RESULTS

The results obtained after the experimental protocol were subjected to statistical analysis using IBM SPSS version 20. Paired t – test was used to compare pre-experimental (baseline) values with those obtained post experiment (at the end of 6wks) and the results were evaluated for statistical significance.

4.1 PRE-EXPERIMENTAL GROUPS

241 subjects volunteered for the study. 03 dropped out in early part of training and were not considered as part of the study for tabulation of the results. Two groups were formed using block randomisation. This ensured the comparability of the two groups, as was revealed during statistical analysis.

Table 1: Pre-experimental values in both HIIT & SCT study groups

<table>
<thead>
<tr>
<th>Parameters</th>
<th>HIIT (n=119) (mean±S.D.)</th>
<th>SCT (n=119) (mean±S.D.)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>20.25±2.25</td>
<td>20.32±2.99</td>
<td>0.87</td>
</tr>
<tr>
<td>Height (m)</td>
<td>1.71±0.067</td>
<td>1.71±0.04</td>
<td>0.73</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>67.02±6.97</td>
<td>66.01±5.15</td>
<td>0.14</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>23.05±2.99</td>
<td>22.60±2.27</td>
<td>0.13</td>
</tr>
<tr>
<td>Body Fat (kg)</td>
<td>15.62±5.24</td>
<td>15.31±4.32</td>
<td>0.57</td>
</tr>
<tr>
<td>Lean Mass (kg)</td>
<td>51.39±4.28</td>
<td>50.70±2.90</td>
<td>0.14</td>
</tr>
<tr>
<td>BMR (kcal/day)</td>
<td>1619±135</td>
<td>1597±91</td>
<td>0.14</td>
</tr>
<tr>
<td>Peak Lactate (mMol/L)</td>
<td>7.93±0.70</td>
<td>8.08±0.70</td>
<td>0.05</td>
</tr>
<tr>
<td>VO₂max (mL/kg/min)</td>
<td>34.29±3.50</td>
<td>33.97±3.72</td>
<td>0.47</td>
</tr>
<tr>
<td>Vmax (km/hr)</td>
<td>11.42±0.47</td>
<td>11.32±0.67</td>
<td>0.14</td>
</tr>
<tr>
<td>Total Cholesterol (mg/dL)</td>
<td>162.71±25.53</td>
<td>168.56±21.32</td>
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<tr>
<td>Triglycerides (mg/dL)</td>
<td>126.74±30.36</td>
<td>125.71±33.69</td>
<td>0.80</td>
</tr>
<tr>
<td>HDL (mg/dL)</td>
<td>48.61±9.71</td>
<td>46.44±6.59</td>
<td>0.04</td>
</tr>
<tr>
<td>Fasting Glucose (mg/dL)</td>
<td>83.40±7.09</td>
<td>82.12±7.51</td>
<td>0.14</td>
</tr>
</tbody>
</table>

Table 1 shows the pre experimental values of different parameters. It is seen that the parameters are similar. No significant statistical difference was observed between the groups.
4.1.1 Age: The age distribution among both the groups was similar with the mean age in the HIIT group being 20.25±3.0 years, whereas that of the SCT group, 20.32±3.0 years {figure 1, table 1}.

Figure 8: Mean age (years) in both HIIT and SCT

![Bar chart showing mean age in years for HIIT and SCT groups]

Figure 8 depicts the graph showing mean age in years of the two groups. There is no significant difference in age of HIIT and SCT groups.
4.1.2 Height: The mean height of HIIT group was 1.71±0.07m as compared with 1.71±0.05m of SCT group (table 1). There was no significant difference between the two groups (figure 2). There was no effect of the experiment on the height of any individual studied.

Figure 9: Mean height (in metres) of both HIIT & SCT study groups

Figure 9 depicts a Graph showing the mean height (meters) of the two study groups. There was no significant difference in height of HIIT and SCT groups.
The following parameters were studied

1. Aerobic performance
2. Anthropometric profile
3. Peak lactate level
4. Lipid profile and
5. Glucose tolerance

4.2 AEROBIC PERFORMANCE

Aerobic performance was measured in terms of the following

i. \( \text{VO}_{2\text{max}} \)
ii. \( \text{Vmax} \)
iii. \( \text{HR max} \)
iv. Recovery HR at 2min, 3min and 5 min

4.2.1 \( \text{VO}_{2\text{max}} \): At the beginning of the experimental protocol, the mean \( \text{VO}_{2\text{max}} \) of HIIT group was 34.29±3.50mL/kg/min as compared with 33.97±3.72mL/kg/min of SCT group.

After 03 weeks, the mean \( \text{VO}_{2\text{max}} \) of the HIIT group was 39.04±3.26mL/kg/min (increase by 4.76±3.14mL/kg/min, an increase of 13.87% over baseline). Compared with this, the mean \( \text{VO}_{2\text{max}} \) of the SCT group was 37.42±3.11mL/kg/min (increase by 3.45±2.46mL/kg/min, an increase of 10.17% over baseline) \{figure 3\}.

