CHAPTER – IV

ANALYSIS AND INTERPRETATION OF THE DATA

The analysis of the data and the detailed results of the study are presented in this chapter. For this purpose, forty (N=40) men students who participated in intercollegiate basketball tournaments were selected randomly as subjects. They were divided into two equal groups of twenty (n=20) namely sports vision training group (group-I) and Control group (group II). The training period was limited to three days per week for twelve weeks. The control group did not involve in any training. The dependent variables selected for this study were Dynamic Visual Acuity, Depth Perception, Arm Eye co-ordination, Peripheral Vision, Speed Dribble, Dribble and shoot and Passing. All the subjects were tested prior to and immediately after the experimental period on the selected dependent variables.

The data obtained from the experimental groups before and after the experimental period were statistically analyzed with dependent ‘t’-test and Analysis of covariance (ANCOVA). Whenever, the obtained ‘F’ ratio for the adjusted post-test was found to be significant, post hoc test was not applied to find out the paired mean differences. In all cases, 0.05 level was fixed as level of confidence to test the significance which was considered as appropriate.

4.1 ANALYSIS OF THE DATA

The influence of independent variables on each of the criterion variables are presented below.
4.1.1 Dynamic Visual Acuity

The results of the dependent ‘t’-test on the data obtained for Dynamic Visual Acuity of the subjects in the pre-test and post-test of the Sport Vision Training group and Control group have been analyzed and presented in Table-IV.

Table - IV
Summary of Mean Standard Deviation and dependent ‘t’ test for the pre and post tests on Dynamic Visual Acuity of Sports Vision Training group and Control group

(Dynamic Visual Acuity is expressed in Decimal)

<table>
<thead>
<tr>
<th>Test</th>
<th>Descriptive Statistics</th>
<th>Sports Vision Training Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>Mean</td>
<td>0.61</td>
<td>0.63</td>
</tr>
<tr>
<td></td>
<td>SD (±)</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td>Post Test</td>
<td>Mean</td>
<td>0.75</td>
<td>0.64</td>
</tr>
<tr>
<td></td>
<td>SD (±)</td>
<td>0.07</td>
<td>0.06</td>
</tr>
<tr>
<td>“t” Test</td>
<td></td>
<td>6.09*</td>
<td>0.57</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level.

The table value required for 0.05 level of significance with df 19 is 2.09.

Table-IV shows that the pre-test mean and standard deviation of Dynamic Visual Acuity on Sports Vision Training group and Control group are 0.61 ± 0.08, and 0.63 ± 0.08 respectively. The post-test mean and standard deviation are 0.75 ± 0.07 and 0.64 ± 0.06 respectively.
The obtained dependent t-ratio values between the pre and post test means on Dynamic Visual Acuity of Sports Vision Training group and Control group are 6.09, and 0.57 respectively. The table value required for significant difference with df 19 at 0.05 level is 2.09. It was concluded that Sports Vision Training had registered significant improvement in Dynamic Visual Acuity performance.

The analysis of covariance on Dynamic Visual Acuity of the pre, post, and adjusted test scores of Sports Vision Training group and Control group have been analyzed and presented in Table - V

**Table – V**

**Analysis of Covariance of the Data on Dynamic Visual Acuity of Pre, Post and Adjusted scores of Sports Vision Training Group and Control Group**

<table>
<thead>
<tr>
<th>Adjusted Post-test Means</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>‘F’ Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sports Vision Training Group (I)</td>
<td>Control Group (II)</td>
<td>Between With in</td>
<td>0.13 0.09</td>
<td>1 37</td>
<td>0.13 0.002</td>
</tr>
</tbody>
</table>

* Significant at 0.05 level of confidence

(The table value required for Significance at 0.05 level with df 1 and 37 is 4.11)

Table V shows that the adjusted post-test mean values of Dynamic Visual Acuity for Sports Vision Training Group and Control Group are 0.75, and 0.64 respectively. The obtained F-ratio of 52.70 for adjusted post test mean is much greater than the table value of 4.11 for df 1 and 37 required for significant at 0.05 level of confidence.
The results of the study indicated that there is a significant difference between the adjusted post-test means of Sports Vision Training group and Control group on Dynamic Visual Acuity.

