A CO-RELATIONAL STUDY OF SOMATOTYPING, PHYSICAL FITNESS AND SKILLS OF BASEBALL PLAYERS OF VIDARBHA

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ABSTRACT
Today physical education sports and games have become a part of curriculum in the school, college and Universities. Every human being has a fundamental right to access to physical activities and sports, which are essential for the whole, some development of his personality. The freedom to develop physical intellectual and moral power, through physical education and sport must be guaranteed both within the educational system and in other aspects of social life.

KEY WORD: physical education sports and games, physical activities and sports.

1.0 INTRODUCTION
Physical fitness is one of the potential characteristics of every human being. Physically fit citizens are a major asset for a strong nation, and hence, physical fitness of the youth should be a national and general concern. Like all the sporting activities, baseball also requires the players to be physically fit and need to possess a certain set of skills and body type to excel. In addition to the high level of skill required to play baseball, to be a successful player needs good speed, power and agility. The experts feel that in the sport of baseball, the most important physical attribute according is balance and coordination. Players also require a high level of motivation and self-confidence, and equally and importantly need a high level of skill. In view of the above, this research activity is carried out to determine physical fitness and somatotypes of school going students (boys) and was further studied to establish relationship with their performance in baseball tournaments.

2.0 RESEARCH METHODOLOGY
2.1 Sample Technique and Size
Players participating in inter school baseball tournaments were considered as samples for this study. 100 baseball players were selected from each District of the study area i.e. Nagpur, Wardha and Chandrapur districts of Vidarbha Region making the sample size of 300. The distribution of samples was as follows. Researcher selected 3 districts, 10 schools from each district and 10 baseball players from each school, so total no of baseball players were 300.

2.2 Criterion Measures
Muscular strength was measured by sit ups, maximum number of repetitions were recorded as scores of the test. Muscular power will be measured by standing broad jump and horizontal distance recorded in centimeters. Speed was measured by 50 yard dash and time was recorded in 1/10th of second. Endurance was measured by 600 meters run/walk test, the time was recorded in seconds. Agility was measured by shuttle run and the time was recorded in 1/10th of second. The
somatotype characteristics were measured with the help of Health Carter Somatotype Rating Form. The sports performance of the high school boys was assessed using a structured questionnaire. In this study, the sports performance of the school going students was assessed by using a structured questionnaire.

### 2.3 Statistical Techniques and Significance Level

To determine the relationship between physical fitness skills and somatotype status of school level baseball students of Vidarbha region, SPSS 18.0 software was used. Descriptive as well as inferential statistics was determined. The data characteristics such as mean, standard deviation, range, frequency, percentage, etc. were determined. A Pearson’s product moment correlation was computed between the two measures. The significance level was chosen to be 0.05 (or equivalently, 5%).

### 3.0 RESULTS AND DISCUSSION

#### 3.1 Relationship between Somatotypes and sports performance

**Table 1: Relationship between Somatotypes and sports performance of baseball players**

<table>
<thead>
<tr>
<th>Somatotypes</th>
<th>Correlation coefficient ($r^2$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endomorphs</td>
<td>-0.523*</td>
</tr>
<tr>
<td>Mesomorphs</td>
<td>0.624**</td>
</tr>
<tr>
<td>Ectomorphs</td>
<td>0.348*</td>
</tr>
</tbody>
</table>

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

Above Table 1 presents results regarding the relationships between Somatotypes and sports performance of baseball players.

- **Endomorphs**: The data showed that there is significant negative relationship between Endomorph and Sports Performance ($r^2 = -0.523$, $p<0.01$) of the baseball players.

- **Mesomorphs**: The data showed that there is significant positive relationship between Mesomorph and Sports Performance ($r^2 = 0.624$, $p<0.01$) of the baseball players.

- **Ectomorphs**: The data showed that there is significant positive relationship between Ectomorph and Sports Performance ($r^2 = 0.348$, $p<0.05$) of the baseball players.

#### 3.2 Relationship between physical fitness and sports performance

**Table 2: Relationship between Somatotypes and sports performance of baseball players**

<table>
<thead>
<tr>
<th>Somatotypes</th>
<th>Sports performance Correlation coefficient ($r^2$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscular Strength</td>
<td>0.508**</td>
</tr>
<tr>
<td>Muscular Endurance</td>
<td>0.241</td>
</tr>
<tr>
<td>Speed</td>
<td>0.690**</td>
</tr>
<tr>
<td>Agility</td>
<td>0.721**</td>
</tr>
<tr>
<td>Cardio respiratory Endurance</td>
<td>0.428*</td>
</tr>
</tbody>
</table>

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

Above Table 2 presents results regarding the relationships between Somatotypes and sports performance of baseball players.

