket. A player who is currently batting is denoted as a batsman, while the act of hitting the ball is called a shot or stroke. The terms batsman or specialist batsman are also used generically to describe players who specialize in batting. Fielding in the sport of cricket is the action of fielders in collecting the ball after it is struck by the batsman, in such a way as to either limit the number of runs that the batsman scores or get the batsman out by catching the ball in flight or running the batsman out. Cricket fielding position can be broken down into offside and leg side parts of the field. The motor educability is generally defined as "The ability to learn well different motor skills quickly and easily". In other words, motor educability refers to one's level of ease with which one learns new motor skills. As in intelligence testing in education, so is motor educability testing (Motor intelligence) in physical

education. Although, the validity of motor educability tests at their ability to predict motor skill learning has not been established, yet a large number of motor educability test batteries have been published. Earlier, in 1958, Franklin Henry's Memory-Drum theory of narrow muscular reaction advocated that motor learning ability is task specific rather than general to various motor skills. Development of the motor ability is an important part of a child's physical development. In motor development, changes in activity can be observed through the physical progress. Motor development is an important prerequisite for man's motor learning. Along with other development, motor development continues during childhood and adolescence. It is for this reason that modern colleges, academic teaching and training is accompanied by various physical exercises, games and many activities that require motor activity. It helps to develop in child many handicrafts that assist him in his adopting some particular career. Some such handicrafts are stitching and sewing, wood work, typewriting, cooking, etc. Motor control is essential in all handicrafts. Motor development is an important part of overall comprehensive development. This promoted us to undertake this study with the aim to determine the exploratory study of motor educability among cricket players of different level of achievement. Fitness is a condition in which an individual has sufficient energy to avoid fatigue and enjoy life. It is necessary for elderly people to maintain and improve their physical fitness in order to satisfy healthy, high quality of daily life (Tanaka et al., 2004). Skill-related physical fitness refers to an individual's athletic ability in sports such as tennis and encompasses skill-related attributes like dynamic balance, power, speed and agility; the health-related aspect is a measure of cardiovascular endurance, muscle strength, endurance and flexibility and body composition (Hopkins & Walker, 1988).

Human motor behavior is dependent upon various abilities and these abilities are divided into different categories i.e., Physical fitness, motor fitness, motor ability and motor educability. The motor educability is generally defined as "The ability to learn well different motor skills quickly and easily". In other words, motor educability refers to one's level of ease with which one learns new motor skills. As in intelligence testing in

education, so is motor educability testing (Motor intelligence) in physical education. Although, the validity of motor educability tests at their ability to predict motor skill learning has not been established, yet a large number of motor educability test batteries have been published (Brace, 1941, Johnson, 1932, Metheny 1938, Carpenter 1942, McCloy and Young 1954). Earlier, in 1958, Franklin Henry's Memory-Drum theory of narrow muscular reaction advocated that motor learning ability is task specific rather than general to various motor skills. Development of the motor ability is an important part of a child's physical development. In motor development, changes in activity can be observed through the physical progress Motor development is an important prerequisite for man's motor leaning. Along with other development, motor development continues during childhood and adolescence. An in this, much importance is attached to various physical movements and exercises. It is for this reason that modern colleges, academic teaching and training are accompanied by various physical exercises, games and many activities that require motor activity. It helps to develop in child many handicrafts that assist him in his adopting some particular career. Some such handicrafts are stitching and sewing, wood work, typewriting, cooking, etc. Motor control is essential in all handicrafts. Motor development is an important part of overall comprehensive development. Motor educability has been influence by many factors likes neuromuscular coordination, intelligence and others.