Since, two groups are compared and whenever they obtained ‘F’ ratio for adjusted post test is found to be significant, no post hoc test was applied.

The above data also reveal that Sports Vision Training group had shown better performance in Dynamic Visual Acuity.

The pre and post mean values of Sports Vision Training group and Control group on Dynamic Visual Acuity are graphically represented in the Figure -XXXVII.

The adjusted post mean values of Sports Vision Training group and Control group on Dynamic Visual Acuity are graphically represented in the Figure -XXXVIII.
Figure: XXXVII  The Pre and Post Mean values of Sports Vision Training group and Control group on Dynamic Visual Acuity (In Decimal)
Figure: XXXVIII  The Adjusted Post Mean values of Sports Vision Training group and Control group on Dynamic Visual Acuity (In Decimal)
4.1.2 Depth Perception

The results of the dependent ‘t’-test on the data obtained for Depth Perception of the subjects in the pre-test and post-test of the Sports Vision Training group and Control group have been analyzed and presented in Table-VI.

Table - VI
Summary of Mean Standard Deviation and dependent ‘t’ test for the pre and post tests on Depth Perception of Sports Vision Training group and Control group
(Depth Perception is expressed in Numbers)

<table>
<thead>
<tr>
<th>Test</th>
<th>Descriptive Statistics</th>
<th>Sports Vision Training Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>Mean 6.90</td>
<td>6.65</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SD (±) 0.45</td>
<td>0.49</td>
<td></td>
</tr>
<tr>
<td>Post Test</td>
<td>Mean 8.10</td>
<td>6.75</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SD (±) 0.45</td>
<td>0.44</td>
<td></td>
</tr>
<tr>
<td>“t” Test</td>
<td>8.49*</td>
<td>0.68</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 level.

The table value required for 0.05 level of significance with df 19 is 2.09.

Table-VI shows that the pre-test mean and standard deviation of Depth Perception on Sports Vision Training group and Control group are 6.90 ± 0.45, and 6.65 ± 0.49 respectively. The post-test mean and standard deviation are 8.10 ± 0.45 and 6.75 ± 0.44 respectively.
The obtained dependent t-ratio values between the pre and post test means on Depth Perception of Sports Vision Training group and Control group are 8.49 and 0.68 respectively. The table value required for significant difference with df 19 at 0.05 level is 2.09. It was concluded that Sports Vision Training had registered significant improvement in Depth Perception performance.

The analysis of covariance on Depth Perception of the pre, post, and adjusted test scores of Sports Vision Training group and Control group have been analyzed and presented in Table - VII.

**Table - VII**

Analysis of Covariance of the Data on Depth Perception of Pre, Post and Adjusted scores of Sports Vision Training Group and Control Group

<table>
<thead>
<tr>
<th>Adjusted Post-test Means</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>‘F’ Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sports Vision Training Group (I)</td>
<td>Control Group (II)</td>
<td>Between With in</td>
<td>13.10 3.99</td>
<td>1 37</td>
<td>13.10 0.11</td>
</tr>
</tbody>
</table>

*Significant at.05 level of confidence

(The table value required for Significance at 0.05 level with df 1 and 37 is 4.11)

Table VII shows that the adjusted post-test mean values of Depth Perception for Sports Vision Training Group and Control Group are 8.02 and 6.83 respectively. The obtained F-ratio of 121.44 for adjusted post test mean is much greater than the table value of 4.11 for df 1 and 37 required for significant at 0.05 level of confidence.
The results of the study indicated that there is a significant difference between the adjusted post-test means of Sports Vision Training group and Control group on Depth Perception.

