CHAPTER- IV
RESULTS AND DISCUSSION

4.1 OVERVIEW

The chapter deals with the analysis of data collection from the samples under study. The three groups namely, interval training on treading, interval training on spinning and control group were analysed with difference of selected motor fitness variables such as speed, muscular strength, muscular endurance, explosive power (vertical and horizontal), cardio respiratory endurance and agility responses to interval training on treading, interval training on spinning at in relation to pre test, post test and adjusted post scores. The subjects for this study were selected at random but the groups were equated in relation to the factors that have been examined. Hence the difference among the means of the three groups in the pre test had to be taken into account during the analysis of the post test difference among the means. This achieves the application of analysis of covariance (ANCOVA) where the final means were adjusted for differences in the initial means and the adjusted means were tested for significance. When the adjusted post test means were significant, the Scheffe's post hoc test was administered to find out the paired means significant difference.

4.2 TEST OF SIGNIFICANCE

This is the crucial portion of the discussion in arriving at the conclusion by examining the hypotheses. The procedure of testing the hypotheses is in accordance with the result obtained in relation to the level of confidence, which was fixed at 0.05 levels, which was considered necessary for this study.
These tests are usually called the tests of significance, since we test whether the difference between the pre-test and post test scores of the samples are significant or not. In the present study, if they obtained F-ratio was greater than the table F-ratio at 0.05 levels, the hypotheses was accepted to the effect that there existed significant difference between the means of the groups compared. If the obtained F-ratio was less than the table F-ratio at 0.05 levels, the hypotheses was rejected to the effect that there existed no significant difference between the means of the groups on this study.

4.3 LEVEL OF SIGNIFICANCE

The probability level below which we rejected the hypotheses is termed as the level of significance. The F-ratio obtained by analysis of variance and analysis of covariance needed to be significant at 0.05 levels. In addition to that, the significant confidence interval value, utilizing the Scheffe’s post hoc test in which the obtained mean difference value needed to be greater than the Scheffe’s confidence interval value for significance.

The influence of interval training on treading and spinning on motor fitness variables of untrained college women was analyzed separately for each variable and presented in table III to IX. The post hoc test observations were analysed individually in table III (a) to IX (a). The adjusted post test means were represents in the 1 to 7 independently.
TABLE III
THE RESULTS OF ANALYSIS OF COVARIANCE ON SPEED OF
DIFFERENT GROUPS
(scores in seconds)

<table>
<thead>
<tr>
<th>Testing Conditions</th>
<th>G-1</th>
<th>G-2</th>
<th>G-3</th>
<th>SV</th>
<th>SS</th>
<th>Df</th>
<th>MS</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test Mean</td>
<td>7.41</td>
<td>7.41</td>
<td>7.40</td>
<td>Between</td>
<td>0.0009</td>
<td>2</td>
<td>0.0004</td>
<td>0.01</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.15</td>
<td>0.09</td>
<td>0.18</td>
<td>With in</td>
<td>0.9572</td>
<td>42</td>
<td>0.0228</td>
<td></td>
</tr>
<tr>
<td>Post test Mean</td>
<td>7.19</td>
<td>7.13</td>
<td>7.41</td>
<td>Between</td>
<td>0.6684</td>
<td>2</td>
<td>0.3342</td>
<td>41.12*</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.12</td>
<td>0.04</td>
<td>0.07</td>
<td>With in</td>
<td>0.3413</td>
<td>42</td>
<td>0.0081</td>
<td></td>
</tr>
<tr>
<td>Adjusted post test Mean</td>
<td>7.19</td>
<td>7.13</td>
<td>7.41</td>
<td>Between</td>
<td>0.6812</td>
<td>2</td>
<td>0.3406</td>
<td>51.92*</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.12</td>
<td>0.04</td>
<td>0.07</td>
<td>With in</td>
<td>0.2689</td>
<td>41</td>
<td>0.0066</td>
<td></td>
</tr>
</tbody>
</table>

* Significant at .05 level of confidence. Required table value for test the significance was 3.22, and 3.23, with the df of 2 and 42, 2and 41.

4.4 RESULTS OF SPEED

The pre test mean and standard deviation on speed scores of G1, G2, and G3 were 7.41 ± 0.15, 7.41 ± 0.09 and 7.40± 0.18 respectively. The obtained pre test F value of 0.01 was lesser than the required table F value of 3.22. Hence the pre test means value of interval training on treading; spinning and control group on speed before start of the respective treatments were found to be insignificant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus this analysis confirmed that the random assignment of subjects into three groups were successful.
The post test mean and standard deviation on speed scores of G1, G2, and G3 were 7.19 ± 0.12, 7.13 ± 0.04 and 7.41± 0.07 respectively. The obtained post test F value of 41.12 was higher than the required table F value of 3.22. Hence the post test means value of interval training on treading and spinning on speed were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 42. The results proved that the selected two training interventions namely interval training on reading and spinning were produced significant improve rather than the control group of the sample populations.

The adjusted post test mean on speed scores of G1, G2, and G3 were 7.19, 7.13 and 7.41 respectively. The obtained adjusted post test F value of 51.92 was higher than the required table F value of 3.23. Hence the adjusted post test means value of interval training on treading and spinning on speed were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 41. The results confirm that the selected two training interventions namely interval training on reading and spinning were produced significant difference among the groups.

In order to find out the superiority effects among the treatment and control groups the scheffe’s post hoc test were administered.

The outcomes of the same are presented in the table III (a).
4.4.1 Results of scheffes post hoc test on speed.

Table III (a) without a doubt shows the significant difference of adjusted post test means of interval training on treading, interval training spinning and control group on speed. The results of scheffes post hoc test undoubtedly proved that the first pair wise comparison between group1 and group 2 was not significant; because the calculated mean difference value of this comparison 0.07 was lesser than the confidential value of 0.08. Further the second pair wise comparison between group 1 and 3 was significant. The reason for significant the calculated mean difference value of this comparison 0.22 was higher than the confidential value of 0.08. Finally the third pair wise comparison of group 2 and 3 was significant; owing to the calculated mean difference value of this comparison 0.29 was higher than the confidential value of 0.08. The adjusted post test mean difference of experimental and control groups value graphically represented in the figure 1.
FIGURE 1
THE ADJUSTED POST TEST MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON SPEED

Scores in seconds
6.95 7 7.05 7.1 7.15 7.2 7.25 7.3 7.35 7.4 7.45

G1 G2 G3

Interval Training on Treading
Interval Training on Spinning
Control Group
TABLE IV
THE RESULTS OF ANALYSIS OF COVARIANCE ON MUSCULAR STRENGTH OF DIFFERENT GROUPS
(scores in numbers)

