

Coordinative Abilities of Indian American Football Players: A Comparative Analysis Across Various Playing Positions

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Abstract:

Coordinative abilities play a crucial role in American Football, influencing an athlete's performance across various playing positions. This research paper aims to investigate the coordinative abilities of Indian American Football players, focusing on different playing positions within the sport. The study will analyze various coordinative aspects such as agility, balance, reaction time, and coordination skills to understand how these abilities vary across positions. The findings of this research will provide valuable insights into the physical attributes required for specific roles in American Football and contribute to optimizing training and talent development strategies.

Introduction:

American Football is a physically demanding sport that requires a combination of strength, speed, and coordinative abilities. Coordinative skills, including agility, balance, reaction time, and coordination, are crucial in executing various game-specific actions effectively. This research aims to explore the coordinative abilities of Indian American Football players and investigate potential variations among different playing positions. By understanding how coordinative abilities relate to specific roles, this study seeks to enhance the development of players and improve overall team performance.

Methodology:

Study Design:

This study adopted a cross-sectional design, examining coordinative abilities in Indian American Football players from different playing positions.

Sample Selection:

Participants recruited from various American Football teams in India. The sample will include players from Four different positions Receivers, Defensive backs, Quarterbacks, Linebackers.

Statistical analysis:

1. To Profile elite Indian American Football Players to standardized human performance measures by their selected Coordinative Abilities., mean and standard deviation were used.
2. To compare Playing Positions of American Football Players (Receivers, Defensive backs, Quarterbacks, Linebackers) by their selected Coordinative Abilities, one way analysis of variance (ANOVA) was used and the level of significance was set at 0.05 level.

Finding and Conclusions

TABLE – 1

MEAN, STANDARD DEVIATION AND RANGE OF AMERICAN FOOTBALL PLAYERS IN COORDINATIVE ABILITIES AT FOUR DIFFERENT PLAYING POSITIONS

| Variables | Playing Positions | | | | | | | | | | | |
|--------------------------------|-------------------|------|-----------|-----------------|------|-----------|--------------|------|-----------|-------------|------|-----------|
| | Receivers | | | Defensive backs | | | Quarter back | | | Linebackers | | |
| | M | SD | Range | M | SD | Range | M | SD | Range | M | SD | Range |
| Reaction Ability | 81.10 | 4.16 | 75-89 | 86.30 | 9.79 | 72-101 | 87.10 | 7.36 | 76-97 | 78 | 3.69 | 72-83 |
| Orientation Ability | 8.14 | .29 | 7.60-8.63 | 7.77 | .27 | 7.23-8.10 | 8.35 | .41 | 7.76-9.01 | 7.86 | .21 | 7.49-8.22 |
| Differentiation Ability | 11.50 | 1.39 | 9-13 | 12.60 | 1.46 | 10-15 | 10.40 | 2.21 | 7-13 | 13.40 | 1.39 | 11-15 |
| Balance Ability | 8.16 | .27 | 7.80-8.60 | 8.72 | .32 | 8.12-9.10 | 8.30 | .36 | 7.70-8.80 | 8.06 | .22 | 7.62-8.32 |
| Rhythm Ability | 1.55 | .25 | 1.19-1.83 | 1.26 | .15 | 1.00-1.50 | 1.23 | .10 | 1.00-1.34 | 1.10 | .11 | .90-1.29 |

M= Mean

SD = Standard Deviation

To observe the difference between American Football players of all the four playing positions on their selected coordinative abilities, the analysis of variance was adopted and data pertaining to these have been presented in table 2 to 11.

TABLE – 2

ANALYSIS OF VARIANCE OF REACTION ABILITY AMONG DIFFERENT PLAYING POSITIONS IN AMERICAN FOOTBALL PLAYERS

| Source of Variation | df | SS | MSS | F-Ratio |
|---------------------|----|---------|--------|---------|
| Between Groups | 3 | 1124.95 | 374.98 | 8.275* |

| | | | | |
|----------------|----|---------|-------|--|
| With in Groups | 76 | 3443.80 | 45.31 | |
|----------------|----|---------|-------|--|

*Significant at 0.05 Level of Confidence

$$F_{0.05}(3, 76) = 2.73$$

Table – 2 revealed that there was significant difference in different playing positions in relation to Reaction Ability as obtained F ratio was 8.275, which was higher value than the value 2.73, required for F-ratio to be significant at 0.05 level with (3,76) degree of freedom.

