

## COMPARATIVE STUDY OF KINESTHETIC PERCEPTION BETWEEN HIGH SPORTS PERFORMANCE AND HIGH ACADEMIC PERFORMANCE GROUPS

**Pandey Gayatri**

Ph. D Research Scholar, Department of Exercise Physiology, L.N.I.P.E. Gwalior, Madhya Pradesh, India

### ABSTRACT

*The kind of sense organs found within the muscles and joints are called proprioceptors. The function of proprioceptors is conduct sensory reports to the central nervous system from muscles, tendons, ligaments and joints. These sense organs are concerned with kinesthetic senses that, in general, unconsciously tell us where our body part in relation to our environment. The objective of this study was to determine the difference of kinesthetic perception between high sports performance and high academic performance groups. In this research Total sixty (N=60) healthy teenagers boys were randomly selected as subjects for the present study from Maun Nath Bhanjan district of Uttar Pradesh. As Kinesthetic is the sense of position, location and orientation so, it was measured by kinesthetic obstacles test. The Independent t-test was used for the kinesthetic perception comparison of both groups. The level of significance was set at 0.05. The results showed the significant difference between HSPG & HAPG.*

*Key Words: Proprioceptors, Kinesthetic Perception, High Sports Performance Group and High Academic Performance Group.*

### INTRODUCTION:

Sports outline an important feature of life. This plays a vital role in mounting the physical, mental and social growth of the individuals which leads to the name and fame of nation just because of greatest performance by athletes in national and international level competitions. The past few decades have witnessed man on innovation in this area. Sports are becoming increasingly sophisticated technical going popularity as separate profession with expansion of educational facilities in the country. More young people are taking part in sports as a daily feature of their life. The participation in sports and physical fitness increase an individual productivity simultaneously it also promotes social harmony and discipline (Sadri, 1993) among participants.

The kind of sense organs found within the muscles and joints are called proprioceptors. The function of proprioceptors is conduct sensory reports to the central nervous system from muscles, tendons, ligaments and joints. These sense organs are concerned with kinesthetic senses that in general, unconsciously tell us where our body part in relation to our environment. Their contributions enable us to execute a smooth and coordinated movement. Generally kinesthetic sense is called sixth sense (Fox L. Edward). If you can run without watching your feet, hit a [baseball](#) without focusing on the bat, or pass a basketball without looking at your arm, you're using a "sixth sense" called proprioception. Proprioception is the capacity of the body to determine where all of its parts are positioned at any given time, and it plays an important role in the world of sports (Brwn, 2013).

In this context, (Sarkar & Sarkar, 2013) picked up a story from the Mahabharata. Mahaboli Bhima, the 2nd Pandav, was fond of food from his very childhood. One day he was eating Dadhi (concentrated milk) at an extremely dark night. Arjuna was present there and being astonished he asked to his elder brother Bhima that how he could be able to take Dadhi even in such a dark night-impossible to see anything. Bhima replied, “Don’t you know that we have eyes in our hand?” In relation to the key of the story – the sixth sense – is obviously responsible in all the field of games and sports to perceive the position of one’s body segments, positions of the implements and positions of the team mates or even the position of the opponents while performing a complex motor task during the game. Not only in the field of games and sports it has a wide application in almost all fields of knowledge like it helps the mathematicians to make sense about the right direction while selecting procedure to be followed for solving a complex calculations or to giving a compact definition of anything in the field of study and this sixth sense also known as kinesthetic perception.

Probably this sense is related with fieldwork out of sports movement. On the other hand, better academic achievement depends on cognition. And cognition is the total mental ability of the person which covers intelligence, conceptualizing, imagery, reasoning, memorizing capacity etc. Perception and sensation which are most important factors of kinesthetic sense and intelligence quality which are closely related with brain process (nervous system). This school of contemplation makes interested the investigator to take up the present study (Sarkar & Sarkar, 2013).

The researcher has gone through various study which conducted on kinesthetic perception as well as school of contemplation(mentioned above). After noticing all these thoughts the scholar interested to investigator to take up the present study. It was a genuine effort on the part of the investigator to compare between high academic performance group and high sports performance group in relation to possession of kinesthetic perception.