<table>
<thead>
<tr>
<th>Testing Conditions</th>
<th>G-1</th>
<th>G-2</th>
<th>G-3</th>
<th>SV</th>
<th>SS</th>
<th>Df</th>
<th>MS</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>Mean</td>
<td>12.00</td>
<td>11.53</td>
<td>12.07</td>
<td>Between</td>
<td>2.53</td>
<td>2</td>
<td>1.26</td>
</tr>
<tr>
<td></td>
<td>S.D.</td>
<td>0.73</td>
<td>1.02</td>
<td>0.85</td>
<td>Within</td>
<td>34.66</td>
<td>42</td>
<td>0.82</td>
</tr>
<tr>
<td>Post test</td>
<td>Mean</td>
<td>14.07</td>
<td>13.00</td>
<td>11.07</td>
<td>Between</td>
<td>69.37</td>
<td>2</td>
<td>34.68</td>
</tr>
<tr>
<td></td>
<td>S.D.</td>
<td>1.65</td>
<td>1.21</td>
<td>1.00</td>
<td>Within</td>
<td>77.86</td>
<td>42</td>
<td>1.85</td>
</tr>
<tr>
<td>Adjusted post test</td>
<td>Mean</td>
<td>13.94</td>
<td>13.32</td>
<td>10.88</td>
<td>Between</td>
<td>77.63</td>
<td>2</td>
<td>38.81</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Within</td>
<td>46.58</td>
<td>41</td>
<td>1.13</td>
</tr>
</tbody>
</table>

* Significant at .05 level of confidence. Required table value for test the significance was 3.22, and 3.23, with the df of 2 and 42, 2and 41.

4.5 RESULTS OF MUSCULAR STRENGTH

The pre test mean and standard deviation on muscular strength scores of G1, G2, and G3 were 12.00± 0.73, 11.53± 1.02 and 12.07 ± 0.85 respectively. The obtained pre test F value of 1.53 was lesser than the required table F value of 3.22. Hence the pre test means value of interval training on treading; spinning and control group on muscular strength before start of the respective treatments were found to be insignificant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus this analysis confirmed that the random assignment of subjects into three groups were successful.
The post test mean and standard deviation on muscular strength scores of G1, G2, and G3 were 14.07 ± 1.65, 13.00± 1.21 and 11.07± 1.00 respectively. The obtained post test F value of 18.71 was higher than the required table F value of 3.22. Hence the post test means value of interval training on treading and spinning on muscular strength were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 42. The results proved that the selected two training interventions namely interval training on reading and spinning were produced significant improvement rather than the control group of the sample populations.

The adjusted post test mean on muscular strength scores of G1, G2, and G3 were 13.94, 13.32 and 10.88 respectively. The obtained adjusted post test F value of 34.16 was higher than the required table F value of 3.23. Hence the adjusted post test means value of interval training on treading and spinning on muscular strength were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 41. The results confirm that the selected two training interventions namely interval training on reading and spinning were produced significant difference among the groups.

In order to find out the superiority effects among the treatment and control groups the scheffe’s post hoc test were administered.

The outcomes of the same are presented in the table IV (a).
TABLE IV (a)
THE RESULTS OF SCHEFFE’S POST HOC TEST MEAN
DIFFERENCES ON MUSCULAR STRENGTH
AMONG THREE GROUPS
(scores in numbers)

<table>
<thead>
<tr>
<th>G-1</th>
<th>G-2</th>
<th>G-3</th>
<th>Mean differences</th>
<th>Confidence interval value</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.94</td>
<td>13.32</td>
<td></td>
<td>0.62</td>
<td>0.99</td>
</tr>
<tr>
<td>13.94</td>
<td></td>
<td>10.88</td>
<td>3.06*</td>
<td>0.99</td>
</tr>
<tr>
<td>13.32</td>
<td>10.88</td>
<td></td>
<td>2.44*</td>
<td>0.99</td>
</tr>
</tbody>
</table>

* Significant at .05 level of confidence.

4.5.1 Results of scheffe's post hoc test on muscular strength.

Table IV (a) shows the significant difference of adjusted post test means of interval training on treading, interval training spinning and control group on muscular strength. The results of scheffes post hoc test undoubtedly proved that the first pair wise comparison between group 1 and group 2 was not significant; because the calculated mean difference value of this comparison 0.62 was lesser than the confidential value of 0.99. Further the second pair wise comparison between group 1 and 3 was significant. The cause for significant the calculated mean difference value of this comparison 3.06 was higher than the confidential value of 0.09. Finally the third pair wise comparison of group 2 and 3 was significant; owing to the calculated mean difference value of this comparison 2.44 was higher than the confidential value of 0.99. The adjusted post test mean difference of experimental and control groups value graphically represented in the figure 2.
FIGURE 2
THE ADJUSTED POST TEST MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON MUSCULAR STRENGTH

![Bar chart showing the adjusted post test mean values for experimental and control groups on muscular strength.]

- **G1**: Interval Training on Treading
- **G2**: Interval Training on Spinning
- **G3**: Control Group

Scores in numbers:
- G1: 13.94
- G2: 13.32
- G3: 10.88
### TABLE V

THE RESULTS OF ANALYSIS OF COVARIANCE ON MUSCULAR ENDURANCE OF DIFFERENT GROUPS

(scores in numbers)

<table>
<thead>
<tr>
<th>Testing Conditions</th>
<th>G-1</th>
<th>G-2</th>
<th>G-3</th>
<th>SV</th>
<th>SS</th>
<th>Df</th>
<th>MS</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>Mean</td>
<td>10.47</td>
<td>10.00</td>
<td>10.07</td>
<td>Between</td>
<td>1.91</td>
<td>2</td>
<td>0.95</td>
</tr>
<tr>
<td></td>
<td>S.D.</td>
<td>1.20</td>
<td>1.55</td>
<td>1.29</td>
<td>Within</td>
<td>82.66</td>
<td>42</td>
<td>1.96</td>
</tr>
<tr>
<td>Post test</td>
<td>Mean</td>
<td>14.40</td>
<td>15.13</td>
<td>10.20</td>
<td>Between</td>
<td>212.57</td>
<td>2</td>
<td>106.28</td>
</tr>
<tr>
<td></td>
<td>S.D.</td>
<td>1.14</td>
<td>1.63</td>
<td>1.17</td>
<td>Within</td>
<td>79.73</td>
<td>42</td>
<td>1.89</td>
</tr>
<tr>
<td>Adjusted post test</td>
<td>Mean</td>
<td>14.31</td>
<td>15.19</td>
<td>10.23</td>
<td>Between</td>
<td>209.36</td>
<td>2</td>
<td>104.68</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Within</td>
<td>71.55</td>
<td>41</td>
<td>1.74</td>
</tr>
</tbody>
</table>

* Significant at .05 level of confidence. Required table value for test the significance was 3.22, and 3.23, with the df of 2 and 42, 2and 41.

