

Evacuation safety of vulnerable people - Serious game or serious case?

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Background

- Finland has moved from institutional care for vulnerable people, to living at home.
- Living at home is possible by the services provided at home.
- The goal of living at home is to reduce the need for institutional places - and save on care costs.
- **As a result of this change, there is and will be more elderly people living in poorer condition than before**
- The current situation endangers their evacuation safety in the event of fire

Previous studies confirm the situation

- Nurses are more concerned about the safety of home care clients than about the safety of clients in other forms of care. (Ojala 2020)
- Social services and rescue services receive an increasing number of reports relating to the safety of elderly living at home. (Ojala 2021)
- Significant fire safety problems are identified during home visits.
- Deficiencies have been identified in structural fire safety, such as in the prevalence of smoke detectors in households (Laine, Telaaranta, Lehto, Leino & Pouta 2021)

Fire deaths in institutional care / home care

- Legislation concerning institutional care required the service provider to assess the fire- and egress safety of patients. This reduced the fire deaths in institutional care to almost zero. Now the risk has shifted to homes with insufficient protective measures.
- In Finland, a significant proportion of fire deaths happens to people living at home who have not been able to leave the burning apartment in time.

Corrective and preventive actions*

The level of safety can be improved

- By using fire safety technology
- By training fire safety for vulnerable people, their relatives and social and health professionals
- By assessing the resident's functional capacity and, as a result, changing the form of care if needed
- By identifying fire risks and the risks relating to evacuation safety
- **The EVAC application has been developed to identify the evacuation safety risks**
- **Training has been developed to improve fire safety skills. One method of training is games such as the Virpa 2 game**

*Korpilahti, Koivula, Doupi & Jaakoaho 2020

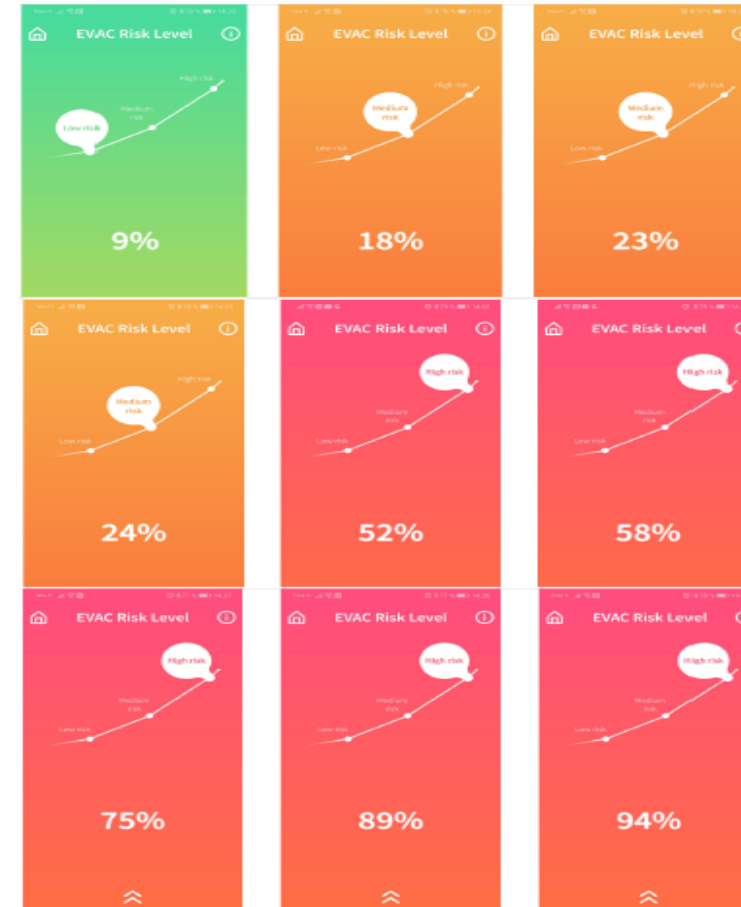
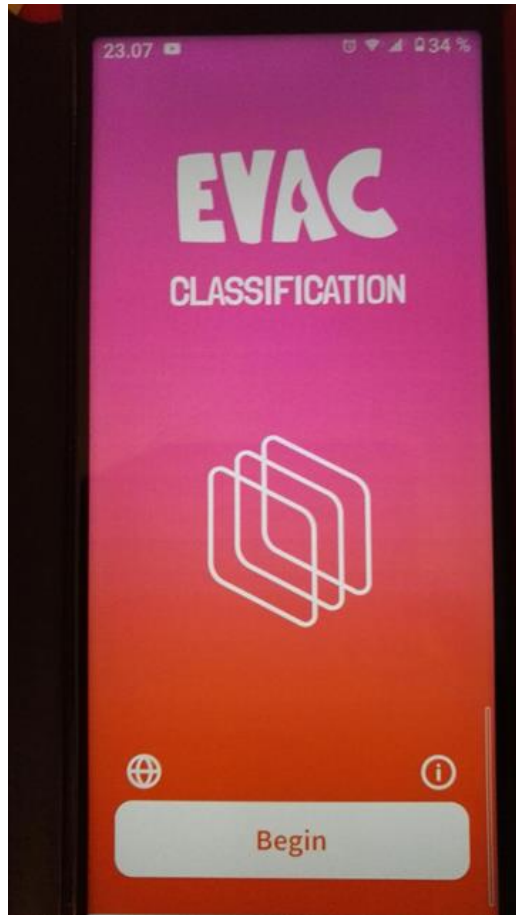
EVAC application

Björkgren, Borg, Oksanen & Mäkinen (2020)

EVAC application for mobile devices

- The Finnish EVAC application has been developed to assess the evacuation safety of people with special needs.
- The assessment is based on the InterRAI and RAI Home Care tools.
- InterRAI is a commonly used tool to assess the clients ability to function. RAI Home Care is widely used in home care.
- Based on RAI HC, a method has been developed to assess the evacuation safety risks of a home care client
- In the EVAC application, seven questions are used to assess the magnitude of the evacuation safety risk.
- EVAC application is also available in English.

