CHAPTER – IV
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ANALYSIS OF DATA AND RESULTS OF THE STUDY

DATA ANALYSIS

The statistical technique that had been used for the systematic and meaningful analysis of collected data has been presented in this chapter.

Data were collected from three different subdivisions namely Rampurhat, Bolpur and Suri of Birbhum district of West Bengal, India in respect of six parameters namely agility, balance, coordination, speed, power and reaction time which has been described in this chapter. The six test items namely; Semo Agility Test, Stork Stand Balance Test, Eye-Foot Coordination Test, 50 Yard Test, Standing Broad Jump, Nelson Hand Reaction Test were selected with a view to measure the motor fitness components of the children belonging to above and below poverty line.

A total number of two thousand and four hundred (2400) the children belonging to APL and BPL category from different schools of three subdivisions of Birbhum district of West Bengal, India were tested in the different items of motor fitness components. Of the above mentioned samples 561 APL and 572 BPL children from Rampurhat subdivision; 402 APL and 444 BPL from Bolpur subdivision; and 237 APL and 184 BPL
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from Suri subdivision were selected from Birbhum district of West Bengal, India.

1200 each of APL and BPL students of class VI – VIII aged 9 to 14 years of Government aided schools from three different subdivisions namely Rampurhat, Bolpur and Suri of Birbhum district of West Bengal, India were selected separately to compare the motor fitness components between the children belonging to above and below the poverty line.

Descriptive Statistics were employed to identify status of central characteristics in terms of Measure of Central Tendency and simple variability. Hence Mean, Range, Standard Deviations etc were analyzed for each component of motor fitness for two selected group viz. APL and BPL.

The Student ‘t’ test was applied for comparing the means of both the groups for each motor fitness component. The hypothesis was tested at .05 Level of Significance.

Six different sections have been made to describe the results of the study separately for each motor fitness component for the children belonging to above and below the poverty line category. At the end, discussion of findings with supports of other study and discussion of hypothesis are described in this chapter.
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Section I - Agility

In this section an analysis of data of the study for the children belonging to APL and BPL category for Agility on the motor fitness component has been described. A total number of twelve hundred (1200) APL and twelve hundred (1200) BPL children have been tested through Semo Agility Test.

Table 5: Comparison of the means of Agility between the children belonging to APL and BPL category

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>MD</th>
<th>SEMD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>APL</td>
<td>1200</td>
<td>14.944</td>
<td>0.722</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPL</td>
<td>1200</td>
<td>15.290</td>
<td>4.111</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 Level of Significance.
*Tab \( t_{0.05} \) at 2398 degree of freedom is 1.96

Fig – 14: Comparison of the means of Agility between the children belonging to APL and BPL category
Table 5 shows the comparison of the means between the children belonging to APL and BPL category for agility on the motor fitness component. In Semo Agility Test total 2400 (1200 each) children belonging to APL and BPL category have been compared through Student ‘t’ test. The mean performance value of both the categories can be observed as 14.944 Sec. for APL and 15.290 Sec. for BPL. The Standard Deviation of both the categories is 0.722 for APL and 4.111 for BPL. The mean difference is 0.347

Table 5 signifies that there is a significant difference on Agility between the children belonging to APL and BPL category because the calculated ‘t’ value 2.877 is found to be greater than the tabulated ‘t’ value 1.96.

On the basis of mean performance value of the children belonging APL and BPL category i.e. 14.944 Sec. and 15.29 Sec. respectively; Mean Difference value 0.347 and Standard error of mean difference value 0.121 it can be concluded that in Agility the children belonging to APL category were better than the children belonging to BPL category.

The graphical representation of comparison of the means between the children belonging to APL and BPL category for agility (Semo Agility Test) on the motor fitness component is exhibited in Figure 14.
Section II - Balance

In this section an analysis of data of the study for the children belonging to APL and BPL category for Balance on the motor fitness component has been described. A total number of twelve hundred (1200) APL and twelve hundred (1200) BPL children have been tested through Stork Stand Balance Test.