### 4.6 RESULTS OF MUSCULAR ENDURANCE

The pre test mean and standard deviation on muscular endurance scores of G1, G2, and G3 were $10.47 \pm 1.20$, $10 \pm 1.55$ and $10.07 \pm 1.29$ respectively. The obtained pre test F value of 0.48 was lesser than the required table F value of 3.22. Hence the pre test means value of interval training on treading; spinning and control group on muscular endurance before start of the respective treatments were found to be insignificant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus this analysis confirmed that the random assignment of subjects into three groups were successful.
The post test mean and standard deviation on muscular endurance scores of G1, G2, and G3 were 14.40 ± 1.14, 15.13 ± 1.63 and 10.20± 1.17 respectively. The obtained post test F value of 55.98 was higher than the required table F value of 3.22. Hence the post test means value of interval training on treading and spinning on muscular endurance were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus the results proved that the significant improvement were noticed between the selected treatment groups namely interval training on treading and interval training on spinning on muscular endurance.

The adjusted post test mean on muscular endurance scores of G1, G2, and G3 were 14.31, 15.19 and 10.23 respectively. The obtained adjusted post test F value of 59.97 was higher than the required table F value of 3.23. Hence the adjusted post test means value of interval training on treading and spinning on muscular endurance were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 41. Therefore the results confirm that the adjusted post test produce the significant difference among the groups.

In order to find out the superiority effects among the treatment and control groups the scheffé’s post hoc test were administered.

The outcomes of the same are presented in the table V (a).
<table>
<thead>
<tr>
<th>G-1</th>
<th>G-2</th>
<th>G-3</th>
<th>Mean differences</th>
<th>Confidence interval value</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.31</td>
<td>15.19</td>
<td></td>
<td>0.88</td>
<td>1.22</td>
</tr>
<tr>
<td>14.31</td>
<td>10.23</td>
<td></td>
<td>4.07*</td>
<td>1.22</td>
</tr>
<tr>
<td>15.19</td>
<td>10.23</td>
<td></td>
<td>4.95*</td>
<td>1.22</td>
</tr>
</tbody>
</table>

* Significant at .05 level of confidence.

4.6.1 Results of scheffes post hoc test on muscular endurance.

Table V (a) shows the significant difference of adjusted post test means of interval training on treading, interval training spinning and control group on muscular endurance. The results of scheffes post hoc test undoubtedly proved that the first pair wise comparison between group 1 and group 2 was not significant; because the calculated mean difference value of this comparison 0.88 was lesser than the confidential value of 1.22. Further the second pair wise comparison between group 1 and 3 was significant. The cause for significant the calculated mean difference value of this comparison 4.07 was higher than the confidential value of 1.22. Finally the third pair wise comparison of group 2 and 3 was significant; owing to the calculated mean difference value of this comparison 4.95 was higher than the confidential value of 1.22. The adjusted post test mean difference of experimental and control groups value graphically represented in the figure 3.
FIGURE 3
THE ADJUSTED POST TEST MEAN VALUES OF EXPERIMENTAL AND
CONTROL GROUPS ON MUSCULAR ENDURANCE

Scores in numbers

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14.31</td>
<td>15.19</td>
<td>10.23</td>
</tr>
</tbody>
</table>

- **Blue**: Interval Training on Treading
- **Green**: Interval Training on Spinning
- **Orange**: Control Group
TABLE VI
THE RESULTS OF ANALYSIS OF COVARIANCE ON CARDIO RESPIRATORY ENDURANCE OF DIFFERENT GROUPS
(scores in meters)

<table>
<thead>
<tr>
<th>Testing Conditions</th>
<th>G-1</th>
<th>G-2</th>
<th>G-3</th>
<th>sv</th>
<th>SS</th>
<th>Df</th>
<th>MS</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>Mean</td>
<td>1224.67</td>
<td>1226.00</td>
<td>1227.33</td>
<td>B</td>
<td>53.33</td>
<td>2</td>
<td>26.66</td>
</tr>
<tr>
<td></td>
<td>S.D.</td>
<td>34.62</td>
<td>35.18</td>
<td>37.14</td>
<td>W</td>
<td>57226.66</td>
<td>42</td>
<td>1362.53</td>
</tr>
<tr>
<td>Post test</td>
<td>Mean</td>
<td>1412.67</td>
<td>1563.33</td>
<td>1228.67</td>
<td>B</td>
<td>842791.11</td>
<td>2</td>
<td>421395.55</td>
</tr>
<tr>
<td></td>
<td>S.D.</td>
<td>50.26</td>
<td>43.92</td>
<td>37.21</td>
<td>W</td>
<td>87600.00</td>
<td>42</td>
<td>2085.71</td>
</tr>
<tr>
<td>Adj. post test</td>
<td>Mean</td>
<td>1413.62</td>
<td>1563.33</td>
<td>1227.71</td>
<td>B</td>
<td>847857.98</td>
<td>2</td>
<td>423928.71</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>W</td>
<td>58139.54</td>
<td>41</td>
<td>1418.03</td>
</tr>
</tbody>
</table>

* Significant at .05 level of confidence. Required table value for test the significance was 3.22, and 3.23, with the df of 2 and 42, 2and 41.

4.7 RESULTS OF CARDIO RESPIRATORY ENDURANCE

The pre test mean and standard deviation on cardio respiratory endurance scores of G1, G2, and G3 were 1224.67 ± 34.62, 1226.00 ± 35.18 and 1227.33± 37.14 respectively. The obtained pre test F value of 0.02 was lesser than the required table F value of 3.22. Hence the pre test means value of interval training on treading; spinning and control group on cardio respiratory endurance before start of the respective treatments were found to be insignificant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus this analysis confirmed that the random assignment of subjects into three groups were successful.
The post test mean and standard deviation on cardio respiratory endurance scores of G1, G2, and G3 were 1412.67 ± 50.26, 1563.33 ± 43.92 and 1228.67 ± 37.21 respectively. The obtained post test F value of 202.04 was higher than the required table F value of 3.22. Hence the post test means value of interval training on treading and spinning on cardio respiratory endurance were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus the results proved that the significant improvement were noticed between the selected treatment groups namely interval training on treading and interval training on spinning on cardio respiratory endurance.