After 06 weeks of intervention, the mean \( \text{VO}_{2\text{max}} \) of the HIIT group was 41.40±3.67mL/kg/min (increase by 7.12±3.82mL/kg/min, an increase of 20.75% over baseline and 2.36±2.20mL/kg/min (6.04%) over 03 week value). This increase was statistically significant (p<0.001)

Compared with this, the mean \( \text{VO}_{2\text{max}} \) of the SCT group was 40.16±3.16mL/kg/min (increase by 6.19±2.75mL/kg/min, an increase of 18.22% over baseline and 2.74±1.90mL/kg/min (7.31%) over 03 week value). This increase was also statistically significant (p<0.001) \{figure 3, table 2\}

The difference in \( \text{VO}_{2\text{max}} \) was more in HIIT group (by 7.12±3.82mL/kg/min) as compared with SCT group (by 6.19±2.752mL/kg/min). The difference was statistically significant (p=0.001) \{figure 4, table 2\}.  
Figure 10: Mean VO_{2max} levels (ml/kg/min) at 0, 3, 6 wks in HIIT & SCT groups

**Figure 10** shows a graph showing mean VO_{2max} values (mL/kg/min) at pre-experiment (0wk), 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups showed significant gains in VO_{2max}. 

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Figure 11: Difference in increase in the mean VO$_{2\text{max}}$ (ml/kg/min) between HIIT and SCT at 0, 3 and 6 wks

**Figure 11** depicts a graph showing difference in increase in VO$_{2\text{max}}$ (mL/kg/min) in HIIT and SCT at 0, 3 and 6 wks. HIIT results in significantly greater increase in VO$_{2\text{max}}$ than SCT.
4.2.2 Vmax: At the beginning of the experimental protocol, the mean Vmax of HIIT group was 11.42±0.47 km/hr as compared with 11.32±0.67 km/hr of SCT group \{table 2\}

After 03 weeks, the mean Vmax of the HIIT group was 12.13±0.49 km/hr (increase by 0.71±0.44 km/hr, an increase of 6.22% over baseline). Compared with this, the mean Vmax of the SCT group was 11.88±0.44 km/hr (increase by 0.56±0.57 km/hr, an increase of 4.97% over baseline).

After 06 weeks of intervention, the mean Vmax of the HIIT group was 12.43±0.55 km/hr (increase by 1.01±0.54 km/hr, an increase of 8.83% over baseline and 0.30±0.33 km/hr (2.46%) over 03 week value). This increase was statistically significant (p<0.001) \{figure 5, table 2\}.

Compared with this, the mean Vmax of the SCT group was 12.24±0.49 km/hr (increase by 0.92±0.62 km/hr, an increase of 8.13% over baseline and 0.36±0.28 km/hr (3.01%) over 03 week value). This increase was also statistically significant (p<0.001)

The difference in Vmax was more in HIIT group (by 1.01±0.54 km/hr) as compared with SCT group (by 0.92±0.62 km/hr). The difference, however, was not statistically significant (p=0.362) \{figure 6, table 2\}
Figure 12: Mean Vmax at 0, 3, 6 wks of HIIT & SCT

Figure 12 depicts a graph showing Vmax values (km/hr) at pre – experiment (0wk), 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups show significant gains in Vmax.
Figure 13: Difference in change in mean Vmax at 0,3,6 wks between HIIT & SCT

**Results**

**Figure 13:** Graph showing difference in increase in mean Vmax (km/hr) in HIIT and SCT at 0, 3 and 6 wks. HIIT results in greater increase in Vmax than SCT, however, the change is not statistically significant.
4.2.3 Recovery Heart Rate: At the beginning of the experimental protocol, the mean recovery heart rate of HIIT group was 160.37 ±9.66 beats/min at 2 min, 135.71 ±7.00 beats/min at 3 min and 125.50 ±6.89 beats/min at 5 min post exercise as compared with 160.46 ±9.85 beats/min at 2 min, 135.78 ±6.88 beats/min at 3 min and 125.71 ±7.35 beats/min at 5 min of SCT group {figure 7, table 2}

After 03 weeks, the mean recovery HR of the HIIT group was 152.32 ±7.93 beats/min at 2 min (decrease by 8.05±7.93 beats/min, an decrease of 5.02% over baseline), 123.57 ±6.08 beats/min at 3 min (decrease by 12.13±6.08 beats/min, an decrease of 8.94% over baseline), and 111.94 ±6.73 beats/min at 5 min post exercise (decrease by 13.65±6.73 beats/min, an decrease of 10.81% over baseline). Compared with this, the mean recovery HR of the SCT group was 150.27 ±10.64 beats/min at 2 min (decrease by 11.35±4.10 beats/min, an decrease of 7.08% over baseline), 125.74 ±5.60 beats/min at 3 min (decrease by 10.04±3.47 beats/min, an decrease of 7.40% over baseline), and 115.38 ±5.35 beats/min at 5 min post exercise (decrease by 10.33±3.76 beats/min, an decrease of 8.22% over baseline) {figures 7,8,9 table 2}

After 06 weeks of intervention, the mean recovery HR of the HIIT group was 144.62 ±12.51 beats/min at 2 min (decrease by 15.75±7.01 beats/min, an decrease of 9.82% over baseline), 114.16 ±5.84 beats/min at 3 min (decrease by 21.55±6.69 beats/min, an decrease of 15.88% over baseline), and 101.87 ±5.42 beats/min at 5 min post exercise (decrease by 23.64±6.87 beats/min, an decrease of 18.83% over baseline). This decrease was statistically significant (p<0.001) {figure 8, table 2}.

Compared with this, the mean recovery HR of the SCT group was 138.92 ±11.91 beats/min at 2 min (decrease by 21.55±6.21 beats/min, an decrease of 13.43% over baseline), 111.29 ±5.30 beats/min at 3 min (decrease by 24.49±7.65 beats/min, an decrease of 18.03% over baseline), and 100.18 ±5.01 beats/min at 5 min post exercise (decrease by 25.52±8.61 beats/min, an decrease of 20.31% over baseline). This decrease was also statistically significant (p<0.001) {figure 9, table 2}.