**Table 6: Comparison of the means of Balance between the children belonging to APL and BPL category**

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>MD</th>
<th>SEMD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>APL</td>
<td>1200</td>
<td>7.512</td>
<td>2.361</td>
<td>2398</td>
<td>0.422</td>
<td>0.089</td>
<td>4.753*</td>
</tr>
<tr>
<td>BPL</td>
<td>1200</td>
<td>7.091</td>
<td>1.968</td>
<td></td>
<td>0.422</td>
<td>0.089</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 Level of Significance.
*Tab $t_{0.05}$ at 2398 degree of freedom is 1.96

**Fig – 15: Comparison of the means of Balance between the children belonging to APL and BPL category**
Table 6 shows the comparison of the means between the children belonging to APL and BPL category for balance on the motor fitness component. In Stork Stand Balance Test total 2400 (1200 each) APL and BPL children have been compared through Student ‘t’ test. The mean performance value of both the categories can be observed as 7.512 Sec. for APL and 7.091 Sec. for BPL. The Standard Deviation of both the categories is 2.361 for APL and 1.968 for BPL. The mean difference is 0.422.

Table 6 signifies that there is a significant difference on Balance between the children belonging to APL and BPL category because the calculated ‘t’ value 4.753 is greater than the tabulated ‘t’ value 1.96.

On the basis of mean performance value of the children belonging to APL and BPL category i.e. 7.512 Sec. and 7.091 Sec. respectively; Mean Difference value 0.422 and Standard error of mean value 0.089 it can be concluded that in Balance the children belonging to APL category are better than the children belonging to BPL category.

The graphical representation of comparison of the means between the children belonging to APL and BPL category for balance (Stork Stand Balance Test) on the motor fitness component is exhibited in Figure 15.
Section III – Power

In this section an analysis of data of the study for the children belonging to APL and BPL category for Power on the motor fitness component has been described. A total number of twelve hundred (1200) APL and twelve hundred (1200) BPL children have been tested through Standing Broad Jump.

Table 7: Comparison of the means of Power between the children belonging to APL and BPL category

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>MD</th>
<th>SEMD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>APL</td>
<td>1200</td>
<td>171.92</td>
<td>10.391</td>
<td>2398</td>
<td>1.113</td>
<td>0.380</td>
<td>2.931*</td>
</tr>
<tr>
<td>BPL</td>
<td>1200</td>
<td>170.81</td>
<td>8.071</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 Level of Significance.
*Tab t.05 at 2398 degree of freedom is 1.96

Fig – 16: Comparison of the means of Power between the children belonging to APL and BPL category
Table 7 shows the comparison of the means between the children belonging to APL and BPL category for power on the motor fitness component. In Standing Broad Jump total 2400 (1200 each) children belonging to APL and BPL category have been compared through Student ‘t’ test. The mean performance value of both the categories can be observed as 171.92 cm. for APL and 170.81 cm. for BPL. The Standard Deviation of both the categories is 10.391 for APL and 8.071 for BPL. The mean difference is 1.113.

Table 7 signifies that there is a significant difference on Power between the children belonging to APL and BPL category because the calculated ‘t’ value 2.931 is greater than the tabulated ‘t’ value 1.96.

So on the basis of mean performance value of the children belonging to APL and BPL category i.e. 171.92 cm. and 170.81 cm. respectively; Mean Difference value 1.113 and Standard error of mean value 0.380 it can concluded that in Power the children belonging to APL category are better than the children belonging to BPL category.

The graphical representation of comparison of the means between the children belonging to APL and BPL category for power (Standing Broad Jump) on the motor fitness component is exhibited in Figure 16.
Section IV – Co-ordination

In this section an analysis of data of the study for the children belonging to APL and BPL category for coordination on the motor fitness component has been described. A total number of twelve hundred (1200) APL and twelve hundred (1200) BPL children have been tested through Eye-Foot Coordination Test.