The adjusted post test mean on cardio respiratory endurance scores of G1, G2, and G3 were 1413.62, 1563.33 and 1227.71 respectively. The obtained adjusted post test F value of 298.95 was higher than the required table F value of 3.23. Hence the adjusted post test means value of interval training on treading and spinning on cardio respiratory endurance were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 41. Therefore the results confirm that the adjusted post test produce the significant difference among the groups.

In order to find out the superiority effects among the treatment and control groups the scheffe’s post hoc test were administered.

The outcomes of the same are presented in the table VI (a).
TABLE VI (a)
THE RESULTS OF SCHEFFE’S POST HOC TEST MEAN DIFFERENCES ON CARDIO RESPIRATORY ENDURANCE AMONG THREE GROUPS
(scores in meters)

<table>
<thead>
<tr>
<th>G-1</th>
<th>G-2</th>
<th>G-3</th>
<th>Mean differences</th>
<th>Confidence interval value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1413.62</td>
<td>1563.33</td>
<td></td>
<td>149.71*</td>
<td>34.88</td>
</tr>
<tr>
<td>1413.62</td>
<td>1227.71</td>
<td></td>
<td>185.91*</td>
<td>34.88</td>
</tr>
<tr>
<td>1563.33</td>
<td>1227.71</td>
<td></td>
<td>335.62*</td>
<td>34.88</td>
</tr>
</tbody>
</table>

* Significant at .05 level of confidence.

4.7.1 Results of scheffes post hoc test on cardio respiratory endurance

Table VI (a) shows the significant difference of adjusted post test means of interval training on treading, interval training spinning and control group on cardio respiratory endurance. The results of scheffes post hoc test undoubtedly proved that the first pair wise comparison between **group 1 and group 2** was significant; because the calculated mean difference value of this comparison 149.71 was greater than the confidential value of 34.88. Further the second pair wise comparison between **group 1 and 3** was significant. The cause for significant the calculated mean difference value of this comparison 185.91 was higher than the confidential value of 34.88. Finally the third pair wise comparison of **group 2 and 3** was significant; owing to the calculated mean difference value of this comparison 335.62 was higher than the confidential value of 34.88. The adjusted post test mean difference of experimental and control groups value graphically represented in the figure 4.
FIGURE 4
THE ADJUSTED POST TEST MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON CARDIO RESPIRATORY ENDURANCE

- **G1**: Interval Training on Treading
- **G2**: Interval Training on Spinning
- **G3**: Control Group
TABLE VII
THE RESULTS OF ANALYSIS OF COVARIANCE ON AGILITY
OF DIFFERENT GROUPS
(scores in seconds)

<table>
<thead>
<tr>
<th>Testing Conditions</th>
<th>G-1</th>
<th>G-2</th>
<th>G-3</th>
<th>SV</th>
<th>SS</th>
<th>Df</th>
<th>MS</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>Mean</td>
<td>12.47</td>
<td>12.13</td>
<td>12.00</td>
<td>Between</td>
<td>1.73</td>
<td>2</td>
<td>0.86</td>
</tr>
<tr>
<td></td>
<td>S.D.</td>
<td>1.71</td>
<td>1.45</td>
<td>1.32</td>
<td>Within</td>
<td>101.46</td>
<td>42</td>
<td>2.41</td>
</tr>
<tr>
<td>Post test</td>
<td>Mean</td>
<td>10.80</td>
<td>10.93</td>
<td>12.13</td>
<td>Between</td>
<td>16.17</td>
<td>2</td>
<td>8.08*</td>
</tr>
<tr>
<td></td>
<td>S.D.</td>
<td>1.28</td>
<td>1.06</td>
<td>1.75</td>
<td>Within</td>
<td>87.06</td>
<td>42</td>
<td>2.07</td>
</tr>
<tr>
<td>Adj. post test</td>
<td>Mean</td>
<td>10.79</td>
<td>10.93</td>
<td>12.14</td>
<td>Between</td>
<td>16.21</td>
<td>2</td>
<td>8.10*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Within</td>
<td>87.00</td>
<td>41</td>
<td>2.12</td>
</tr>
</tbody>
</table>

* Significant at .05 level of confidence. Required table value for test the significance was 3.22, and 3.23, with the df of 2 and 42, 2 and 41.

4.8. RESULTS OF AGILITY

The pre test mean and standard deviation on agility scores of G1, G2, and G3 were 12.47± 1.71, 12.13± 1.45 and 12.00± 1.32 respectively. The obtained pre test F value of 0.35 was lesser than the required table F value of 3.22. Hence the pre test means value of interval training on treading; spinning and control group on agility before start of the respective treatments were found to be insignificant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus this analysis confirmed that the random assignment of subjects into three groups were successful.
The post test mean and standard deviation on agility scores of G1, G2, and G3 were 10.80± 1.28, 10.93± 1.06and 12.13± 1.75 respectively. The obtained post test F value of 3.90 was higher than the required table F value of 3.22. Hence the post test means value of interval training on treading and spinning on agility were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus the results proved that the significant improvement were noticed between the selected treatment groups namely interval training on treading and interval training on spinning on agility.

The adjusted post test mean on agility scores of G1, G2, and G3 were 10.79, 10.93and 12.14 respectively. The obtained adjusted post test F value of 3.82 was higher than the required table F value of 3.23. Hence the adjusted post test means value of interval training on treading and spinning on agility were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 41. Therefore the results confirm that the adjusted post test produce the significant difference among the groups.

In order to find out the superiority effects among the treatment and control groups the scheffe’s post hoc test were administered.

The outcomes of the same are presented in the table VII (a).
TABLE VII (a)
THE RESULTS OF SCHEFFE’S POST HOC TEST MEAN DIFFERENCES ON AGILITY AMONG THREE GROUPS
(scores in seconds)

<table>
<thead>
<tr>
<th>G-1</th>
<th>G-2</th>
<th>G-3</th>
<th>Mean Differences</th>
<th>Confidence Interval Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.79</td>
<td>10.93</td>
<td></td>
<td>0.14</td>
<td>1.15</td>
</tr>
<tr>
<td>10.79</td>
<td></td>
<td>12.14</td>
<td>1.34*</td>
<td>1.15</td>
</tr>
<tr>
<td></td>
<td>10.93</td>
<td>12.14</td>
<td>1.20*</td>
<td>1.15</td>
</tr>
</tbody>
</table>

* Significant at .05 level of confidence.

