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## A comparative study on psychomotor variables among different players

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### Abstract

The purpose of the study was to compare the kinaesthetic perception and reaction time between athletes, football and kho-kho players. For the present study total 450 male players (150 from each athletes, football and kho-kho) of Inter College State Competition belonging from various college in West Bengal were selected. The age of the subject was ranged between 18-25 years. For the present study selected psychomotor variables (Kinaesthetic perception and reaction time) were selected as the measuring criteria. To find out the difference between athletes, football and kho-kho players in relation to their kinaesthetic perception and reaction time the ANOVA test was applied as the statistical treatment.. Post Hoc test of Scheffer's is followed to decide significant differentiation between paired means wherever 'f' ratio is important. Significant difference was found between athletes, football and kho-kho players in relation to their kinaesthetic perception and reaction time where calculated the value of kinesthetic sense significantly differs in between Athletes and Football players (MD = 3.18), Athletes and Kho-Kho players (MD=3.37) since the result of the mean differential value were higher than the crucial differential value of 0.48 at significance level of 0.05. Mean value of Football and Kho -Kho players (MD = 0.19) is less than the critical difference value of 0.48. Hence this difference is not statistically significant. Since the mean of Reaction Time significantly differs in between Athletes and Football players (MD = 23.02), Football and Kho -Kho players (MD = 39.54) as well as Athletes and Kho-Kho players (MD=16.52) because the value of mean difference is greater than the value of crucial difference 4.57 at significance level of 0.05. From the findings of the study it is concluded that Kinesthetic sense is highly required and more prominent in case of football players than athletes and kho-kho players (almost similar in later two cases). The reaction time of athletes and kho-kho players is better than football players, whereas the kho-kho players have better reaction time than athletes.

**Keywords:** Psychomotor, kinesthetic sense, reaction time, athletes, football, kho-kho

### Introduction

The term 'sport' originated out of the combination of two words 'dis' and 'porter' which means carry away from work'. Today sports are well-thought-out as an international discipline because it promotes peace, harmony and brotherhood. Sports are also one of the factors which contribute to the improvement of character, increased self-confidence and meeting the desired objective through sincere and conscious efforts.

The domain of psychomotor deals with body movements and other factors which influence an athlete's mind. Movement is the key to the life process. In one form it is connected directly with muscular contractions and involves strong action in its myriad forms, while in another form it is connected with neural mechanisms or psychomotor domain. There is a certain level of utilization of the body's forces, and lots of restricted actions which should be taken care of. Some factors aid more effective such human-made forms of movement as sports, exercises, and skilled.

Psychomotor components work as the medium for the insight of cognitive and affective domains. These domains are inseparable identities and function in perfect harmony with one another. These are concerned primarily with strong attention. The psychology and biomechanics of the muscular system are to be understood before understanding the nature of the action. Performance of motor skills is not a physical or mental response alone but involves neural, physiological and psychological aspects (D. A. Watson, A. Tellegen, 1985).

Psychomotor ability is a major aspect of presentation or performance in sports.

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It includes skills like reaction time, hand-eye coordination, balance, and other physical movements related to conscious cognitive processing. Every individual has some sorts of psychomotor ability. An athlete also walks, runs, jumps, throws on these basic principles. A sprinter, for example, needs a better reaction time than a shooter. Psychomotor learning is a procedure in which the cognitive, affective and physical associations can be built, and the psychomotor abilities are required performed. It is a coordinated activity which involves hands, arms, fingers, and feet. Als, when these abilities are practised regularly, the movement or physical action becomes automatic.

Learning skills in different games depends upon the development of psychomotor ability, i.e. development of cognitive and physical aspect. Just reading of the books only on skills cannot help. One has to devote ample time for practising the conceptual skill from the book. The combination of theoretical understanding and physical training can only help in the development of fresh psychomotor ability. Regular practice can establish these abilities to be automatic, and there is no need for any further thought process while executing the skill.

A number of sports activities include various psychomotor capacities like walking, running, hopping, throwing, jumping etc. Psychomotor ability is measured by reaction time, speed or accuracy. The various abilities include hand-eye coordination, multi-limb coordination, orientation and managing of speed and movement and alike.

