CHAPTER IV

RESULTS AND DISCUSSIONS

4.1 OVERVIEW

This chapter deals with the analysis of data collected from the samples under study. The purpose of this study was to find out the isolated and combined effects of yogic practice, walking, and jogging on selected cardio respiratory and psychological variables among middle aged men. To facilitate the study hundred and fifty middle aged men from Perinthalmanna, Malappuram district, Kerala State was randomly selected as subjects and their age was between 40 and 50 years. They were assigned into five groups of which the first group served as yogic practices groups, second group served as walking, third group served as jogging group, the fourth group served as combined and fifth group served as the control group.

The requirements of the experimental procedures, testing as well as exercise schedules were explained to them so as to avoid any ambiguity of the effort required on their part and prior to the administration of the study, the investigator got the individual consent from each subject. Taking into consideration of feasibility criteria, availability of instruments and the relevance of the variables of the present study, the cardio respiratory variables selected were resting pulse rate and VO$_2$ max. The psychological variables selected were, anxiety, aggression and self confidence.

The study was formulated as a true random group design, consisting of a pre test and post test. The subjects (n=150) were randomly assigned to five equal groups
of thirty middle aged men each. The groups were assigned as Experimental Groups I, II, III, IV and control group respectively. Pre tests were conducted for all the subjects on selected cardio respiratory and psychological variables such as resting pulse rate, \( VO_2 \) max, anxiety, aggression and self confidence. The experimental groups participated in their respective yogic practices, walking, jogging and combined for a period of twelve weeks. The post tests were conducted on the above said dependent variables after a period of 24 weeks treatment period. The obtained data were subjected to statistical treatments using ‘t’ test, ANOVA and ANCOVA to draw meaningful conclusions.

**4.2 TEST OF SIGNIFICANCE**

As Clarke and Clarke (1970) say, “these data must be analysed in ways appropriate to the research design. Such analysis can only be appropriate to the research design. Such analysis can only be accomplished through the application of pertinent statistics”.

This is the vital portion of thesis for achieving the conclusion by examining the hypotheses. The procedure of testing the hypotheses was either by accepting the hypotheses or rejecting the same in accordance with the results obtained in relation to the level of confidence.

The test was usually called the test of significance since we test whether the differences among three groups or within many groups’ scores were significant or not. In this study, if the obtained F-value were greater than the table value, the null
hypotheses were rejected to the effect that there existed significant difference among the means of the groups compared and if the obtained values were lesser than the required values, then the null hypotheses were accepted to the effect that there existed no significant differences among the means of the groups under study.

4.2.1 LEVEL OF SIGNIFICANCE

The subjects were compared on the effect of isolated and combined effect of walking, jogging, and yogasana practices on selected cardio respiratory parameters, namely resting pulse rate and VO$_2$ max and psychological variables, anxiety, aggression and self concept. Among middle aged men. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, among the groups on selected criterion variables separately. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as appropriate.

In this study, if the obtained F value were greater than the table value, the null hypotheses were rejected to the effect that there existed significant difference among the means of the groups compared and if the obtained values were lesser than the required values at 0.05 level, then the null hypotheses were accepted to the effect that there existed no significant differences among the means of the groups under study.

4.3 COMPUTATION OF ANALYSIS OF COVARIANCE AND POST HOC TEST

4.3.1 ANALYSIS ON RESTING PULSE RATE
The statistical analysis of the initial and final means of cardio respiratory variable, resting pulse rate due to 24 weeks walking, jogging, yogasanas and combined exercises among middle aged men is presented in Table IV.
Table IV

ANALYSIS OF COVARIENCE ON RESTING PULSE RATE AMONG WALKING, JOGGING, YOGASANAS AND COMBINED AND CONTROL GROUPS

(Scores in Beats/per minute)

<table>
<thead>
<tr>
<th></th>
<th>Walking Group</th>
<th>Jogging Group</th>
<th>Yoga-asanas Group</th>
<th>Combined Group</th>
<th>Control Group</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>Obtained F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test Mean</td>
<td>72.83</td>
<td>72.13</td>
<td>77.37</td>
<td>74.00</td>
<td>73.2</td>
<td>Between</td>
<td>504.73</td>
<td>4</td>
<td>126.18</td>
<td>4.88*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Within</td>
<td>3746.77</td>
<td>145</td>
<td>25.84</td>
<td></td>
</tr>
<tr>
<td>Post Test Mean</td>
<td>70.47</td>
<td>69.90</td>
<td>71.93</td>
<td>70.83</td>
<td>73.1</td>
<td>Between</td>
<td>198.71</td>
<td>4</td>
<td>49.68</td>
<td>2.38</td>
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<td></td>
<td></td>
<td></td>
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<td>Within</td>
<td>3025.67</td>
<td>145</td>
<td>20.87</td>
<td></td>
</tr>
<tr>
<td>Adjusted Post Test Mean</td>
<td>71.36</td>
<td>71.38</td>
<td>69.03</td>
<td>70.75</td>
<td>73.7</td>
<td>Between</td>
<td>322.21</td>
<td>4</td>
<td>80.55</td>
<td>28.91*</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Within</td>
<td>401.21</td>
<td>144</td>
<td>2.79</td>
<td></td>
</tr>
<tr>
<td>Mean Diff</td>
<td>2.37</td>
<td>2.23</td>
<td>5.43</td>
<td>3.17</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table F-ratio at 0.05 level of confidence for 4 and 145 (df) =2.45, 4 and 144(df) =2.45

*Significant
Table IV shows that the pre test mean values on resting pulse rate is 72.83, 72.13, 77.37, 74.00 and 73.2 for walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 4.88 was greater than the table F value of 2.45 at 0.05 level.

The post test mean values on resting pulse rate is 70.47, 69.90, 71.93, 70.83 and 73.1 for middle aged men walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be not significant as the obtained F value of 2.38 was less than the required table F value of 2.45 to be significant at 0.05 level.

