

Using elements of escapism and fantasy in serious games for rehabilitation of patients with back pain

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ABSTRACT

Recent studies have evidenced that escapism can be used as a coping strategy for patients in pain. Video games can provide means of escapism through interactivity. In physical rehabilitation one of the important factors to keep person connected to physiotherapy is motivation. Serious games can be designed for the specific rehabilitation of patients.

In this study we will be placing our main focus on fantasy aesthetics and incorporating escapism technique using fantasy aesthetic to motivate patients of back pain to stay connected to the rehabilitation process.

CCS CONCEPTS

• Health • Digital Games

KEYWORDS

Serious games, Escapism, Fantasy, Physical Rehabilitation

1 Introduction

Escapism, i.e a “way of avoiding unpleasant or boring life” [1] is used as a therapy to avoid negativity and relax people by breaking their monotonous routine and leading them to enjoy their fantasy world [2]. Activities such as reading, playing games, watching television or browsing social media can all help disrupt the mundane day-to-day routine and provide an escapist route, however, games provide a more interactive, exciting, challenging and thrilling platform [3].

Serious games are a type of digital games that are created not just for entertainment but to achieve an additional goal that could be related to health or education [4]. Serious games play a very constructive role by providing an engaging and motivating experience for the user and allowing them to break from reality.

The focus of our research is designing and developing a serious game that relies on fantasy and escapism to help with user motivation and engagement for the rehabilitation of patients with lower back pain. In this paper we will share the process for doing this research.

2 Background

Physical rehabilitation is a branch of medicine that helps patients to regain physical abilities using specific exercises based on the condition of the patient [9]. It has proven to be a useful method to treat numerous back and limb pain conditions [10]. Conventional physiotherapy methods are useful but have several limitations such as low motivation of patients, shortage of therapists, fixed appointment times, travel to rehabilitation centre location, [11] [12] and unsupervised exercises [13]. In the UK alone, approximately £10 billion is used each year just for treatment of back pain [14].

One of the major limitations in rehabilitation of patient is motivation of patient to do exercise. Serious games using fantasy as mode of escapism can be used to keep the patient motivated and engaged [15].]. The player’s own imagination plays an important role in keeping them connected to game so that it is not perceived as a monotonous repetitive practice [16].

Physical rehabilitation using digital games is an active area of research. The majority of research in this area has focused on stroke, trauma, spinal pain, arthritis and neurological injuries whilst lower back pain remains a relatively less research area.

According to Alazba et al. [5], 80% of people experience back pain once in their life, and in adults, back pain is considered to be the primary reason for disability.

Within limits, video games can provide a healthy escapist experience to players [6]. The fantasy aesthetic plays a major role in user engagement [7]. In video games, escapism through fantasy is mainly achieved by creating a different world that allows the player to forget about the real world, creating a 'safe space' allowing one to deal with real world issues [2].

The greater engagement that fantasy and escapism instill in games can be used to enrich the serious games experience as well; serious games are a type of game that aim to achieve one additional goal besides entertainment which could be health or education related. Serious games are being used in many health-related application for rehabilitation purposes where health related behaviors are positively affected by such games [8].

Given its significant positive impact on patients' life, we are using escapism and the fantasy aesthetic in serious games to engage and motivate patients with back pain to perform their rehabilitation exercises.

3 Methodology

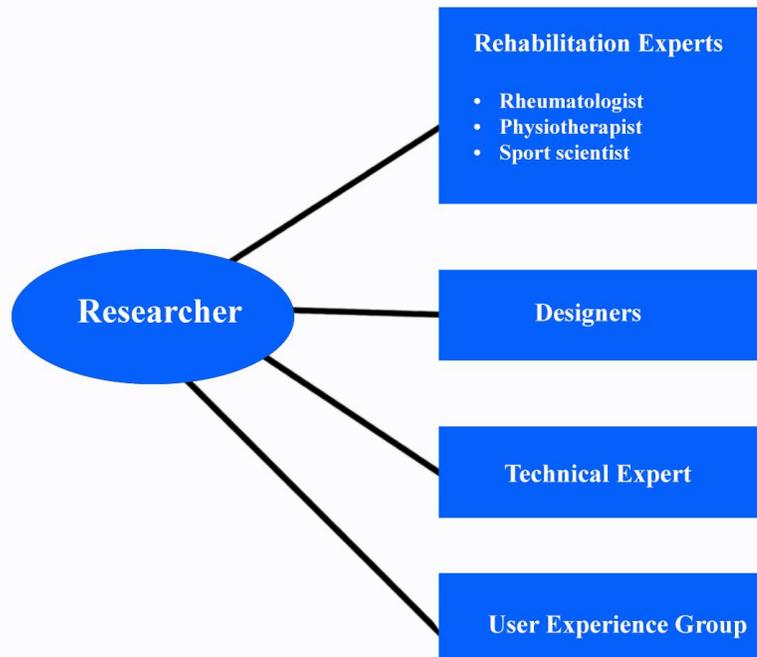


Figure 1: Participants involved in co-design

In [Figure 1](#) all the expected involved groups are identified with whom back and forth communication is expected till the final product is being made. The study initial discussions took place between the medical experts, including a consultant rheumatologist and physiotherapists that helped identify and inform the problem area. The target group was identified as being 18–55-year-olds with lower back pain. Follow-up discussions, informed the physical therapy and exercises required for the patients with lower back pain.

We also had joint meetings with physiotherapists and sports science academics to explore what interventions were currently being used for the rehabilitation of patients with lower pain. We explored the level of accuracy as well as limitations of current motion capture techniques and are in the process of developing a criteria for choosing a solution that would provide optimal accuracy whilst being least intrusive for the patient.

To inform the game design and aesthetic aspects, we will be conducting focus groups and a questionnaire survey of target age group. A pilot game will be developed based on these user insights that will also incorporate the rehabilitation exercise regime. This game will then be checked and validated by the medical experts and tested by volunteers in the presence of a physiotherapist. The volunteers will be asked to do a user-experience survey, and, game refinements will be made based on the advice of the medical experts and the results of the user-experience survey.

4 Conclusion

Working with the medical professionals have provided us with a roadmap for the physical therapy that we need to incorporate in our game as well as identifying the key problem area. The user involvement and user-experience survey will further enable us to create a game that is engaging and enjoyable for this particular age group.

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