The development of fresh psychomotor capabilities consists of cognitive, associative and autonomic stages. In other words, this type of skill is associated with multi-tasking, which capacitates human beings to focus more on diversified objects without losing control of the psychological and physical abilities. It is to be noted here that a psychomotor skill is refined over a span of the period through repetitive performance, where the person has to practice it regularly so that he won't have to face many difficulties while carrying out the activity.

At the time of analyzing the psychomotor skills, it is important to note that these kinds of skills require attention or effort from both the physical and mental aspect. So it is rightly said that these psychomotor skills are poised of the capability of balancing both the physical and mental characteristics in order to attain a particular goal.

Kinesthetic perception deals with various kinds of abilities such as strength, speed, stamina, agility, patience and skill of the player in sports. A good player always maintains these personal traits or skills, including rhythm and positioning of body parts. A player should have exact knowledge and information about his muscles, their positioning during body movements. This knowledge is highly necessary for the successful implementation of skills and attributes.

In every game and sport reaction time is an outstanding characteristic or quality, barely necessary for successful all-around performance. In a basketball game, height is considered as the primary requirement for selection of the players. It is a tangible quality, and tall players are an asset to the team for rebound purpose and also as a defensive deterrent around the basket (Larry G. Shaver, 1981).

### **Problem of the statement**

The purpose of the study was to compare the selected psychomotor variables among different players at the state level.

### **Delimitations**

1. The present research is delimited to 150 numbers of male players each from athletics (sprinters), Football and Kho-Kho disciplines.
2. The study is further delimited to the state level male players who participate in the Inter College State Athletics (sprints), Football and Kho-Kho championships held in 2017, at Salt Lake (Kolkata) in West Bengal.
3. The study is delimited to the following variables:
  - A. Psychomotor Variables:
    - Kinesthetic perception
    - Reaction time
4. The study is delimited only state-level player's age group ranging from 18-25 years.

### **Limitations**

The present research has drawn its inferences from sports and its various subjects including psychological and physical conditions of sports players, however, their different socio-economic conditions may also be studied and how it affect the performance level of the players too. The study may also be conducted on other sports events players apart from athletics. The living styles, food habits, including daily routines and various other factors, their effects on various athletic activities also may be studied. The study may also be conducted exclusively on women athletic players and other sports.

### **Hypothesis**

Keeping view of the objectives of present research, the following hypothesis are drawn, and the researcher has tried to justify based on the findings of the research.

- Ho<sub>1</sub>-No significant difference between kinesthetic sense and performance of football, Kho-Kho and athletic persons.
- Ho<sub>2</sub>-No significant difference in reaction time seen between athletes, Football and Kho-Kho players.

### **Methodology**

To achieve the purpose of the study the investigator were selected randomly 150 athletes, 150 football players and 150 kho-kho state level players, who participate in the Inter College State Athletics (sprints), Football and Kho-Kho championships held in 2017, at Salt Lake (Kolkata) in West Bengal. To compare the Kinesthetic perception and Reaction time between the athletes, football and kho-kho state level players. The data were collected by using the Distance Perception Jump test for measure Kinesthetic Perception and Nelson Foot Reaction Time Test for measure reaction time. To compare the data of selected psychomotor variables among west Bengal athletes, players of football and kho-kho, ANOVA test was applied. Post Hoc test of Scheffer's is followed to decide significant differentiation between paired means wherever 'f' ratio is important. Simple effect tests were done to know the differential value wherever the integration is significant at 0.05 level.

### **Result of the study**

The Study of significant mean differences among different variables such as Kinesthetic Sense, Reaction Time of players are also done with utmost genuineness. Various statistical tools and techniques like one way ANOVA, t-test, f test, Post Hoc test with LSD were conducted for analysis of the significant differences among the values of paired means of Athletes, Football and Kho-Kho players. Various norms and

grades are also developed to categorize the selected subjects.