Since the one way analysis of variance was found significant in relation to Reaction Ability, the least significant difference (LSD) test was applied to find out which of the differences of the means amongst the different playing positions were statistically significant.

TABLE – 3

LEAST SIGNIFICANT DIFFERENCE POST – HOC TEST FOR MEANS OF ALL PLAYING POSITIONS IN RELATION TO REACTION ABILITY

| Playing Positions | | | | M.D. | C.D. |
|-------------------|-----------------|--------------|-------------|------|------|
| Receivers | Defensive backs | Quarter back | Linebackers | | |
| 81.10 | 86.30 | | | 5.2* | 4.25 |
| 81.10 | | 87.10 | | 6* | |
| 81.10 | | | 78.00 | 3.1 | |
| | 86.30 | 87.10 | | .8 | |
| | 86.30 | | 78.00 | 8.3* | |
| | | 87.10 | 78.00 | 9.1* | |

*Significant at .05 level.

It is evident from table 3 that mean differences of all playing positions in relation to Reaction Ability was found to be significant between Receivers and Defensive backs; Receivers and Quarter Back; Defensive backs and Linebackers; Quarter Back and Linebackers.

Mean difference between Receivers and Linebackers; Defensive backs and Quarter Back. did not prove to be significant at .05 level of confidence.

TABLE – 4

ANALYSIS OF VARIANCE OF ORIENTATION ABILITY AMONG DIFFERENT PLAYING POSITIONS IN AMERICAN FOOTBALL PLAYERS

| Source of Variation | df | SS | MSS | F-Ratio |
|---------------------|----|-------|-------|---------|
| Between Groups | 3 | 4.200 | 1.400 | 14.732* |
| With in Groups | 76 | 7.222 | .095 | |

*Significant at 0.05 Level of Confidence

F 0.05 (3, 76) = 2.73

Table – 4 revealed that there was significant difference in different playing positions in relation to Orientation Ability as obtained F ratio was 14.732, which was higher value than the value 2.73, required for F-ratio to be significant at 0.05 level with (3,76) degree of freedom.

Since the one way analysis of variance was found significant in relation to Orientation Ability, the least significant difference (LSD) test was applied to find out which of the differences of the means amongst the different playing positions were statistically significant.

TABLE – 5

LEAST SIGNIFICANT DIFFERENCE POST – HOC TEST FOR MEANS OF ALL PLAYING POSITIONS IN RELATION TO ORIENTATION ABILITY

| Playing Positions | | | | M.D. | C.D. |
|-------------------|-----------------|--------------|-------------|------|------|
| Receivers | Defensive backs | Quarter back | Linebackers | | |
| 8.146 | 7.776 | | | .37* | .195 |
| 8.146 | | 8.356 | | .21* | |
| 8.146 | | | 7.869 | .27* | |
| | 7.776 | 8.356 | | .58* | |
| | 7.776 | | 7.869 | .09 | |
| | | 8.356 | 7.869 | .48* | |

*Significant at .05 level.

It is evident from table – 5 that mean differences of all playing positions in relation to Orientation Ability was found to be significant except between Defensive backs and Linebackers.

TABLE – 6

ANALYSIS OF VARIANCE OF DIFFERENTIATION ABILITY AMONG DIFFERENT PLAYING POSITIONS IN AMERICAN FOOTBALL

| Source of Variation | df | SS | MSS | F-Ratio |
|---------------------|----|--------|--------|---------|
| Between Groups | 3 | 102.55 | 34.183 | 12.526* |
| With in Groups | 76 | 206.40 | 2.729 | |

*Significant at 0.05 Level of Confidence

F 0.05 (3, 76) = 2.73

Table – 6 revealed that there was significant difference in different playing positions in relation to Differentiation Ability as obtained F ratio was 12.526, which was higher value than the value 2.73, required for F-ratio to be significant at 0.05 level with (3,76) degree of freedom.

Since the one way analysis of variance was found significant in relation to Differentiation Ability, the least significant difference (LSD) test was applied to find out which of the differences of the means amongst the different playing positions were statistically significant.