The difference in mean recovery HR was significantly greater in SCT group as compared with HIIT group after 02 min (<0.005), 03 min (p<0.005) and 05 min (p<0.01) post exercise {table 2}
Figure 14: Mean peak and resting heart rate at 0wk of HIIT & SCT

**Table:**

<table>
<thead>
<tr>
<th></th>
<th>Resting HR</th>
<th>Peak HR</th>
<th>Recovery HR 2min</th>
<th>Recovery HR 3min</th>
<th>Recovery HR 5min</th>
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</thead>
<tbody>
<tr>
<td>HIIT</td>
<td>72.44</td>
<td>200.45</td>
<td>160.37</td>
<td>135.71</td>
<td>125.5</td>
</tr>
<tr>
<td>SCT</td>
<td>72.68</td>
<td>200.21</td>
<td>160.46</td>
<td>135.78</td>
<td>125.71</td>
</tr>
</tbody>
</table>

*Figure 14* depicts the mean peak and recovery heart rate pattern at wk 0. Both the curves, each representing the respective study group, are almost completely overlapping each other. Hence, both the groups were comparable at the pre-experimental state.
Figure 15: Mean peak and recovery HR at 3wk of HIIT & SCT

Figure 15 illustrates a graph showing the mean peak and recovery heart rate pattern after 3 weeks. HIIT shows higher peak heart rate and better heart rate recovery at 3 min and 5 min.
Figure 16: Mean peak and resting HR at 6wks of HIIT & SCT

Figure 16 depicts a graph showing the Mean Peak and Recovery Heart rate pattern after 6 weeks. HIIT shows higher Peak Heart rate. SCT shows better Heart Rate Recovery at 2 min, 3 min and 5 min.
Table 2: Effects on aerobic performance in both HIIT & SCT

<table>
<thead>
<tr>
<th>Parameters</th>
<th>HIIT (n=119)[Mean±S.D]</th>
<th>SCT (n=119)[Mean±S.D]</th>
<th>Difference b/w HIIT &amp; SCT (significance)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre Test</td>
<td>Post test</td>
<td>Difference b/w pre/post test values (significance)</td>
</tr>
<tr>
<td>VO$_{2\text{max}}$ (mL/kg/min)</td>
<td>34.29±3.50</td>
<td>41.40±3.67</td>
<td>7.12±3.82 (p&lt;0.005)</td>
</tr>
<tr>
<td>Vmax (km/hr)</td>
<td>11.42±0.47</td>
<td>12.43±0.55</td>
<td>1.01±0.54 (p&lt;0.005)</td>
</tr>
<tr>
<td>RHR 2 (beats/min)</td>
<td>160.37 ±9.66</td>
<td>144.62 ±12.51</td>
<td>15.75±7.01 (p&lt;0.005)</td>
</tr>
<tr>
<td>RHR 3 (beats/min)</td>
<td>135.71 ±7.00</td>
<td>114.16 ±5.84</td>
<td>21.55±6.69 (p&lt;0.005)</td>
</tr>
<tr>
<td>RHR 5 (beats/min)</td>
<td>125.50 ±6.89</td>
<td>101.87±5.42</td>
<td>23.64±6.87 (p&lt;0.005)</td>
</tr>
</tbody>
</table>

Table 2 is showing the effects of HIIT and SCT on the aerobic performance of subjects. It can be deduced that both HIIT and SCT are effective in improving the aerobic performance of healthy adult males over 6 weeks of training. HIIT provides better gain in VO$_{2\text{max}}$ while SCT is more effective in enhancing heart rate recovery after maximal exercise. Both are equally effective in improving peak velocity.
4.3 ANTHROPOMETRIC PROFILE

Anthropometric profile was measured in terms of the following:

i. Weight
ii. BMI
iii. Body fat
iv. Lean mass
v. BMR

4.3.1 Weight: At the beginning of the experimental protocol, the mean weight of HIIT group was 67.02±6.97 kg as compared with 66.01±5.15 kg of SCT group (table 3).

After 03 weeks, the mean weight of the HIIT group was 66.36±6.86 kg (decrease by 0.66±0.68 kg, a decrease of 0.98% over baseline). Compared with this, the mean weight of the SCT group was 64.25±4.94 kg (decrease by 1.76±0.70 kg, a decrease of 2.66% over baseline). (Figure 10)

After 06 weeks of intervention, the mean weight of the HIIT group was 64.91±6.65 kg (decrease by 2.11±1.17 kg (2.18%) over baseline and 1.45±0.94 kg (2.18%) over 03 week value). This decrease was statistically significant (p<0.001) (figure 10, table 3).

Compared with this, the mean weight of the SCT group was 62.48±4.80 kg (decrease by 3.53±0.86 kg (5.35%) over baseline and 1.78±0.64 kg (2.77%) over 03 week value). This increase was also statistically significant (p<0.001)

The difference in weight was more in SCT group (by 3.53±0.86 kg) as compared with HIIT group (by 2.11±1.17 kg) (figure 11, table 3). The difference was not statistically significant (p=0.256).
Figure 17 depicts a graph showing mean body weight (kg) at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT, causing a drop in the body weight of subjects. Both groups show significant reduction in weight.
Figure 18: Difference in change in the mean body weight at 0, 3 & 6 wks between HIIT & SCT

Figure 18 depicts a graph showing the difference in decrease in mean weight (kg) between HIIT and SCT at 0, 3 and 6 wks. SCT results in greater decrease in weight than HIIT, but the change is not statistically significant.
4.3.2 BMI: At the beginning of the experimental protocol, the mean BMI of HIIT group was 23.05±2.99 kg/m² as compared with 22.60±2.27 kg/m² of SCT group.

