

Chapter 80

Online Social Exergames for Seniors: A Pillar of Gamification for Clinical Practice

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ABSTRACT

The population is getting older, and the resources for care will be even more limited in the future than they are now. There is thus an aim for the society that the seniors can manage themselves as long as possible, while at the same time keeping a high quality of life. Physical activity is important to stay fit, and social contact is important for the quality of life. The aim of this chapter is to provide a state-of-the-art of online social exergames for seniors, providing glimpses of senior users' opinions and games limitations. The importance of the motivational techniques is emphasized, as well as the impact that the exergames have to seniors. It contributes to the book objectives focusing on current state and practice in health games for physical training and rehabilitation and the use of gamification, exploring future opportunities and uses of gamification in eHealth and discussing the respective challenges and limitations.

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INTRODUCTION

An increase in the life expectancy and decrease in birth rate cause an ageing population and according to the UN reports the rate of population ageing in the 21st century will exceed that of the previous century. Older people (aged 60 years or over) increased from 9.2 per cent in 1990 to 11.7 per cent in 2013 and will continue to grow as a proportion of the world population, reaching 21.1 per cent by 2050. A continuous increase on the number of “oldest old” (aged 80 year or over) is expected, reaching 19 per cent in 2050 from 14 per cent in 2013 (United Nations - Department of Economic and Social Affairs Population Division, 2013).

Healthcare is costly and all countries face budget constraints, so spending more money is not the solution. Policy makers and health professionals believe that the solution lies in an active and healthy ageing (*White Paper: “Together for Health: A Strategic Approach for the EU 2008-2013”*, 2007). Services for each individual’s whole-person need are emerging and should prolong the time elderly individuals can live autonomously and healthily (Berry & Bendapudi, 2007).

The use of information and communication technology (ICT) is an emerging field in active and healthy aging trying to create better conditions of life for the older adults and to strengthen the industrial opportunities. This includes the use of games for keeping seniors active and healthy in the form of exergames and gamified applications in combination with sensors and motion devices.

This new era of research gives rise to a multitude of challenges. Techniques, methods and strategies that are already applied in different domains are gathered in order to provide state-of-the-art games which will enhance the physical activity of seniors. Despite the fact that a lot of studies engage research on how a health game contribute to behaviour change, patients’ self-management of care, and adherence to care, remain an open research field (Baranowski, Buday, Thompson, & Baranowski, 2008; Honka, Kaipainen, Hietala, & Saranummi, 2011; D. King, Greaves, Exeter, & Darzi, 2013; Strong, Tulu, Agu, & He, 2014) in order to be applied properly in the target group of seniors. Persuasive games and motivational strategies are starting to be applied in games for physical activity for seniors (Ellen Brox, Luque, Evertsen, & Hernandez, 2011; Kort, IJsselsteijn, Eggen, & Hoven, 2005), but complete frameworks which prove their effectiveness are still missing.

This Chapter is structured as follows. Initially an overview over games that are used by seniors for exercise are described. Mainly proprietary but also a few open-source games can be categorized in game types, providing the current trends. Many of those are normally not played online, although some offer online solutions too. Gamification is also being researched as a current trend in exergaming. The following section will identify the existing research that takes (or took) place through relevant EU and national projects. A review of those projects reveals the research gaps which need to be fulfilled in the future. An analysis of general requirements and an investigation into the different technology possibilities is following. The next section is focusing on the impact of exergames for seniors. This section strengthens the knowledge regarding improvements that exergames can have for seniors, thus providing the ground to build on. Physical activity can also improve the mental health and will be included in the key issues for possible positive contribution of exergames. The following section will focus on social aspects which have been proved to be an important factor of everyday life, especially for seniors. This section records the existing efforts on the inclusion of this aspect into the exergames. Motivation, on the other hand, is really important to keep the seniors to frequently play the exergames. Persuasive techniques that are used in exergaming are recorded and the connection with social aspects is emphasized. Last but not least future challenges and research questions will be presented in order to further boost the rapidly developing area of games in healthcare.

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