

Chapter 8

Accessible Mobile Rehabilitation Games for Special User Groups

Sari Merilampi

Satakunta University of Applied Sciences, Finland

Antti Koivisto

Satakunta University of Applied Sciences, Finland

Andrew Sirkka

Satakunta University of Applied Sciences, Finland

ABSTRACT

This chapter presents viewpoints of 104 users upon trials on four mobile games which combine cognitive stimulation and physical exercise in rehabilitation. The first game requires users to control by tilting a mobile phone embedded in a balance board; the second game can be controlled by tilting the tablet computer; the third game is a modified version of Trail Making Test A—a memory test that can be played by tapping figures on the screen of tablet computer; and the fourth game is an activation game with a special controller, dedicated for people with severe physical limitations. Users welcomed the use of games as self-rehabilitation tools that can be adjusted according to personal skills and limitations. The games not only gave them meaningful activities, but also saved time and efforts of professional care takers who might be unable to socialize frequently with clients.

DOI: 10.4018/978-1-5225-6026-5.ch008

INTRODUCTION

People with special needs are too often seen as a minor and marginalised group having no use or even interest for game technology. However, alongside with the ageing of populations and dwindling resources, modern user-friendly technology applications have shown huge capacity in intensifying care and rehabilitation services. Active ageing, self-supported care, and other aspects in quality of life would take an enormous step forward with deployment of user-friendly technologies (Leinonen, Koivisto, Sirkka, & Kiili, 2012; McCallum, 2012; Confalonieri, Guandalini, Da Lio, & De Cecco, 2012).

Having real possibilities to be mentally, physically and socially active is an important part of well-being in all ages. People with special needs, like cognitive or physical limitations, often feel unnecessarily disabled because of attitude and belief prevailing in the environment, including care professionals. To break the unnecessary impediments, new means and methods are required. Elements of entertainment and therapy content can be put together into mobile games, such as four games investigated in this study, to make games become tools for rehabilitation that is adoptable for anyone in need (Leinonen et al., 2012).

Several studies show that both physical exercise and game play have positive effects on people, including older adults or people with learning disabilities, who are combating serious depression or even Alzheimer's disease (e.g. Fairchild & Scogin, 2010; Geda et al., 2010; Spector et al., 2003; McCough et al., 2011; Merilampi, Sirkka, Leino, Koivisto, & Finn, 2014). Findings from scientific research studies show that, in general, playing video games can lead to changes in an individual pleasure, vigilance, dominance, and therefore improving the overall experience of well-being. In the case of older adults, simple and easy to play video games are well accepted, as the games were found to be able to create positive feelings and enjoyment (Khoo & Cheok, 2006; Koivisto, Merilampi, Kiili, Sirkka, & Salli, 2013; Sirkka, Merilampi, Koivisto, Leinonen, & Leino, 2012; Snowden et al., 2011). Even a few minutes of regular game playing exercise on daily basis can generate cognitive benefits, improving skills required to enhance performances like attention and concentration (Gao & Mandryk, 2012a). This knowledge has inspired the Well-being Enhancing Technology research group (WET-RG) to create games that combine physical movement with cognitive impetus, and then testing the games in several target groups.

In Finland, the WET-RG at Satakunta University of Applied Sciences focuses on generating gamification tools to activate and assist people with special needs. Instead of investing in design-for-all, WET-RG chose to design for somebody. This chapter presents findings of trials on four different cognitively stimulating mobile games, where the games were tested with different target groups. The chapter also

23 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/accessible-mobile-rehabilitation-games-for-special-user-groups/208028

Related Content

Assessing Past, Present, and Future Interactions with Virtual Patients

Richard E. Ferdig, Katherine Schottke, Diego Rivera-Gutierrez and Benjamin Lok (2012). *International Journal of Gaming and Computer-Mediated Simulations* (pp. 20-37).

www.irma-international.org/article/assessing-past-present-future-interactions/74791

Libraries and Video Games: Why?

(2015). *Integrating Video Game Research and Practice in Library and Information Science* (pp. 133-146).

www.irma-international.org/chapter/libraries-and-video-games/125380

Application of Gamification in Modern Education

Adnan Ahmad, Furkh Zeshan, Muhammad Hamid, Rutab Marriam and Alia Samreen (2022). *Handbook of Research on Promoting Economic and Social Development Through Serious Games* (pp. 60-75).

www.irma-international.org/chapter/application-of-gamification-in-modern-education/300623

The Relation of Motivation Factors for Online Games With Personality Disorders, Addiction, Shyness, and Loneliness in Kuwait

Hasan Abbas (2022). *International Journal of Gaming and Computer-Mediated Simulations* (pp. 1-24).

www.irma-international.org/article/the-relation-of-motivation-factors-for-online-games-with-personality-disorders-addiction-shyness-and-loneliness-in-kuwait/295873

Game Mods: Customizable Learning in a K16 Setting

Elizabeth Fanning (2009). *Handbook of Research on Effective Electronic Gaming in Education* (pp. 1390-1399).

www.irma-international.org/chapter/game-mods-customizable-learning-k16/20155