Can a three weeks program in a rehabilitation center improve balance in elderly people?

A randomized clinical controlled trial

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Introduction
Balance is one of the primary risk factors for falls among the elderly. Balance exercise has shown to be the most important component of fall prevention for home-dwelling older people.

Less is known about possible effects of intensive balance exercise during a short period in a rehabilitation center.

Purpose
Primary objective:
To determine whether a balance training program used complementary to a three weeks rehabilitation program in an inpatient setting may improve balance for elderly people.

Secondary objective:
Observe fall rates, fall related injuries and training habits.

Methods
IG and CG-Same “treatment as usual” three weeks program (treatments, training sessions). IG additionally followed a balance training program (OTAGO) with physiotherapist, in group-settings and self training.
RG: nothing.

Results
No significant difference between groups was found (p=0.016). (Table 2).

No significant group differences in fall rate and fall injuries during follow-up, but significant increase in mean training activity for IG and CG (p=0.027/0.001) at T3 compared to RG (p=0.001). (Table 2).

Discussion & Conclusions
1) Three weeks rehabilitation improved training habits and some aspects of balance in the elderly but extra balance training did not improve balance more than standard rehabilitation.
2) Activities challenging for balance can benefit the elderly as much as specific balance exercises.
3) Balance training programs initiated during a stay in a rehabilitation center has to be followed up after discharge in order to sustain effects.

Recommendations
Balance improvement for the elderly is a long term project. Short periods of rehabilitation should focus on:
1) Motivating the elderly to activities that are challenging for balance rather than learning exercises for balance training at home.
2) Reducing risk factors for falls other than balance (e.g. strength).
3) Make training in fall technology as a form of AADL training in order to increase confidence.
4) Purpose being to maintain AADL level even those AADL exposing to fall risks.

Table 1. Effects of the 3 week intervention and sustainability of effects 3- and 6 months later

<table>
<thead>
<tr>
<th>Group</th>
<th>T1 Mean (SD)</th>
<th>T2 Mean (SD)</th>
<th>T3 Mean (SD)</th>
<th>T4 Mean (SD)</th>
<th>T1 - T2</th>
<th>T1 - T3</th>
<th>T1 - T4</th>
</tr>
</thead>
<tbody>
<tr>
<td>IG</td>
<td>30.8 (8.1)</td>
<td>-</td>
<td>28.8 (7.8)</td>
<td>29.0 (8.2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CG</td>
<td>32.9 (9.6)</td>
<td>29.4 (9.4)</td>
<td>** 28.6 (8.3)</td>
<td>** 28.8 (8.3)</td>
<td>0.3</td>
<td>0.4</td>
<td>0.4</td>
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<tr>
<td>IG</td>
<td>13.8 (3.7)</td>
<td>11.7 (3.6)</td>
<td>** 0.5</td>
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<td></td>
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</tr>
<tr>
<td>CG</td>
<td>15.7 (5.1)</td>
<td>13.7 (4.5)</td>
<td>** 0.4</td>
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<tr>
<td>IG</td>
<td>21.0 (12.0)</td>
<td>17.7 (12.4)</td>
<td>** 0.3</td>
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<tr>
<td>CG</td>
<td>27.9 (26.2)</td>
<td>35.5 (27.5)</td>
<td>* 0.3</td>
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<td></td>
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<tr>
<td>IG</td>
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<td>7.8 (11.1)</td>
<td>0.1</td>
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<tr>
<td>CG</td>
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<td>42.3 (116.3)</td>
<td>0</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

ANCOVA - with covariate from T1

** P <0.01 for within group difference compared with T1
* p <0.05 for within group difference compared with T1

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