Since, two groups are compared and whenever they obtained ‘F’ ratio for adjusted post test is found to be significant, no post hoc test was applied.

The above data also reveal that Sports Vision Training group had shown better performance in Depth Perception.

The pre and post mean values of Vision Training group and Control group on Depth Perception are graphically represented in the Figure -XXXIX.

The adjusted post mean values of Sports Vision Training group and Control group on Depth Perception are graphically represented in the Figure -XL.
Figure: XXXIX

The Pre and Post Mean values of Sports Vision Training group and Control group on Depth Perception (In Numbers)
Figure: XL   The Adjusted Post Mean values of Sports Vision Training group and Control group on Depth Perception (In Numbers)
4.1.3 Arm Eye Coordination

The results of the dependent ‘t’-test on the data obtained for Arm Eye Coordination of the subjects in the pre-test and post-test of the Sports Vision Training group and Control group have been analyzed and presented in Table-VIII.

<table>
<thead>
<tr>
<th>Test</th>
<th>Descriptive Statistics</th>
<th>Sports Vision Training Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>Mean</td>
<td>25.50</td>
<td>25.21</td>
</tr>
<tr>
<td></td>
<td>SD (±)</td>
<td>1.32</td>
<td>1.51</td>
</tr>
<tr>
<td>Post Test</td>
<td>Mean</td>
<td>27.45</td>
<td>25.25</td>
</tr>
<tr>
<td></td>
<td>SD (±)</td>
<td>0.76</td>
<td>1.41</td>
</tr>
<tr>
<td>“t” Test</td>
<td></td>
<td>5.73*</td>
<td>0.11</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level.

*The table value required for 0.05 level of significance with df 19 is 2.09.*

Table-VIII shows that the pre-test mean and standard deviation of Arm Eye Coordination on Sports Vision Training group and Control group are 25.50 ± 1.32, and 25.21 ± 1.51 respectively. The post-test mean and standard deviation are 27.45 ± 0.76 and 25.25 ± 1.41 respectively.
The obtained dependent t-ratio values between the pre and post test means on Arm Eye Coordination of Sports Vision Training group and Control group are 5.73 and 0.11 respectively. The table value required for significant difference with df 19 at 0.05 level is 2.09. It was concluded that Sports Vision Training had registered significant improvement in Arm Eye Coordination performance.

The analysis of covariance on Arm Eye Coordination of the pre, post, and adjusted test scores of Sports Vision Training group and Control group have been analyzed and presented in Table - IX.

**Table - IX**

*Analysis of Covariance of the Data on Arm Eye Coordination of Pre, Post and Adjusted scores of Sports Vision Training Group and Control Group*

<table>
<thead>
<tr>
<th>Adjusted Post-test Means</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>‘F’ Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sports Vision Training Group (I)</strong></td>
<td><strong>Control Group (II)</strong></td>
<td>Between With in</td>
<td>39.89</td>
<td>17.83</td>
<td>39.89</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level of confidence

(The table value required for Significance at 0.05 level with df 1 and 37 is 4.11)
Table IX shows that the adjusted post-test mean values of Arm Eye Coordination for Sports Vision Training Group and Control Group are 27.35 and 25.35 respectively. The obtained F-ratio of 82.78 for adjusted post test mean is much greater than the table value of 4.11 for df 1 and 37 required for significant at 0.05 level of confidence.

The results of the study indicated that there is a significant difference between the adjusted post-test means of Sports Vision Training group and Control group on Arm Eye Coordination.

Since, two groups are compared and whenever they obtained ‘F’ ratio for adjusted post test is found to be significant, no post hoc test was applied.

The above data also reveal that Sports Vision Training group had shown better performance in Arm Eye Coordination.

The pre and post mean values of Sports Vision Training group and Control group on Arm Eye Coordination are graphically represented in the Figure -XLI.

