CHAPTER - IV

ANALYSIS OF THE DATA AND
RESULTS OF THE STUDY
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“No human investigation can be called true science without passing through mathematical tests”.

Leonard Da Vinci.

The collected data pertaining to the study has been analyzed and presented in this chapter. The primary purpose of the study was to find out on prediction of hockey playing ability from selected physical, anthropometric measurements and fundamental skills of Inter-University men hockey players. To achieve the purpose of the study one hundred (N=100) men hockey players have been selected from different universities such as Sri Venkateswara University, Tirupati, Sri Krishnadevaraya University, Anantapuram, Osmania University, Hyderabad, Kakatiya University, Warangal, Acharya Nagarjuna University, Guntur and Jawaharlal Nehru Technological University, Hyderabad in Andhra Pradesh were selected as subjects. All the selected subjects were tested on playing ability through subjective evaluation, physical ability through speed and endurance, anthropometric measurements through standing height and arm length, fundamental skills through Henry-Friedel field hockey test, Dribble and shooting ability test. The subjects age ranges from 18-25 years.

In order to analyze the collected data on selected dependent variable in relation to independent variables among university hockey players, Pearson’s product moment correlation ‘r’ was used to find out the degree of relationship between hockey playing ability and the selected variables.

To analyze the combined impact of all selected variables on playing ability, multiple correlation ‘R’ was employed. Further the investigator has attempted to analyze the effect of partialled out variables on hockey playing ability, the partial correlation was employed. The level of significance was fixed at 0.05 levels to test the degree of relationship between hockey playing ability and other selected physical, anthropometrical and fundamental skill variables.
ANALYSIS OF THE DATA

The degree of relationship between hockey playing ability and physical, anthropometrical and fundamental skill variables were analyzed and presented below.

The obtained coefficient of correlation with selected independent variables in relation to hockey playing ability was presented in table III.

TABLE - III
CO-EFFICIENT OF CORRELATION BETWEEN HOCKEY PLAYING ABILITY AND SELECTED VARIABLES

<table>
<thead>
<tr>
<th>Variables</th>
<th>Hockey playing ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>0.366*</td>
</tr>
<tr>
<td>Endurance</td>
<td>0.369*</td>
</tr>
<tr>
<td>Standing Height</td>
<td>0.452*</td>
</tr>
<tr>
<td>Arm Length</td>
<td>0.386*</td>
</tr>
<tr>
<td>Dribbling</td>
<td>0.367*</td>
</tr>
<tr>
<td>Dribble and Shooting</td>
<td>0.489*</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level of confidence

The table value for significant at 0.05 level with df 98 is 0.197.

Table III shows the correlation between selected independent variables and a dependent variable of the Inter-University men hockey players.

Co-efficient of correlation between speed and hockey playing ability was 0.366 since the obtained ‘r’ value 0.366 is much higher than the table value 0.197 at 0.5 level with the df 98. The results of the study indicated that there is a significant relationship between speed and hockey playing ability.

Co-efficient of correlation between endurance and hockey playing ability was 0.369 since the obtained ‘r’ value 0.369 is much higher than the table value 0.197 at 0.05 level with the df 98. It indicated that the significant relationship was documented between endurance and hockey playing ability.

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Co-efficient of correlation between standing height and hockey playing ability was 0.452 since the obtained ‘r’ value 0.452 is much higher than the table value 0.197 at 0.05 level with the df 98. The study reveals that the significant relationship was documented between standing height and hockey playing ability.

Co-efficient of correlation between arm length and hockey playing ability was 0.386 since the obtained ‘r’ value 0.386 is much higher than the table value 0.197 at 0.05 level with the df 98. It indicated that the significant relationship was existed between arm length and hockey playing ability.

Co-efficient of correlation between dribbling and hockey playing ability was 0.367 since the obtained ‘r’ value 0.367 is much higher than the table value 0.197 at 0.05 level with the df 98. The study indicated that there was a significant relationship between dribbling and hockey playing ability.

Co-efficient of correlation between hockey playing ability, dribble and shooting was 0.489 since the obtained ‘r’ value 0.489 is much higher than the table value 0.197 at 0.05 level with the df 98. It reveals that the significant relationship was takes place between hockey playing ability, dribble and shooting.

Table III shows that the co-efficient of correlation between the independent variables and the dependent variable ranges from 0.366 to 0.489. The high significant of correlation was documented between hockey playing ability, dribble and shooting.

Based on the results investigator has concluded that the dependent variable hockey playing ability is heavily depends on the selected physical, anthropometrical and fundamental skills.