**Table 1:** Summary of one way anova on kinesthetic sense among athletes football and kho-kho players

Source of Variance	Degree of Freedom	Sum of Square	Mean Sum of Square	F- ratio	P- value
Between-group	2	1076.46	538.23	122.096*	4.94
Within-group	447	1970.49	4.41		E-43

\*Significant at 0.05 level Tabulated  $F_{0.05}(2, 447) = 3.016$

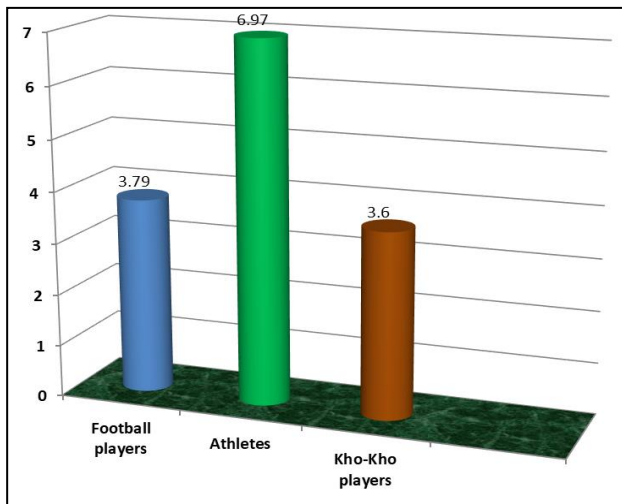
The above table-1 reveals about the significant differences among the variables of kinesthetic sense among athletes, football and kho-kho players because the calculated f-value of 122.096 is greater than f-value in the given table, i.e. 3.016 for 2/447 degrees of freedom significant at 0.05 level. The LSD Post Hoc test is done to assess significance of paired mean difference between groups for kinesthetic sense is shown in table-2 since F test is significant through ANOVA.

**Table 2:** Significant difference amid the paired means of kinesthetic sense of athletes, football and Kho Kho players

Athletes	Mean of		Mean Difference (MD)	Critical Difference (CD)
	Football players	Kho-Kho players		
6.97	3.79		3.18*	0.48
	3.79	3.60	0.19	0.48
6.97		3.60	3.37*	0.48

\*Significant difference at 0.05

Table 2 indicated that mean value of kinesthetic sense significantly differs in between Athletes and Football players (MD = 3.18), Athletes and Kho-Kho players (MD=3.37) since the result of the mean differential value were higher than the crucial differential value of 0.48 at significance level of 0.05. Mean value of Football and Kho –Kho players (MD = 0.19) is less than the critical difference value of 0.48. Hence this difference is not statistically significant. The mean differences are shown graphically in Fig. 1.



**Fig 1:** Comparison of mean among the athletes, football and kho-kho players in kinesthetic sense.

**Table 3:** Summary of one way analysis of variance for the data on reaction time among athletes, football and kho-kho players

Sources of Variance	Degrees of Freedom	Sum total of Squares	Mean Sum total of Squares	F ratio	P- value
Between group	2	122243.20	61121.58	149.	1.75
Within-group	447	182545.20	408.38	67*	E-50

\*Significant at 0.05 level Tabulated  $F_{0.05}(2, 447) = 3.016$

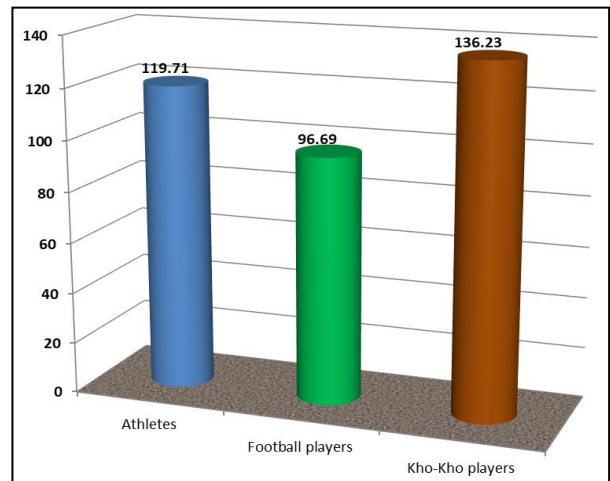
Table-3 shows the significant difference is found in variables of Reaction Time of athletes, football and kho-kho players because the F value 149.67 is greater than the f-Value 3.016 in the given table with significant difference level of 0.05 for 2/447 degrees of freedom. The LSD Post Hoc test was conducted to assess significance of the paired mean differences between groups for reaction time is shown in table-4 since F test is found to be significant through ANOVA.