The adjusted post mean values of Sports Vision Training group and Control group on Arm Eye Coordination are graphically represented in the Figure -XLII.
Figure: XLI  The Pre and Post Mean values of Sports Vision Training group and Control group on Arm Eye Coordination (In Numbers)
Figure: XLII  The Adjusted Post Mean values of Sports Vision Training group and Control group on Arm Eye Coordination (In Numbers)
4.1.4 Peripheral Vision

The results of the dependent ‘t’-test on the data obtained for Peripheral Vision of the subjects in the pre-test and post-test of the Sports Vision Training group and Control group have been analyzed and presented in Table-X.

**Table - X**

Summary of Mean Standard Deviation and dependent ‘t’ test for the pre and post tests on Peripheral Vision of Sports Vision Training group and Control group

(Peripheral Vision is expressed in Degree)

<table>
<thead>
<tr>
<th>Test</th>
<th>Descriptive Statistics</th>
<th>Sports Vision Training Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>Mean</td>
<td>166.00</td>
<td>165.50</td>
</tr>
<tr>
<td></td>
<td>SD (±)</td>
<td>4.77</td>
<td>5.10</td>
</tr>
<tr>
<td>Post Test</td>
<td>Mean</td>
<td>175.55</td>
<td>165.75</td>
</tr>
<tr>
<td></td>
<td>SD (±)</td>
<td>4.70</td>
<td>5.06</td>
</tr>
<tr>
<td>“t” Test</td>
<td></td>
<td>6.38*</td>
<td>0.16</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level.

The table value required for 0.05 level of significance with df 19 is 2.09.

Table-X shows that the pre-test mean and standard deviation of Peripheral Vision on Sports Vision Training group and Control group are 166.00 ± 4.77, and 165.50 ± 5.10 respectively. The post-test mean and standard deviation are 175.55 ± 4.70 and 165.75 ± 5.06 respectively.
The obtained dependent t-ratio values between the pre and post test means on Peripheral Vision of Sports Vision Training group and Control group are 6.38 and 0.16 respectively. The table value required for significant difference with df 19 at 0.05 level is 2.09. It was concluded that Sports Vision Training had registered significant improvement in Peripheral Vision performance.

The analysis of covariance on Peripheral Vision of the pre, post, and adjusted test scores of Sports Vision Training group and Control group have been analyzed and presented in Table - XI.

**Table - XI**

**Analysis of Covariance of the Data on Peripheral Vision of Pre, Post and Adjusted scores of Sports Vision Training Group and Control Group**

<table>
<thead>
<tr>
<th>Adjusted Post-test Means</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>‘F’ Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sports Vision Training Group (I)</td>
<td>Control Group (II)</td>
<td>Between</td>
<td>878.20</td>
<td>1</td>
<td>878.20</td>
</tr>
<tr>
<td>175.34</td>
<td>165.96</td>
<td>With in</td>
<td>262.62</td>
<td>37</td>
<td>7.10</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level of confidence

*(The table value required for Significance at 0.05 level with df 1 and 37 is 4.11)*

Table XI shows that the adjusted post-test mean values of Peripheral Vision for Sports Vision Training Group and Control Group are 175.34 and 165.96 respectively. The obtained F-ratio of 123.73 for adjusted post test mean is much greater than the table value of 4.11 for df 1 and 37 required for significant at 0.05 level of confidence.
The results of the study indicated that there is a significant difference between the adjusted post-test means of Sports Vision Training group and Control group on Peripheral Vision.

Since, two groups are compared and whenever they obtained ‘F’ ratio for adjusted post test is found to be significant, no post hoc test was applied.

The above data also reveal that Sports Vision Training group had shown better performance in Peripheral Vision.

The pre and post mean values of Sports Vision Training group and Control group on Peripheral Vision are graphically represented in the Figure -XLIII.

