

A. DIJKSTRA, H. KAZIMIER-VAN DER ZWAAG, W. KOOISTRA, G. SWILDENS. **Exergaming to support mobility for older adults.** *Gerontechnology* 2016;15(suppl):107s; doi:10.4017/gt.2016.15.s.579.00

Purpose Many countries in the world have to cope with an aging population. To prevent impoverished elderly care, older adults living in the community should take precautions especially regarding their mobility. An exergame has been developed to encourage elderly people to stay independent and socially active for as long as possible (Figure 1). Exergaming can be defined as an experimental activity which involves playing exergames that require physical exertion, or movements that are more than sedentary activities, and also include strength, balance, and flexibility activities¹. A recent review of research of gamification shows that the majority of studies find positive effects from exergaming². The main focus of the study was not to test the effectiveness of the game itself, but rather the design of the game as an autogenously trigger in a behavioural change support system. **Method** (i) A literature study was conducted between the relationship between mobility and staying independent for as long as possible, and identifying matching exercise interventions. (ii) Focus group interviews were conducted with independently living older adults (n=13) to define the users context by identifying desires regarding mobility. (iii) A design science research approach with potential users (n=8) was conducted to develop a playable prototype. **Results & Discussion** (i) The literature studies gave useful information in developing focus group interviews and designing play sessions in the game regarding mobility. (ii) Focus group analyses showed that the planned exergame will need to be carefully constructed. Empowerment and helping older adults to retain sense of self-reliance and responsibility for their own life need to be part of the game. (iii) The data from the focus groups was analyzed and used as input for Scrum³ sessions with researchers, educational technologists and game designers. The prototype was evaluated in play test sessions with end-users, including an in-depth study, again providing input for the design and development of the prototype. After each session, observational data and players feedback (usability and feasibility) was analyzed and led to a partial redesign or reconfiguration of the game. The exergame prototype is the result of design and redesign in co-creation with potential users. But before we can bring the game to the market, it is necessary to prove conclusively that the exergame is an effective method for training older adults independent, mobile and socially active for as long as possible.

References

1. Oh Y, Yang S. Defining Exergames & Exergaming. Meaningful Play 2010 Conference Paper, Michigan State University, East Lansing, Michigan; 2010; http://meaningfulplay.msu.edu/proceedings2010/mp2010_paper_63.pdf; retrieved September 9, 2016
2. Hamari J, Koivist J, Sarsa H. Does gamification work? A literature review of empirical studies on gamification. In: HICSS 2014: Proceedings of 47th Hawaii International Conference on System Sciences, Washington, DC: IEEE Computer Society Press; 2014; http://people.uta.fi/~kljuham/2014-hamari_et_al-does_gamification_work.pdf; retrieved September 9, 2016
3. Schwaber K. Scrum development process. In: Business Object Design and Implementation. New York: Springer; 1997; pp 117-134

Keywords: active ageing, mobility, design, exergame

Address: NHL University
of Applied Sciences,
Leeuwarden, Netherlands;
E: ate.dijkstra@nhl.nl



Figure 1. An impression of the exergame used in this study