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Analysis of psychomotor abilities as predictive factor for female long jumpers

Deepti Joshi

Abstract
Sports activities required different levels of fitness and abilities as par the level of competition & requirement of that particular skill or event. Psychomotor abilities play an important role in learning and execution of skills. Sometimes the level of involvement of ability may vary in different games. So to analyze the impact of selected psychomotor abilities on long jump performance as predictive factor for female long jumpers researcher opted this topic for her research work. For the purpose of this study 55 female national level long jumpers were selected as a subject. Age group of athletes was 17 - 28 years. To carry out this study Single Group Experimental Research design was used. The test item selected for this study was psychomotor abilities i.e. Reaction Time, Speed of Movement, Kinesthetic Perception, Explosive power and Flexibility. Reaction Time was measured by Four way alternate response test, Speed of Movement was measured by Nelson Speed of Movement Test, Kinesthetic Perception was measured by Horizontal Space Test, Explosive Power was measured by Standing Broad Jump and Flexibility was measured by Modified Sit and Reach Test. Performance of an athlete's was recorded during the competition. The data on jumping performance along with psychomotor abilities was examined by Pearson's Product Moment Correlation in order to find out the relationship of jumping performance to each of the psychomotor abilities separately. Multiple Regression analysis was done in order to predict jumping performance on the basis of psychomotor abilities. The level of significance to check the relationship obtained by Pearson's Product Moment Correlation was set at 0.05.

Keywords: Psychomotor abilities, kinaesthetic perception, Reaction time.

1. Introduction
Sport is as old as human society and it has achieved a universal status in modern society. It enjoys the popularity, which out strip any other form of social activity, it has become an integral part of the educational process. Psychomotor variables act as the medium for the realization of cognitive and affective domains of learning and motor behaviour. All these domains of learning are inseparable identities and work in perfect harmony and unison with one another. The psychomotor variables are primarily concerned with muscular contraction. Performance of motor skills involves neural, physiological and psychological aspects and is a continuum that runs the gamut from physical to cognitive and there is always integration between these aspects of human behaviour. Psychomotor abilities of an individual is a perfect blending of physical as well as motor fitness and goes a long way in fielding the excellent outcomes in sports activities. The nations exhibiting excellence in the international sports do attach great significance to the total fitness level of their players.
Sports activities required different levels of fitness and abilities as par the level of competition & requirement of that particular skill or event. Psychomotor abilities play an important role in learning and execution of skills. Sometimes the level of involvement of ability may vary in different games. So to analyze the impact of selected psychomotor abilities on long jump performance as predictive factor for female long jumpers researcher opted this topic for her research work.

2. Materials and methods
For the purpose of this study 55 female national level long jumpers were selected as a subject. Age group of athletes was 17 - 28 years. To carry out this study Single Group Experimental Research design was used.

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3. Results & Discussion

As determined earlier purpose of this study is analysis of psychomotor abilities as a predictive factor for female long jumpers. Therefore results of this investigation are presented in the following tables:-

3.1. Tables and Figures

Table 1: Descriptive Analysis of Psychomotor Abilities

S. No.	Psychomotor Abilities	Min	Max	Mean	SD
1	Reaction Time	43.86	48.7	45.718	1.301
2	Speed of Movement	18.9	25.7	22.809	1.881
3	Kinesthetic Perception	3	9	5.678	1.732
4	Explosive Power	2.25	2.8	2.502	0.120
5	Flexibility	7	17	12.263	2.352

Above cited table shows the descriptive analysis of selected Psychomotor Abilities (Independent Variable). Mean values of Psychomotor Abilities Reaction Time, Speed of Movement, Kinesthetic Perception, Explosive Power and Flexibility are 45.718, 22.809, 5.678, 2.502 and 12.263 respectively. Standard deviation values of Psychomotor Abilities Reaction Time, Speed of Movement, Kinesthetic Perception, Explosive Power and Flexibility are 1.301, 1.881, 1.732, 0.120 and 2.352 respectively.