After 03 weeks, the mean BMI of the HIIT group was 22.82±2.92 kg/m² (decrease by 0.23±0.25 kg/m², a decrease of 0.99% over baseline). Compared with this, the mean BMI of the SCT group was 21.99±2.19 kg/m² (decrease by 0.60±0.25 kg/m², a decrease of 2.66% over baseline).

After 06 weeks of intervention, the mean BMI of the HIIT group was 22.32±2.84 kg/m² (decrease by 0.73±0.42 kg/m² (3.16%) over baseline and 0.50±0.33 kg/m² (2.18%) over 03 week value). This increase was highly significant (p<0.001) {figure 12, table 3}

Compared with this, the mean BMI of the SCT group was 21.39±2.12 kg/m² (decrease by 1.21±0.31 kg/m² (5.36%) over baseline and 0.61±0.22 kg/m² (2.77%) over 03 week value). This increase was also highly significant (p<0.001) {figure 12, table 3}

The difference in BMI was more in SCT group (by 1.21±0.31 kg/m²) as compared with HIIT group (by 0.73±0.42 kg/m²) {figure 13, table 3}. The difference was not statistically significant (p=0.245).
**Results**

Figure 19: Mean BMI at 0, 3 & 6 wks of HIIT and SCT

![Mean BMI at 0,3,6 wks of HIIT & SCT](image)

**Figure 19** depicts a graph showing mean BMI (kg/m$^2$) at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups show significant drop in BMI.
Figure 20: Difference in change in the mean BMI values between HIIT & SCT groups

Figure 20 illustrates a Graph showing the difference in decrease in mean BMI (kg/m²) in HIIT and SCT at 0, 3 and 6 wks. SCT results in significantly greater decrease in BMI than HIIT.
**Results**

### 4.3.3 Body Fat:
At the beginning of the experimental protocol, the mean body fat of HIIT group was 15.62±5.24 kg as compared with 15.31±4.32 kg of SCT group.

After 03 weeks, the mean body fat of the HIIT group was 13.96±4.82 kg (decrease by 1.66±1.01 kg, a decrease of 10.62% over baseline). Compared with this, the mean body fat of the SCT group was 13.28±3.86 kg (decrease by 2.03±0.82 kg, a decrease of 13.26% over baseline).

After 06 weeks of intervention, the mean body fat of the HIIT group was 12.30±4.43 kg (decrease by 3.32±1.54 kg (21.24%) over baseline and 1.66±0.84 kg (11.88%) over 03 week value). This decrease was statistically significant (p<0.001) (Figure 14, Table 3).

Compared with this, the mean body fat of the SCT group was 11.34±3.58 kg (decrease by 3.97±1.06 kg (25.95%) over baseline and 1.94±0.63 kg (14.62%) over 03 week value). This decrease was also statistically significant (p<0.001) (Table 3).

The difference in body fat was more in SCT group (by 3.97±1.06kg) as compared with HIIT group (by 3.32±1.54 kg). The difference was statistically significant (p<0.001). (Table 3)

The body fat percentage showed a similar trend (Figures 15, 16)
Figure 21: Mean body fat at 0, 3 & 6 wks of HIIT & SCT

Figure 21: Graph showing mean body fat (kg) at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups show significant drop in body fat.
Figure 22: Mean body fat percentage at 0, 3 & 6 wks of HIIT & SCT

Figure 22 depicts a graph showing the mean body fat percentage at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups show significant drop in body fat.
Figure 23: Difference in changes in the mean body fat percentage between HIIT & SCT

Figure 23 shows the difference in decrease in the mean body fat percentage in HIIT and SCT at 0, 3 and 6 wks. SCT results in significantly greater fall in body fat than HIIT.
4.3.4 **Lean mass:** At the beginning of the experimental protocol, the mean lean mass of HIIT group was 51.39±4.28 kg as compared with 50.70±2.90 kg of SCT group.

After 03 weeks, the mean lean mass of the HIIT group was 52.40±4.34 kg (increase by 1.00±0.88 kg, an increase of 1.95% over baseline). Compared with this, the mean lean mass of the SCT group was 50.98±2.96 kg (increase by 22±22 kg, an increase of 5% over baseline).

After 06 weeks of intervention, the mean lean mass of the HIIT group was 52.61±4.43 (increase by 1.21±1.16 kg, an increase of 0.54% over baseline and 0.21±0.66 kg (0.40%) over 03 week value). This increase was statistically significant (p<0.001) \{table 3\}

Compared with this, the mean lean mass of the SCT group was 51.14±2.92 kg (increase by 0.44±0.73 kg, an increase of 0.86% over baseline and 0.16±0.54 kg (0.32%) over 03 week value). This increase was also statistically significant (p<0.001)\{ figure 17\}

The difference in lean mass was more in HIIT group (by 1.21±1.16 kg) as compared with SCT group (by 0.44±0.73 kg). The difference was statistically significant (p<0.001) \{table 3\}

The lean mass per kg wt showed a similar trend \{ figure 18, 19\}. 
**Figure 24**: Mean lean mass at 0, 3 & 6wks of HIIT & SCT

*Results*

Figure 24 depicts a graph showing the mean lean mass (kg) at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups show significant gain in lean mass.