Taking into consideration the pre test means and post test means, adjusted post test means were computed and subjected to statistical treatment through ANCOVA. The adjusted post test means is 71.36, 71.38, 69.03, 70.75 and 73.7 for walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 28.91 was greater than the required table F value of 2.45 at 0.05 level. This proved that the treatments to the subjects significantly improved the cardio respiratory variable, resting pulse rate of the middle aged men.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s Confidence Interval test. The results are presented in Table V.
Table V

Scheffe’s post hoc test for the differences between the adjusted post test paired means on Experimental and Control Groups on Resting Pulse Rate

<table>
<thead>
<tr>
<th>Walking Group</th>
<th>Jogging Group</th>
<th>Yogasanas Group</th>
<th>Combined Group</th>
<th>Control Group</th>
<th>MEAN DIFF</th>
<th>Required C.I</th>
</tr>
</thead>
<tbody>
<tr>
<td>71.36</td>
<td>71.38</td>
<td></td>
<td></td>
<td>71.36</td>
<td>0.02</td>
<td>1.38</td>
</tr>
<tr>
<td>71.36</td>
<td></td>
<td>69.03</td>
<td></td>
<td>71.36</td>
<td>2.33*</td>
<td>1.38</td>
</tr>
<tr>
<td>71.36</td>
<td></td>
<td></td>
<td>70.75</td>
<td>71.36</td>
<td>0.61</td>
<td>1.38</td>
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<td>71.36</td>
<td></td>
<td></td>
<td></td>
<td>71.36</td>
<td>2.39*</td>
<td>1.38</td>
</tr>
<tr>
<td>71.36</td>
<td>69.03</td>
<td></td>
<td></td>
<td>71.38</td>
<td>2.35*</td>
<td>1.38</td>
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<tr>
<td>71.38</td>
<td></td>
<td>70.75</td>
<td></td>
<td>71.38</td>
<td>0.63</td>
<td>1.38</td>
</tr>
<tr>
<td>71.38</td>
<td></td>
<td></td>
<td></td>
<td>71.38</td>
<td>2.37*</td>
<td>1.38</td>
</tr>
<tr>
<td>71.38</td>
<td>69.03</td>
<td></td>
<td></td>
<td>71.38</td>
<td>1.72*</td>
<td>1.38</td>
</tr>
<tr>
<td>69.03</td>
<td></td>
<td>70.75</td>
<td></td>
<td>69.03</td>
<td>4.72*</td>
<td>1.38</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>70.75</td>
<td>70.75</td>
<td>3.00*</td>
<td>1.38</td>
</tr>
</tbody>
</table>

- Significant at 0.05 level.
Table V shows the Scheffe’s Post hoc test on the adjusted post test means. The calculated confidence interval required to be significant at 0.05 level was 1.38. Hence, the mean differences between the following pairs were found to be significant at 0.05 level as the obtained mean differences are greater than the required mean difference to be significant.

i. Walking group and Yogasanas group (MD : 2.33)

ii. Walking group and Control group (MD: 2.39)

iii. Jogging Group and Yogasanas group (MD: 2.35)

iv. Jogging Group and Control Group (MD: 2.37)

v. Yogasanas Group and Combined Group (MD: 1.72)

vi. Yogasanas Group and Control Group (MD: 4.72)

vii. Combined Group and Control Group (MD: 3.00)

The mean differences between the following pairs are found to be insignificant at 0.05 level as the obtained mean differences were lesser than the required mean difference.

i. Walking group and Jogging group (MD : 0.02)

ii. Walking group and Combined group (MD: 0.61)
iii. Jogging Group and Combined Group (MD: 0.63)

The obtained pre test means, post test means and adjusted means are presented through bar diagram for better understanding of the results in Figure II.

**Figure II**

**Showing Graph on Pre Test, Post and Adjusted Means of Control, Walking, Jogging, Yoga and Combined Groups on Resting Pulse Rate**

4.3.1.2 DISCUSSIONS ON RESTING PULSE RATE

The team of researchers found that middle-aged people who maintained a reasonable level of physical activity were less likely to become unable to walk distances, climb stairs, maintain their sense of balance, stand from a seated position with their arms folded, or sustain their hand grip as they get older. (Iain
Lang, et.al. (2007) Research showed that, among men and women aged 50 to 69 years and across all weight ranges, the rate of decreased physical ability later in life was twice as high among those who were less physically active. Findings showed, regardless of weight, people who engaged in heavy housework or gardening, who played sport or who had a physically active job, were more likely to remain mobile later in life.

A number of researches have (Karen 2005) also advocated walking and jogging as the most desirable physical activity among middle aged men. In recent researches (Madan Mohan et.al 2005), yogic practices much considered as the most suitable physical activity for middle aged men. The purpose of the research was to find out which of these physical activities, viz; walking or jogging or yoga or combined one has more influence on cardio respiratory and psychological parameters.

The results presented in Table 1 shows that cardio respiratory parameter, resting pulse rate altered due to 24 weeks walking treatment from the pre test mean value of 72.83 to post test 70.47 beats per minute. The 24 weeks jogging treatment reduced resting pulse rate from pre test mean value of 72.13 to 69.90 beats per minute. The 24 weeks yogasanas treatment reduced resting pulse rate from pre test mean value of 77.27 to 71.93 beats per minute. The 24 weeks combined treatment consisting of walking, jogging and yogasana, altered resting pulse rate from the pre
test mean value of 74 to 70.83 beats per minute. Thus, it was found that all the four treatments altered resting pulse rate of the middle aged men. The adjusted post test means proved that yogasanas group scored the least 69.03 followed by combined group 70.75, walking group 71.36, jogging group 71.38 and control group 73.7 respectively.