2. Selection of variable

A feasibility analysis as to which of the variables could be taken up for the investigation, keeping in view the availability of tools, adequacy to the subjects and the legitimate time that could be devoted for tests and to keep the entire study unitary and integrated was made in consultation with experts. With the above criteria's in mind, the following variable was selected for the present study:

- Motor Educability

3. selection of tool

Motor Educability	Metheny-Johnson Motor Educability Test
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4. Description of the test

Motor Educability

METHENY-JOHNSON MOTOR EDUCABILITY TEST

Each participant was subjected to preliminary exercise testing to familiarize them with the exercise model. The test battery consists of the following four motor stunts: Front roll, Back roll, Jumping half-turns and Jumping full-turns. Subjects performed a warm up lasting 5-min. before the specific test, to promote specific physiologic and motor adaptation.

Test Area: A canvas measuring 15 feet in length and 2 feet wide is marked as show in figure. The 15 feet length is divided into ten section of each 18" inch each. The width of the transverse lines is ¾ inch and 3 inch alternatively as show in figure. So that centre of lines remains 18" inch apart. Another ¾ inch wide line is marked lengthwise in the middle of the canvas length. This properly marked piece of canvas is placed over a gymnasium mat with the sides and ends properly tucked to the mat so that the canvas remains properly stretched.

Alternatively, the above area may be directly painted or marked on the gymnasium mat without using the canvas.

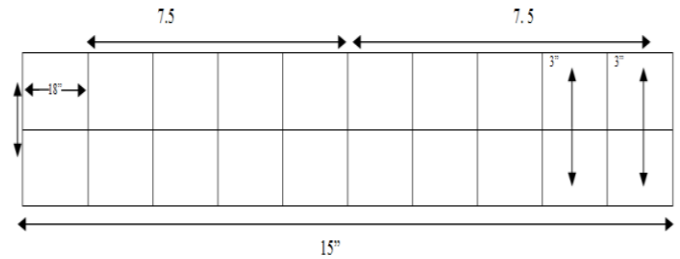


Figure 3.1
Metheny-Johnson Motor Educability Test

Test item:

i. **Front roll:** Ignoring the long middle dividing line, the subject is asked to start outside the marked area and perform two front rolls, one up to 7.5' i.e. 3" wide center line and the other in the second half of 7.5'. The subject is to perform the rolls without touching the limits or over reaching the zone mentioned above.

Scoring: Each correct roll gets 5 points, hence maximum of 10 points .Two points are deducted for over-reaching side line, right or left for each roll; one point is deducted for over reaching the end limit on each roll and full five points are deducted when the subject fails to perform a true front roll.

ii. **Back roll:** The test is similar to front roll both in performing and scoring. The subject is to start outside the marked chart area and is to perform two back rolls in the 2 feet lane area, one up to first half and the second back roll in the second half.

iii. **Jumping Half- turns:** The subject is asked to start with feet on first 3inch line, jump with both feet to second 3inch wide line, executing a half turn either right or left, jump third 3inch line executing half turn in opposite direction to first half-turn and then to 4th and 5th 3inch wide lines executing half turns right and left alternatively.

Scoring: Perfect execution of four jumps is worth ten points. Only 2 points are deducted for each wrong jump when the subject either dose not land with both feet on the 3inch line or turns the wrong way or both.

iv. **Jumping Full- Turns:** The subject is asked to start with feet out side marked area at about the center of the lane. She/he is required to jump with feet together to second rectangular space, executing a full turn with the body either right or left; continue jumping to alternate rectangular spaces across the marked mat executing full turns, rotating body in same direction, landing on both feet every time.

Scoring: Perfect execution of five jumps is worth ten points. Two points are deducted, if the subject fails to keep balance on landing on both feet: turns too far or oversteps the squares.