- **Muscular Strength**: The data showed that there is significant positive relationship between Muscular Strength and Sports Performance ($r^2 = 0.508$, $p<0.01$) of the baseball players.
• **Muscular Endurance**: The data showed that there is significant positive relationship between Muscular Endurance and Sports Performance ($r^2 = 0.241$, $p=\text{Not significant}$) of the baseball players.

• **Speed**: The data showed that there is significant positive relationship between Speed and Sports Performance ($r^2 = 0.690$, $p<0.01$) of the baseball players.

• **Agility**: The data showed that there is significant positive relationship between Agility and Sports Performance ($r^2 = 0.721$, $p<0.01$) of the baseball players.

• **Cardio respiratory Endurance**: The data showed that there is significant positive relationship between Cardio respiratory Endurance and Sports Performance ($r^2 = 0.428$, $p<0.05$) of the baseball players.

### 3.3 Relationship between Somatotypes and physical fitness

<table>
<thead>
<tr>
<th>Somatotypes</th>
<th>Physical Fitness Correlation coefficient ($r^2$)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Muscular Strength</td>
<td>Muscular Endurance</td>
</tr>
<tr>
<td>Endomorphs</td>
<td>0.557**</td>
<td>0.207</td>
</tr>
<tr>
<td>Mesomorphs</td>
<td>0.603**</td>
<td>0.495**</td>
</tr>
<tr>
<td>Ectomorphs</td>
<td>0.301</td>
<td>0.621</td>
</tr>
</tbody>
</table>

* : Significant at $p \leq 0.05$ level  
** : Significant at $p \leq 0.01$ level

Above Table 3 presents results regarding the relationships between Somatotypes and Physical Fitness of baseball players.

• **Endomorph and Muscular Strength**: The data showed that there is significant positive relationship between Endomorph and Muscular Strength ($r^2 = 0.557$, $p<0.01$) of the baseball players.

• **Endomorph and Muscular Endurance**: The data showed that there is significant positive relationship between Endomorph and Muscular Endurance ($r^2 = 0.207$, $p=\text{Not Significant}$) of the baseball players.

• **Endomorph and Speed**: The data showed that there is significant positive relationship between Endomorph and Speed ($r^2 = 0.134$, $p=\text{Not Significant}$) of the baseball players.

• **Endomorph and Agility**: The data showed that there is significant positive relationship between Endomorph and Agility ($r^2 = 0.134$, $p=\text{Not Significant}$) of the baseball players.

• **Endomorph and Cardio respiratory Endurance**: The data showed that there is significant positive relationship between Endomorph and Cardio respiratory Endurance ($r^2 = 0.201$, $p=\text{Not Significant}$) of the baseball players.

• **Mesomorph and Muscular Strength**: The data showed that there is significant positive relationship between Mesomorph and Muscular Strength ($r^2 = 0.603$, $p<0.01$) of the baseball players.

• **Mesomorph and Muscular Endurance**: The data showed that there is significant positive relationship between Mesomorph and Muscular Endurance ($r^2 = 0.495$, $p<0.01$) of the baseball players.

• **Mesomorph and Speed**: The data showed that there is significant positive relationship between Mesomorph and Speed ($r^2 = 0.594$, $p<0.01$) of the baseball players.

• **Mesomorph and Agility**: The data showed that there is significant positive relationship between Mesomorph and Agility ($r^2 = 0.539$, $p<0.01$) of the baseball players.

• **Mesomorph and Cardio respiratory Endurance**: The data showed that there is significant positive relationship between Mesomorph and Cardio respiratory Endurance ($r^2 = 0.493$, $p<0.05$) of the baseball players.

• **Ectomorph and Muscular Strength**: The data showed that there is significant positive relationship between Ectomorph and Muscular Strength ($r^2 = 0.301$, $p=\text{Not Significant}$) of the baseball players.
4.0 CONCLUSIONS

4.1 Relationship between Somatotypes and sports performance

In view of the study results it is concluded that there is significant negative relationship between Endomorph and Sports Performance, while a positive relationship between Mesomorph as well as Ectomorphs and Sports Performance.

4.2 Relationship between physical fitness and sports performance

- In view of the study results it is concluded that there is significant significant positive relationship between Muscular Strength, Speed, Agility and Cardio-respiratory endurance with the Sports Performance of baseball players. However, the relationship between Muscular Endurance and Sports Performance was not statistically significant.

4.3 Relationship between Somatotypes and physical fitness

- Form the data it is concluded that there is significant positive relationship between Endomorph and Muscular Strength, while the Mesomorph showed positive relationship with Muscular Strength, Muscular Endurance, Speed, Agility and Cardio respiratory Endurance. Moreover, the Ectomorph showed positive relationship with Muscular Endurance, Speed, Agility and Cardio respiratory Endurance.

5.0 BIBLIOGRAPHY