To test the significance, ANCOVA was used and the obtained F value of 28.91 was greater than the table F value of 2.45 thus the differences among the experimental and control group taking into consideration of pre test scores and post test scores was significant at 0.05 level.

The post hoc analysis made through Scheffe’s confidence interval (Table II) proved that all the treatments, namely, walking, jogging, yogasanas and combined significantly altered resting pulse rate of the middle aged men comparing to control group.

The comparisons among treatment groups proved that the yogasana group was significantly superior than other treatments, namely, walking, jogging and combined in altering resting pulse rate of the middle aged men.

Madan Mohan, et.al.(2000) studied the effects of yoga training on cardiovascular response to exercise and the time course of recovery after the exercise and found that exercise induced changes in the parameters, heart rate and blood pressure, were significantly reduced and concluded that after yoga training a
given level of exercise leads to a milder cardiovascular response, suggesting better exercise tolerance.

Madanmohan et.al (2005) undertook a comparative study of the effect of short term (three weeks) training in savitri (slow breathing) and bhastrika (fast breathing) pranayams on respiratory pressures and endurance, reaction time, blood pressure, heart rate, rate-pressure product and double product and concluded that different types of pranayams produce different physiological responses in normal young volunteers.

Murugesan, Govindarajulu and Bera (2000) selected thirty three (N = 33) hypertensives, aged 35-65 years, from Govt. General Hospital, Pondicherry, were examined with four variables viz, systolic and diastolic blood pressure, pulse rate and body weight and found that pre-post test with ANCOVA revealed that both the treatment stimuli (i.e., yoga and drug) were effective in controlling the variables of hypertension.

The results of study proved that there was significant change due to 24 weeks of yogasanas on resting pulse rate and the findings of this study are in agreement with the studies of Madanmohan et.al. (2000), Madanmohan (2005), and Murugesan, Govindarajulu and Bera (2000) who found that resting pulse rate can be beneficially altered with yogasana practices.
4.3.2.1 ANALYSIS ON VO$_2$ MAX

The statistical analysis of the initial and final means of cardio respiratory variable, VO$_2$ max due to twenty four weeks walking, jogging, yogasanas and combined exercises among middle aged men is presented in Table VI.
Table VI

ANALYSIS OF COVARIENCE ON VO₂ MAX AMONG WALKING, JOGGING, YOGASANAS AND COMBINED AND CONTROL GROUPS
(Scores in ml/kg/min)

<table>
<thead>
<tr>
<th></th>
<th>Walking Group</th>
<th>Jogging Group</th>
<th>Yoga-asanas Group</th>
<th>Combined Group</th>
<th>Control Group</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>Obtained F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test Mean</td>
<td>14.73</td>
<td>15.07</td>
<td>14.00</td>
<td>14.34</td>
<td>15.5</td>
<td>Between</td>
<td>39.77</td>
<td>4</td>
<td>9.94</td>
<td>6.10*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Within</td>
<td>236.41</td>
<td>145</td>
<td>1.63</td>
<td></td>
</tr>
<tr>
<td>Post Test Mean</td>
<td>15.92</td>
<td>16.52</td>
<td>16.77</td>
<td>16.10</td>
<td>15.6</td>
<td>Between</td>
<td>27.35</td>
<td>4</td>
<td>6.84</td>
<td>3.90*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Within</td>
<td>254.14</td>
<td>145</td>
<td>1.75</td>
<td></td>
</tr>
<tr>
<td>Adjusted Post Test Mean</td>
<td>15.91</td>
<td>16.28</td>
<td>17.25</td>
<td>16.36</td>
<td>15.1</td>
<td>Between</td>
<td>66.17</td>
<td>4</td>
<td>16.54</td>
<td>16.22*</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Within</td>
<td>146.85</td>
<td>144</td>
<td>1.02</td>
<td></td>
</tr>
<tr>
<td>Mean Diff</td>
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<td>1.45</td>
<td>2.77</td>
<td>1.76</td>
<td>0.11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant

Table F-ratio at 0.05 level of confidence for 4 and 145 (df) =2.45, 4 and 144(df) =2.45
Table VI shows the pre test mean values on \( \text{vo}_2 \text{ max} \) 14.73, 15.07, 14.00, 14.34 and 15.5 for middle aged men walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 6.10 was greater than the required table F value of 2.45 at 0.05 level.

The post test mean values on \( \text{vo}_2 \text{ max} \) are 15.92, 16.52, 16.77, 16.10 and 15.6 for middle aged men for walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 3.9 was greater than the required table F value of 2.45 at 0.05 level.

Taking into consideration the pre test means and post test means, adjusted post test means were computed and subjected to statistical treatment through ANCOVA. The adjusted post test means are 15.91, 16.28, 17.25, 16.36 and 15.1 for middle aged men walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 16.22 was greater than the required table F value of 2.45 at 0.05 level. This proved that the treatments to the subjects were significantly improved the cardio respiratory variable, \( \text{vo}_2 \text{ max} \) of the middle aged men.
Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s Confidence Interval test. The results are presented in Table VII.

### Table VII

**SCHEFFE’S POST HOC TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED POST TEST PAIRED MEANS ON VO$_2$ MAX**

<table>
<thead>
<tr>
<th>ORDERED ADJUSTED POST TEST MEANS</th>
<th>MEAN DIFF</th>
<th>Required C.I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking Group</td>
<td>Jogging Group</td>
<td>Yogasanas Group</td>
</tr>
<tr>
<td>Walking Group</td>
<td>Jogging Group</td>
<td>Yogasanas Group</td>
</tr>
<tr>
<td>15.91</td>
<td>16.28</td>
<td>0.37</td>
</tr>
<tr>
<td>15.91</td>
<td>17.25</td>
<td>1.34*</td>
</tr>
<tr>
<td>15.91</td>
<td>16.36</td>
<td>0.45</td>
</tr>
<tr>
<td>15.91</td>
<td>15.1</td>
<td>0.84*</td>
</tr>
<tr>
<td>16.28</td>
<td>17.25</td>
<td>0.97*</td>
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<td>0.90*</td>
</tr>
<tr>
<td>17.25</td>
<td>15.1</td>
<td>2.18*</td>
</tr>
<tr>
<td>16.36</td>
<td>15.1</td>
<td>1.28*</td>
</tr>
</tbody>
</table>

* Significant at 0.05 level.
Table VII shows the Scheffé’s Post hoc test on the adjusted post test means. The calculated confidence interval required to be significant at 0.05 level was 0.84. Hence, the mean differences between the following pairs are found to be significant at 0.05 level as the obtained mean differences are greater than the required mean difference to be significant.