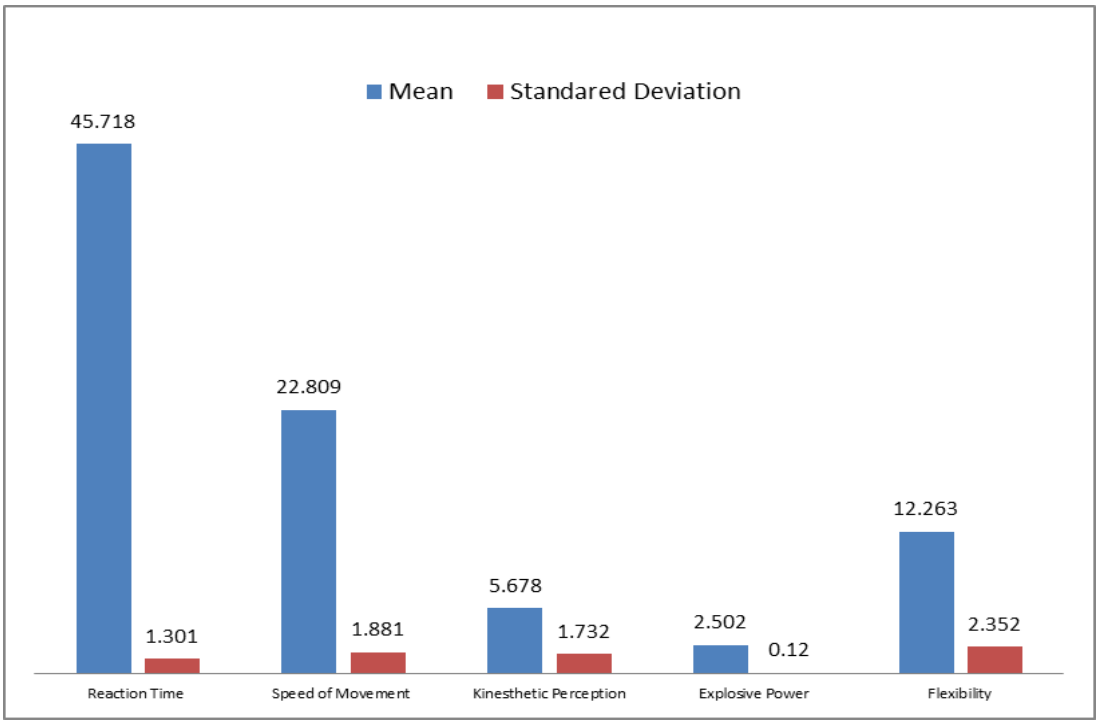

Fig 1: Mean and Standard Deviation Values of Psychomotor Abilities of Female Long Jumpers

Table 2: Relationship of Psychomotor Abilities with Jumping Performance (Long Jump)

Variables Correlated	Coefficient of correlation
Reaction Time and Long Jump Performance	-0.378*
Speed of Movement and Long Jump Performance	-0.245
Kinesthetic Perception and Long Jump Performance	-0.228
Explosive Power and Long Jump Performance	0.744*
Flexibility and Long Jump Performance	0.302*

*Level of Significance at 0.05.
r.05 (55) = 0.254

It is revealed from table no 3 relationship between Psychomotor Abilities (Independent variables) and Long jump performance (Dependent variables). Significant relationship was found between Reaction Time (r = -0.378), Explosive Power (r = 0.774), and Flexibility (r = 0.302) and no significant relationship was found among Speed of Movement (r= -0.245) and Kinesthetic Perception (r = - 0. 228) at 0.05 Level of significance.

Table 3: Multiple Correlations of Psychomotor Abilities of Female Long Jumpers

S. No.	Variables	Multiple Correlation (R)
1	Reaction Time	$R_c.145 = 0.765$*
2	Speed of Movement	
3	Kinesthetic Perception	
4	Explosive Power	
5	Flexibility	

Significant at 0.05 Level of Significance R=0.348

Above table shows the significant multiple correlations among selected Psychomotor Abilities (Reaction Time, Speed of Movement, Kinesthetic Perception, Explosive Power and

Flexibility) with Long jump performance i.e. 0.765* at 0.05 level of significance.

3.2 Multiple Regression Analysis for Psychomotor Abilities in Long Jump

Multiple regression analysis in order to predict long jump performance is presented as follows:

Y= .388 – (0.040 Reaction Time) + (2.578 Explosive Power) + (0.022 Flexibility)

Y = Long jump performance.

4. Conclusion

In this study it was observed that the reaction time, explosive power and flexibility have significant relationship with long jump performance among psychomotor abilities. Reaction time plays an important role in execution of movement in long jump at appropriate timing which can improve the performance. Explosive power also found out significant may be due to the basic nature of the event because long jump required maximum explosive strength to get optimum vertical height after takeoff so that jumper can have some time to perform action in the air to cover maximum horizontal distance. With flexibility long jump performance also shows the significant relationship. It includes verity of movements in different techniques of long jump and to perform those movements athlete needed good flexibility. Speed of movement found out insignificant with long jump performance may be due to the combination of sequence of movement required in long jump and speed of movement is only the time taken to complete small movement after receiving first stimulus. In kinesthetic perception it gives the awareness of position of body or parts of the body as it makes through the space but many more factors are affecting long jump performance so it can be possible that the significance of kinesthetic perception is reduced as par the findings.

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