4.8.1 Results of scheffes post hoc test on agility

Table VII (a) shows the significant difference of adjusted post test means of interval training on treading, interval training spinning and control group on agility. The results of scheffes post hoc test undoubtedly proved that the first pair wise comparison between group 1 and group 2 was not significant; because the calculated mean difference value of this comparison 0.14 was lesser than the confidential value of 1.15. Further the second pair wise comparison between group 1 and 3 was significant. The cause for significant the calculated mean difference value of this comparison 1.34 was higher than the confidential value of 1.15. Finally the third pair wise comparison of group 2 and 3 was significant; owing to the calculated mean difference value of this comparison 1.20 was higher than the confidential value of 1.15. The adjusted post test mean difference of experimental and control groups value graphically represented in the figure5.
FIGURE 5
THE ADJUSTED POST TEST MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON AGILITY

Scores in seconds

- **Blue**: Interval Training on Treading
- **Green**: Interval Training on Spinning
- **Orange**: Control Group

<table>
<thead>
<tr>
<th>Group</th>
<th>Score in Seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>10.79</td>
</tr>
<tr>
<td>G2</td>
<td>10.93</td>
</tr>
<tr>
<td>G3</td>
<td>12.14</td>
</tr>
</tbody>
</table>
TABLE VIII
ANALYSIS OF COVARIANCE ON EXPLOSIVE POWER IN TERMS OF
VERTICAL ABILITY OF DIFFERENT GROUPS
(scores in centimeters)

<table>
<thead>
<tr>
<th>Testing Conditions</th>
<th>G-1</th>
<th>G-2</th>
<th>G-3</th>
<th>SV</th>
<th>SS</th>
<th>Df</th>
<th>MS</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>Mean</td>
<td>20.47</td>
<td>20.87</td>
<td>20.20</td>
<td>Between</td>
<td>3.37</td>
<td>2</td>
<td>1.68</td>
</tr>
<tr>
<td></td>
<td>S.D.</td>
<td>1.59</td>
<td>1.02</td>
<td>2.59</td>
<td>Within</td>
<td>153.86</td>
<td>42</td>
<td>3.66</td>
</tr>
<tr>
<td>Post test</td>
<td>Mean</td>
<td>23.40</td>
<td>27.07</td>
<td>21.40</td>
<td>Between</td>
<td>247.77</td>
<td>2</td>
<td>123.88</td>
</tr>
<tr>
<td></td>
<td>S.D.</td>
<td>2.15</td>
<td>1.95</td>
<td>3.40</td>
<td>Within</td>
<td>300.13</td>
<td>42</td>
<td>7.14</td>
</tr>
<tr>
<td>Adj. post test</td>
<td>Mean</td>
<td>23.44</td>
<td>26.77</td>
<td>21.66</td>
<td>Between</td>
<td>197.34</td>
<td>2</td>
<td>98.67</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Within</td>
<td>191.75</td>
<td>41</td>
<td>4.67</td>
</tr>
</tbody>
</table>

* Significant at .05 level of confidence. Required table value for test the significance was 3.22, and 3.23, with the df of 2 and 42, 2and 41.

4.9 RESULTS OF EXPLOSIVE POWER IN THE TERMS OF VERTICAL ABILITY

The pre test mean and standard deviation on explosive power in terms of vertical ability scores of G1, G2, and G3 were 20.47± 1.59, 20.87± 1.02 and 20.20 ± 2.59 respectively. The obtained pre test F value of 0.46 was lesser than the required table F value of 3.22. Hence the pre test means value of interval training on treading; spinning and control group on explosive power in terms of vertical ability before start of the respective treatments were found to be insignificant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus this analysis confirmed that the random assignment of subjects into three groups were successful.
The post test mean and standard deviation on explosive power in terms of vertical ability scores of G1, G2, and G3 were 23.40 ± 2.15, 27.07 ± 1.95 and 21.40 ± 3.40 respectively. The obtained post test F value of 17.33 was higher than the required table F value of 3.22. Hence the post test means value of interval training on treading and spinning on explosive power in terms of vertical were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus the results proved that the significant improvement were noticed between the selected treatment groups namely interval training on treading and interval training on spinning on explosive power in the terms vertical ability.

The adjusted post test mean on explosive power in terms of vertical ability scores of G1, G2, and G3 were 23.44, 26.77 and 21.66 respectively. The obtained adjusted post test F value of 21.09 was higher than the required Table F value of 3.23. Hence the adjusted post test means value of interval training on treading and spinning on explosive power in terms of vertical ability were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 41. Therefore the results confirm that the adjusted post test produce the significant difference among the groups.

In order to find out the superiority effects among the treatment and control groups the scheffe’s post hoc test were administered.

The outcomes of the same are presented in the table VIII (a).
TABLE VIII (a)
THE RESULTS OF SCHEFFE’S POST HOC TEST MEAN DIFFERENCES ON EXPLOSIVE POWER IN TERMS OF VERTICAL ABILITY AMONG THREE GROUPS (scores in centimeters)

<table>
<thead>
<tr>
<th></th>
<th>G-1</th>
<th>G-2</th>
<th>G-3</th>
<th>MEAN DIFFERENCES</th>
<th>CONFIDENCE INTERVAL VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>23.44</td>
<td>26.77</td>
<td>5.11</td>
<td></td>
<td>2.00</td>
</tr>
<tr>
<td>23.44</td>
<td>21.66</td>
<td>2.18</td>
<td></td>
<td></td>
<td>2.00</td>
</tr>
</tbody>
</table>

* Significant at .05 level of confidence.