Walking group and Yogasanas group (MD : 1.34)

Walking group and Control group (MD: 0.84)

Jogging Group and Yogasanas group (MD: 0.97)

Jogging Group and Control Group (MD: 1.21)

Yogasanas Group and Combined Group (MD: 0.90)

Yogasanas Group and Control Group (MD: 2.18)

Combined Group and Control Group (MD: 1.28)

The mean differences between the following pairs are found to be insignificant at 0.05 level as the obtained mean differences are lesser than the required mean difference.

i. Walking group and Jogging group (MD : 0.37)

ii. Walking group and Combined group (MD: 0.45)
iii. Jogging Group and Combined Group (MD: 0.07)

The obtained pre test means, post test means and adjusted means are presented through bar diagram for better understanding of the results in Figure III.
4.3.2.2 DISCUSSIONS ON VO$_2$ MAX

The results presented in Table VI showed that cardio respiratory parameter, vo$_2$ max was altered due to 24 weeks walking treatment from the pre test mean.
value of 14.73 to post test 15.92 ml/kg/min. The 24 weeks jogging treatment improved \( \text{vo}_2 \text{ max} \) from pre test mean value of 15.07 to 16.52 ml/kg/min. The 24 weeks yogasanas treatment improved \( \text{vo}_2 \text{ max} \) from pre test mean value of 14.0 to 16.77 ml/kg/min. The 24 weeks combined treatment consisting of walking, jogging and yogasana, altered \( \text{vo}_2 \text{ max} \) from the pre test mean value of 14.34 to 16.10 ml/kg/min. Thus, it was found that all the four treatments altered \( \text{vo}_2 \text{ max} \) of the middle aged men. The adjusted post test means proved that yogasanas group scored the least 17.25 followed by combined group 16.36, jogging group 16.28, walking group 15.91 and then control group 15.1 respectively.

To test the significance, ANCOVA was used and the obtained F value of 16.22 was greater than the required table F value of 2.45 thus the differences among the experimental and control group taking into consideration of pre test scores and post test scores was significant at 0.05 level (P<0.05).

The post hoc analysis made through Scheffe’s confidence interval proved that all the treatments, namely, walking, jogging, yogasanas and combined significantly altered \( \text{vo}_2 \text{ max} \) of the middle aged men comparing to control group.

The comparisons among treatment groups proved that the yogasana group was significantly superior to other treatments, namely, walking, jogging and combined in altering \( \text{vo}_2 \text{ max} \) of the middle aged men.
Madan Mohan, et.al.(2000) studied the effects of yoga training on cardiovascular response to exercise and the time course of recovery after the exercise and found that exercise induced changes in the parameters, heart rate and blood pressure, were significantly reduced and concluded that after yoga training a given level of exercise leads to a milder cardiovascular response, suggesting better exercise tolerance.

Madanmohan et.al (2005) undertook a comparative study of the effect of short term (three weeks) training in savitri (slow breathing) and bhastrika (fast breathing) pranayams on respiratory pressures and endurance, reaction time, blood pressure, heart rate, rate-pressure product and double product and concluded that different types of pranayams produce different physiological responses in normal young volunteers.

Murugesan, Govindarajulu and Bera (2000) selected thirty three (N = 33) hypertensives, aged 35-65 years, from Govt. General Hospital, Pondicherry, were examined with four variables viz, systolic and diastolic blood pressure, pulse rate and body weight and found that pre-post test with ANCOVA revealed that both the treatment stimuli (i.e., yoga and drug) were effective in controlling the variables of hypertension.

The results of study proved that there was significant changes due to 24 weeks yogasanas on vo2 max and the findings of this study are in agreement with
the studies of Madanmohan et.al. (2000), Madanmohan (2005), and Murugesan, Govindarajulu and Bera (2000) who found that vo2 max can be beneficially altered with yogasana practices.

4.3.3.1 ANALYSIS ON ANXIETY

The statistical analysis of the initial and final means of psychological variable, anxiety due to twelve weeks walking, jogging, yogasanas and combined exercises among middle aged men is presented in Table VIII.
Table VIII

ANALYSIS OF COVARIENCE ON ANXIETY AMONG WALKING, JOGGING, YOGASANAS AND COMBINED AND CONTROL GROUPS

(Scores in Points)

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>Obtained F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>3343.04</td>
<td>4</td>
<td>835.76</td>
<td>14.03*</td>
</tr>
<tr>
<td>Within</td>
<td>8640.30</td>
<td>145</td>
<td>59.59</td>
<td></td>
</tr>
<tr>
<td>Between</td>
<td>3370.31</td>
<td>4</td>
<td>842.58</td>
<td>14.57*</td>
</tr>
<tr>
<td>Within</td>
<td>8382.87</td>
<td>145</td>
<td>57.81</td>
<td></td>
</tr>
<tr>
<td>Between</td>
<td>364.98</td>
<td>4</td>
<td>91.24</td>
<td>28.71*</td>
</tr>
<tr>
<td>Within</td>
<td>457.66</td>
<td>144</td>
<td>3.18</td>
<td></td>
</tr>
</tbody>
</table>

Table F-ratio at 0.05 level of confidence for 4 and 145 (df) = 2.45, 4 and 144(df) = 2.45

*Significant
Table VIII shows that the pre test mean values on anxiety are 65.97, 54.47, 53.40, 55.40 and 53.9 for middle aged men for walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 14.03 was greater than the required table F value of 2.45 to be significant at 0.05 level.

