Application of a rehabilitation game model to assistive technology design

J Boureaud[1], D E Holmes[2], D K Charles[2], S McClean[2], P J Morrow[2], S McDonough[3]

[1]Faculty of Science and Technique, University of Limoges,
123 Avenue Albert Thomas, Limoges, FRANCE

[2]Computer Science Research Institute, [3]Institute of Nursing and Health Research,
Ulster University, UK

justine.boureaud@etu.unilim.fr, holmes-d2@email.ulster.ac.uk,
{dk.charles, si.mcclean, pj.morrow, s.mcdonough}@ulster.ac.uk

ABSTRACT

Games are increasingly used by physiotherapists in rehabilitation and the gamification of rehabilitation processes is an increasingly common practice. A key motivation for injecting playful or gameful activities into rehabilitation is to enhance engagement for home rehabilitation exercises by making them more fun. Multi-disciplinary cooperation is important to designing gameful activities. However, system design and development can be challenging between software engineers, health professionals, and academics due to terminology and knowledge differences. Sometimes skill and knowledge levels are also not optimal within the team. In both cases a comprehensive Rehabilitation Game Model (RGM) built on established principles, with an associated tool, can facilitate an effective design process. Factors that can be missed without use of a structured process include the potential impact of symptoms and variation in user demographic, personality or interaction preference. Our RGM helps game designers put a greater focus on variations between people in designing rehabilitation games. In this paper we provide an overview of the RGM and extending it to include rehabilitation aspects. We apply it to upper arm stroke rehabilitation. We present a representation of the output from the RGM that can form the basis for advice and guidance to serious game designers of upper arm stroke rehabilitation games.

Full papers will be published in the Conference Proceedings and will be freely available to delegates at the conference and online on September 20, 2016.