**Table 8: Comparison of the means of Co-ordination between the children belonging to APL and BPL category**

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>MD</th>
<th>SEMD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>APL</td>
<td>1200</td>
<td>6.289</td>
<td>0.835</td>
<td>2398</td>
<td>0.071</td>
<td>0.032</td>
<td>2.200*</td>
</tr>
<tr>
<td>BPL</td>
<td>1200</td>
<td>6.360</td>
<td>0.752</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 Level of Significance.
*Tab $t_{0.05}$ at 2398 degree of freedom is 1.96

**Fig – 17: Comparison of the means of Co-ordination between the children belonging to APL and BPL category**
Table 8 shows the comparison of the means between the children belonging to APL and BPL category for co-ordination on the motor fitness component. In Eye-Foot Coordination Test total 2400 (1200 each) children belonging to APL and BPL category have been compared through Student ‘t’ test. The mean performance value of both the categories can be observed as 6.289 Sec. for APL and 6.360 Sec. for BPL. The Standard Deviation of both the categories is 0.835 for APL and 0.752 for BPL. The mean difference is 0.032.

Table 8 signifies that there is a significant difference on Coordination between the children belonging to APL and BPL category because the calculated ‘t’ value 2.20 is greater than the tabulated ‘t’ value 1.96.

On the basis of mean performance value of the children belonging to APL and BPL category i.e. 6.289 Sec. and 6.360 Sec. respectively; Mean Difference value 0.071 and standard error of mean difference 0.032 it can be concluded that in Coordination the children belonging to APL category are better than the children belonging to BPL category.

The graphical representation of comparison of the means between the children belonging to APL and BPL category for co-ordination (Eye-Foot Coordination Test) on the motor fitness component is exhibited in Figure 17.
Section V - Speed

In this section an analysis of data of the study for the children belonging to APL and BPL category for Speed on the motor fitness component has been described. A total number of twelve hundred (1200) APL and twelve hundred (1200) BPL children have been tested through 50 Yards Dash Test.

Table 9: Comparison of the means of Speed between the children belonging to APL and BPL category

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>MD</th>
<th>SEMD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>APL</td>
<td>1200</td>
<td>8.460</td>
<td>0.726</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPL</td>
<td>1200</td>
<td>8.560</td>
<td>0.694</td>
<td>2398</td>
<td>0.100</td>
<td>0.029</td>
<td>3.449*</td>
</tr>
</tbody>
</table>

*Significant at 0.05 Level of Significance.
*Tab $t_{0.05}$ at 2398 degree of freedom is 1.96

Fig – 18: Comparison of the means of Speed between the children belonging to APL and BPL category
Table 9 shows the comparison of the means between the children belonging to APL and BPL category for speed on the motor fitness component. In 50 Yards Dash Test total 2400 (1200 each) children belonging to APL and BPL category have been compared through Student ‘t’ test. The mean performance value of both the categories can be observed as 8.46 Sec. for APL and 8.56 Sec. for BPL. The Standard Deviation of both the categories is 0.726 for APL and 0.694 for BPL. The mean difference is 0.100.

Table 9 signifies that there is a significant difference on Speed between the children belonging to APL and BPL category because the calculated ‘t’ value 3.449 is greater than the tabulated ‘t’ value 1.96.

On the basis of mean performance value of the children belonging to APL and BPL category i.e. 8.46 Sec. and 8.56 Sec. respectively; Mean Difference value 0.100 and standard error of mean 0.029 it can be concluded that in Speed the children belonging to APL category are better than the children belonging to BPL category.

The graphical representation of comparison of the means between the children belonging to APL and BPL category for Speed (50 Yard Dash Test) on the motor fitness component is exhibited in Figure 18.
Section VI – Reaction Ability

In this section an analysis of data of the study for the children belonging to APL and BPL category for Reaction ability on the motor fitness component has been described. A total number of twelve hundred (1200) APL and twelve hundred (1200) BPL children have been tested through Nelson Hand Reaction Test.