In order to analyze the combined effect of all the six independent variables on the dependent variable hockey playing ability of Inter-University hockey players, the data are subjected to multiple correlation and the results are presented in table IV.
TABLE - IV
RELATIONSHIP BETWEEN THE COMBINED EFFECT OF DEPENDENT VARIABLE AND INDEPENDENT VARIABLES

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Independent Variables</th>
<th>Obtained $R_{1,234567}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hockey Playing Ability</td>
<td>Speed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endurance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Standing Height</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arm length</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dribbling</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dribble and Shooting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.720*</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 level of confidence.

The table value for significant at 0.05 level which the degree of freedom 93 is 0.353.

Table IV reveals that the $R_{1,234567}$ value of 0.353 was the tabulated value for significance at 0.05 levels with df 93. The obtained $R_{1,234567}$ value 0.720 was greater than the table value of 0.353. Therefore, the obtained $R_{1,234567}$ was significant at 0.05 level of confidence. It was clear that there is a significant relationship between independent variables and dependent variable.

The data are further subjected to partial correlation to partialled out the effects of each independent variable on the combined effect of independent variables on hockey playing ability are presented in table V.
TABLE – V
PARTIAL RELATIONSHIP BETWEEN THE SELECTED DEPENDENT
AND INDEPENDENT VARIABLES

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Independent Variables</th>
<th>Partial ‘r’ ( r_{12.34567} = 0.249^* )</th>
<th>Pearson’s ‘r’</th>
<th>( r_{13.24567} = 0.218^* )</th>
<th>( r_{14.23567} = 0.324^* )</th>
<th>( r_{15.23467} = 0.263^* )</th>
<th>( r_{16.23457} = 0.280^* )</th>
<th>( r_{17.23456} = 0.348^* )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hockey Playing Ability</td>
<td>Speed</td>
<td>( r_{12.34567} = 0.249^* )</td>
<td>0.366*</td>
<td>( r_{13.24567} = 0.218^* )</td>
<td>0.369*</td>
<td>( r_{14.23567} = 0.324^* )</td>
<td>0.452*</td>
<td>( r_{15.23467} = 0.263^* )</td>
</tr>
<tr>
<td>Standing Height</td>
<td></td>
<td></td>
<td></td>
<td>( r_{16.23457} = 0.280^* )</td>
<td>0.367*</td>
<td></td>
<td></td>
<td>( r_{17.23456} = 0.348^* )</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level of confidence.

The table value for significant at 0.05 level with df 98 is 0.197.

Table V shows that the obtained partial correlation was significant at 0.05 level of confidence. The results of the study indicated that the correlation between hockey playing ability and speed was 0.366 when endurance, standing height, arm length, dribbling and dribble & shooting were partialled out, the correlation was decreased to \( r_{12.34567} \) 0.249. Thus, the speed has got some positive influence on hockey playing ability. The simple correlation between hockey playing ability and endurance was 0.369. When speed, standing height, arm length, dribbling and dribble & shooting were partialled out, the correlation was declined to \( r_{13.24567} \) 0.218. Thus, endurance has some value accounted for the hockey playing ability. The correlation between hockey playing ability and standing height was 0.452. When speed, endurance, arm length, dribbling and dribble & shooting were partialled out, the correlation declined to \( r_{14.23567} \) 0.324. Thus, standing height had some value accounted for the hockey playing ability. The correlation between hockey playing ability and arm length was 0.386. When speed, endurance, standing height, dribbling and dribble & shooting were partialled out, the correlation reduced to 0.263. Thus arm length had some value accounted for the hockey playing ability.
The correlation between hockey playing ability and dribbling was 0.367. When speed, endurance, standing height, arm length, and dribble & shooting were partialled out, the correlation declined to 0.280. Thus dribbling had some value accounted for the hockey playing ability. The correlation between hockey playing ability and dribble & shooting was 0.489. When speed, endurance, standing height, arm length and dribbling were partialled out, the correlation declined to 0.348. Thus dribble & shooting had some value accounted for the hockey playing ability.

DISCUSSION ON FINDINGS

In this study physical variables speed and endurance, anthropometric measurements standing height and arm length, fundaments skills dribbling, dribble and shooting, were taken as independent variables. One hundred (N=100) Inter-university men hockey players were taken for this study. All the selected subjects were rated in their playing ability by three experts, during the actual competition. This rating score was taken as dependent variable or criterion variable.

Only six variables were taken for this study. Out of which how many of the selected variables have got significant relationship with the hockey playing ability was found through this study.

The study revealed that six variables are significantly correlated with the hockey playing ability. The correlation results were presented in the Table VI.

