**THE APPLICATION OF FUNCTIONAL TRAINING TO IMPROVE FITNESS IN OLDER ADULTS**

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**ABSTRACT**

With age, a number of physiological and behavioral changes contribute to a decline in functional performance. Functional performance is described as the physical abilities related to the performance of daily activities. Evidence suggests that the primary contributors to the decline in physical function is the decrease in physical activity. In addition to muscular strength, critical contributors to the decline in functional performance include endurance, flexibility, and balance (McArdle et al., 2010). 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.

**METHODS**

- The 14-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
  - 8-foot Up-and-Go for motor agility
  - Forward Reach for static balance

**RESULTS**

Pre- and post-test data were analyzed using an ANOVA with repeated measures.
- Except the Back Scratch flexibility test, older adult subjects improved significantly on all measures (p < 0.001).
- 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>14 weeks</th>
<th>Improvement from baseline</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-s Chair Stand (repellitions)</td>
<td>18.4 ± 5.2</td>
<td>24.8 ± 6.5</td>
<td>6.4 (34.6%)</td>
<td>&lt; 0.001</td>
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<tr>
<td>30-s Arm Curl (repellitions)</td>
<td>21.6 ± 4.6</td>
<td>29.4 ± 5.3</td>
<td>7.8 (36.0%)</td>
<td>&lt; 0.001</td>
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<tr>
<td>Chair Sit-and-Reach (in)</td>
<td>1.3 ± 5.3</td>
<td>4.5 ± 3.2</td>
<td>3.1 (237.9%)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Back Scratch (in)</td>
<td>-1.8 ± 3.9</td>
<td>-1.2 ± 3.3</td>
<td>0.6 (34.8%)</td>
<td>0.12</td>
</tr>
<tr>
<td>6-minute Walk (yards)</td>
<td>621.8 ± 115.8</td>
<td>680.9 ± 129.8</td>
<td>59.1 (9.5%)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>8-foot Up-and-Go (second)</td>
<td>5.3 ± 1.0</td>
<td>4.5 ± 0.9</td>
<td>0.8 (15.6%)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Forward Reach (in)</td>
<td>14.8 ± 2.6</td>
<td>17.1 ± 3.2</td>
<td>2.3 (15.4%)</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

**CONCLUSION**

- The 14-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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