4.9.1 Results of scheffes post hoc test on explosive power in terms of vertical ability

Table VIII (a) shows the significant difference of adjusted post test means of interval training on treading, interval training spinning and control group on explosive power in the terms of vertical ability. The results of scheffes post hoc test undoubtedly proved that the first pair wise comparison between group 1 and group 2 was significant; because the calculated mean difference value of this comparison 3.33 was higher than the confidential value of 2.00. Further the second pair wise comparison between group 1 and 3 was significant. The cause for significant the calculated mean difference value of this comparison 2.18 was higher than the confidential value of 2.00 Finally the third pair wise comparison of group 2 and 3 was significant; owing to the calculated mean difference value of this comparison 5.11 was higher than the confidential value of 2.00 The adjusted post test mean difference of experimental and control groups value graphically represented in the figure 6.
FIGURE 6
THE ADJUSTED POST TEST MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON EXPLOSIVE POWER IN THE TERMS OF VERTICAL ABILITY

Scores in centimeters

G1 G2 G3

23.44 26.77 21.66

Interval Training on Treading
Interval Training on Spinning
Control Group
TABLE IX
THE RESULTS OF ANALYSIS OF COVARIANCE ON EXPLOSIVE POWER IN TERMS OF HORIZONTAL ABILITY OF DIFFERENT GROUPS
(scores in meters)

<table>
<thead>
<tr>
<th>Testing Conditions</th>
<th>G- 1</th>
<th>G- 2</th>
<th>G-3</th>
<th>SV</th>
<th>SS</th>
<th>Df</th>
<th>MS</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>Mean</td>
<td>1.26</td>
<td>1.25</td>
<td>1.20</td>
<td>Between 0.03</td>
<td>2 0.01</td>
<td>1.23</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S.D.</td>
<td>0.13</td>
<td>0.11</td>
<td>0.09</td>
<td>Within 0.55</td>
<td>42 0.013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post test</td>
<td>Mean</td>
<td>1.35</td>
<td>1.40</td>
<td>1.23</td>
<td>Between 0.24</td>
<td>2 0.12</td>
<td>7.83</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S.D.</td>
<td>0.11</td>
<td>0.10</td>
<td>0.14</td>
<td>Within 0.64</td>
<td>42 0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj. post test</td>
<td>Mean</td>
<td>1.34</td>
<td>1.39</td>
<td>1.24</td>
<td>Between 0.16</td>
<td>2 0.08</td>
<td>6.32</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Within 0.54</td>
<td>41 0.013</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at .05 level of confidence. Required table value for test the significance was 3.22, and 3.23, with the df of 2 and 42, 2and 41.

4.10. RESULTS OF EXPLOSIVE POWER IN TERMS OF HORIZONTAL ABILITY

The pre test mean and standard deviation on explosive power in terms of horizontal ability scores of G1, G2, and G3 were 1.26 ± 0.13, 1.25 ± 0.11 and 1.20 ± 0.09 respectively. The obtained pre test F value of 1.23 was lesser than the required table F value of 3.22. Hence the pre test means value of interval training on treading; spinning and control group on explosive power in terms of horizontal ability before start of the respective treatments were found to be insignificant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus this analysis confirmed that the random assignment of subjects into three groups were successful.
The post test mean and standard deviation on explosive power in terms of horizontal ability scores of G1, G2, and G3 were 1.35 ± 0.11, 1.40 ± 0.10 and 1.23 ± 0.14 respectively. The obtained post test F value of 7.83 was higher than the required table F value of 3.22. Hence the post test means values of interval training on treading and spinning on were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 42. Thus the results proved that the significant improvement were noticed between the selected treatment groups namely interval training on treading and interval training on spinning on explosive power in the terms horizontal ability.

The adjusted post test means on explosive power in terms of horizontal ability and G3 were 1.34, 1.39 and 1.24 respectively. The obtained adjusted post test F value of 6.32 was higher than the required table F value of 3.23. Hence the adjusted post test means value of interval training on treading and spinning on explosive power in terms of horizontal ability were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 41.

In order to find out the superiority effects among the treatment and control groups the scheffe’s post hoc test were administered.

The outcomes of the same are presented in the table IX (a).
TABLE IX (a)
THE RESULTS OF SCHEFFE’S POST HOC TEST MEAN DIFFERENCES ON EXPLOSIVE POWER IN TERMS OF HORIZONTAL ABILITY AMONG THREE GROUPS
(scores in meters)

<table>
<thead>
<tr>
<th></th>
<th>G-1</th>
<th>G-2</th>
<th>G-3</th>
<th>Mean differences</th>
<th>Confidence interval value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.34</td>
<td>1.39</td>
<td>1.34</td>
<td>1.24</td>
<td>1.39</td>
<td>1.24</td>
</tr>
<tr>
<td>0.05</td>
<td>0.10*</td>
<td>0.15*</td>
<td>0.10*</td>
<td>0.15*</td>
<td>0.10*</td>
</tr>
<tr>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
</tr>
</tbody>
</table>

* Significant at .05 level of confidence.

4.10.1 Results of scheffes post hoc test on explosive power in terms of horizontal ability

Table IX (a) shows the significant difference of adjusted post test means of interval training on treading, interval training spinning and control group on explosive power in the terms of horizontal ability. The results of scheffes post hoc test undoubtedly proved that the first pair wise comparison between group 1 and group 2 was not significant; because the calculated mean difference value of this comparison 0.05 was lesser than the confidential value of 0.09. Further the second pair wise comparison between group 1 and 3 was significant. The cause for significant the calculated mean difference value of this comparison 0.10 was higher than the confidential value of 0.09. Finally the third pair wise comparison of group 2 and 3 was significant; owing to the calculated mean difference value of this comparison 0.15 was higher than the confidential value of 0.09. The adjusted post test mean difference of experimental and control groups value graphically represented in the figure 7.
FIGURE 7
THE ADJUSTED POST TEST MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON EXPLOSIVE POWER IN TERMS OF HORIZONTAL ABILITY

![Bar chart showing scores in meters for groups G1, G2, and G3.]

- **G1**: Interval Training on Treading
- **G2**: Interval Training on Spinning
- **G3**: Control Group
4.11 DISCUSSION ON FINDINGS

The interval training on treading and interval training on spinning have produced significant improvement on selected motor fitness variables greater than control group of untrained college women responses to the twelve weeks of the selected two training interventions.

4.11.1 Speed

The end result of the present study clearly indicated that, there was a significant difference among interval training on treading, interval training on spinning and control group on the performance of speed owing to the twelve weeks selected two training intervention of untrained college women, and the significant improvement were noticed on the performance of speed between the experimental groups, when compared with the control group. After analysing the statistical end results the researcher found that the selected training groups have significantly improved the quality of speed from the base line to post interventions. The pre to post intervention was present as follows. The interval training on treading group from pre (7.41 ± 0.15), to post (7.19 ± 0.12) and interval training on spinning group from (7.41± 0.09) to post (7.13± 0.04) have significantly changed the pre to post results. The present study demonstrates an increase in speed performance of 0.002% and 0.003% for interval training on treading and interval training on spinning training respectively. The result of this study prove that the quality of speed performance increased significantly over the twelve weeks training period for interval training on treading and interval training on spinning when comparing control group. However, the progress among the two experimental groups was similar. The control group did not show any significant changes on speed.
4.11.2 Muscular strength

The results of the present study clearly indicated that, there was a significant difference among interval training on treading, interval training on spinning and control group on the performance of muscular strength owing to the twelve weeks selected two training intervention of untrained college women, and the significant improvement were noticed on the performance of muscular strength between the experimental groups, when compared with the control group.