The adjusted post mean values of Sports Vision Training group and Control group on Peripheral Vision are graphically represented in the Figure -XLIV.
Figure: XLIII  The Pre and Post Mean values of Sports Vision Training group and Control group on Peripheral Vision (In Degree)
Figure:XLIV

The Adjusted Post Mean values of Sports Vision Training group and Control group on Peripheral Vision (In Degree)
4.1.5 Speed Dribble

The results of the dependent ‘t’-test on the data obtained for Speed Dribble of the subjects in the pre-test and post-test of the Sports Vision Training group and Control group have been analyzed and presented in Table-XII.

Table - XII
Summary of Mean Standard Deviation and dependent ‘t’ test for the pre and post tests on Speed Dribble of Sports Vision Training group and Control group
(Speed Dribble is expressed in Numbers)

<table>
<thead>
<tr>
<th>Test</th>
<th>Descriptive Statistics</th>
<th>Sports Vision Training Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>Mean</td>
<td>23.50</td>
<td>23.40</td>
</tr>
<tr>
<td></td>
<td>SD (±)</td>
<td>0.82</td>
<td>0.60</td>
</tr>
<tr>
<td>Post Test</td>
<td>Mean</td>
<td>26.30</td>
<td>23.45</td>
</tr>
<tr>
<td></td>
<td>SD (±)</td>
<td>1.85</td>
<td>0.76</td>
</tr>
<tr>
<td>‘t’ Test</td>
<td></td>
<td>6.13*</td>
<td>0.23</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level.

The table value required for 0.05 level of significance with df 19 is 2.09.

Table-XII shows that the pre-test mean and standard deviation of Speed Dribble on Sports Vision Training group and Control group are 23.50 ± 0.82, and 23.40 ± 0.60 respectively. The post-test mean and standard deviation are 26.30± 1.85 and 23.45± 0.76 respectively.
The obtained dependent t-ratio values between the pre and post test means on Speed Dribble of Sports Vision Training group and Control group are 6.13, and 0.23 respectively. The table value required for significant difference with df 19 at 0.05 level is 2.09. It was concluded that Sports Vision Training had registered significant improvement in Speed Dribble performance.

The analysis of covariance on Speed Dribble of the pre, post, and adjusted test scores of Sports Vision Training group and Control group have been analyzed and presented in Table - XIII.

Table - XIII
Analysis of Covariance of the Data on Speed Dribble of Pre, Post and Adjusted scores of Sports Vision Training Group and Control Group

<table>
<thead>
<tr>
<th>Adjusted Post-test Means</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>‘F’ Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sports Vision Training Group (I)</td>
<td>Control Group (II)</td>
<td>Between</td>
<td>74.53</td>
<td>1</td>
<td>74.53</td>
</tr>
<tr>
<td></td>
<td></td>
<td>With in</td>
<td>51.81</td>
<td>37</td>
<td>1.40</td>
</tr>
</tbody>
</table>

* Significant at.05 level of confidence

(The table value required for Significance at 0.05 level with df 1 and 37 is 4.11)

Table XIII shows that the adjusted post-test mean values of Speed Dribble for Sports Vision Training Group and Control Group are 26.24 and 23.51 respectively. The obtained F-ratio of 53.23 for adjusted post test mean is much greater than the table value of 4.11 for df 1 and 37 required for significant at 0.05 level of confidence.
The results of the study indicated that there is a significant difference between the adjusted post-test means of Sports Vision Training group and Control group on Speed Dribble.

Since, two groups are compared and whenever they obtained ‘F’ ratio for adjusted post test is found to be significant, no post hoc test was applied.

The above data also reveal that Sports Vision Training group had shown better performance in Speed Dribble.

The pre and post mean values of Sports Vision Training group and Control group on Speed Dribble are graphically represented in the Figure -XLV.

The adjusted post mean values of Sports Vision Training group and Control group on Speed Dribble are graphically represented in the Figure -XLVI.
Figure: XLV  The Pre and Post Mean values of Sports Vision Training group and Control group on Speed Dribble (In Numbers)
Figure: XLVI  The Adjusted Post Mean values of Sports Vision Training group and Control group on Speed Dribble (In Numbers)
4.1.6 Dribble and Shoot

The results of the dependent ‘t’-test on the data obtained for Dribble and Shoot of the subjects in the pre-test and post-test of the Sports Vision Training group and Control group have been analyzed and presented in Table-XIV.