**Table 4:** Significant difference between the paired means of “reaction time” in different players

Athletes	Mean		Mean Difference (MD)	Critical Difference (CD)
	Football players	Kho-Kho players		
119.71	96.69		23.02*	4.57
	96.69	136.23	39.54*	4.57
119.71		136.23	16.52*	4.57

\*significant at 0.05 level

The findings of Table-4 reveal that the mean of Reaction Time significantly differs in between Athletes and Football players (MD = 23.02), Football and Kho –Kho players (MD = 39.54) as well as Athletes and Kho-Kho players (MD=16.52) because the value of mean difference is greater than the value of crucial difference 4.57 at significance level of 0.05. Differences in mean are shown in the graph (fig. 2).



**Fig 2:** Comparison of mean among the athletes, football and kho-kho players in reaction time.

**Findings and Discussion**

It is evident from Table 2 and Fig. 1, which provides the findings of significant difference amid the paired means of kinaesthetic sense of three kinds of players.

Table 2 indicated that mean value of kinesthetic sense significantly differs in between Athletes and Football players (MD = 3.18), Athletes and Kho-Kho players (MD=3.37) since the result of the mean differential value were higher than the crucial differential value of 0.48 at a significance level of 0.05.

Mean value of Football and Kho-Kho players (MD = 0.19) is less than the critical difference value of 0.48. Hence this difference is not statistically significant.

Results of the present research showed the significant difference in kinesthetic sense among athletes, football and kho-kho players. In case of football players, the approach was made with the ball (external objectives) along with the opponent players in various unpredictable manners. Hence the kinesthetic sense was more. In the case of athletes and kho-kho players, it was low because of a bit of stereotype physical gestures.

It is evident from Table 4 and Fig. 2, which provides the findings of a significant difference between the paired means of the reaction time of three kinds of players.

The findings of Table-4 reveal that the mean of Reaction Time significantly differs in between Athletes and Football players (MD = 23.02), Football and Kho-Kho players (MD = 39.54) as well as Athletes and Kho-Kho players (MD=16.52) because the value of mean difference is greater than the value of crucial difference 4.57 at significance level of 0.05.

When the reaction time was analyzed, it was seen that the Kho-Kho Players had more stability in their reaction time because of their sitting position and response to 'Kho' and then attacking the runner immediately. Also, in the case of sprinting athletes, they had to react quickly to the response of the sound for a good star. Hence reaction time stability was more. In case of football players, they found time for reaction as per the nature of the game, getting lower reaction time than the other two.

### Conclusions

The present research draws the following conclusions:

- Kinesthetic sense is highly required and more prominent in case of football players than athletes and kho-kho players (almost similar in later two cases).
- The reaction time of athletes and kho-kho players is better than football players, whereas the kho-kho players have better reaction time than athletes.

### Recommendations

The following recommendations may be made for improved psychomotor performance among players.

- The coaches and instructors should thoroughly examine the physical and mental state of the players during the selection process.
- During selection and training programmes of athletes, football and kho-kho players', emphasis must be laid on kinesthetic perception and reaction ability of the players.
- A longitudinal study may be conducted to see if the high score on selected psychomotor variables by a player will predict their performance as seen among various international and national players.
- Sports topics/classes should be included in academic courses so that students will be interested to take it as their professional career.
- A same research can be undertaken among female athletes, football and kho-kho players.
- Psycho motor abilities of different age groups and other sports events players may be studied for better

understanding on the subject and its relation with various psychological variables.

- The findings of this study would work as an User Manual for sports players, physical education teachers and instructors, sports analysts/scientists for further research on the subject.

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