5. Research Findings

Table-4.2

Mean & SD of District, State and National level Cricket Players with regard to Motor Educability's and Skill Related Physical Fitness Components

Variable	District		State		National	
	Mean	SD	Mean	SD	Mean	SD
Front Roll (Count)	6.07	0.96	6.47	1.68	6.07	1.58
Back Roll	6.20	1.42	6.53	1.81	7.07	1.44

(Count)						
Jumping Half Turn (Count)	6.33	1.40	6.47	1.77	7.80	1.15
Jumping Full Turn (Count)	6.00	1.77	6.87	1.68	7.67	1.29

SD: Standard Deviation, SEM: Standard Error of Mean

Table-4.2

Analysis of Variance (ANOVA) Results with regard to Motor Educability among District, State and National Level Cricket Players on the sub-variable Front Roll

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	1.60	2	0.80	0.384	0.684
Within Groups	87.60	42	2.086		
Total	89.20	44			

It is evident from table that results of Analysis of Variance (ANOVA) among district, state and national level cyclists with regard to the front roll were found statistically insignificant ($P > .05$).

Since 'F' ratio 0.384 was not found statistically insignificant, therefore, there is no need to apply the post hoc test.

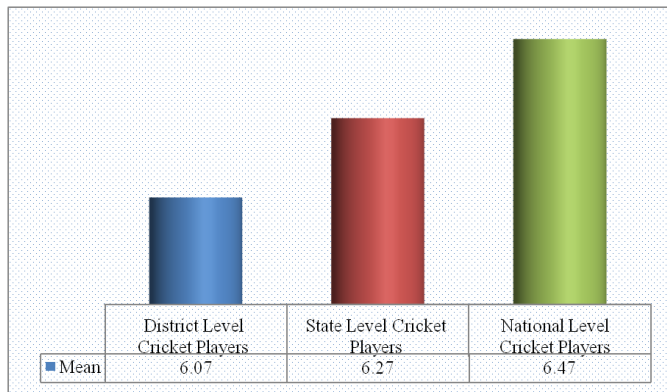


Figure-4.1

Graphical representation of mean scores with regard to Front Roll among District, State and National level Cricket Players

Table-4.3

Analysis of Variance (ANOVA) Results with regard to Motor Educability among District, State and National Level Cricket Players on the sub-variable Back Roll

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	5.73	2	2.867	1.168	0.321
Within Groups	103.067	42	2.454		
Total	108.800	44			

It is evident from table 1 that results of Analysis of Variance (ANOVA) among district, state and national level cyclists with regard to the Back Roll were found statistically insignificant ($P > .05$).

Since 'F' ratio was not found statistically insignificant, therefore, there is no need to apply the post hoc test.

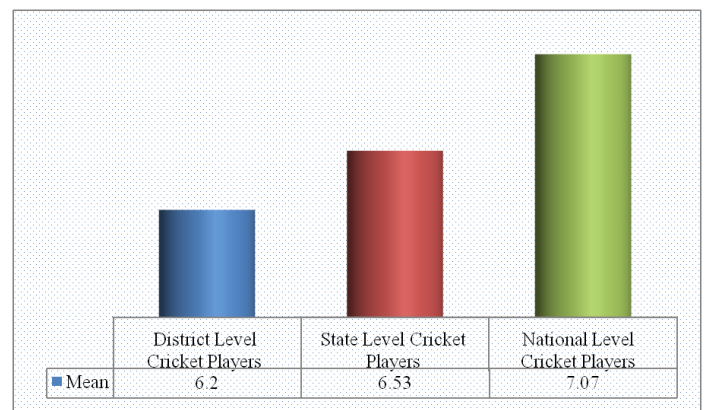


Figure-4.2

Graphical representation of mean scores with regard to Back Roll among District, State and National level Cricket Players

Table-4.4

Analysis of Variance (ANOVA) Results with regard to Motor Educability among District, State and National Level Cricket Players on the sub-variable Jumping Half Turn

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	19.733	2	9.867	4.632	0.015*
Within Groups	89.467	42	2.130		
Total	109.20	44			

It can be seen from table- that significant differences were found with regard to the Jumping Half Turn among District, State and National level Cricket Players as the P-value (Sig.) 0.015 was found smaller than 0.05 level of significance ($P < 0.05$). Since the obtained F-ratio 4.632 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 in respect to e Jumping Half Turn. The results of Scheffe's post hoc test have been presented in Table-4.12.