TABLE – 7

LEAST SIGNIFICANT DIFFERENCE POST – HOC TEST FOR MEANS OF ALL PLAYING POSITIONS IN RELATION TO DIFFERENTIATION ABILITY

| Playing Positions | | | | M.D. | C.D. |
|-------------------|-----------------|-------------|-------------|------|-------|
| Recievers | Defensive backs | Quater back | Linebackers | | |
| 11.5 | 12.60 | | | 1.1* | 1.045 |
| 11.5 | | 10.40 | | 1.1* | |
| 11.5 | | | 13.40 | 1.9* | |
| | 12.60 | 10.40 | | 2.2* | |
| | 12.60 | | 13.40 | .8 | |
| | | 10.40 | 13.40 | 3* | |

*Significant at .05 level.

It is evident from table – 7 that mean differences of all playing positions in relation to Differentiation Ability was found to be significant except between Defensive backs and Linebackers.

TABLE – 8

ANALYSIS OF VARIANCE OF BALANCE ABILITY AMONG DIFFERENT PLAYING POSITIONS IN AMERICAN FOOTBALL

| Source of Variation | df | SS | MSS | F-Ratio |
|---------------------|----|-------|-------|---------|
| Between Groups | 3 | 5.057 | 1.686 | 18.376* |
| With in Groups | 76 | 6.972 | .092 | |

*Significant at 0.05 Level of Confidence

$$F_{0.05}(3, 76) = 2.73$$

Table – 8 revealed that their was significant difference in different playing positions in relation to Balance Ability as obtained F ratio was 18.376, which was higher value than the value 2.73, required for F-ratio to be significant at 0.05 level with (3,76) degree of freedom.

Since the one way analysis of variance was found significant in relation to Balance Ability, the least significant difference (LSD) test was applied to find out which of the differences of the means amongst the different playing positions were statistically significant.

TABLE – 9

LEAST SIGNIFICANT DIFFERENCE POST – HOC TEST FOR MEANS OF ALL PLAYING POSITIONS IN RELATION TO BALANCE ABILITY

| Playing Positions | | | | M.D. | C.D. |
|-------------------|-----------------|-------------|-------------|------|------|
| Recievers | Defensive backs | Quater back | Linebackers | | |

| | | | | | |
|------|-------|------|-------|-------|------|
| 8.16 | 8.725 | | | .565* | .192 |
| 8.16 | | 8.30 | | .140 | |
| 8.16 | | | 8.069 | .091 | |
| | 8.725 | 8.30 | | .425* | |
| | 8.725 | | 8.069 | .656* | |
| | | 8.30 | 8.069 | .231* | |

*Significant at .05 level.

It is evident from table –9 that mean difference of all playing positions in relation to Balance Ability was found to be significant except between Receivers and Quarter Back; Receivers and Linebackers.

TABLE – 10

ANALYSIS OF VARIANCE OF RHYTHM ABILITY AMONG DIFFERENT PLAYING POSITIONS IN AMERICAN FOOTBALL

| Source of Variation | df | SS | MSS | F-Ratio |
|---------------------|----|-------|------|---------|
| Between Groups | 3 | 2.248 | .749 | 26.080* |
| With in Groups | 76 | 2.183 | .029 | |

*Significant at 0.05 Level of Confidence

$$F_{0.05}(3, 76) = 2.73$$

Table – 10 revealed that there was significant difference in different playing positions in relation to Rhythm Ability as obtained F ratio was 26.080, which was higher value than the value 2.73, required for F-ratio to be significant at 0.05 level with (3,76) degree of freedom.

Since the one way analysis of variance was found significant in relation to Rhythm Ability, the least significant difference (LSD) test was applied to find out which of the differences of the means amongst the different playing positions were statistically significant.