TABLE – VI
CO-EFFICIENT OF CORRELATION OF SELECTED VARIABLES IN RELATION TO HOCKEY PLAYING ABILITY IN ORDER

<table>
<thead>
<tr>
<th>1. Dribble and Shooting</th>
<th>0.489</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Standing Height</td>
<td>0.452</td>
</tr>
<tr>
<td>3. Arm Length</td>
<td>0.386</td>
</tr>
<tr>
<td>4. Endurance</td>
<td>0.369</td>
</tr>
<tr>
<td>5. Dribbling</td>
<td>0.367</td>
</tr>
<tr>
<td>6. Speed</td>
<td>0.366</td>
</tr>
</tbody>
</table>
Dribble and Shooting Ability:

Results indicate that the significant relationship was existed between hockey playing ability and dribble and shooting. Hence, the study concluded that dribble and shooting is having a significant role in improving playing ability in hockey.

Standing Height:

Results indicate that the significant relationship was existed between hockey playing ability and standing height. Hence, the study concluded that standing height is having a significant role in improving playing ability in hockey.

Arm Length:

Results indicate that the significant relationship was existed between hockey playing ability and arm length. Hence, the study concluded that arm length is having a significant role in improving playing ability in hockey.

Endurance:

Results indicate that the significant relationship was existed between hockey playing ability and endurance. Hence, the study concluded that endurance is having a significant role in improving playing ability in hockey.

Dribbling:

Results indicate that the significant relationship was existed between hockey playing ability and dribbling. Hence, the study concluded that dribbling is having a significant role in improving playing ability in hockey.

Speed:

Results indicate that the significant relationship was existed between hockey playing ability and speed. Hence, the study concluded that speed is having a significant role in improving playing ability in hockey.

Based on the results the investigator has advised the selectors to keep all these six variables in mind while selecting players in hockey, since all the factors are found to be significantly related to the hockey playing ability.
The investigation clearly pointed out that the hockey playing ability was mostly based on the Dribble and Shooting ability (the correlation value of 0.489), anthropometric measurements (Standing Height and Arm Length). The correlation values are 0.452 and 0.386.

From the findings of this study, six selected variables namely dribble and shooting ability, Standing Height, Arm Length, Endurance, Dribbling and Speed can be used by Physical Educators, Fitness trainers and coaches to design suitable training programme to develop all six selected variables.

It is evident that the Dribble and Shooting has the highest relation (0.489) with hockey playing ability, followed by standing height (0.452), Arm Length (0.386), Endurance (0.369), Dribbling (0.367), that Speed (0.366) with hockey playing ability.

The scores of the respondents (refer Appendix -I) has been substituted in multiple correlation and it is found that the playing ability was based on physical (Speed and Endurance), Anthropometric measurements (Standing Height and Arm Length) and Fundamental skills (Dribbling and Dribble & shooting).

DISCUSSION ON HYPOTHESES

1. The first hypothesis stated that there would be a significant relationship between the criterion variable and predictor variables. The results of the study indicate that there was a significant relationship between criterion variable and predictor variables. Hence, the first hypothesis was held true at 0.05 level of confidence.

2. The second hypothesis stated that there would be a significant relationship between speed and hockey playing ability. The result of the study indicates that there was a significant relationship between speed and hockey playing ability. Hence, the second hypothesis was held true at 0.05 level of confidence.

3. The third hypothesis stated that there would be a significant relationship between endurance and hockey playing ability. The result of the study indicates that there was a significant relationship between endurance and hockey playing ability. Hence, the third hypothesis was held true at 0.05 level of confidence.
4. The fourth hypothesis stated that there would be a significant relationship between standing height and hockey playing ability. The result of the study indicates that there was a significant relationship between standing height and hockey playing ability. Hence, the fourth hypothesis was held true at 0.05 level of confidence.

5. The fifth hypothesis stated that there would be a significant relationship between arm length and hockey playing ability. The result of the study indicates that there was a significant relationship between arm length and hockey playing ability. Hence, the fifth hypothesis was held true at 0.05 level of confidence.

6. The sixth hypothesis stated that there would be a significant relationship between dribbling and hockey playing ability. The result of the study indicates that there was a significant relationship between dribbling and hockey playing ability. Hence, the sixth hypothesis was held true at 0.05 level of confidence.

7. The seventh hypothesis stated that there would be a significant relationship between dribble and shooting, and hockey playing ability. The result of the study indicates that there was a significant relationship between dribble and shooting, and hockey playing ability. Hence, the seventh hypothesis was held true at 0.05 level of confidence.

8. The eighth hypothesis stated that there would be a significant relationship between hockey playing ability and combined effect of speed, endurance, standing height, arm length, dribbling and dribble and shooting. The result of the present investigation indicates that there was a significant relationship between hockey playing ability and the combined effect of speed, endurance, standing height, arm length, dribbling, and dribble and shooting. Hence, the eighth hypothesis was held true at 0.05 level of confidence.