The post test mean values on anxiety are 62.50, 51.87, 48.13, 52.97 and 53.5 for middle aged men for walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 14.57 was greater than the required table F value of 2.45 to be significant at 0.05 level.

Taking into consideration the pre test means and post test means, adjusted post test means were computed and subjected to statistical treatment through ANCOVA. The adjusted post test means are 53.55, 53.93, 51.22, 54.14 and 56.1 for middle aged men for walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 28.71 was greater than the required table F value of 2.45 to be significant at 0.05 level. This proved that the treatments to the subjects significantly improved the psychological variable, anxiety of the middle aged men.
Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s Confidence Interval test. The results are presented in Table IX.

**Table IX**

**Scheffe’s Post Hoc Test for the Differences Between The Adjusted Post Test Paired Means on Anxiety**

<table>
<thead>
<tr>
<th>ORDERED ADJUSTED POST TEST MEANS</th>
<th>MEAN DIFF</th>
<th>Required C.I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking Group</td>
<td>Jogging Group</td>
<td>Yogasanas Group</td>
</tr>
<tr>
<td>53.55</td>
<td>53.93</td>
<td></td>
</tr>
<tr>
<td>53.55</td>
<td></td>
<td>51.22</td>
</tr>
<tr>
<td>53.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>53.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>53.93</td>
<td>51.22</td>
<td></td>
</tr>
<tr>
<td>53.93</td>
<td></td>
<td>54.14</td>
</tr>
<tr>
<td>53.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51.22</td>
<td>54.14</td>
<td></td>
</tr>
<tr>
<td>51.22</td>
<td></td>
<td>56.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>54.14</td>
</tr>
</tbody>
</table>

* Significant at 0.05 level.
Table IX shows the Scheffe’s Confidence Interval test on the adjusted post test means. The calculated confidence interval required to be significant at 0.05 level was 1.48. Hence, the mean differences between the following pairs are found to be significant at 0.05 level as the obtained mean differences are greater than the required mean difference to be significant.

Walking group and Yogasanas group (MD : 2.33)

Walking group and Control group (MD: 2.56)

Jogging Group and Yogasanas group (MD: 2.71)

Jogging Group and Control Group (MD: 2.17)

Yogasanas Group and Combined Group (MD: 2.92)

Yogasanas Group and Control Group (MD: 4.89)

Combined Group and Control Group (MD: 1.97)

The mean differences between the following pairs were found to be insignificant at 0.05 level as the obtained mean differences were lesser than the required mean difference to be significant.

Walking group and Jogging group (MD : 0.38)

Walking group and Combined group (MD: 0.59)
Jogging Group and Combined Group (MD: 0.21)

The obtained pre test means, post test means and adjusted means are presented through bar diagram for better understanding of the results in Figure IV.

**Figure IV**

**Showing Line Graph on Pre Test, Post and Adjusted Means of Control, Walking, Jogging, Yoga and Combined Groups on Anxiety**
4.3.3.2 DISCUSSIONS ON ANXIETY

Hallberg (1980) found that very little is known about men’s psychological balances at middle age. He pointed out that basically men and women are more alike than different in their middle years’ psychological behaviours. He has pointed out a number of reasons that affected the anxiety, like hormonal change, professional life, irresponsible behaviour and suggested alternate physical works to contain anxiety and other psychological imbalances.

The results presented in Table V shows that psychological parameter, anxiety was altered due to 24 weeks walking treatment from the pre test mean value of 65.97 to post test 62.50. The 24 weeks jogging treatment altered anxiety from pre test mean value of 54.47 to 51.87. The 24 weeks yogasanas treatment altered anxiety from pre test mean value of 53.4 to 48.13. The 24 weeks combined treatment consisting of walking, jogging and yogasana, altered anxiety from the pre test mean value of 56.40 to 52.97. Thus, it was found that all the four treatments altered anxiety of the middle aged men. The adjusted post test means proved that yogasanas group scored the least 51.22 followed by waling group 53.55, jogging group 53.93, combined group 54.14 and control group 56.1 respectively.

To test the significance, ANCOVA was used and the obtained F value of 28.71 was greater than the required table F value of 2.45 thus the differences
among the experimental and control group taking into consideration of pre test scores and post test scores were significant at 0.05 level.

The post hoc analysis made through Scheffé’s confidence interval (Table IX) proved that all the treatments, namely, walking, jogging, yogasanas and combined significantly altered anxiety of the middle aged men comparing to the control group.

The comparisons among treatment groups proved that the yogasana group was significantly superior to other treatments, namely, walking, jogging and combined in altering anxiety of the middle aged men.

Ray, et.al. (2001) undertook a study to observe any beneficial effect of yogic practices on psychological parameters like personality, learning, arithmetic and psychomotor ability, and mental well being and found improvement in various psychological parameters like reduction in anxiety and depression and a better mental function after yogic practices.

Schell, Allolio and Schonake (1994) conducted a study on psychological effects of Hatha – Yoga exercise in healthy women and found in the personality inventory the yoga group showed markedly higher scores in life satisfaction and lower scores in excitability, aggressiveness, openness, emotionality and somatic complaints. Significant differences could also be observed concerning coping with
stress and mood at the end of the experiment. The yoga group had significant higher scores in high spirits and extravertedness.

Guszkowska M (2004) made a meta-analyses of correlational and experimental studies revealed positive effects of exercise, in healthy people and confirmed the acute effect of exercise i.e. the reductions in anxiety and depression after single sessions of exercise. Paluska SA, and Schwenk TL. (2000) found Physical activity may play an important role in the management of mild-to-moderate mental health diseases, especially depression and anxiety.