EVAC application



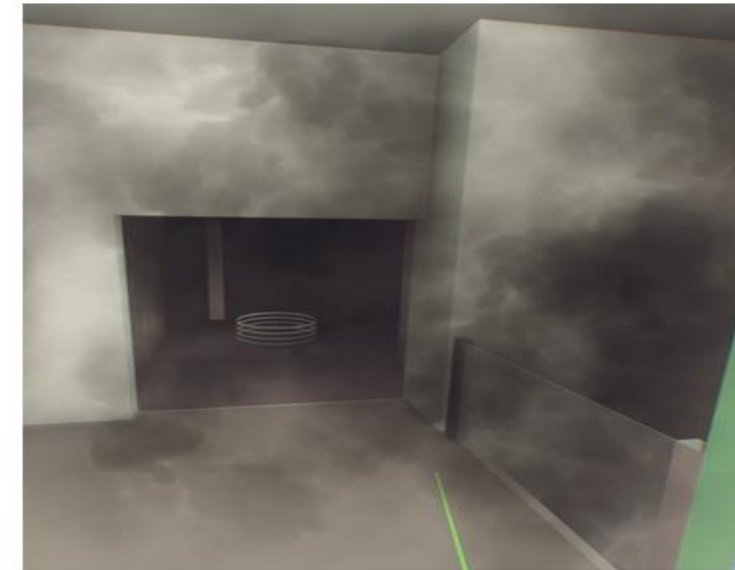
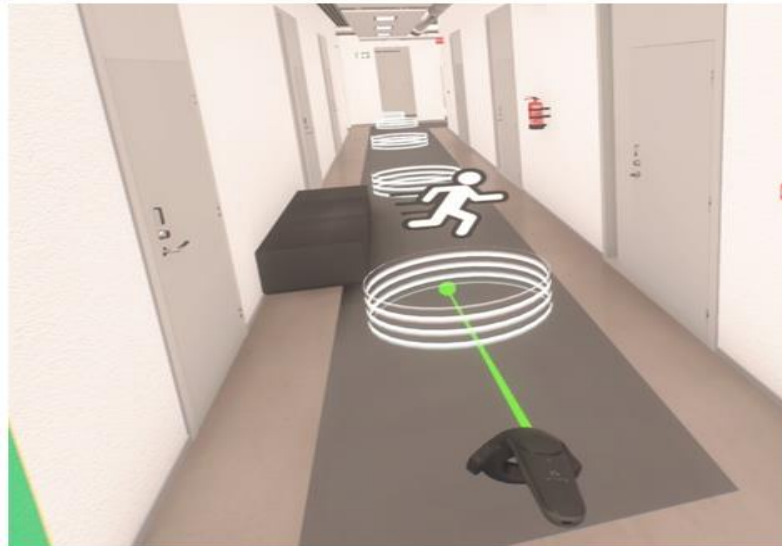
Kuva 17. EVAC-mittari 2.0:n applikaation antamat tulokset.

Virpa 2 - serious game

<https://www.virpagame.fi/?lang=en>

Serious game design – PHASE 1 VIRTUAL REALITY

- Four target groups: children, university students, working adults, firemen
→ Children were not watching the safety signs



Serious game design – PHASE 2 AUGMENTED REALITY Mobile game Virpa Fire Expert









The aim of Virpa Fire Expert game was to teach school children, 7–13 years old, fire safety signs and how to exit in case of emergency.

Educational principles

- a) Learning is not given -The learner is an active participant who **constructs** his or her learning
- b) Competence is built on knowledge, **skills** and attitude
- c) Co-development process carried out together with the fire department and with the schools





| | | |
|---|---------------------------|-----|
|  | Exit -merkki | 300 |
|  | Kokoontumispaikka -merkki | 15 |
|  | Sammutin -merkki | 115 |
|  | Palohälytin -merkki | 98 |
|  | Palokello -merkki | 41 |
|  | Defibrilaattori -merkki | 63 |





Serious game design – LEARNING OUTCOME STUDY

- The percentage of players (n=259) who observed three or more signs increased by 180 % compared to the situation before playing
- ¼ of the players (n=1076) scanned the signs in more than one building and ¼ of the players had played after two weeks - 10 % after three months



Lessons learned – what makes a game serious?

- Authentic environment
- Co-development and the expertise
- Theoretical framework
- Clear objectives – What exactly do you want to teach?
- Pedagogic material for teachers based on curriculum
- Attractivity – How to keep the players busy?
- Measurability – usability and learning outcomes
- Clear language and gender issues



If not, the challenge is that the game, instead of being serious, remains on the level of entertainment.

For more information:

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- Ojala, T. (2020). Safety of living among People with Limited Functional Capacities, Health and Safety and Safety Training of Care Personnel - Practical Nurses' Thoughts. Survey in 2019 among the Members of SuPer, the Finnish Union of Practical Nurses. (Summary in English). SPEK.
- <https://www.virpagame.fi/?lang=en>

Thank You



WWW.FIRESAFETYWEEK.EU