Therefore, the purpose objective of this study was to compare kinesthetic perception of high sports performance group and high academic performance group. Consequently, I tested the hypothesis that there would be significant difference between the mean score of high sports performance group and high academic achievement group on the kinesthetic perception.

#### MATERIALS AND METHODS:

The methodology of the study consists of selection of subjects, testing procedure and the technique employed for analysis of data.

To fulfill the purpose of the study total sixty (N=60) healthy teenagers with the age  $17.57 \pm .89$  boys were randomly selected as subjects for the present study from Maun Nath Bhanjan district of Uttar Pradesh. They were selected randomly from a large population on the basis of the following two criterion i) The thirty (N=30) subjects for High Academic Performance Group (HAPG) were selected on the basis they had at least 80% and above marks in Secondary School examination (class 10<sup>th</sup>) and ii) The thirty (30) subjects of High Sports Performance Group

(HSPG) were selected on the basis that they had at least one school national level participation in their respective events/game. The details are presented in the table1:-

Table 1

Distribution of Subjects

S. No.	Group	No. of Participants
1	High Sports Performance Group(HSPG)	30
2	High Academic Performance Group (HAPG)	30
Total Number of Participants		60

Procedure of Data Collection: In order to measure the kinesthetic perception of the subjects the kinesthetic obstacles test was administered (Johnson Barry L. & Nelson Jackson k, 1988).

Purpose: The purpose of this test was to measure the ability of subject to predict the position during movement without the use of eyes.

Reliability- .53

Validity- Face Validity.

Age & Sex- Ten through college and satisfactory for both boys and girls.

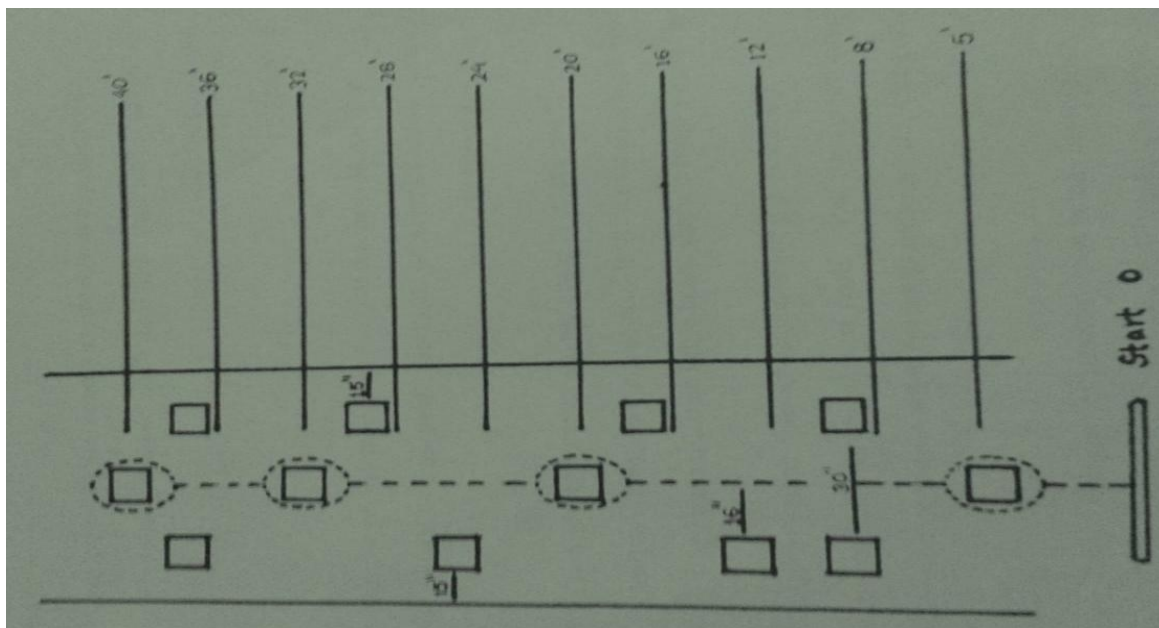
Procedure- Each subject was allowed one practice trial of walking through the course without being blindfolded. The subject walked through the course with blindfolded for the test.