The results of study proved that there was significant change due to 24 weeks yogasanas on anxiety and the findings of this study are in agreement with the studies of Ray, et.al. (2001) and Schell, Alloio and Schonake (1994). And the findings are also in agreement with the findings of Guszkowska M (2004) and Paluska SA, and Schwenk TL. (2000) who found that physical exercises significantly alter psychological variables. Further, this research compared the effect of physical exercises and yogic practices on psychological variable anxiety and it was found that yogic practices are better than physical activities such as walking, jogging and combined exercises in altering middle aged men.
4.3.4.1 ANALYSIS ON AGGRESSION

The statistical analysis of the initial and final means of psychological variable, aggression due to twenty four weeks walking, jogging, yogasanas and combined exercises among middle aged men is presented in Table X.
Table X

ANALYSIS OF COVARIENCE ON AGGRESSION AMONG WALKING, JOGGING, YOGASANAS AND COMBINED AND CONTROL GROUPS
(Scores in Points)

<table>
<thead>
<tr>
<th></th>
<th>Walking Group</th>
<th>Jogging Group</th>
<th>Yoga- asanas Group</th>
<th>Combined Group</th>
<th>Control Group</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Squares</th>
<th>Obtained F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test Mean</td>
<td>97.17</td>
<td>96.43</td>
<td>99.73</td>
<td>99.17</td>
<td>98.7</td>
<td>Between</td>
<td>231.49</td>
<td>4</td>
<td>57.87</td>
<td>3.09*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Within</td>
<td>2713.87</td>
<td>145</td>
<td>18.72</td>
<td></td>
</tr>
<tr>
<td>Post Test Mean</td>
<td>94.30</td>
<td>93.47</td>
<td>80.57</td>
<td>96.03</td>
<td>97.3</td>
<td>Between</td>
<td>5458.93</td>
<td>4</td>
<td>1364.73</td>
<td>27.61*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Within</td>
<td>7166.40</td>
<td>145</td>
<td>49.42</td>
<td></td>
</tr>
<tr>
<td>Adjusted Post Test Mean</td>
<td>95.49</td>
<td>95.47</td>
<td>78.91</td>
<td>95.00</td>
<td>96.8</td>
<td>Between</td>
<td>6627.28</td>
<td>4</td>
<td>1656.82</td>
<td>62.49*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Within</td>
<td>3817.96</td>
<td>144</td>
<td>26.51</td>
<td></td>
</tr>
<tr>
<td>Mean Diff</td>
<td>-2.87</td>
<td>-2.97</td>
<td>-19.17</td>
<td>-3.13</td>
<td>-1.40</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Table F-ratio at 0.05 level of confidence for 4 and 145 (df) =2.45, 4 and 144(df) =2.45

*Significant
Table X shows that the pre test mean values on aggression are 97.17, 96.43, 99.73, 99.17 and 98.7 for walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 3.09 was greater than the required table F value of 2.45 at 0.05 level.

The post test mean values on aggression are 94.3, 93.47, 80.57, 96.03 and 97.3 for middle aged men for walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 27.61 was greater than the required table F value of 2.45 at 0.05 level.

Taking into consideration the pre test means and post test means, adjusted post test means were computed and subjected to statistical treatment through ANCOVA. The adjusted post test means are 95.49, 95.47, 78.91, 95.00 and 96.8 for middle aged men for walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 62.49 was greater than the required table F value of 2.45 at 0.05 level. This proved that the treatments to the subjects were significantly improved the psychological variable, aggression of the middle aged men.
Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s Confidence Interval test. The results are presented in Table XI.

Table XI

Showing Multiple Comparisons of Ordered Adjusted Post Test Means and Mean Differences between Experimental and Control Groups on Aggression

<table>
<thead>
<tr>
<th>ORDERED ADJUSTED POST TEST MEANS</th>
<th>MEAN DIFF</th>
<th>Required C.I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking Group</td>
<td>Jogging Group</td>
<td>Yogasanas Group</td>
</tr>
<tr>
<td>95.49</td>
<td>95.47</td>
<td>0.02</td>
</tr>
<tr>
<td>95.49</td>
<td>78.91</td>
<td>16.58*</td>
</tr>
<tr>
<td>95.49</td>
<td>95.00</td>
<td>0.49</td>
</tr>
<tr>
<td>95.49</td>
<td>96.8</td>
<td>1.30</td>
</tr>
<tr>
<td>95.47</td>
<td>78.91</td>
<td>16.57*</td>
</tr>
<tr>
<td>95.47</td>
<td>95.00</td>
<td>0.47</td>
</tr>
<tr>
<td>95.47</td>
<td>96.8</td>
<td>1.32</td>
</tr>
<tr>
<td>78.91</td>
<td>95.00</td>
<td>16.10*</td>
</tr>
<tr>
<td>78.91</td>
<td>96.8</td>
<td>17.88*</td>
</tr>
<tr>
<td>95.00</td>
<td>96.8</td>
<td>1.79</td>
</tr>
</tbody>
</table>

* Significant at 0.05 level.
Table XI shows the Post hoc Interval test on the adjusted post test means. The calculated confidence interval required to be significant at 0.05 level was 4.27. Hence, the mean differences between the following pairs are found to be significant at 0.05 level as the obtained mean differences are greater than the required mean difference to be significant.

- Walking group and Yogasanas group (MD : 16.58)
- Jogging Group and Yogasanas group (MD: 16.57)
- Yogasanas Group and Combined Group (MD: 16.10)
- Yogasanas Group and Control Group (MD: 17.68)

The mean differences between the following pairs are found to be insignificant at 0.05 level as the obtained mean differences are lesser than the required mean difference to be significant.