<table>
<thead>
<tr>
<th></th>
<th>0wk</th>
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<td>SCT</td>
<td>50.7</td>
<td>50.98</td>
<td>51.14</td>
</tr>
</tbody>
</table>
Figure 25: Mean lean mass per kg body weight at 0, 3 & 6 wks of HIIT & SCT

Figure 25 depicts a graph showing the mean lean mass per kg body weight at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups show significant gain in lean mass.
Figure 26: Difference in changes in the mean lean mass per kg body wt at 0, 3 & 6 wks between HIIT & SCT

Figure 26 depicts a graph showing difference in fall in the mean lean mass per kg body weight in HIIT and SCT at 0, 3 and 6 wks. SCT results in significantly greater fall in lean mass than HIIT.
4.3.5 BMR: At the beginning of the experimental protocol, the mean BMR of HIIT group was 1619±135kcal/day as compared with 1597±91kcal/day of SCT group.

After 03 weeks, the mean BMR of the HIIT group was 1650±136kcal/day (increase by 31±27.81kcal/day), an increase of 1.95% over baseline). Compared with this, the mean BMR of the SCT group was 1606±93kcal/day (increase by 9±16.98kcal/day, an increase of 0.54% over baseline).

After 06 weeks of intervention, the mean BMR of the HIIT group was 1657±140kcal/day (increase by 38±36.46kcal/day, an increase of 2.36% over baseline and 7±20.91kcal/day (0.40%) over 03 week value). This increase was statistically significant (p<0.001) \{table 3\}

Compared with this, the mean BMR of the SCT group was 1610±92 kcal/day (increase by 14±22.90kcal/day, an increase of 0.86% over baseline and 5±17.01kcal/day (0.32%) over 03 week value). This increase was also statistically significant (p<0.001) \{figure 20\}.

The difference in BMR was more in HIIT group (by 38.24±36.46 kcal/day) as compared with SCT group (by 13.80±22.90kcal/day). The difference was statistically significant (p<0.001). \{table 3\}

The charts for the BMR per kg body wt behaved similarly \{figure 21, 22\}.
Results

Figure 27: Mean BMR at 0,3 & 6 wks of HIIT & SCT

Figure 27 depicts a graph showing BMR (kcal) at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups show significant gain in BMR.
Figure 28: Mean BMR per kg body wt at 0, 3 & 6 wks of HIIT & SCT

Figure 28 depicts a graph showing the mean BMR per kg body weight (kcal/kg) at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups show significant gain in BMR.
Figure 29: Difference in change in BMR per kg body wt at 0, 3 & 6 wks of HIIT & SCT

Figure 29: Graph showing difference in increase in BMR per kg body weight (kcal/kg) between HIIT and SCT at 0, 3 and 6 wks. HIIT results in significantly greater increase in BMR than SCT.
Table 3: Effects of HIIT & SCT on the anthropometric profile

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<tr>
<th>Parameters</th>
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<th>SCT (n=119){Mean±S.D}</th>
<th>Difference (significance)</th>
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<tbody>
<tr>
<td></td>
<td>Pre Test</td>
<td>Post test</td>
<td>Change (significance)</td>
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<tr>
<td>Weight (kg)</td>
<td>67.02±6.97</td>
<td>64.91±6.65</td>
<td>2.11±1.17 (p&lt;0.005)</td>
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<td>BMI (kg/m²)</td>
<td>23.05±2.99</td>
<td>22.32±2.84</td>
<td>0.73±0.42 (p&lt;0.005)</td>
</tr>
<tr>
<td>Body Fat (kg)</td>
<td>15.62±5.24</td>
<td>12.30±4.43</td>
<td>3.32±1.54 (p&lt;0.005)</td>
</tr>
<tr>
<td>Lean Mass (kg)</td>
<td>51.39±4.28</td>
<td>52.61±4.43</td>
<td>0.27±0.54 (p&lt;0.005)</td>
</tr>
<tr>
<td>BMR (kcal/day)</td>
<td>1619±135</td>
<td>1657±140</td>
<td>38±36.46 (p&lt;0.005)</td>
</tr>
</tbody>
</table>

Table 3 shows the effects of HIIT and SCT on anthropometric profile. It shows that both HIIT and SCT are effective in improving the anthropometric profile of healthy adult males over 6 weeks of training. SCT is more effective in reducing body fat and BMI while HIIT is more effective in increasing lean mass and BMR. Both are equally effective in weight reduction.
4.4 PEAK LACTATE

At the beginning of the experimental protocol, the mean peak lactate of HIIT group was 7.93±0.70mMol/L as compared with 8.08±0.70mMol/L of SCT group.

After 03 weeks, the mean peak lactate of the HIIT group was 9.45±0.88mMol/L (increase by 1.52±0.76mMol/L, an increase of 19.16% over baseline). Compared with this, the mean peak lactate of the SCT group was 9.22±0.88mMol/L (increase by 1.14±0.77mMol/L, an increase of 14.12% over baseline). (figure 23)

After 06 weeks of intervention, the mean peak lactate of the HIIT group was 10.29±1.03mMol/L (increase by 2.36±1.05mMol/L, an increase of 29.81% over baseline and 0.84±0.62mMol/L (8.94%) over 03 week value). This increase was statistically significant (p=0.001) (figure 23, table 4)

Compared with this, the mean peak lactate of the SCT group was 9.90±1.02mMol/L (increase by 1.82±1.06mMol/L, an increase of 22.51% over baseline and 0.68±0.49mMol/L (7.35%) over 03 week value). This increase was also statistically significant (p=0.001)

The difference in peak lactate was more in HIIT group (by 2.36±1.05mMol/L) as compared with SCT group (by 1.81±1.06mMol/L). The difference was not statistically significant (p=0.927). (figure 24, table 4)
Table 4: Effects on peak blood lactate in both HIIT & SCT

