**Effects of Functional Training in an Older Adult Fitness Program**

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**ABSTRACT**

With age, a number of physiological and functional changes contribute to a decline in functional performance. Functional performance is described as the physical abilities related to the performance of daily activities. In addition to muscular strength, critical components of physical function for older adults are agility, power, static and dynamic balance. However, previous studies focusing on physical training for this population did not include activities that directly improved each of these components. The purpose of this study was to document the physical changes in older adults through the application of a structured functional training fitness program. Healthy male (n=24) and female (n=14) older adults with no injuries were included. The purpose of this study was to document the functional fitness changes in older adults through the application of a structured 35-week functional training program. The development of this program was supported by a grant from the Foundation and the University of Texas at El Paso. The current training programs.

**INTRODUCTION**

- Functional performance for older adults is described as the physical abilities related to the performance of daily activities.
- Critical components of physical function for older adults are cardiovascular endurance, muscular strength, agility, power, static and dynamic balance.
- Previous studies for older adults did not include activities that directly improved each of these components.
- Authors hypothesized that functional training would elicit greater improvements in the functional fitness of older adults than less comprehensive programs.

**PURPOSE**

The purpose of this study was to document the functional fitness changes in older adults through the application of a structured 35-week functional training program.

**DESCRIPTIVES**

Participants: 24 Men and 14 Women (N = 38)

<table>
<thead>
<tr>
<th>GROUP</th>
<th>N</th>
<th>Age (years)</th>
<th>Height * (cm)</th>
<th>Body Mass * (kg)</th>
<th>BMI (kg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>24</td>
<td>68.4 ± 5.4</td>
<td>172.± 5.7</td>
<td>86.7 ± 11.6</td>
<td>29.2 ± 3.4</td>
</tr>
<tr>
<td>Women</td>
<td>14</td>
<td>67.6 ± 5.9</td>
<td>161.± 5.7</td>
<td>66.5 ± 11.7</td>
<td>25.8 ± 5.1</td>
</tr>
</tbody>
</table>

Mean ± SD descriptive characteristics of those Participants that completed the 35-week training program. Body Mass Index (BMI). * Men significantly different than women (P < 0.001).

**METHODS**

- The 35-week program included three 75-minute sessions weekly.
- Training sessions included:
  - Machine and free-weight based resistance training
  - Swiss ball and medicine ball core strength training
  - Static and dynamic balance training
  - Cardiovascular endurance training
  - Agility ladder and cone agility drills
  - Medicine ball explosive throws
- Subjects’ functional fitness was assessed pre- and post-training by:
  - 30-second Chair Stand for lower body strength and endurance
  - 30-second Arm Curl for Upper Body Strength and Endurance
  - Chair Sit-and-Reach for lower body flexibility
  - Back Scratch for upper body flexibility
  - 6-minute Walk for aerobic endurance
- Subjects’ functional fitness was assessed pre- and post-training by:

**RESULTS**

- Pre- and post-test data were analyzed using paired samples T-tests.
- Except the Back Scratch flexibility test, older adult subjects improved significantly on all measures (p < 0.007).
- Compared to population norms for highly active older adults, post-test scores were greater for all measures and significantly different (p<0.001) for:
  - 30-second chair stand and arm curl strength tests
  - chair sit-and-reach flexibility test
  - 8-ft up-and-go agility test
- Compared to previous older adult training studies using body weight exercises, rubber bands, and resistance training machines, our subjects showed greater improvement and scored higher at post-test.

**SUMMARY OF RESULTS**

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Baseline</th>
<th>35 weeks</th>
<th>Improvement from baseline</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-s Chair Stand (repetitions)</td>
<td>19.1 ± 5.2</td>
<td>29.0 ± 7.9</td>
<td>9.9 (51.9%)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>30-s Arm Curl (repetitions)</td>
<td>22.5 ± 4.6</td>
<td>34.4 ± 6.5</td>
<td>11.9 (52.7%)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Chair Sit-and-Reach (in)</td>
<td>1.0 ± 5.2</td>
<td>2.8 ± 4.9</td>
<td>1.7 (162.8%)</td>
<td>&lt; 0.007</td>
</tr>
<tr>
<td>Back Scratch (in)</td>
<td>-2.1 ± 3.9</td>
<td>-1.7 ± 4.3</td>
<td>0.4 (18.2%)</td>
<td>&gt; 0.52</td>
</tr>
<tr>
<td>6-minute Walk (yards)</td>
<td>639.0 ± 116.8</td>
<td>725.5 ± 114.9</td>
<td>86.5 (13.5%)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>6-foot Up-and-Go (second)</td>
<td>5.2 ± 1.0</td>
<td>4.6 ± 0.6</td>
<td>0.6 (29.6%)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Forward Reach (in)</td>
<td>15.1 ± 2.5</td>
<td>18.4 ± 2.7</td>
<td>3.3 (21.6%)</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

**CONCLUSION**

- The 35-week functional training based exercise program resulted in significant increases in strength, lower body flexibility, cardiovascular endurance, balance and agility.
- As a result of the intervention, subjects exceeded functional test norms identified for highly active older adults and no injuries were incurred during the intervention.
- Functional training was found safe and effective for improving the physical function of older adults.

**PRACTICAL APPLICATION**

Due to the effectiveness of functional training for improving physical function, it would be prudent for professionals working with older adults to implement functional training methods in current training programs.

**ACKNOWLEDGEMENTS**

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