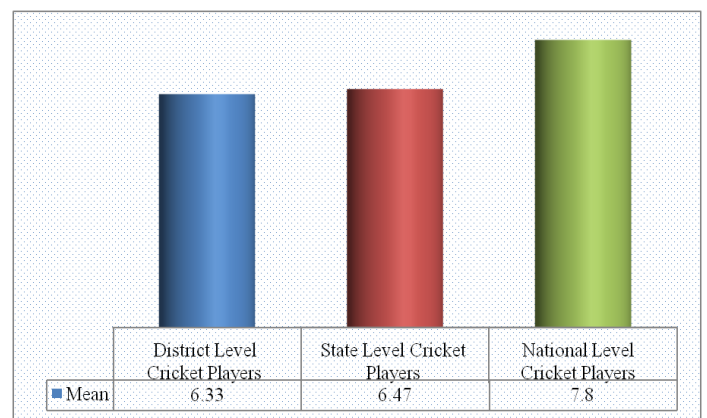


Figure-4.3

Graphical representation of mean scores with regard to Jumping Half Turn among District, State and National level Cricket Players

Table-4.5

Analysis of Variance (ANOVA) Results with regard to Motor Educability among District, State and National Level Cricket Players on the sub-variable Jumping Full Turn

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between	20.844	2	10.422	4.088	0.024*

Groups				
Within Groups	107.067	42	2.549	
Total	127.911	44		

It can be seen from table- that significant differences were found with regard to the Jumping Full Turn among District, State and National level Cricket Players as the P-value (Sig.) 0.024 was found smaller than 0.05 level of significance ($P < 0.05$). Since the obtained F-ratio 4.088 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 in respect to Jumping Full Turn. The results of Scheffe's post hoc test have been presented in Table-4.12.

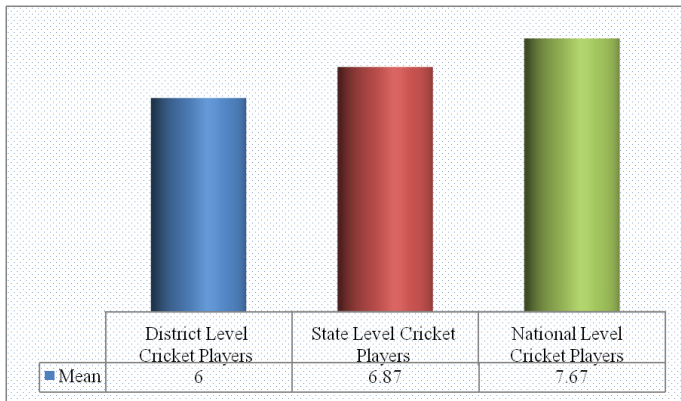


Figure-4.4

Graphical representation of mean scores with regard to Jumping Full Turn among District, State and National level Cricket Players

6. Discussion of findings

Analysis of Variance (ANOVA) results shows in tables from 4.2 to 4.3 among district, state and national level with regard to Motor Educability of male cricket players. It can be summarized that on the variables jumping half turn and jumping full turn among district, state and national level results shows significant differences. However, insignificant differences found in relation to front roll and back roll among district, state and national level cricket players. The results of jumping half turn in the present study is supported by the results of partially in line with the results of Karkare, A. (2012), as he concluded that non-tribal boys had significance better on the account of jumping half-turns compare to their counterparts. Results also supported by the investigation of Das, J. (2014). As he concluded that Group of under-13 girls had significantly better than other groups in relation to jumping half-turns. Another study done by Bal, B.S. et al. (2014) also support the present fact, as they establish significance difference on the account of jumping half-turns among district, state and national level cricket players.

The result of current investigation in respect to jumping full-turns is in line with the outcome of Sings, S & Kumar, S (2014), as they discovered in their study that there was no significance difference among foil, sabre and epee fencers in relation to jumping full-turns. Das, J. (2014) study also partially in line as he establishes no difference in relation to jumping full-turns between under-11 and under-12 year's girls groups. Investigation done by Karkare, A. (2012) is also partially in contrast as they found that non-tribal boys had significantly performed better than tribal boys & girls and non-tribal girls.