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Pre Test</th>
<th>Post test</th>
<th>Change (significance)</th>
<th>Pre Test</th>
<th>Post test</th>
<th>Change (significance)</th>
<th>Difference between HIIT &amp; SCT (significance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Lactate (mMol/L)</td>
<td>7.93 ±0.70</td>
<td>10.29 ±1.03</td>
<td>2.36±1.05 (p&lt;0.005)</td>
<td>8.08 ±0.70</td>
<td>9.90 ±1.02</td>
<td>1.82±1.06 (p&lt;0.005)</td>
<td>HIIT&gt;SCT (p=0.927)</td>
</tr>
</tbody>
</table>

Table 4 shows the effects of HIIT and SCT on the mean peak blood lactate. It shows that both HIIT and SCT are equally effective in increasing the peak blood lactate levels after maximal exercise over 6 weeks of training.
Figure 30: Mean peak blood lactate at 0, 3 & 6 wks of HIIT & SCT

Figure 30 depicts a graph showing peak blood lactate (mMol/L) at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups show significant increase in peak lactate levels.
Figure 31: Difference in changes in peak lactate at 0, 3 & 6 wks b/w HIIT & SCT groups

Figure 31 depicts a graph showing the difference in increase in peak lactate (mMol/L) between HIIT and SCT study groups at 0, 3 and 6 wks. HIIT results in greater increase in peak lactate than SCT, but the change is not statistically significant.
4.5 LIPID PROFILE

Lipid profile was measured in terms of the following

i. Total cholesterol

ii. Triglycerides

iii. High Density Lipoprotein (HDL)

iv. Total Cholesterol to HDL ratio (TC/HDL)

4.5.1 Total Cholesterol: At the beginning of the experimental protocol, the mean total cholesterol of HIIT group was 162.71±25.53 mg/dL as compared with was 168.56±21.32 mg/dL of SCT group.

After 03 weeks, the mean total cholesterol of the HIIT group was 159.13±23.60 mg/dL (decrease by 3.58±7.60 mg/dL, a decrease of 2.20% over baseline). Compared with this, the mean total cholesterol of the SCT group was 163.64±21.02 mg/dL (decrease by 4.92±5.42 mg/dL, an decrease of 2.92% over baseline) {figure 25}.

After 06 weeks of intervention, the mean total cholesterol of the HIIT group was 153.76±21.32 mg/dL (decrease by 8.95±14.91 mg/dL, a decrease of 5.50% over baseline and 5.37±12.17 mg/dL (3.37%) over 03 week value). This decrease was statistically significant (p<0.001) {figure 25, table 5}

Compared with this, the mean Total cholesterol of the SCT group was 158.03±21.19 mg/dL (decrease by 10.53±8.72 mg/dL, a decrease of 6.25% over baseline and 5.61±5.98 mg/dL (3.43%) over 03 week value). This decrease was also statistically significant (p<0.001)

The difference in total cholesterol was more in SCT group (by was 10.53±8.72 mg/dL) as compared with HIIT group (by 8.95±14.91 mg/dL). The difference, however, was not statistically significant (p=0.278) {figure 26, table 5}. 
Results

Figure 32: Mean total cholesterol at 0, 3 & 6 wks of HIIT & SCT

Figure 32 depicts a graph showing mean total cholesterol (mg/dL) at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups showed a significant fall in total cholesterol.
Figure 33: Difference in change of mean total cholesterol between HIIT & SCT groups at 0, 3 & 6 wks

Figure 33 depicts a graph showing difference in fall in Mean Total Cholesterol (mg/dL) in HIIT and SCT groups at 0, 3 and 6 wks. SCT results in greater fall in Total Cholesterol than HIIT, which is not statistically significant.
4.5.2 Triglyceride: At the beginning of the experimental protocol, the mean triglyceride value of HIIT group was 126.74±30.36 mg/dL as compared with 125.71±33.69 mg/dL of SCT group.

After 03 weeks, the mean triglyceride value of the HIIT group was 123.68±28.21 mg/dL (decrease by 3.06±6.96 mg/dL, an decrease of 2.41% over baseline). Compared with this, the mean triglyceride value of the SCT group was 120.61±30.98 mg/dL (decrease by 5.11±7.75 mg/dL, an decrease of 4.06% over baseline) \{figure 27, table 5\}

After 06 weeks of intervention, the mean triglyceride value of the HIIT group was 117.45±28.60 mg/dL (decrease by 9.29±18.54 mg/dL, an decrease of 7.33% over baseline and 6.24±17.26 mg/dL (5.04%) over 03 week value). This decrease was statistically significant (p<0.001) \{figure 27, table 5\}

Compared with this, the mean triglyceride value of the SCT group was 117.00±30.21 mg/dL (decrease by 8.71±11.54 mg/dL, a decrease of 6.93% over baseline and 3.61±7.58 mg/dL (2.99%) over 03 week value). This decrease was also statistically significant (p<0.001)

The difference in triglyceride level was more in HIIT group (by 9.29±18.54 mg/dL) as compared with SCT group (by 8.71±11.54 mg/dL). The difference was not statistically significant (p=0.490) \{figure 28, table 5\}. 