Scoring- The performer score 10 points for each stations he successfully clear without touching .There are 10 stations for maximum score of 100 points.

Equipments- The test required material for building folding, chalk markers, twelve chairs and measuring tape.

Area- An area of 40×5 feet was marked on the floor and twelve chairs were arranged as obstacles in according with floor pattern as per the requirement as indicated in figure1

**Figure1. Marking of Kinesthetic Obstacle Test for the Test of Kinesthetic Perception**



#### Penalty-

1. There was 10 points penalty for touching any part of the body against any part of chair object. After such penalty the subject was directed to the centre line and one step ahead of that particular station.
2. There was a 5 point penalty for each occurrence off getting outside of the line. Upon such occurrences the subjects is directed back into the centre of line at the nearest point from which he went astray.

So, the final score were recorded to present the kinesthetic perception of the subjects.

Statistical technique: Statistical analysis was done with SPSS (Statistical Package for the Social Sciences, 20.0, USA). Mean and standard deviation was calculated as a descriptive statistics and independent t-test was used to find out the mean difference between the groups. The level of significance was set at 0.05. The assumptions for applying independent t-test were also taken into consideration (Homogeneity of Variance, Independent sample).

## RESULTS AND DISCUSSION:

Table 2

Descriptive Statistics of HSPG &amp; HAPG for Kinesthetic Perception

Groups	N	Mean	Std. Deviation
HSPG	30	52.17	8.57
HAPG	30	37.17	8.37

Table 2 shows the mean & standard deviation of HSPG & HAPG on kinesthetic perception. HSPG's mean along with standard deviation was  $52.17 \pm 8.57$  similarly HAPG's mean along standard deviation was  $37.17 \pm 1.67$ . The mean score of HSPG and HAPG are illustrated in Figure no. 1.

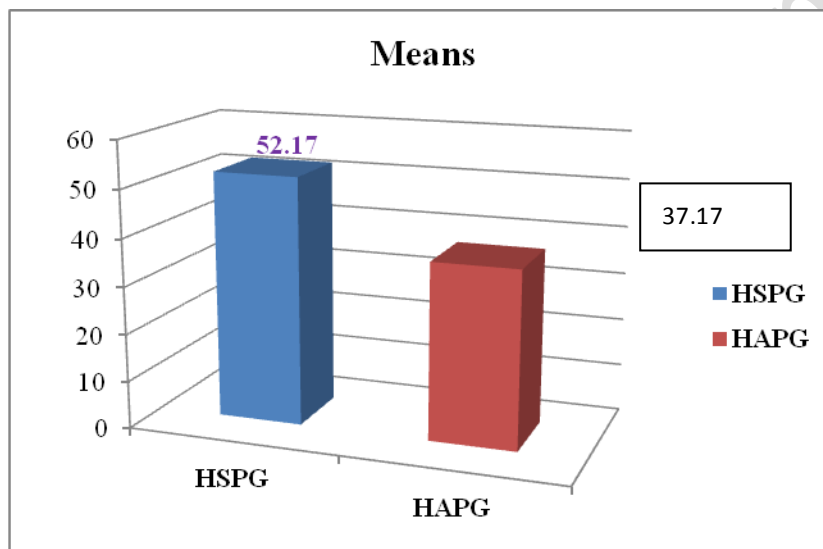


Fig: 1 Mean on Kinesthetic Perception HSPG &amp; HAPG.

Table 3

Independent t- test Statistics for HSPG and HAPG on Kinesthetic Perception

Groups	Means diff.	t-value	p-value	F-value	p-value
HSPG	15	6.85	0.00	0.36	0.55
HAPG					

Table 3 shows the mean difference, t-value and F-value to test the equality of variance (Levene's test was used). The mean difference on kinesthetic perception of male and female hockey players was 15. The F-value was 0.36 which is insignificant as the p-value was 0.55 which is more than 0.05 thus, it is concluded that variance of both the groups are equal. Similarly the t-value and p-value was 6.85 and 0.00 respectively. Since p-value was less than 0.05 which was significant, therefore it may be concluded that kinesthetic perception of HSPG and HAPG was poles apart.