- Walking group and Jogging group (MD: 0.02)
- Walking Group and Combined Group (MD: 0.49)
- Walking Group and Control Group (MD: 1.30)
- Jogging Group and Combined Group (MD: 0.47)
- Jogging Group and Control Group (MD: 1.32)
Combined Group and Control Group (MD: 1.79).

The obtained pre test means, post test means and adjusted means are presented through bar diagram for better understanding of the results in Figure V.

**Figure V**

*Showing Line Graph on Pre Test, Post and Adjusted Means of Control, Walking, Jogging, Yoga and Combined Groups on Aggression*
4.3.4.2 DISCUSSIONS ON AGGRESSION

Hallberg (1980) found very little is known about men’s psychological balances at middle age. He pointed out that basically men and women are more alike than different in their middle years’ psychological behaviours. He has pointed out a number of reasons that affected the aggression, like hormonal change, professional life at this age, irresponsible behaviour and suggested for alternate physical works to contain aggression and other psychological imbalances.

The results presented in Table X showed that psychological parameter, aggression altered due to 24 weeks walking treatment from the pre test mean value of 97.17 to post test 94.30. The 24 weeks jogging treatment altered aggression from pre test mean value from 96.43 to 93.47. The 24 weeks yogasanas treatment altered aggression from pre test mean value to 99.73 to 80.57. The 24 weeks combined treatment consisting of walking, jogging and yogasana, altered aggression from the pre test mean value to 99.17 to 96.03. Thus, it was found that all the four treatments altered aggression of the middle aged men. The adjusted post test means proved that yogasanas group scored the least 78.91 followed by combined group 95.0, jogging group 95.47, walking group 95.49 and then control group 96.8 respectively.
To test the significance, ANCOVA was used and the obtained F value of 62.49 was greater than the required table F value of 2.45 thus the differences among the experimental and control groups taking into consideration of pre test scores and post test scores was significant at 0.05 level (P<0.05).

The post hoc analysis made through Scheffe’s confidence interval (Table XI) proved that the treatments, namely, walking, jogging, and combined failed to significantly alter aggression of the middle aged men comparing to control group. However, treatment yogasana significantly altered aggression of the middle aged men comparing to control group and other treatment groups, namely, walking, jogging and combined exercises.

Thus the comparisons among treatment groups proved that the yogasana group was significantly superior to other treatments, namely, walking, jogging and combined in altering aggression of the middle aged men.

The results of study proved that there was significant change due to 24 weeks yogasanas on aggression and the findings of this study are in agreement with the studies of Ray, et.al. (2001) and Schell, Allolio and Schonake (1994). Further, this research compared the effect of physical exercises and yogic practices on psychological variable aggression and it was found that yogic practices were better than physical activities such as walking, jogging and combined exercises in altering aggression of middle aged men.
4.3.5.1 ANALYSIS ON SELF CONFIDENCE

The statistical analysis of the initial and final means of psychological variable, self confidence due to twenty four weeks walking, jogging, yogasanas and combined exercises among middle aged men is presented in Table XII.
Table XII

ANALYSIS OF COVARIENCE ON SELF CONFIDENCE AMONG WALKING, JOGGING, YOGASANAS AND COMBINED AND CONTROL GROUPS

(Scores in Points)

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Squares</th>
<th>Obtained F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>54.76</td>
<td>4</td>
<td>13.69</td>
<td>3.94*</td>
</tr>
<tr>
<td>Within</td>
<td>503.70</td>
<td>145</td>
<td>3.47</td>
<td></td>
</tr>
<tr>
<td>Between</td>
<td>140.63</td>
<td>4</td>
<td>35.16</td>
<td></td>
</tr>
<tr>
<td>Within</td>
<td>158.85</td>
<td>144</td>
<td>1.10</td>
<td>31.87*</td>
</tr>
</tbody>
</table>

Table F-ratio at 0.05 level of confidence for 4 and 145 (df) = 2.45, 4 and 144(df) = 2.45

*Significant
Table XII shows that the pre test mean values on self confidence are 12.07, 12.00, 11.40, 12.00 and 13.2 for middle aged men of walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 2.74 was greater than the required table F value of 2.45 to be significant at 0.05 level.

The post test mean values on self confidence are 13.80, 13.77, 14.97, 14.07 and 13.1 for middle aged men of walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 3.94 was greater than the required table F value of 2.45 to be significant at 0.05 level.

Taking into consideration the pre test means and post test means, adjusted post test means were computed and subjected to statistical treatment through ANCOVA. The adjusted post test means are 13.85, 13.86, 15.49, 14.16 and 12.3 for middle aged men walking, jogging, yogasana, combined and control groups respectively. The statistical analysis proved to be significant as the obtained F value of 31.87 was greater than the required table F value of 2.45 to be significant at 0.05 level. This proved that the treatments to the subjects were significantly improved the psychological variable, self confidence of the middle aged men.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s Confidence Interval test. The results are presented in Table XIII.

Table XIII

**SHOWING MULTIPLE COMPARISONS OF ORDERED ADJUSTED POST TEST MEANS AND MEAN DIFFERENCES BETWEEN EXPERIMENTAL AND CONTROL GROUPS ON SELF CONFIDENCE**

<table>
<thead>
<tr>
<th>ORDERED ADJUSTED POST TEST MEANS</th>
<th>MEAN DIFF</th>
<th>Required C.I</th>
</tr>
</thead>
</table>

Table XIII shows the Scheffe’s Confidence Interval test on the adjusted post test means. The calculated confidence interval required to be significant at 0.05 level was 0.87. Hence, the mean differences between the following pairs are found to be significant at 0.05 level as the obtained mean differences are greater than the required mean difference to be significant.