**Table 10: Comparison of the means of Reaction Ability between the children belonging to APL and BPL category**

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>MD</th>
<th>SEMD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>APL</td>
<td>1200</td>
<td>0.1784</td>
<td>0.0048</td>
<td>2398</td>
<td>0.0011</td>
<td>0.0003</td>
<td>3.612*</td>
</tr>
<tr>
<td>BPL</td>
<td>1200</td>
<td>0.1794</td>
<td>0.0088</td>
<td></td>
<td>0.0011</td>
<td>0.0003</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 Level of Significance.

*Tab t.05 at 2398 degree of freedom is 1.96

**Fig – 19: Comparison of the means of Reaction Ability between the children belonging to APL and BPL category**
Table 10 shows the comparison of the means between the children belonging to APL and BPL category for Reaction ability on the motor fitness component. In Nelson Hand Reaction Test total 2400 (1200 each) children belonging to APL and BPL category have been compared through Student ‘t’ test. The mean performance value of both the categories can be observed as 0.1784 Sec. for APL and 0.1794 Sec. for BPL. The Standard Deviation of both the categories is 0.0048 for APL and 0.0088 for BPL. The mean difference is 0.0011.

Table 10 signifies that there is a significant difference on reaction ability between the children belonging to APL and BPL category because the calculated ‘t’ value 3.612 is greater than the tabulated ‘t’ value 1.96.

On the basis of mean performance value of the children belonging to APL and BPL category i.e. 0.1784 Sec. and 0.1794 Sec. respectively; Mean Difference value 0.0011 and Standard error of mean difference 0.0003 it can be concluded that in reaction ability the children belonging to APL category are better than the children belonging to BPL category.

The graphical representation of comparison of the means between the children belonging to APL and BPL category for Reaction ability (Nelson Hand Reaction Test) on the motor fitness component is exhibited in Figure 19.
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DISCUSSION OF FINDINGS

Statistical Analysis has revealed significant facts about motor fitness status among the children belonging to above and below the poverty line.

Research Scholar is of the view that the findings in terms of motor fitness status justify the very purpose for which the study was conceptualized. Research Scholar was more than satisfied that successful accomplishment of this study has paved significant contribution in the area of Physical Education, Health and Sports Science research.

Findings from statistical analysis have clearly revealed and established significant differential status in terms of motor fitness between the two selected categories namely APL and BPL. Further as revealed by statistical analysis superior motor fitness status of the children belonging to above the poverty line category over the children belonging to below the poverty line category were also seen and established.

Findings of the study established the fact that the children belonging to APL (Above Poverty Line) category were significantly better in case of all motor fitness components viz. Agility, Balance, Power, Coordination, Speed, and Reaction ability in comparison to the children belonging to BPL (Below Poverty Line) category.
Research scholar would like to attribute these very reasons being ultimate factors in making the children belonging to APL category in better motor fitness status than the children belonging to BPL category.

The maximum families belonging to APL category are service holder in government sector as well as in private sector. So they are economically stable. The children belonging to APL category goes to the schools where they are supposed to involve in various structured physical activity programme and also enjoying much better facilities than the BPL students.

Further the children belonging to APL category gets much healthy diet and resides in much more healthier environment than the BPL category. Diet plays a vital role in the maintenance of good health and the preventions and cure of diseases. It helps the body to build healthy cells, tissues, glands and organs. The body can’t perform any of its functions be they metabolic, hormonal physical, mental or chemical without proper diet. The science which studies importance of diet, its preparation methods and its effects on the body is dietetics.

The various scientific evidences have long linked good nutrition to overall health and well being. Proper nutrition signifies that a diet is supplying all the essential nutrients to carry our normal tissue growth, repair and maintenance. The diet will provide sufficient substances to obtain the
energy necessary for work, physical activity and relaxation. This might be one of the reasons behind the result of the present study that the children belonging to APL category is better than the children belonging to BPL category in overall motor fitness. This particular fact is supported by the study of Bhatnagar, et. al. (1988) where they concluded that the upper socio-economic conditions had a better physical development and better nutritional and hygienic status. Sharma (2015) and Kodli (2016) also found positive effect of socio–economic status on physical fitness and sports performance.

