Abstract: P635

The addition of yoga to aerobic exercise programs reduces global cardiovascular risk

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Topic(s):
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Introduction: Regular physical activity may modulate the inflammatory process and be cardio-protective. Yoga is a form of exercise that may have cardiovascular benefits. The effects of yoga on global cardiovascular risk have not been adequately described. The purpose of this study is to determine whether the addition of yoga to a regular exercise regimen reduces global cardiovascular risk.

Methods: Sixty consecutive individuals with essential hypertension were recruited in a lifestyle intervention program. All individuals with known hypertensive end organ damage, known cardiovascular diseases, as well as those taking medications/supplements that affected blood pressure, blood sugar, cholesterol or vascular inflammation were excluded. Participants were randomized to either a yoga group or similar duration stretching control group. Participants, over the 3-month intervention regimen, performed 15 minutes of either yoga or stretching in addition to 30 minutes of aerobic exercises thrice weekly. Blood pressure, cholesterol levels and hs-CRP were measured, and Reynold's Global Cardiovascular Risk Score was calculated at baseline and at the end of the 3-month intervention program.

Results: At screening, there were no statistically significant differences between the groups in any measured parameters or the 10-year risk of a cardiovascular event as measured by the Reynolds Risk Score. (8.2 vs. 9.0%; yoga vs. control group) After the 3-month intervention period, there was a statistically significantly greater decrease in the Reynold's Risk Score in the yoga vs. the control group. (7.0 vs. 8.4%, p=0.003, relative reduction 13.2 vs. 6.5%, p<0.0001)

Conclusions: In patients with essential hypertension on no medications and with no known end organ damage, the practice of yoga incorporated into a 3-month exercise intervention program was associated with significant greater improvement in the Reynold's Risk of a 10-year cardiovascular event, when compared to the control stretching group. If these results are validated in more diverse populations over a longer duration of follow up, yoga may represent an important addition to traditional cardiovascular disease prevention programs.
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Methods:
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Baseline and 3 Month Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Control Before</th>
<th>Control After</th>
<th>Percentage Change</th>
<th>Yoga Before</th>
<th>Yoga After</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic Blood Pressure (mm Hg)</td>
<td>126</td>
<td>122</td>
<td>-3.17%</td>
<td>130</td>
<td>118</td>
<td>-9.23%</td>
</tr>
<tr>
<td>HDL (mmol/L):</td>
<td>1.26</td>
<td>1.29</td>
<td>2.38%</td>
<td>1.18</td>
<td>1.30</td>
<td>10.2%</td>
</tr>
<tr>
<td>LDL (mmol/L)</td>
<td>3.11</td>
<td>2.68</td>
<td>-13.8%</td>
<td>3.19</td>
<td>2.72</td>
<td>-14.7%</td>
</tr>
<tr>
<td>Triglycerides (mmol/L):</td>
<td>2.32</td>
<td>1.91</td>
<td>-17.7%</td>
<td>2.46</td>
<td>1.92</td>
<td>-22.0%</td>
</tr>
<tr>
<td>HbA1C (%):</td>
<td>5.45</td>
<td>5.16</td>
<td>-5.32%</td>
<td>5.66</td>
<td>5.27</td>
<td>-6.89%</td>
</tr>
<tr>
<td>Fasting Blood Sugar (mmol/L):</td>
<td>5.42</td>
<td>5.01</td>
<td>-7.56%</td>
<td>5.60</td>
<td>5.15</td>
<td>-8.03%</td>
</tr>
<tr>
<td>hs-CRP (mmol/L):</td>
<td>2.32</td>
<td>1.79</td>
<td>-22.8%</td>
<td>2.95</td>
<td>2.12</td>
<td>-28.2%</td>
</tr>
<tr>
<td>Reynolds Risk Score:</td>
<td>9.64%</td>
<td>8.44%</td>
<td>-6.63%</td>
<td>8.18%</td>
<td>6.99%</td>
<td>-14.8%</td>
</tr>
</tbody>
</table>

Figure 1. Baseline and 3-Month Outcomes