Table - XIV
Summary of Mean Standard Deviation and dependent ‘t’ test for the pre and post tests on Dribble and Shoot of Sports Vision Training group and Control group
(Dribble and Shoot is expressed in Seconds)

<table>
<thead>
<tr>
<th>Test</th>
<th>Descriptive Statistics</th>
<th>Sports Vision Training Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>Mean</td>
<td>13.18</td>
<td>13.05</td>
</tr>
<tr>
<td></td>
<td>SD (±)</td>
<td>0.32</td>
<td>0.35</td>
</tr>
<tr>
<td>Post Test</td>
<td>Mean</td>
<td>13.91</td>
<td>13.01</td>
</tr>
<tr>
<td></td>
<td>SD (±)</td>
<td>0.35</td>
<td>0.35</td>
</tr>
<tr>
<td>‘t’ Test</td>
<td></td>
<td>6.90*</td>
<td>0.32</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level.

The table value required for 0.05 level of significance with df 19 is 2.09.

Table-XIV shows that the pre-test mean and standard deviation of Dribble and Shoot on Sports Vision Training group and Control group are 13.18 ± 0.32, and 13.05 ± 0.35 respectively. The post-test mean and standard deviation are 13.91 ± 0.35 and 13.01 ± 0.35 respectively.
The obtained dependent t-ratio values between the pre and post test means on Dribble and Shoot of Sports Vision Training group and Control group are 6.90, and 0.32 respectively. The table value required for significant difference with df 19 at 0.05 level is 2.09. It was concluded that Vision Training had registered significant improvement in Dribble and Shoot performance.

The analysis of covariance on Dribble and Shoot of the pre, post, and adjusted test scores of Sports Vision Training group and Control group have been analyzed and presented in Table - XV.

**Table - XV**

**Analysis of Covariance of the Data on Dribble and Shoot of Pre, Post and Adjusted scores of Sports Vision Training Group and Control Group**

<table>
<thead>
<tr>
<th>Adjusted Post-test Means</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>‘F’ Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sports Vision Training Group (I)</strong></td>
<td><strong>Control Group (II)</strong></td>
<td>Between</td>
<td>6.24</td>
<td>1</td>
<td>6.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>With in</td>
<td>2.50</td>
<td>37</td>
<td>0.07</td>
</tr>
</tbody>
</table>

*Significant at.05 level of confidence

(The table value required for Significance at 0.05 level with df 1 and 37 is 4.11)

Table XV shows that the adjusted post-test mean values of Dribble and Shoot for Sports Vision Training Group and Control Group are 13.86 and 13.06 respectively. The obtained F-ratio of 92.25 for adjusted post test mean is much greater than the table value of 4.11 for df 1 and 37 required for significant at 0.05 level of confidence.
The results of the study indicated that there is a significant difference between the adjusted post-test means of Sports Vision Training group and Control group on Dribble and Shoot.

Since, two groups are compared and whenever they obtained ‘F’ ratio for adjusted post test is found to be significant, no post hoc test was applied.

The above data also reveal that Sports Vision training group had shown better performance in Dribble and Shoot.

The pre and post mean values of Sports Vision Training group and Control group on Dribble and Shoot are graphically represented in the Figure -XLVII.

The adjusted post mean values of Sports Vision Training group and Control group on Dribble and Shoot are graphically represented in the Figure -XLVIII.
Figure: XLVII  The Pre and Post Mean values of Sports Vision Training group and Control group on Dribble and Shoot (In Seconds)
Figure: XLVIII  The Adjusted Post Mean values of Sports Vision Training group and Control group on Dribble and Shoot (In Seconds)
4.1.7 Passing

The results of the dependent ‘t’-test on the data obtained for Passing of the subjects in the pre-test and post-test of the Sports Vision Training group and Control group have been analyzed and presented in Table-XVI.