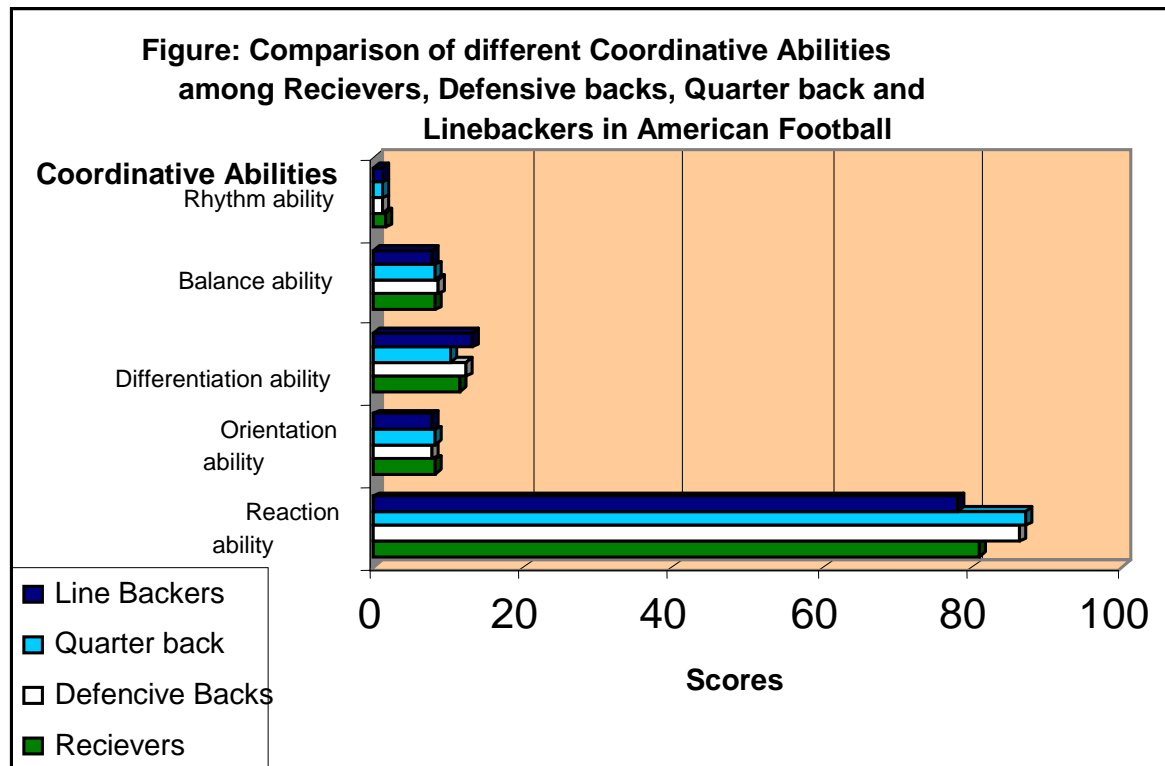
TABLE – 11

LEAST SIGNIFICANT DIFFERENCE POST – HOC TEST FOR MEANS OF ALL PLAYING POSITIONS IN RELATION TO RHYTHM ABILITY

| Playing Positions | | | | M.D. | C.D. |
|-------------------|-----------------|--------------|-------------|-------|------|
| Receivers | Defensive backs | Quarter back | Linebackers | | |
| 1.559 | 1.269 | | | .290* | .108 |
| 1.559 | | 1.23 | | .328* | |
| 1.559 | | | 1.1 | .459* | |
| | 1.269 | 1.23 | | .038 | |
| | 1.269 | | 1.1 | .169* | |
| | | 1.23 | 1.1 | .131* | |

*Significant at .05 level.

It is evident from table – 11 that mean differences of all playing positions in relation to Rhythm Ability was found to be significant except in case of Defensive backs and Quarter Back.



Discussion:

The results of the study have revealed that there was a significant difference between various playing positions of American Football in relation to different coordinative abilities. In case of Reaction Ability and Rhythm Ability Defensive Backs found to be stronger than to the players of other playing positions. The strong Reaction and Rhythm ability of the Line backers may be attributed to their functional and technical aspects of game. Line backers need to be quick, move with precision and take decision quickly which enable them to deceive opponent. Strong orientation and differentiation ability of the midfielder was established through statistical analysis of the data. This might probably account for vast difference of tactical moves between all field positions. Quarter back are backbone of any team, responsible to coordinate a link between defenders and attacking players. Quarter back have to understand the defensive as well as attacking moves which enable them to orient and differentiate different game pattern.

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