A child’s development in any field depends on personal interest, opportunity, cultural, social and financial status, family’s support and encouragement. However, this may not be true in case of underprivileged children staying in the slums. We can consider the following arguments for this. It is assumed that the children belonging to BPL category fall behind the children belonging to the APL category not only in their fitness but also in growth, development, and nutrition. This is due to a lack of various facilities, equipments, technical guidance, place of residence, parents' educational background and proper diet etc. Therefore, motor fitness of the children belonging to the BPL category has been affected. This particular fact is supported by the study of Nezhad et. al. (2012) and Podstawski
et.al. (2014). In the first study they found that the families that have higher level of social-economic status, their children are more active and participate in sport more than others. In other study it has been found that the children belongs to higher social conditions like the place of residence and parents educational background etc. and the economical conditions like type of school (public or private), monthly income per household member, and the number of children in a given family etc. have better motor fitness ability than the lower social and economical conditions.

Children living in low-income families or neighborhoods have worse health outcomes on average than other children on a number of key indicators, including infant mortality, low birth weight, asthma, overweight and obesity, injuries, mental health problems and lack of readiness to learn. Some groups, such as Aboriginal populations, suffer disproportionately from poverty and its consequences, such as excess infant mortality (Human Resources Development Canada, 2003), higher risk of injuries, and higher rates of disabilities, respiratory conditions and obesity (Human Resources Development Canada, 2007).

Poverty and poor health are inseparably linked (WHO, 2008). Poverty has many dimensions – material deprivation (of food, shelter, sanitation, and safe drinking water), social exclusion, lack of
education, unemployment, and low income – that all work together to reduce opportunities, limit choices, undermine hope, and, as a result, threaten health. Poverty has been linked to higher prevalence of many health conditions, including increased risk of chronic disease, injury, deprived infant development, stress, anxiety, depression, and premature death (Charlotte et. al. 2009). This could be another reason for the children belonging to below poverty line have fall behind in motor fitness status than the children belonging to above the poverty line.

Fitness is related to the health. The expert committee of the World Health Organization (1981) described physical fitness as “the ability to undertake muscular work satisfactorily.” Physical fitness is the capacity to carry out, reasonably well, various forms of physical activities, without being unduly tired and includes qualities important to the individual’s health and well-being. Child development during the early years lays the foundation for later health and development; children must be given the best possible start in life. Family income is a key determinant of healthy child development. Children in families with greater material resources enjoy more secure living conditions and greater access to a range of opportunities that are often unavailable to children from low-income families. On average, children living in low-income families or
neighborhoods have poorer health outcomes (Gupta et al., 2007). This might be another reason that the children belonging to BPL category having poorer motor fitness status than the children belonging to APL category.

Children with lower family incomes tend to have less healthy physical fitness status and have higher risk of obesity than children with higher family incomes (Jin & Jones-Smith, 2015). This might be another reason behind the result of the present study.

On the whole, as per as the motor fitness is concerned it is assumed that the children belonging to below the poverty line fall behind the children belonging to the above the poverty line. This is due to a lack of various facilities, equipments, technical guidance, proper diet, poor health, poor environmental conditions, parental support, lack of education, culture, encouragement, pregnancy and infant care, personal interest, no. of children in the family, low birth weight, proper sanitation, poor mental health, poor living conditions etc.
DISCUSSION OF HYPOTHESIS

In the light of these findings the hypothesis of the study stated earlier that there would be significant difference in Motor Fitness Components between the children belonging to above and below the poverty line of the Birbhum District of West Bengal was hereby accepted as significant difference in motor fitness status between the children belonging to APL and BPL category has been observed.