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Figure 34: Mean triglyceride levels at 0, 3 & 6 wks of HIIT & SCT

Figure 34 depicts a graph showing triglyceride value (mg/dL) at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups show significant fall in Triglycerides.
Figure 35: Difference in changes of mean triglyceride levels between HIIT & SCT at 0, 3 & 6 wks

Figure 35 depicts a graph showing difference in fall in triglyceride level (mg/dL) between HIIT and SCT at 0, 3 and 6 wks. HIIT results in greater fall in triglyceride level than SCT, which is not statistically significant.
4.5.3 HDL: At the beginning of the experimental protocol, the mean HDL of HIIT group was 48.61±9.71 mg/dL as compared with 46.44±6.59 mg/dL of SCT group.

After 03 weeks, the mean HDL of the HIIT group was 52.11±8.30 mg/dL (increase by 3.50±4.29 mg/dL, an increase of 7.19% over baseline). Compared with this, the mean HDL of the SCT group was 50.82±6.61 mg/dL (increase by 4.39±2.96 mg/dL, an increase of 9.45% over baseline). {figure 29, table 5}

After 06 weeks of intervention, the mean HDL of the HIIT group was 55.37±8.14 mg/dL (increase by 6.76±5.88 mg/dL, an increase of 13.90% over baseline and 3.26±4.02 mg/dL (6.26%) over 03 week value). This increase was statistically significant (p<0.001)

Compared with this, the mean HDL of the SCT group was 55.39±7.10 mg/dL (increase by 8.96±4.94 mg/dL, an increase of 19.29% over baseline and 4.57±3.54 mg/dL (8.99%) over 03 week value). This increase was also statistically significant (p<0.001) {figure 29, table 5}

The difference in HDL was more in SCT group (by 8.96±4.93 mg/dL) as compared with HIIT group (by 6.76±5.88 mg/dL). The difference was statistically significant (p=0.045). {figure 30, table 5}
Figure 36: Mean HDL levels at 0, 3 & 6 wks of HIIT & SCT

Figure 36 depicts a graph showing HDL levels (mg/dL) at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups show significant increase in HDL.
Figure 37: Difference in changes in the Mean HDL levels b/w HIIT & SCT at 0, 3 & 6 wks

Figure 37 illustrates a graph showing difference in rise in the Mean HDL levels (mg/dL) between HIIT and SCT at 0, 3 and 6 wks. SCT results in significantly greater rise in HDL than HIIT.
4.5.4 Total cholesterol/HDL: At the beginning of the experimental protocol, the mean Total cholesterol to HDL ratio of HIIT group was 3.43±0.65 as compared with 3.68±0.59 of SCT group.

After 03 weeks, the mean total cholesterol to HDL ratio of the HIIT group was 3.10±0.55 (decrease by 0.32±0.30, an decrease of 9.40% over baseline). Compared with this, the mean total cholesterol to HDL ratio of the SCT group was 3.26±0.50 (decrease by 0.43±0.25, an decrease of 11.58% over baseline). {figure 31, table 5}

After 06 weeks of intervention, the mean total cholesterol to HDL ratio of the HIIT group was 2.82±0.47 (decrease by 0.61±0.44, an decrease of 17.70% over baseline and 0.28±0.32 (9.16%) over 03 week value). This decrease was statistically significant (p<0.001)

Compared with this, the mean total cholesterol to HDL ratio of the SCT group was 2.89±0.47 (decrease by 0.80±0.36, an decrease of 21.64% over baseline and 0.37±0.22 (11.38%) over 03 week value). This decrease was also statistically significant (p<0.001) {figure 31, table 5}

The difference in total cholesterol to HDL ratio was more in SCT group (by 0.79±0.36) as compared with HIIT group (by 0.69±0.44). The difference was statistically significant (p=0.034). {figure 32, table 5}
Figure 38: Mean total cholesterol/ HDL ratio at 0, 3 & 6 wks of HIIT & SCT

**Figure 38:** Graph showing total cholesterol to HDL ratio at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups show significant decrease in total cholesterol to HDL ratio.
Figure 39: Difference in changes of total cholesterol/HDL ratio at 0, 3 & 6 wks between HIIT & SCT

**Figure 39:** Graph showing difference in fall in total cholesterol to HDL ratio in HIIT and SCT at 0, 3 and 6 wks. SCT results in greater fall in total cholesterol to HDL ratio than HIIT, which is not statistically significant.
Table 5: Effects on lipid profile in both HIIT & SCT study groups

<table>
<thead>
<tr>
<th>Parameters</th>
<th>HIIT (n=119)[Mean±S.D]</th>
<th>SCT (n=119)[Mean±S.D]</th>
<th>Difference between HIIT &amp; SCT (significance)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre Test</td>
<td>Post test</td>
<td>Change (significance)</td>
</tr>
<tr>
<td>Total cholesterol (mg/dL)</td>
<td>162.71 ±25.53</td>
<td>153.76 ±21.32</td>
<td>8.95±14.91 (p&lt;0.005)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SCT&gt;HIIT (p=0.278)</td>
</tr>
<tr>
<td>Triglycerides value(mg/dL)</td>
<td>126.74 ±30.36</td>
<td>117.45 ±28.92</td>
<td>9.29±18.54 (p&lt;0.005)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HIIT&gt;SCT (p=0.490)</td>
</tr>
<tr>
<td>HDL (mg/dL)</td>
<td>48.61 ±9.71</td>
<td>55.37 ±8.14</td>
<td>6.76±5.88 (p&lt;0.005)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SCT&gt;HIIT (p=0.045)</td>
</tr>
<tr>
<td>TC/HDL</td>
<td>3.43 ±0.65</td>
<td>2.82 ±0.47</td>
<td>0.61±0.44 (p&lt;0.005)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SCT&gt;HIIT (p=0.034)</td>
</tr>
</tbody>
</table>

Table 5 shows the effects of HIIT and SCT on Lipid Profile. It shows that both HIIT and SCT are effective in improving the lipid profile of healthy adult males over 6 weeks of training. SCT is more effective in improving serum HDL levels. Both are equally effective in reducing total cholesterol, triglycerides and total cholesterol to HDL ratio.
4.6 GLUCOSE TOLERANCE

Glucose tolerance was measured in terms of the following:

i. Fasting Glucose

ii. 2 hr Post Prandial Glucose

4.6.1 Fasting Blood Glucose: At the beginning of the experimental protocol, the mean Fasting Blood Glucose (FBG) of HIIT group was 83.40±7.09 mg/dL as compared with 82.12±7.51 mg/dL of SCT group.

