

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.

WHO, The Global strategy and action plan on ageing and health, 2016



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.



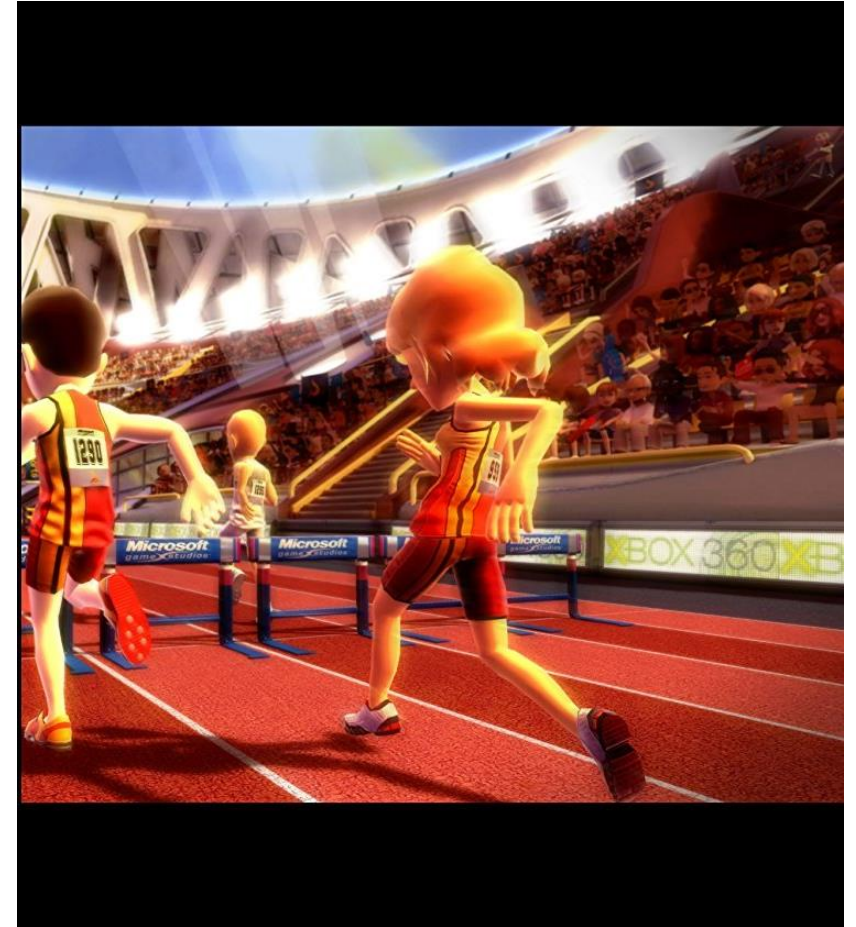
Assessments

- 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 $75,00 \pm 7,34$ and 73,3% or the participants were female.



	Pre-Intervention	Post-Intervention		
	X ± SS	X ± SS	z	p
<u>Berg Balance Scale</u>				
Total Score(54-0)	37,93 ± 2,68	44,46 ± 2,87	-3,419	0,001*
<u>Functional Independence Measure</u>				
Self-Care (42-7)	37,73 ± 1,53	39,20 ± 20,30	-2,480	0,013*
Sphincter Control (14-2)	14,00 ± ,00	13,93 ± 0,25	-1,000	0,317
Transfers (21-3)	17,60 ± 1,12	19,66 ± 0,97	-3,347	0,001*
Locomotion (14-2)	10,20 ± 1,08	12,26 ± 1,16	-3,407	0,001*
Communication (14-2)	13,66 ± 0,61	13,86 ± 0,51	-1,732	0,083
Social Cognition (21-3)	18,8 ± 1,52	19,73 ± 1,16	-2,889	0,004*
Total Score (126-18)	112,00 ± 1,14	119,06±3,32	-3,442	0,001*



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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