Impact of Coordinative Ability on Performance of Hockey Players Participating in Inter Collegiate Level Tournaments

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1.0 Introduction

Physical education and sport build health activity habits that encourage life-long participation in physical activity. This extends the impact of physical education beyond the schoolyard and highlights the potential impact of physical education on public health. To achieve broader goals in education and development, sports programmes must focus on the development of the individual and not only on the development of technical sports skills. While the physical benefits of participation in sport are well known and supported by large volumes of empirical evidence, sport and physical activity can also have positive benefits on performance in various sports. Sports performance depends on both skill and physical fitness. Physical fitness components include aerobic and anaerobic power, agility, balance, coordination, flexibility, muscular fitness, and timing.

Performance in a given sports is a complex combination of several factors. Certain factors are dominating and other supportive. Nevertheless, every factor has its own role to play. The complex nature of performance is not merely the product of physical, psychic, physiological prerequisites. It is the accrued result of training and competition, over a period supported by the society in general. The different types of outdoor sports like hockey demand that the players be fully fit and should possess the coordinative ability to excel in various tournaments. In many cases the mistakes made by a player in a game and even within the practice, is due to the lack or poor coordination of body movements, as the execution of certain exercises and/or skill, this is evident when the player has no control of his different game profiles, with the attack or defense. For this reason, the Coordination is defined as "the combined action of central nervous system and keletal muscle towards the development of planned movement." Also, it has been mentioned that that the coordinative capabilities are determined mainly by the coordination, i.e. by regulating processes and driving the movement. In the back drop of above information this study has been carried out to study the impact of coordinative ability of hockey players on their performance.

2.0 Research Methodology

2.1 Design of Study

The design of the study was random group design, where the hockey players belonging to age group 18 to 25 years were selected randomly. Total 300 hockey players participating in inter collegiate level tournaments were selected in the study. The subjects were selected from the six districts of the Nagpur Administrative Division comprising of Nagpur, Wardha, Bhandara, Gondia, Chandrapur and Gadchiroli.

2.2 Data Collection

Data collection was done by using experimental method.

2.3 Selection of Variables

Based on literature review and with the discussion with experts and scholar's own understanding the following variables were selected for the purpose of the study.

2.4 Coordinative ability related variables

Numbered Medicine Ball Run Test was employed to check the orientation ability of the hockey players. Backward Medicine Ball Throw test was administered to assess the differentiation ability of the subjects. Furthermore, Nelson Hand Reaction Time Test was used to measure the hand reaction time of the subjects (hockey players).

2.5 Sports Performance

Sports performance related information of hockey players was collected using a short self made questionnaire.

2.6 Statistical Analysis and Significance Level

The data characteristics like Mean, Standard Deviation, Minimum, Maximum, etc. were determined. Analysis of Variance (ANOVA) procedure was used to check the difference in mean values and Pearson's Product Moment Correlation Coefficient test was used to study the relationship between coordinative ability and sports performance of hockey players. The data was analyzed using SPSS 18.0 Software. The significance level was chosen to be 0.05 (or equivalently, 5%).

3.0 Statistical Analysis and Interpretation

3.1 Orientation Ability

Table 1: Orientation Ability of Hockey players of various districts of study area

	Mean	SD	Min.	Max.	'F' ratio	P
Nagpur	5.3	±1.4	5.1	7.9	4.567	<0.05
Wardha	8.9	±2.3	6.8	9.4		
Bhandara	6.4	±1.8	5.9	8.1		
Gondia	8.2	±1.4	6.4	9.2		
Gadchiroli	7.2	±1.9	6.1	8.9		
Chandrapur	6.4	±1.7	5.8	7.9		

SD: Standard deviation; **Min**: Minimum; **Max**: Maximum

Above Table 1presents results of comparative assessment of orientation ability of hockey players of various districts of study area. The mean orientation ability of hockey players of Nagpur district and Wardha district was 5.3±1.4 seconds and 8.9±2.3 seconds respectively. However mean orientation ability of hockey players of Bhandara district and Gondia district was 6.4±1.8 seconds and 8.2±1.4 seconds respectively. Further mean orientation ability of hockey players of Gadchiroli district and Chandrapur district was 7.2±1.9 seconds and 6.4±1.7 seconds respectively.