**Table - XVI**

Summary of Mean Standard Deviation and dependent ‘t’ test for the pre and post tests on Passing of Sports Vision Training group and Control group

(Passing is expressed in Seconds)

<table>
<thead>
<tr>
<th>Test</th>
<th>Descriptive Statistics</th>
<th>Sports Vision Training Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>Mean</td>
<td>17.23</td>
<td>17.34</td>
</tr>
<tr>
<td></td>
<td>SD (±)</td>
<td>1.17</td>
<td>0.77</td>
</tr>
<tr>
<td>Post Test</td>
<td>Mean</td>
<td>16.20</td>
<td>17.25</td>
</tr>
<tr>
<td></td>
<td>SD (±)</td>
<td>1.03</td>
<td>0.86</td>
</tr>
<tr>
<td>‘t’ Test</td>
<td>2.97*</td>
<td></td>
<td>0.33</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level.

The table value required for 0.05 level of significance with df 19 is 2.09.

Table-XVI shows that the pre-test mean and standard deviation of Passing on Sports Vision Training group and Control group are 17.23 ± 1.17 and 17.34 ± 0.77 respectively. The post-test mean and standard deviation are 16.20 ± 1.03 and 17.25 ± 0.86 respectively.
The obtained dependent t-ratio values between the pre and post test means on Passing of Sports Vision Training group and Control group are 2.97 and 0.33 respectively. The table value required for significant difference with df 19 at 0.05 level is 2.09. It was concluded that Sports Vision Training had registered significant improvement in passing performance.

The analysis of covariance on Passing of the pre, post, and adjusted test scores of Sports Vision Training group and Control group have been analyzed and presented in Table - XVII.

**Table - XVII**

*Analysis of Covariance of the Data on Passing of Pre, Post and Adjusted scores of Sports Vision Training Group and Control Group*

<table>
<thead>
<tr>
<th></th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>‘F’ Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sports Vision Training Group (I)</strong></td>
<td>Between With in</td>
<td>9.81 20.85</td>
<td>1 37</td>
<td>9.81 0.56</td>
<td>17.42*</td>
</tr>
<tr>
<td><strong>Control Group (II)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 level of confidence

*(The table value required for Significance at 0.05 level with df 1 and 37 is 4.11)*

Table XVII shows that the adjusted post-test mean values of Passing for Sports Vision Training Group and Control Group are 16.23 and 17.22 respectively. The obtained F-ratio of 17.42 for adjusted post test mean is much greater than the table value of 4.11 for df 1 and 37 required for significant at 0.05 level of confidence.
The results of the study indicated that there is a significant difference between the adjusted post-test means of Sports Vision Training group and Control group on Passing.

Since, two groups are compared and whenever they obtained ‘F’ ratio for adjusted post test is found to be significant, no post hoc test was applied.

The above data also reveal that Sports Vision Training group had shown better performance in Passing.

The pre and post mean values of Sports Vision Training group and Control group on Passing are graphically represented in the Figure -XLIX.

The adjusted post mean values of Sports Vision Training group and Control group on Passing are graphically represented in the Figure -L.
Figure: XLIX  The Pre and Post Mean values of Sports Vision Training group and Control group on Passing (In Seconds)
Figure: L  The Adjusted Post Mean values of Sports Vision Training group and Control group on Passing (In Seconds)
4.2 DISCUSSION ON FINDINGS

The results of the study indicate that experimental groups namely Sports Vision Training group have shown significant changes in the selected dependent variables namely Dynamic Visual Acuity, Depth Perception, Arm eye co-ordination, Peripheral Vision, Speed Dribble, Dribble and shoot and Passing. It has also been found that significant changes achieved by Sports Vision Training group are remarkable when compared with Control group.