Walking group and Yogasanas group (MD : 1.64)

Walking Group and Control Group (MD: 1.51)

Jogging Group and Yogasanas group (MD: 1.63)

Jogging Group and Control Group (MD: 1.52)

Yogasanas Group and Combined Group (MD: 1.33)
Yogasanas Group and Control Group (MD: 3.15)

Combined Group and Control Group (MD: 1.82)

The mean differences between the following pairs are found to be insignificant at 0.05 level as the obtained mean differences are lesser than the required mean difference to be significant.

Walking group and Jogging group (MD: 0.01)

Walking Group and Combined Group (MD: 0.31)

Jogging Group and Combined Group (MD: 0.30)

The obtained pre test means, post test means and adjusted means are presented through bar diagram for better understanding of the results in Figure VI.
4.3.5.2 DISCUSSIONS ON SELF CONFIDENCE

Hallberg (1980) found that very little is known about men’s psychological balances at middle age. He pointed out that basically men and women are more alike than different in their middle years’ psychological behaviours. He has pointed out a number of reasons that affected the self confidence, like hormonal change, professional life at this age, irresponsible behaviour and suggested for alternate physical works to contain self confidence and other psychological imbalances.
The results presented in Table XII showed that psychological parameter, self-confidence was altered due to 24 weeks walking treatment from the pre test mean value of 12.07 to post test 13.80. The 24 weeks jogging treatment altered self confidence from pre test mean value of 12.00 to 13.77. The 24 weeks yogasanas treatment altered self confidence from pre test mean value of 11.40 to 14.97. The 24 weeks combined treatment consisting of walking, jogging and yogasana, altered self confidence from the pre test mean value of 12.00 to 14.07. Thus, it was found that all the four treatments altered self confidence of the middle aged men. The adjusted post test means proved that yogasanas group scored the highest 15.49 followed by combined group 14.16, jogging group 13.86, walking group 13.85 and then control group 12.3 respectively.

To test the significance, ANCOVA was used and the obtained F value of 31.87 was greater than the required table F value of 2.45 thus the differences among the experimental and control groups taking into consideration of pre test scores and post test scores was significant at 0.05 level (P<0.05).

The post hoc analysis made through Scheffe’s confidence interval (Table XIII) proved that the treatments, namely, walking, jogging, and combined significantly altered self confidence of the middle aged men comparing to control group.

The comparisons among treatment groups proved that the yogasana group was significantly superior to other treatments, namely, walking, jogging and combined in altering self confidence of the middle aged men. And combined group was better than walking group and jogging group in altering self confidence of the middle aged men.

physical activity may play an important role in the management of mild-to-moderate mental health diseases, especially depression and anxiety and eliminating psychological imbalances.

The results of study proved that there was significant change due to 24 weeks yogasanas on self confidence and the findings of this study were in agreement with the studies of Ray, et.al. (2001) and Schell, Alloio and Schonake (1994). And the findings were also in agreement with the findings of Guszkowska M (2004) and Paluska SA, and Schwenk TL. (2000) who found that physical exercises significantly alter psychological variables. Further, this research compared the effect of physical exercises and yogic practices on psychological variable self confidence and it was found that yogic practices and combined exercises are better than physical activities such as walking, and jogging in altering middle aged men.
4.4 DISCUSSIONS ON HYPOTHESIS

The formulated hypothesis No. 1 stated that isolated and combined effects of yogic practices, walking and jogging would significantly alter selected cardio respiratory variables, resting pulse rate, and VO$_2$ max. of the middle aged men compared to the control group.

The results presented in Tables IV and V proved that isolated groups, walking, jogging, yogic practices and combined groups significantly improved the cardio respiratory variable resting pulse rate among middle aged men comparing to the control group and the hypothesis was accepted at 0.05 level.

The results presented in Tables VI and VII proved that isolated groups, walking, jogging, yogic practices and combined groups significantly established the cardio respiratory variable VO$_2$ max of the middle aged men comparing with to the control group and the hypothesis two was accepted at 0.05 level.

The formulated hypothesis No. 2 stated that isolated and combined effects of yogic practices, walking and jogging would significantly alter selected psychological variables anxiety, aggression and self confidence level of middle aged men as compared to control group.

The results presented in Tables VIII and IX proved that isolated groups, walking, jogging, yogic practices and combined groups significantly reduced the psychological variable anxiety among middle aged men comparing to the control group and the hypothesis was accepted at 0.05 level.

The results presented in Tables X and XI proved that yogic practices group significantly reduced the psychological variable aggression of the middle aged men comparing to the control group and the hypothesis was accepted at 0.05 level.
The results further proved that walking, jogging and combined group failed to significantly reduce aggression of the middle aged men and to this extent the formulated hypothesis on aggression was rejected and the null hypothesis.

The results presented in Tables XII and XIII proved that isolated groups, walking, jogging, yogic practices and combined groups significantly improved the psychological variable self confidence of the middle aged men comparing to the control group and the hypothesis was accepted at 0.05 level.

Thus, the formulated hypothesis No. 2 was accepted at 0.05 level for psychological variables, anxiety and self confidence and rejected for psychological variable aggression at 0.05 level.

The formulated hypothesis No. 3 stated that among the experimental treatments, combined groups would be significantly better than walking, jogging and combined groups in altering selected cardio respiratory variables.

The post hoc analysis results presented in Tables V and VI on cardio respiratory variables, resting pulse rate and VO₂ max proved that yogic practices group was significantly better than walking, jogging and combined groups hence the formulated hypothesis was accepted at 0.05 level.

The formulated hypothesis No. 4 stated that among the experimental treatments, namely walking, jogging, yogic practices and combined groups, yogic practices group would be significantly better than isolated groups in altering selected psychological variables.

The post hoc analysis presented in Tables IX, XI and XIII on anxiety, aggression and self confidence proved that comparing with the treatment groups, yogic practice was
significantly superior in altering psychological variables, anxiety, aggression and self confidence of the middle aged men. Hence, the hypothesis was accepted at 0.05 level.