The Impact of an Aquatic Exercise Protocol on Physiologic Measures within an Asthmatic Population

Kasee Hildenbrand, PhD, ATC, Timothy S. Fresen, MS, Celestina Barbosa-Leiker, PhD, Sara Nordio, Bruce E. Becker MD, FACS, Ashley J. Miller, BS
Washington State University; Pullman, Washington 99164-1410

Abstract

Purpose:
The goal of this study was to develop an exercise program (frequency, intensity, duration, type of exercise, and program progression) that could be used specifically for asthmatic individuals with varying fitness levels. The research hypothesis was that an aquatic exercise protocol would successfully increase VO2 max, lean body mass, and cardiorespiratory fitness, while reducing asthmatic symptoms.

Methods:
Participants were divided into two groups: an exercise group and a control group. The exercise group was divided into two subgroups: a moderate intensity subgroup and a high intensity subgroup. Both groups participated in a 12-week study. The control group did not participate in the study.

Results:
Significant improvements were observed in VO2 max, lean body mass, and cardiorespiratory fitness. Participants who completed the study reported a decrease in asthma symptoms.

Statistical Analysis:
Two-tailed paired t-tests were used to determine significant differences between pre- and post-treatment measurements. Effect sizes were calculated using Cohen’s d.

Conclusions:
The aquatic exercise protocol was successful in increasing VO2 max, lean body mass, and cardiorespiratory fitness, while reducing asthmatic symptoms.

References:

Training Progression for Asthmatic Participants

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Weeks</th>
<th>Pre-Treatment</th>
<th>Post-Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy bicycle</td>
<td>6</td>
<td>10 min</td>
<td>20 min</td>
</tr>
<tr>
<td>Easy walking</td>
<td>6</td>
<td>10 min</td>
<td>20 min</td>
</tr>
<tr>
<td>Easy leg calf</td>
<td>6</td>
<td>10 min</td>
<td>20 min</td>
</tr>
<tr>
<td>Easy shoulder shrug</td>
<td>6</td>
<td>10 min</td>
<td>20 min</td>
</tr>
<tr>
<td>Easy jump</td>
<td>6</td>
<td>10 min</td>
<td>20 min</td>
</tr>
</tbody>
</table>

Study Limitations

Despite aggressive recruitment efforts, the study population was small. Due to the small sample size, results should be viewed as descriptive. Participants who did not complete the study may have been more severe cases, which could affect the generalizability of the findings.