3.2 Differentiation Ability

Table 2: Differentiation ability of Hockey players of various districts of study area

	Mean	SD	Min.	Max.	F ratio	P
Nagpur	5.4	±1.1	5.2	6.1	3.945	<0.05
Wardha	7.8	±1.3	6.7	8.7		
Bhandara	6.9	±1.7	6.1	8.3		
Gondia	7.8	±2.1	6.3	8.9		
Gadchiroli	7.7	±1.6	6.4	8.4		
Chandrapur	8.2	±1.5	6.2	8.9		

SD: Standard deviation; **Min**: Minimum; **Max**: Maximum

Above **Table 2** presents results of comparative assessment of differentiation ability of hockey players of various districts of study area. The mean differentiation ability of hockey players of Nagpur district and Wardha district was 5.4±1.1 seconds and 7.8±1.3 seconds respectively. However mean differentiation ability of hockey players of Bhandara district and Gondia district was 6.9±1.7 seconds and 7.8±2.1 seconds respectively. Further mean differentiation ability of hockey players of Gadchiroli district and Chandrapur district was 7.7±1.6 seconds and 8.2±1.5 seconds respectively.

3.3 Reaction Ability

Table 3: Reaction ability of Hockey players of various districts of study area

	Mean	SD	Min.	Max.	F ratio	P
Nagpur	1.6	±0.8	0.9	2.1	0.512	Not Significant
Wardha	1.8	±0.6	1	2.2		
Bhandara	1.7	±0.4	0.9	2.1		
Gondia	1.6	±0.6	0.8	2.3		
Gadchiroli	1.5	±0.5	0.8	1.9		
Chandrapur	1.9	±0.3	0.9	2.4		

SD: Standard deviation; **Min**: Minimum; **Max**: Maximum

Above **Table 3** presents results of comparative assessment of reaction ability of hockey players of various districts of study area. The mean reaction ability of hockey players of Nagpur district and Wardha district was 1.6±0.8 seconds and 1.8±0.6 seconds respectively. However mean reaction ability of hockey players of Bhandara district and Gondia district was 1.7±0.4 seconds and 1.6±0.6 seconds respectively. Further mean reaction ability of hockey players of Gadchiroli district and Chandrapur district was 1.5±0.5 seconds and 1.9±0.3 seconds respectively.

3.5 Relationship between Coordinative Ability and Sports Performance

Table 4: Relationship between Coordinative Ability and Sports Performance of Hockey Players of various districts of study area

	Sports performance Correlation coefficient (r^2)
Orientation Ability	0.864**
Differentiation Ability	0.649*
Reaction Ability	0.924**

* : Significant at p 0.05 level
**: Significant at p 0.01 level

Above **Table 4** presents results regarding the relationships between coordination ability and sports performance of hockey players of various districts of study area.

- Orientation Ability: The data showed that there is significant positive relationship between Orientation Ability and Sports Performance (r^2= 0.864, p<0.01) of the hockey players.
- Differentiation Ability: The data showed that there is significant positive relationship between Differentiation Ablity and Sports Performance (r^2= 0.649, p<0.05) of the ahockey players.
- Reaction Ability: The data showed that there is significant positive relationship between Reaction Ablity and Sports Performance (r^2= 0.924, p<0.01) of the hockey players.

4.0 Conclusions

4.1 Orientation Ability

- The comparative assessment showed that there is significant (P<0.05) difference in the orienation ability of hockey players of various districts of study area.

4.2 Differentiation Ability

- The comparative assessment showed that there is significant (P<0.05) difference in the differentiation ability of hockey players of various districts of study area.

4.3 Reaction Ability

- The comparative assessment showed that there is no significant difference in the reaction ability of hockey players of various districts of study area.

4.4 Relationship between Coordinative Ability and Sports Performance

- The comparative assessment showed that there is significant positive relationship between Coordinative Ability and Sports Performance of the hockey players of various districts of study area.

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