After 03 weeks, the mean FBG of the HIIT group was 83.18±6.66 mg/dL (decrease by 0.23±4.56 mg/dL, an decrease of 0.27% over baseline). Compared with this, the mean FBG of the SCT group was 81.83±6.89 mg/dL (decrease by 0.29±3.67 mg/dL, an increase of 0.35% over baseline) {figure 33, table 6}.

After 06 weeks of intervention, the mean FBG of the HIIT group was 82.77±6.51 mg/dL (decrease by 0.63±4.79 mg/dL, an decrease of 0.76% over baseline and 0.40±4.15 mg/dL (0.48%) over 03 week value). This decrease was not statistically significant (p=0.154) {figure 33, table 6}.

Compared with this, the mean FBG of the SCT group was 81.53±6.33 mg/dL (decrease by 0.59±3.96 mg/dL, an decrease of 0.72% over baseline and 0.30±3.05 mg/dL (0.37%) over 03 week value). This decrease was also not statistically significant (p=<0.108)

The difference in FBG was more in HIIT group (by 0.63±4.79 mg/dL) as compared with SCT group (by 0.59±3.96 mg/dL). The difference was statistically significant (p=0.041) {figure 34, table 6}. 82
Figure 40: Mean FBG levels at 0, 3 & 6 wks of HIIT & SCT

Figure 40 depicts a graph showing FBG (mg/dL) at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects. Both groups show significant fall in FBG.
Figure 41 illustrates a graph showing difference in changes in fasting glucose (mg/dL) between HIIT and SCT at 0, 3 and 6 wks. HIIT results in significantly greater fall in fasting blood glucose than HIIT.
4.6.2 2 hours post prandial blood glucose: At the beginning of the experimental protocol, the mean 2 hours post prandial blood glucose of HIIT group was 97.75±7.77 mg/dL as compared with 95.25±7.97 mg/dL of SCT group.

After 03 weeks, the mean 2 hours post prandial blood glucose of the HIIT group was 101.66±9.24 mg/dL (increase by 3.91±7.56 mg/dL, an increase of 4% over baseline). Compared with this, the mean 2 hours post prandial blood glucose of the SCT group was 101.34±7.55 mg/dL (increase by 6.09±7.98 mg/dL, an increase of 6.40% over baseline). {figure 35, table 6}

After 06 weeks of intervention, the mean 2 hours post prandial blood glucose of the HIIT group was 101.32±8.61 mg/dL (increase by 3.57±7.63 mg/dL, an increase of 3.65% over baseline and a decrease of 0.34±5.91 mg/dL (0.33%) over 03 week value). This increase was statistically significant (p<0.001) {figure 35, table 6}

Compared with this, the mean 2 hours post prandial blood glucose of the SCT group was 100.95±7.29 mg/dL (increase by 5.70±8.28 mg/dL, an increase of 5.98% over baseline and decrease of 0.39±5.23 mg/dL (0.39%) over 03 week value). This increase was also statistically significant (p<0.001)

The difference in 2 hours post prandial blood glucose was more in SCT group (by 5.70±8.28 mg/dL) as compared with HIIT group (by 3.57±7.63 mg/dL). The difference was not statistically significant (p=0.334).
Figure 42: Mean 02 hour post prandial blood glucose levels at 0, 3 & 6 wks of HIIT & SCT

Figure 42 depicts a graph showing 2 hr post prandial blood glucose (mg/dL) at 0wk, 3wk and 6 wks. It shows the effect of HIIT and SCT in subjects.
Table 6: Effects on glucose tolerance in both HIIT & SCT study groups

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Pre Test</th>
<th>Post test</th>
<th>Change (significance)</th>
<th>Pre Test</th>
<th>Post test</th>
<th>Change (significance)</th>
<th>Difference between HIIT &amp; SCT (significance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasting Glucose (mg/dL)</td>
<td>83.40 ±7.09</td>
<td>82.77 ±6.51</td>
<td>0.63±4.79 (p&lt;0.005)</td>
<td>82.12 ±7.51</td>
<td>81.53 ±6.33</td>
<td>0.59±3.96 (p&lt;0.005)</td>
<td>HIIT&gt;SCT (p=0.041)</td>
</tr>
<tr>
<td>Post Prandial Glucose</td>
<td>97.75 ±7.77</td>
<td>101.32 ±8.61</td>
<td>3.57±7.63 (p&lt;0.05)</td>
<td>95.25 ±7.97</td>
<td>100.95 ±7.29</td>
<td>5.70±8.28 (p&lt;0.05)</td>
<td>SCT&gt;HIIT (p=0.334)</td>
</tr>
</tbody>
</table>

Table 6 shows the effects of HIIT and SCT on glucose tolerance. It shows that both HIIT and SCT are effective in improving fasting glucose levels of healthy adult males over 6 weeks of training. However, both cause post prandial levels to increase. The quantum of change in healthy adult males is very less.