References

1. Meenu&Parul (2012). Comparison Status of Strength and Speed between Badminton and Lawn-Tennis School Girls. *International Journal of Science and Research*, Vol. 3 (9): 697-699.
2. Kumar, P. (2014). A Comparative Study of Agility among Handball and Basketball Male Player. *International Journal of Science and Research*, Vol. 3 (2): 256-257.
3. Singh, B. &Saini, S. (2014). Biomotor Abilities between Runner and Chaser of Kho-Kho: A Comparative Study. *Research Journal of Physical Education Sciences*, Vol. 2 (9): 5-8.
4. Singh, A.K., Tiwari, D. &Tiwari, U. (2015). A Comparative Study of Balance and Rhythmic Abilities of Indian Soccer Players at Different levels of Participation. *International Journal of Movement Education and Sports Sciences*, Vol. 3 (1): 7-11.
5. Singh,B., Singh, M. & Singh, R. (2014). A Comparative Study of Muscular Strength and Muscular Power among Cricket Players. *Research Journal of Physical Education Sciences*, Vol. 2(10): 12-16.
6. Karahan, M. & Cecilia, G. (2011). A Comparative Study: Differences between Early Adolescent Male Indoor Team Sports Players' Power, Agility and Sprint Characteristics. *Ovidius University Annals, Series Physical Education and Sport / Science, Movement and Health*, Vol. 11 (2): 185-189.
7. Mukesh (2013). A Comparative Study of Co-Ordinate Abilities of Kabbadi and Kho-Kho Female Players at College Level. *International Journal of New Innovations in Engineering and Technology*, 2 (1): 29-32.
8. Lega, S. (2014). A Comparative Study of Selected Motor Abilities of Football and Handball Players. *International Journal of Behavioral Social and Movement Sciences*, Vol. 3 (4): 59-63.
9. Singh, G. & Mishra, P.K. (2012). A Comparative Study of Co-Ordinative Abilities of Taekwondo Players in Different Weight Categories. *Indian Journal of Movement Education and Exercises Sciences*, Vol. 2 (2).
10. Saini, J.N., Badana, O.P. &Bhardwaj, V. (2013). Comparison of Motor Fitness Components between Boxing and Wrestling Players. *IJMESS*, Vol. 2 (2): 24-26.
11. Waldron, M. & Murphy, A. (2013). A Comparison of Physical Abilities and Match Performance Characteristics among Elite and Sub elite Under-14 Soccer. *Pediatric Exercise Science*, 25: 423-434.
12. Singh, K., Singh, M., Bal, B.S. & Singh, R. (2014). A Comparative Study of Running Agility, Jumping Ability and Throwing Ability among Cricket Players. *Research Journal of Physical Education Sciences*, Vol. 2(10): 44-50.
13. Basumatary, S.J. &Lohani, R.C. (2013). Comparison of Selected Motor Abilities between Basketball and Handball Players of Delhi. *International Journal of Movement Education and Sports Sciences*, Vol. 1 (1).
14. Kumar, S. &Mehrota, A. (2014). Comparison of Speed and Agility between Hockey and Football Players. *Indian Journal of Movement Education and Exercises Sciences*, Vol. 4 (2): 44-46.
15. Datt, V. & Mane, M. (2013). A Comparative Study of Speed, Strength and Agility of Inter Collegiate Basketball and Volleyball Players. *Variorum Multi-Disciplinary e-Research Journal*, Vol. 4 (2): 1-5.
16. Kumar, A. (2014). A Comparative Study of Selected Physical Fitness Variables of 15-19 Years Basketball Players of Urban and Rural Area of Rohtak District In Relation To Their Age. *International Journal of Physical Education, Sports and Health*, Vol. 1 (2): 22-24.