After analysing the statistical end results the researcher found that the selected training group have significantly improved the quality of muscular strength from the base line to post interventions. The pre to post intervention was present as follows.

The interval training on treading group from pre (12 ± 0.73), to post (14.07 ± 1.65) and interval training on spinning group from (11.53± 1.02) to post (13.00± 1.21) have significantly changed the pre to post results. The present study demonstrates an increase in muscular strength of 0.02 % and 0.02 % for interval training on treading and interval training on spinning training respectively. The result of this study prove that the quality of muscular strength performance increased significantly over the twelve weeks training period for interval training on treading and interval training on spinning when comparing control group . However, the progress among the two experimental groups was similar. The control group did not show any significant changes on muscular strength.

4.11.3 Muscular endurance

The results of the present study clearly indicated that, there was a significant difference among interval training on treading, interval training on spinning and control group on the performance of muscular endurance owing to the twelve weeks selected two training intervention of untrained college women, and the significant
improvement were noticed on the performance of muscular endurance between the experimental groups, when compared with the control group.

After analysing the statistical end results the researcher found that the selected training group have significantly improved the nature of muscular endurance from the base line to post interventions. The pre to post intervention was present as follows.

The interval training on treading group from pre (10.47 ± 1.20), to post (14.40 ± 1.14) and interval training on spinning group from (10.00± 1.55) to post (15.13± 1.63) have significantly changed the pre to results. The present study reveal an increase in muscular endurance of 0.04% and 0.05% for interval training on treading and interval training on spinning training respectively. The result of this study prove that the nature of muscular endurance performance increased significantly over the twelve weeks training period for interval training on treading and interval training on spinning when comparing control group. However, the progress among the two experimental groups was similar. The control group did not show any significant changes on muscular endurance.

4.11.4 Cardio respiratory endurance

The results of the present study visibly show that, there was a significant difference among interval training on treading, interval training on spinning and control group on the performance of cardio respiratory endurance owing to the twelve weeks selected two training intervention of untrained college women, and the significant improvement were noticed on the performance of cardio respiratory endurance between the experimental groups, when compared with the control group. After analysing the results the researcher found that the selected training group have significantly improved the cardio respiratory endurance performance from the base line to post training. The pre to post intervention was present as follows.
The results of the study clearly indicated that there was significant improvements from pre test to post test study among the two groups, viz, interval training on treading group Pre (1224.67 ± 34.62,) to post (1412.67 ± 50.26) and interval training on spinning group from pre (1226.00 ± 50.26,) to Post (1563.33 ± 49.32). Further the present study demonstrated an increase in cardio respiratory endurance of 1.88%, and 3.38% for interval training on treading and spinning, whereas, the control group did not show any significant improvement on cardio respiratory endurance. The result of this study prove that the ability of cardio respiratory endurance performance increased significantly over the twelve weeks training period for interval training on treading and interval training on spinning when comparing control group.

However, the progress on the performance of cardio respiratory endurance was more favour on interval training on spinning rather than the other training. The control group did not show any significant changes on cardio respiratory endurance.

4.11.5 Agility

The results of the present study evidently prove that, there was a significant difference among interval training on treading, interval training on spinning and control group on the performance of agility owing to the twelve weeks selected two training intervention of untrained college women, and the significant improvement were noticed on the performance of agility between the experimental groups, when compared with the control group.

After analysing the results the researcher found that the selected training group have significantly improved the agility from the base line to post training. The pre to post intervention was present as follows. The pre to post intervention was present as follows.
The interval training on treading group from pre (12.47 ± 1.71), to post (10.80 ± 1.28) and interval training on spinning group from (12.13 ± 1.45) to post (10.93± 1.06) have significantly improved pre to post in the two experimental groups with no change in control group.

The present study demonstrates an increase in agility of 0.02% and 0.01% for interval training on treading and interval training on spinning training respectively.

The result of this study prove that the quality of agility performance increased significantly over the twelve weeks training period for interval training on treading and interval training on spinning when comparing control group.

However, the progress among the two experimental groups was similar. The control group did not show any significant changes on agility.

4.11.6 Explosive power in the terms of vertical ability

The results of the present study clearly confirm that, there was a significant difference among interval training on treading, interval training on spinning and control group on the performance of explosive power in the terms of vertical ability owing to the twelve weeks selected two training intervention of untrained college women, and the significant improvement were noticed on the performance of explosive power in the terms of vertical ability between the experimental groups, when compared with the control group.

After analysing the results the researcher found that the selected training group have significantly improved the explosive power in the terms of vertical ability from the base line to post training. The pre to post intervention was present as follows. The pre to post intervention was present as follows. The interval training on treading group from pre (20.47 ± 1.59), to post 23.40 ± 2.15) and interval training on spinning group from (20.87± 1.02) to post(27.07± 1.95) have significantly improved
pre to post in the two experimental groups with no change in control group. The present study demonstrates an increase in explosive power in terms of vertical ability of 0.03% and 0.06 % for interval training on treading and interval training on spinning training respectively. The result of this study prove that the quality of explosive power in terms of vertical ability performance increased significantly over the twelve weeks training period for interval training on treading and interval training on spinning when comparing control group . However, the progress on the performance of explosive power in the terms of vertical ability was more favour on interval training on spinning rather than the other training. The control group did not show any significant changes on explosive power in the terms of vertical ability.

4.11.7 Explosive power in terms of horizontal ability

The results of the present study clearly confirm that, there was a significant difference among interval training on treading, interval training on spinning and control group on the performance of explosive power in the terms of horizontal ability owing to the twelve weeks selected two training intervention of untrained college women, and the significant improvement were noticed on the performance of explosive power in the terms of horizontal ability between the experimental groups, when compared with the control group.

After analysing the results the researcher found that the selected training group have significantly improved the explosive power in the terms of horizontal ability from the base line to post training. The pre to post intervention was present as follows. The pre to post intervention was present as follows. The interval training on treading group from pre (1.26 ± 0.13), to post (1.35 ± 0.11) and interval training on spinning group from (1.25± 0.11) to post (1.40 ± 0.10) have significantly improved the pre to post results.
The present study demonstrates an increase in explosive power in terms of horizontal ability of 0.01 % and 0.02 % for interval training on treading and interval training on spinning training respectively. The result of this study prove that the quality of explosive power in terms of horizontal ability performance increased significantly over the twelve weeks training period for interval training on treading and interval training on spinning when comparing control group. However, the progress among the two experimental groups was similar. The control group did not show any significant changes on explosive power in terms of horizontal ability.