It was observed from the findings of collected data that there was significant difference between the kinesthetic perception of High Sports Performance Group (HSPG) & High Academic Performance Group (HAPG). It means the kinesthetic of HSPG better than the HAPG. The reason could be attributed to the fact that the subjects of HSPG were take part in various physical activities like individual and team games which help them to improve the quantity of perception regarding the perception of the ball position, own body position, position the teammates, position of the opponent, when, where and how the ball will accurately pass to the teammates etc. while the students of HAPG more focus on their study to achieve maximum marks in various subjects avoiding participation in any vigorous motor action (Sarkar & Sarkar, 2013 ).

Results of this study are also compatible with some research findings, which acknowledge that kinesthetic perception can be improved through practice (Johnson and nelson, 1998) where the academic priority group also has to work conscientiously to achieve a high grade that requires mainly mental work not any vigorous motor action. By keeping this view in mind it can be said that another reason could be to developed kinesthetic perception ability is regular participation in training session for improving their motor abilities as well as performance. It has seen that sport students work hard during their training session by means of practice or repeat the movements' several times in progressive complexity with different variations. This approach of practice helps them greatly in understanding and memorizing the nature of skill as the result student's physical as well as mental capacity were developed.

This test is non-visual kinesthetic ability to predict position during movement which makes individual to drive an automobile and able to steer or use the foot pedals while looking at the road ahead. (Andre & Rojers, 2006) indicated that player looking towards the opponent and

dribbling the ball without a single glance on the movement it all possible through the better relationship between non -visual ability to predict position and motor skills.

### CONCLUSION

The result proved that through practice and involvement in different games and sports in regular basis the kinesthetic perception ability can be developed due to the training effect. That is why the kinesthetic perception of a sports man is always superior to an academician we can also say that physical activities improve the quantity of kinesthetic perception and Kinesthetic learning (also known as tactile learning) is a style of learning that is solely devoted by physical activity, rather than listening to a lecture or watching a demonstration ([https://en.wikipedia.org/wiki/Kinesthetic\\_learning](https://en.wikipedia.org/wiki/Kinesthetic_learning)).

### REFERENCES

- Sadri, R.N (November, 1993) *Promotion of sports: A Special Necessity Competition Success Review* p.p.24-27.
- Fox, L. Edward. *Physiological Basis of Physical Education and Athletics* (4<sup>th</sup> edition) publisher Wm. C. Brown Publisher.
- Sarkar, S. & Sarkar, S.G. (Sept, 2013). Comparative Study on Kinesthetic Perception between High Academic Achievement Group and High Sports Performance Group. *International Global Research Analysis*, volume: 2
- Brown, Jim. (March 19, 2013). *All about Proprioception*. Retrieved from <http://www.coreperformance.com/knowledge/training/all-about-proprioeption.html>.
- Johnson, Barry L. & Nelson, Jackson k. (1988) *Practical Measurements for Evaluation in Physical Education* (3<sup>rd</sup> Edition) Delhi; Surjeet Publication; pp: 225-228.
- Hatzitaki V, Zisi V, Kollias I, Kioumourtzoglou E, (June 2002.) *Perceptual-Motor Contributions to static and dynamic balance control in children* as cited in the paper of Singh, Pramod & Debnat,h Subir on Relationship of Visual and Nonvisual Kinesthesia to the Performance of Perceptual Motor Skills.
- Lynette, A. Jones (2000). *Kinesthetic Sensing to appear in Human and Machine Hepatics*, MIT Press. Retrieved from <http://bdml.stanford.edu/twiki/pub/Haptics/PapersInProgress/jones00.pdf>.
- Andre, J. & Rogers S. (2006). Uses the verbal and blind-walking distance estimates to investigate the two visual system hypotheses Percept Psychophys.; 68(3):353-61
- Kinesthetic learning (August 28, 2015). Retrieved on August 30, 2015 from the OLPC Wiki: [https://en.wikipedia.org/wiki/Kinesthetic\\_learning](https://en.wikipedia.org/wiki/Kinesthetic_learning).