Effects of virtual reality based balance training on the independence in activities of daily living of geriatric individuals

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Background

• The population is rapidly aging;
  • 4.8 million people +65 in 2008 (6.8%)
  • 6.9 million people +65 in 2017 (8.5%)

• The increasing life expectancy, requires new strategies to promote healthy living and functional skills of the elderly (WHO, 2016).
Background

The Strategy (2016 – 2020) has two goals:

• Five years of evidence-based action to maximize functional ability that reaches every person;

• By 2020, establish evidence and partnerships necessary to support a Decade of Healthy Ageing from 2020 to 2030.

The Aim

• To investigate the effects of a virtual reality based balance training program on the independence in activities of daily living of geriatrics.

• Furthermore; to investigate if virtual reality and games were practicable with elderly Turkish people.
Methods

• Individuals who;
  • Are over 65 years old,
  • Have fallen at least once in the past year,
  • Doesn’t have cognitive problems (evaluated with MMSE),
  • Have balance problems (evaluated with BBS)

were included.
Assessments

• Balance status was assessed with Berg Balance Scale (BBS) and independence in activities of daily living was assessed with Functional Independence Measure (FIM) before and after the intervention.
**Intervention**

• A commercially available virtual reality device was used.
• Carefully selected games were used in the balance training.
  • The games included; lateral flexions, flexions and extensions of the body, balancing on one leg and circumflexion/rotation of the arms.
Intervention

• The intervention sessions were carried out twice a week for 4 weeks.
• One session was 30 minutes long.
• Introductory sessions and reminders were provided when necessary.
• The researchers were present and observing/verbally assisting the participants in all of the sessions.
Intervention

• Most of the sessions were carried out in the participant’s own homes.
• The participants were kindly invited to the university for the last session.
Results

• 15 individuals were participated in the study.
• The main age was 75,00±7,34 and 73,3% or the participants were female.
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<tr>
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<th>Pre-Intervention</th>
<th>Post-Intervention</th>
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<tr>
<td><strong>Berg Balance Scale</strong></td>
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<tr>
<td>Total Score (54-0)</td>
<td>37,93 ± 2,68</td>
<td>44,46 ± 2,87</td>
<td>-3,419</td>
<td>0,001*</td>
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<td><strong>Functional Independence Measure</strong></td>
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<td>Self-Care (42-7)</td>
<td>37,73 ± 1,53</td>
<td>39,20 ± 20,30</td>
<td>-2,480</td>
<td>0,013*</td>
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<td>Sphincter Control (14-2)</td>
<td>14,00 ± 0,00</td>
<td>13,93 ± 0,25</td>
<td>-1,000</td>
<td>0,317</td>
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<td>Transfers (21-3)</td>
<td>17,60 ± 1,12</td>
<td>19,66 ± 0,97</td>
<td>-3,347</td>
<td>0,001*</td>
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<td>Locomotion (14-2)</td>
<td>10,20 ± 1,08</td>
<td>12,26 ± 1,16</td>
<td>-3,407</td>
<td>0,001*</td>
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<td>Communication (14-2)</td>
<td>13,66 ± 0,61</td>
<td>13,86 ± 0,51</td>
<td>-1,732</td>
<td>0,083</td>
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<td>Social Cognition (21-3)</td>
<td>18,8 ± 1,52</td>
<td>19,73 ± 1,16</td>
<td>-2,889</td>
<td>0,004*</td>
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<tr>
<td>Total Score (126-18)</td>
<td>112,00 ± 1,14</td>
<td>119,06 ± 3,32</td>
<td>-3,442</td>
<td>0,001*</td>
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Discussion

- A virtual reality based balance training program was effective in improving the balance and functional independence of geriatrics.

- The fact that this easy-to-use and low-cost method has positive outcomes shows that it can be used in rehabilitation of geriatric patients who have problems in ADLs.
But, is that it...?
It all ties back to the culture...

Activities of the Elderly in Turkey

Roles of the Elderly Individuals

Gradually Passivated
• Additional sessions with the family.
• Encouraging elderly to be active and participate.

• 8 participants out of 15 stated that they would like to try and play more games with the whole family involved.
Thank you for your time and attention!

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