The most important fundamental requirement for all sports and games are Speed and Power Parameters. It can also be stated that Sports Vision Training group has improved in all selected dependent variables. The findings of the study are supported by the following references:

Gao et al.,(2015) found athletes in interceptive sports are superior to non athletes in their visuomotor skills. They also have broader access to various visual and complex visuo-oculomotor abilities than non athletes. This likely allows athletes to more effectively coordinate visual and oculomotor abilities under demanding conditions when some visual cues are degraded. The present findings are consistent with a pyramid of sports vision and suggest a top-down process for athlete screening and training.

Vision Training produces functional and performance changes that, when monitored, can be used to assess the success of the vision training and can be initiated as part of a sports medical intervention for concussion prevention (Clark et al., 2015).
Clark et al., (2012), Vision training can combine traditional and technological methodologies to train the athletes’ eyes and improve batting. Vision training as part of conditioning or injury prevention can be applied and may improve batting performance in college baseball players. High performance vision training can be instituted in the pre-season and maintained throughout the season to improve batting parameters.

According to Schwab and Memmert (2012), improvement of certain visual abilities with the help of the sports vision training program.

Heinen and Vinken (2011), reveals, that apprentices optimize their gaze behavior and their movement behavior when binocular vision is eliminated, whereas experts gaze behavior and movement behavior is uninfluenced by eliminating binocular vision. We state, that binocular vision is not necessary for experts to perform to their best. However, eliminating binocular vision could be part of an optimization strategy for apprentices, which could in turn be transferred to new training programs.

Zimmerman et al., (2011) supported to ability to improve already-normal visual acuity is unclear although contrast sensitivity can improve with fast-paced video games. Tinted contact lenses help reduce discomfort glare and speed up adaptation but do not have an appreciable effect on visual acuity and contrast sensitivity.

Deveau and Seitz (2014) also supported to perceptual learning on basic stimuli can lead to improvements on standard vision tests as well as real world vision use such as improved reading and even improved sports performance. Furthermore, we show evidence that this integrative approach to perceptual learning can ameliorate effects of presbyopia and provides promise to improve visual function for individuals suffering from low vision.
King et al., (2015), King-Devick (K-D) test was quickly and easily administered making it a practical sideline tool as part of the continuum of concussion assessment tools for junior rugby league players.

Ciuffreda (2011), suggest that training of eye-hand reaction time in the retinal periphery should be considered in athletes to potentially improve their on-field sports performance.

4.3 RESULTS OF THE STUDY

There was a significant difference between Sports Vision Training group and Control group with respect to the selected visual skills and performance related factors namely Dynamic Visual Acuity, Depth Perception, Arm Eye co-ordination, Peripheral Vision, Speed Dribble, Dribble and shoot and Passing. And there was a significant improvement in selected visual skills and performance related factors, namely Dynamic Visual Acuity, Depth Perception, Arm Eye co-ordination, Peripheral Vision, Speed Dribble, Dribble and shoot and Passing due to Sports Vision Training.

4.4 DISCUSSION ON HYPOTHESES

It was hypothesized that there would be significant improvement of twelve week period of Sports Vision Training on the selected visual skill of inter-collegiate men basketball players. The present study produced similar results. Hence the first research hypothesis of the investigator has been accepted.

In the second hypothesis, it was mentioned that there would be significant differences of twelve week period of Sports Vision Training on the selected visual skill of inter-collegiate men basketball players. The present study produced similar results. Hence the second research hypothesis of the investigator has been accepted.
In the third hypothesis, it was mentioned that there would be significant improvement of twelve week period of Sports Vision Training on the selected performance factors of inter-collegiate men basketball players. The present study produced similar results. Hence the third research hypothesis of the investigator has been accepted.

In the fourth and last hypothesis, it was mentioned that there would be significant differences of twelve week period of Sports Vision Training on the selected performance factors of inter-collegiate men basketball players. Hence the fourth and last research hypothesis of the investigator also has been accepted.