According to the World Health Organization (WHO, 2013), the four primary risk factors for non-communicable diseases were tobacco use, harmful use of alcohol, unhealthy diets, and physical inactivity. Physical inactivity or having a sedentary lifestyle is one of the 10 main reasons for global mortality and disability (WHO, 2013). Approximately 60-85% of adults worldwide have sedentary lifestyles, and 6% of annual mortalities are related to insufficient physical exercise (WHO, 2013). Over two million deaths occur because of sedentary lifestyles (WHO, 2013). Aging affects cardiovascular health, muscle and joint functions, quality of life, independent living, as well as mortality morbidity (Grimmer et al., 2012; Nelson et al., 2007; Sui et al., 2007). Therefore, promoting a regular physical activity habit for aged adults has attracted substantial attention.

The TMT was developed by Prochaska and DiClemente in 1983. This model advocates that the behavioral change is a dynamic process that can be divided into various stages, instead of an all-or-none phenomenon (Prochaska & DiClemente, 1983). 1) the pre-contemplation stage: participants were not exercising and had no intention to exercise in the near six months; 2) the contemplation stage: participants were not exercising, but had the intention to exercise within the next six months; 3) the preparation stage: participants planned to start exercising within one month or were exercising irregularly; 4) the action stage: participants have been regularly exercising for the past six months; and 5) the maintenance stage: participants were not exercising and have no intention to exercise in the future longer than six months. The model is useful in understanding the characteristics of people at different stages and is helpful in designing interventions.

**Design**

A quasi-experimental design with pretest and posttest on two groups was used in this study. Six senior activity centers from Southern Taiwan that volunteered to participate in the study were randomly assigned to either the experimental group (three centers) or control groups (three centers) using a lottery system. The functional fitness of the participants from the senior activity centers were collected at baseline and at three- and six-month into the intervention.

**Setting & Participants**

The study was conducted in six senior activity centers, Southern Taiwan. Approximately 30-35 aged adults from each senior activity center participated in this study, which yield a total sample size of 199 (experimental group n = 97, control group n = 102).

**Methods**

The Effects of the Senior Elastic Band Exercise Program on the Functional Fitness of Community Aged Adults --- Transtheoretical Model

Hui-Ju Yang¹, Kuel-Min Chen², Hui-Chuan Wu³, Yueh-Chin Wang⁴, Wen-Jane Chang⁵, & Hsin-Ting Huang⁶

**Introduction**

The Taiwanese population is rapidly aging and the number of aged adults is increasing dramatically. Aged adults typically exhibit deteriorating physical functions and chronic diseases, thus hindering their performance in physical activities. In addition, exercise content and methods are often emphasized when encouraging aged adults to exercise, neglecting whether they have the intention or adequate preparation for exercise. In this study, the SEB exercise program improved the functional fitness of community aged adults. The program is inexpensive, easy to use, safe, and suitable for practicing at home. Moreover, this study adopted the TMT for selected aged adults using its contemplation and preparation stages. Subsequently, the SEB exercise prescription suitable for the aged adults in these two stages was provided to enhance their progress and increase their exercise behaviors. Therefore, providing appropriate exercise prescriptions according to various stages of behavior change can effectively facilitate regular exercise behaviors and enhance the physical health of aged adults.

**Results**

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Experimental Group (E)</th>
<th>Control Group (C)</th>
<th>E vs. C, p</th>
<th>Lower body flexibility (cm)</th>
<th>Upper body flexibility (cm)</th>
<th>Cardiopulmonary fitness (times)</th>
<th>Lower limb muscle endurance</th>
<th>Upper limb muscle power (kg)</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>30</td>
<td>314.98</td>
<td>307.34</td>
<td>&lt; .01; ***</td>
<td>24.76</td>
<td>16.73</td>
<td>8.36</td>
<td>22.00</td>
<td>27.00</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>30</td>
<td>307.34</td>
<td>268.81</td>
<td>&lt; .001; ***</td>
<td>16.73</td>
<td>8.36</td>
<td>8.36</td>
<td>22.00</td>
<td>27.00</td>
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</tr>
</tbody>
</table>

**Conclusion**

To prevent the exertion of confounding effects on the experimental and control group during interventions, the community centers, instead of individuals, were used as the unit for randomly assigning the participants to the two groups. Therefore, significant differences existed between the experimental and control group in the pretest rebellies, upper limb muscle flexibility, lower limb muscle power, and upper limb muscle power. Subsequent statistical corrections were conducted on these significant differences using ANCOVA.

**Study Limitations**

The effects of the group SEB exercises on the functional fitness of community aged adults who were in their contemplation and preparation stages.