

Yes Wii Can!

Using digital games as a rehabilitation platform after stroke – The role of social support

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I. INTRODUCTION

A CVA or stroke is frequently a life changing event for both the person suffering the CVA as well as their immediate family. During the chronic phase, many stroke survivors return home where they are cared for by their partner. What was normal before may have become completely impossible or has to be re-learned. Patients will have to find a new balance in their living routine, also redefining their relationship with their spouse and their children, especially those living at home. Depression after stroke affects approximately one third of stroke patients, either as a consequence of the disrupting effects of stroke on the brain, or because the patient is going through a phase of bereavement, through loss of physical and mental abilities, job, income, status, respect, and even relationships. Also, partners of stroke patients run an increased risk of becoming depressed, which is related to depression and a low level of general activities in the patient [1]. Motivating a patient to become more active again is a significant challenge, but has tremendous potential benefits, both for patients as well as their immediate family and caretakers.

II. NEED FOR SOCIAL SUPPORT

At Eindhoven University of Technology we focus on facilitating people's continued rehabilitation at home using digital games as a rehabilitation platform. As a first step we have recently conducted a requirements analyses from which we concluded that: (1) social support is critical for patient motivation in order to adhere to the necessary regime of rehabilitation exercises in the chronic phase of CVA, (2) there is a perceived difficulty within the intimate social network around a patient (family, friends) in (re)connecting to the patient, and there is a need to engage in meaningful activities with the patient, (3) technology is not yet available that is specifically designed to support such social engagement with the larger social circle around CVA patients.

III. MULTI-PLAYER GAMES AS SOCIAL SUPPORT

Social support has a substantial positive influence on rehabilitation [2]. High levels of social support are associated with faster and more extensive recovery of functional status after stroke. It is here that the digital game platform provides opportunities for interaction beyond the scope of repetitive exercises. Utilizing the multiplayer aspect of digital games may

increase social connectedness and be a great motivator for a patient to keep practicing. The patient could connect to other patients in order to compare progress, share stories, and provide or receive support. At the same time, the patient's partner or children could join in, playing their own role within the game, and restoring some of the communication that sometimes has been lost in the family. The game could additionally provide a joint topic of conversation after it is finished. Moreover, physical presence is not required. A larger circle of family, friends, or strangers, who would normally not be able to provide substantial social support, due to physical distances, can now interact with and motivate the patient.

IV. ASYMMETRICAL GAME DESIGN

A defining feature of digital games is its power to motivate people to engage in, and keep returning to, a specific task. Of course not just any game would be suitable for this purpose. An important factor will be the ability to provide a level playing field, e.g., grant the patient some "super powers" that will make him an equal match in a competitive game. An inspiring project in such asymmetrical game design is the game 'Age Invaders' [3] where elderly persons successfully interacted with children, as both groups were given competencies that suited their abilities. Games may also allow for co-operative play modes. Multiple patients may collaborate on a difficult quest, or patients can be empowered to assist their children in beating an opponent. In our research programme, we aim to make necessary rehabilitation exercises part of an engaging interactive multi-player game so that people don't realize they are doing exercises. Instead they are having fun together. In sum, although digital games are already being explored for their motivational potential, it is the untapped social dimension of games we think can be of crucial importance in reconnecting patients to their social environments and providing an additional incentive to engage in rehabilitation exercises.

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