



Review

The Nintendo Wii as a tool for neurocognitive rehabilitation, training and health promotion



Tamires Marinho Pessoa*, Danielle Sousa Coutinho, Valeska Martinho Pereira, Natalia Pinho de Oliveira Ribeiro, Antonio Egidio Nardi, Adriana Cardoso de Oliveira e Silva

Laboratory of Panic & Respiration, Institute of Psychiatry, Universidade Federal do Rio de Janeiro (UFRJ), INCT Translational Medicine (CNPq), Brazil

ARTICLE INFO

Article history:

Available online 6 December 2013

Keywords:

Video game
Mental health
Therapeutics
Rehabilitation
Cognitive therapy

ABSTRACT

Health professionals have used virtual reality as an aid for several types of treatment. Given that virtual reality systems are expensive and not always available, a more accessible type of virtual reality technology is video games. The Nintendo Wii™ (NW) is a video game system that uses virtual reality technology, as defined by Deutsch, Borbely, Filler, Huhn, and Guarrera-Bowlby (2008), which may be used for health promotion. The Nintendo Wii™ also provides an opportunity for social interaction; thus, it is a promising tool with great potential for the treatment of specific disorders.

The aim of this article is to evaluate the ways in which the Nintendo Wii has been used to treat specific disorders or to promote cognitive or physical improvements through a review of the literature. The results have shown that the NW is a potentially useful tool in some therapeutic treatments that can be used with people of diverse social statuses and tastes. Despite the positive initial results, further studies are required to provide a better evaluation of video game usage in therapeutic programs.

© 2013 Elsevier Ltd. All rights reserved.

Contents

1. Introduction	384
2. Methods	385
3. Results	386
3.1. Self-image and avatars	386
3.2. Cerebro vascular accidents	386
3.3. Motor behavior	386
3.4. Cognition	388
3.5. Rehabilitation of children and adolescents	389
3.6. Depression and sclerosis	390
3.7. Retirement homes	390
4. Discussion	390
5. Conclusions	391
Financial and competing interests disclosure	391
References	391

1. Introduction

Virtual reality (VR) is defined as a type of interaction with a computer that offers the user an experience that can be compared

to real situations in three dimensions in a virtual environment (Deutsch, Borbely, Filler, Huhn, & Guarrera-Bowlby, 2008). For this interaction, software (in this case, games) and hardware (structural physical components) are developed and produced to build the technology in video game consoles and joysticks to offer the user the control of a graphic environment in which to interact (Ackerman, Kanfer, & Calderwood, 2010).

* Corresponding author. Address: Universidade Federal do Rio de Janeiro, Laboratório de Pânico e Respiração, Rua Visconde de Pirajá, 407/702, Rio de Janeiro, RJ, CEP: 22410-003, Brazil. Tel.: +55 21 2521 6147; fax: +55 21 2523 6839.

E-mail address: tamiresmarinho@aol.com (T.M. Pessoa).

The range of movements that the software is able to reproduce is almost limitless. Aside from that, software can also measure the intensity and duration of performed exercises, offering the user not only a strong connection with the software but also the safety of a controlled activity that encourages further exploration of the virtual environment (Joo et al., 2010). Nevertheless, the majority of these virtual reality systems are not commercially available; in fact, when these systems become commercially available, they are expensive (Deutsch et al., 2008). Video games are a cheaper and more accessible way to use this type of technology (Ackerman et al., 2010).

The Nintendo Wii™ (NW) video game console was first commercialized in late 2006 and introduced a new style of VR. It has a joystick (“wiimote”) containing an accelerometer that records movements in three dimensions and broadcasts data to the console, which can communicate with the joystick and also obtain updates on the internet. According to Plow and Finlayson (2011), one of today’s most widely used video game consoles for home use is the Nintendo Wii™. The games are considered to be easy and are aimed at different ages and educational levels (Ackerman et al., 2010). An attractive feature of these games is that they are intended to be fun and interactive, encouraging people to play through a wide variety of motivational tools, such as music, play-back and bonuses. As a result, the users are motivated to improve their performance (Anderson, Annett, & Bischof, 2010).

The games can have a variety of goals. Cognitive games prioritize activities that involve attention, memory and movement skills. Some of these types of games are focused on movement-skills tasks, and others offer the possibility of social interaction.

Additionally, there are also exergames, which are games that include a significant amount of exercise using the capture device to sense physical movements. All these games can be played at home, offering customers a better experience through the console.

