Exergames

Older people’s motives to use exergames

By: Wytske Meekes
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Supervisor: Dr Emma Stanmore
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Who of you know an older person who has fallen?
Falls among older people

• Increase older people¹
  • 17.7% (2015) to 23.5% (2034)

• Older people are at risk²
  • 28-35% older people worldwide fall each year³
  • 1 in 3 older people fall each year in UK¹

• In 2013, almost 3.653 older people died¹
MIRA-exergames

- Software platform to make physiotherapy fun and convenient for people who rehabilitate.⁴

- Tracks client’s performances (e.g. speed)⁴⁵

- New games developed with and for older people to reduce fall risk⁵

- Exercises are based on FaME and Otago exercise programmes⁵
Mr. Darcy*
Objective

To provide insight in the motivation of older people who recover from a fall or who have a high risk of falling, to use MIRA-exergames to improve their physical function and reduce their fall risk.
Conceptual model

Motivation of MIRA

Intrinsic motivation

- The game
  - concentration
  - challenge
  - clear goals
  - feedback
  - immersion

- Autonomy
  - control

- Competence
  - player skills
  - starting skills

- Relatedness
  - social interaction

Extrinsic motivation

- Integrated regulation
  - goals & values

- Identified regulation
  - personally important outcome

- Introjected regulation
  - sense of guilt, obligation, to prove

- External regulation
  - external reinforcement

Self-Determination Theory\textsuperscript{6,7,8,9}

Game flow model for player enjoyment in games\textsuperscript{10}
Research questions

Why are older people motivated to use MIRA-exergames to improve their physical function and to reduce fall risk?

1. To what extend do older people enjoy the use of MIRA-exergames?

2. To what extend does an objective consequence, which refers to extrinsic motivation, influence the motivation of older people regarding MIRA-exergames?
Methods

- Participants:
  - 12 older people from 2 extra nursing homes
  - 1 physiotherapist
  - 1 warden

- Qualitative and quantitative research
  - Semi-open interviews
  - TAM-questionnaire
  - Observations (81 h)

- Coding (coding scheme)

- Analysis with ATLAS.ti coding programm
Results – intrinsic motivation (1)

- Enjoyment: 8 enjoyed
  - 2 slightly enjoyed
  - 2 did not enjoy

“Sometimes you forget about your problems”

(Ms. Johnsen, 66 years, Depression*)
Results – intrinsic motivation (1)

• Enjoyment:  
  - 8 enjoyed
  - 2 slightly enjoyed
  - 2 did not enjoyed

“Learning from each other makes it interesting. You can learn from each other”

(Mr. Darcy, 89 years*)
Results – intrinsic motivation (2)

- Confidence increased
  - Physical
  - Mental
  - Social

“Yeah it gave me a lot of confidence to get up and doing”

(Ms. Smith, 67 year, Depression*)
Results – extrinsic motivation

- Identified regulation
  - Personal goals: 1) improve physical function
  2) to keep memory active

“*You try to know what’s coming next. If I can remember what next thing to do, that’s positive.*”

*(Ms. Colins, 79 years, mild cognitive impairment*)
Results – extrinsic motivation

• Identified regulation
  • Personal goals:
    1) improve physical function
    2) to keep memory active
    3) improve score

• Introjected regulation
  • Fear

“So I am not growing old, too old to do anything.
I want to keep going.”

(Mr. Crawford, 60, Depression*)
Results – extrinsic motivation

• Identified regulation
  • Personal goals: 1) improve physical function
                  2) to keep memory active
                  3) improve score

• Introjected regulation
  • Fear
  • Obligation for study
Conclusion

Why are older people motivated to use MIRA-exergames to improve their physical function and to reduce fall risk?

• Intrinsically and extrinsically motivated
  • Enjoyment (social interaction) & Confidence
  • Personal goals & Fear

• Implementation in daily lives of older people

• Individual approach
Recommendations

• Coaching
• Personal goals discussed
• Show progress
• Social setting
Discussion

Previous Literature
• Brox et al. (2011) > social-exergame¹¹

• Confidence > self-efficacy (Bandura’s social cognitive theory)¹²¹³¹⁴

Strengths & Limitations
• Selection bias

• Mixed method study
Take home message

Play, to reduce your fall risk
References


* : all names in this study are anonymized
** : this person suffers from a depression, however this is not mentioned in the medical history. She confirmed this herself and regarding the DSM-IV criteria.
Results - TAM

Mean TAM score (+/- S.D.)

Question type

7-point likely scale

EASE 1  EASE 2  EASE 3  EASE 4  USE 1  USE 2  USE 3  USE 4  ATT 1*  ATT 2  ATT 3  ATT 4*  INT 1  INT 2  INT 3