4.12 DISCUSSION ON FINDINGS OF EARLIER STUDIES

The present study findings supported with the related earlier studies as follows.

Sung-Gyung Kim Young Uk Ryu · Hyun Dong Je · Ji Hoon Jeong · Hyeong-Dong Kim (2015), their review suggests that treadmill training is safe and feasible for children with CP and indicates that there may be some positive benefits in walking speed over short distances and in general gross motor skills. The findings of Lin Wang1, Youlian Hong2, Jing Xian Li3 (2014), showed that the muscle activity was significantly different in treadmill running than in over ground running. The research study of I-Hsuan Chen, PhD Yea-Ru Yang, PhD Rai-Chi Chan, MD Ray-Yau Wang, PhD-(2013) the turning-based treadmill training would improve gait symmetry during straight walking, muscle strength of the lower extremities and standing balance. Sen-Wei Tsai · Hsiao-Ling Chen · Yi-Chun Chang · Chuan-Mu Chen(2013) they found that the up regulation of genes associated with neuritis and AChR regeneration following treadmill training may contribute to enhanced gastronomies strength recovery following BoNT-A injection. The end results of Bas Kluitenberg¹, Steef W Bredeweg¹, Sjouke Zijlstra¹, Wiebren Zijlstra²23 and Ida Buist¹(2012) demonstrated
that the treadmill is a moderate to highly valid tool for the assessment of vertical
ground-reaction forces during running for runners who showed a consistent landing
strategy during over ground and treadmill running. Roxana Brasil\(^1\) / Ana Barreto\(^1\) / Leandro Nogueira\(^1\) / Edil Santos\(^1\) / Jefferson (2011) findings suggest that although the
aquatic cycling induces similar physiologic demands in both protocols, the rate of
perceived exertion may vary according to the continuous vs. intermittent nature of the
exercise. The research summary of Simões RA, Gonelli PRG, Celante GS, Sindorf
MAG, Souza TMF, Montebelo MIL, Borin JP, Cesar MC. (2011) the workout
sessions, the LME protocol resulted in significantly (P≤0.01) higher VO2, VCO2, VE,
O2 pulse, HR, VE/VO2, and VE/VCO2 responses as well as total volume of training
vs. the HLT protocol. Although the LME protocol resulted in a higher cardio
respiratory overload versus the HLT protocol, it was too low to improve the cardio
respiratory fitness of young trained women. The study findings of Michael C Rumpf\(^1\),
2*, Amanda J Salacinski2, Pamela A Macfarlane2 and (2009), that supra maximal
Spinning may be a promising way to improve acceleration of collegiate soccer
players. The end results from deJong AT\(^1\), Bonzheim K, Franklin BA, Saltarelli W
(2009) significantly higher VO(2)max values during treadmill testing than those
observed in the general population, their relative arm fitness appears to be slightly
reduced. These findings add to and strongly support the specificity of measurement
and training concept. The outcome of Ford KR, Brent JL, Divine JG, Hewett TE
(2007) indicate that both incline treadmill and resistive ground-based training are
effective at improving sprint start speed, although they potentially do so through
differing mechanisms. Aziz AR\(^1\), Mukherjee S, Chia MY, Teh KC. 2007 The
moderate association between the measured VO (2max) and MST suggests that both
tests were plausibly measuring different aspects of a player's aerobic fitness. The lack

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of association between measured VO (2max) and aerobic endurance performance in the MST with performance in the rRSA suggests that aerobic fitness per se is poorly associated with performance in the rRSA in elite youth soccer players. Nummela A, Hämäläinen I, Rusko H. (2007) concluded that track protocol is related to, and in agreement with, the results of the treadmill protocol. The track version of the maximal anaerobic running test is a valid means of measuring different determinants of sprint running performance. Legaz Arrese A, Munguía Izquierdo D, Serveto Galindo JR.(2006) their study demonstrates that in males and females, physiological parameters can explain the variance in marathon time among elite homogeneous groups. Mika P, Spodaryk K, Cencora A, Mika A (2006) found that the significant improvement of walking ability over 3 months of pain-free treadmill training is associated with a significant increase in red cell deformability in patients with claudication. Modlin, Kim (2006), the results of the study indicate that the high handlebar height position is the best position for participants in a Spinning® class. Stojiljković S, Mazić S, Nesić D, Velkovski S, Mitrović D 2005 Comparison between the initial and final test demonstrated a significant increase of observed variables, under experimental conditions: at final test running velocity has increased at ventilatory threshold, in respect to absolute values and expressed as percentage at VO2max.Egaña M, Donne B (2004), concluded that moderately active female’s similar physiological improvements were observed using stair-climber, elliptical trainer and treadmill running when training volume and intensity were equivalent. Kivi DM, Maraj BK, Gervais P (2002) The results indicated that at slower velocities, there were differences in the stride characteristics and lower-extremity kinematics while sprinting on a treadmill. As the velocity approached near maximum mechanical breakdown was seen, suggesting that velocities greater than 90% should be used
selectively during treadmill training. Margareta Öhrström Jan Hedenbro and Mats Ekelun(2001), the results found weight education in women reduces the energy expenditure during walking both at comfortable and preset speeds. The comfortable walking speed is increased. The improvements are reflected in the patients' own assessment. The results of the present study were demonstrated positive effects on the selected motor fitness variables of untrained college women student. These findings support, in line with the results of the above earlier findings.

4.13 DISCUSSION ON HYPOTHESES

The first hypothesis stated that the interval training on treading may not produce significant improvement on the selected motor fitness variables (speed, muscular strength muscular endurance, cardio respiratory endurance, agility and explosive power in the term of vertical and horizontal ability) of untrained college women. The results of the study showed that the influences of 12 weeks of interval training on treading produced significant improvement on speed, muscular strength, muscular endurance, cardio respiratory endurance, agility and explosive power in the term of vertical and horizontal ability. Hence the researcher first hypothesis was rejected based on the results of the present study.

The second hypothesis stated that the interval training on spinning may not produce significant improvement on the selected motor fitness variables (speed, muscular strength, muscular endurance, cardio respiratory endurance, agility and explosive power in the term of vertical and horizontal ability) of untrained college women. The results of the study showed that the influences of 12 weeks of interval training on spinning produced significant improvement on speed, muscular strength, muscular endurance, cardio respiratory endurance, agility and explosive power in the term of vertical and horizontal ability. Hence the researcher second hypothesis was rejected based on the results of the present study.