Through a literature review, the purpose of this article is to analyze how the NW games have been used in the neuropsychiatric field either for cognitive rehabilitation or for the improvement of the quality of life of patients and to understand how the NW games have been used in the treatment of psychiatric signs and symptoms. Health professionals are increasingly interested in the innovations and cost-benefit ratios of new treatment approaches (Fernández-Aranda et al., 2012). The NW games are designed for entertainment; however, they can be a useful in healthcare. The authors believe that the use of video games in therapy can somehow help patients explore a satisfying world (Langlois, 2011) and extend this pleasant experience to the real world. An example of this is the use of video games for depression. Studies have shown that recreational activities combined with physical activity can improve not only the framework of depression but also the quality of life and cognitive function of patients (Rosenberg et al., 2010). It can be a useful psychiatric tool; a study showed that video games helped 18 patients relieve their frustrations, learn relaxation techniques and develop their own emotional regulation (Fernández-Aranda et al., 2012). Although the use of video games is typically associated with young people, the majority of studies involve participants in early adulthood to old age; this includes studies involving depression, risk of falls and rehabilitation. There are also descriptions of working with children and using video games to improve adolescent health. The use of videogames to promote health and physical activity has also shown good results; a small increase in physical activity in children (Maloney, Bethea, Kelsey, Marks, et al., 2008) and in the elderly was obtained (Studenski et al., 2010). Although studies have proved that playing video games help people to temporarily turn off the problems of everyday life and to return to those problems with a greater focus on solving them, for people who play more than 3 or 4 h per day, the beneficial effects of the game are drastically reduced (KENT,

2001). For occupational therapy, video games have been used for the elderly in nursing homes, and studies have obtained excellent results for increasing the quality of life and increasing the incentive to drive (Hsu et al., 2011). As we can see, video games are used in several areas of healthcare. The literature includes studies involving physical and mental health, and the results have been encouraging but are not yet conclusive. In recent years, the islands have been updated and are accompanied by a wide range of games that may be a good tool for both health professionals and the patients themselves. With this in mind, we designed a study focused on the Nintendo Wii, the first console to have a technology similar to virtual reality technology and to make the island more interactive. Because this technology has existed for several years, it offers a wider range of games that can be used in healthcare, which is why this review is focused on the Nintendo Wii.

2. Methods

This paper aims to assess, through a literature review, how the NW has been used in different health contexts and with different populations as an adjuvant the rapyor in innovative ways to contribute to the engagement of patients in practices that benefit their health status. To access anytype of NW use for health purposes, we searched using the terms “Nintendo Wii” and “Wii”. Thus, any articles that existed in the databases regarding the NW were included. There was no linguistic or temporal restriction on the literature search. There was no population or design restriction for inclusion of articles in this study. The inclusion criteria for the articles were the discussion of any aspect related to mental health and the involvement of the NW or its components. Research was conducted by two independent researchers in March 2013 using the following databases: Web of Knowledge (ISI), PubMed and Psycinfo.

These arch found 551 articles initially, and all were in English. Cross-referencing was carried out to eliminate repetitions of articles found in multiple databases. Articles focusing on the following subjects were excluded: accidental injuries generated by NW (16), studies on aspects related to technology equipment (engineering or development of parts) or marketing strategies, no relation with the field of health (8), software/hardware development (159) and

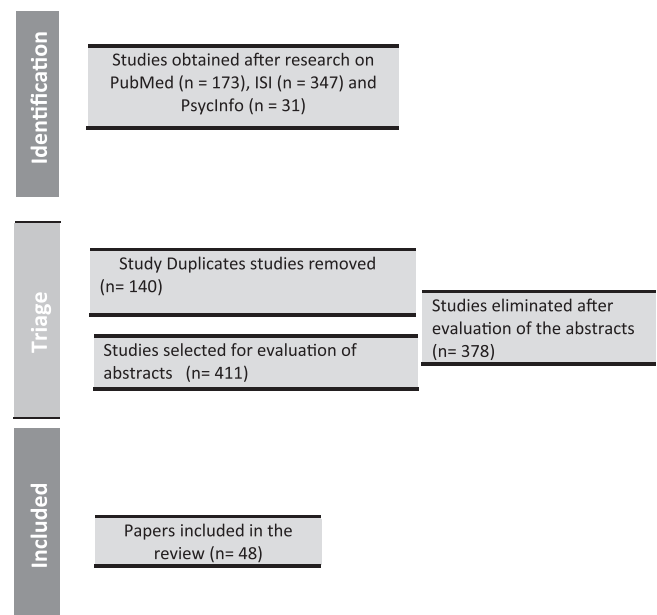


Fig. 1. Flowchart.

Download English Version:

<https://daneshyari.com/en/article/6839371>

Download Persian Version:

<https://daneshyari.com/article/6839371>

[Daneshyari.com](https://daneshyari.com)