

Game Therapy for Stroke Patients

Stephani Inggrit S.D.¹, and Ridwan Sanjaya²

Game Technology Program, Computer Science Faculty
Soegijapranata Catholic University (SCU), Semarang, Indonesia

¹yuuki_shinjou@yahoo.com, ²ridwan.sanjaya@gmail.com

Abstract: Most people probably already understand several the benefits of playing games, but they may be surprised if they find medical and therapeutic benefits from gaming. One of the examples is Nintendo Wii utilization for patient treatment.

Nintendo Wii is a game console that enables its players to play the outdoor activities such as golf, bowling and skateboard. It can be used for people who need treatment to do those kind activities. Because of its fun nature, game therapy has many advantages over conventional therapy. This treatment can help people who suffered paralysis and stroke or children who suffered autism or dyslexia; and also have function as an alternative anesthetic in minor operations. This paper will discuss the advantages of game therapy, especially for stroke patients and explain the game that made for this specific purpose, Circus Challenge.

Keywords: Circus Challenge, Game, Medical field, Nintendo Wii, Therapy

I. INTRODUCTION

Nowadays, people's view about game had started to change. Game is not just considered as an entertainment or a pastime anymore [1]. But, it is still difficult for us to think that actually, game also had an important role in the medical field. Some researches proved that game can help patient therapy [2].

After stroke, patients can recover their control of their weak arm or hand even

after a long time, but this require months of expert and daily therapy. Conventional therapy such as exercises or weight lifting often hurt, continuous and boring. Providing the support and motivation to make people carry out such a demanding program is costly and difficult and often limits their recovery. In United Kingdom, 150,000 people with stroke lead to a cost of care and loss of income of £4 billion [3].

Because of that, recently, game often used to solved the problem. Their non-reliance on passive and repetitive movements gives them some advantage over the conventional therapy methods [4]. Futhermore, game has the ability to make the players forget about their pain. There is evidence that many terminally-ill children who play games need fewer painkillers.

II. HERAPY

There are some clear differences between preventions, treatments, and cures. Prevention is a method to avoid injury, sickness, or disease, but did not help someone who is already ill [5]. The example of preventions is vaccine that was given when the children were born. It is given to avoid a specific illness and will not work for someone who already had that illness. For people who already had the illness, treatments and cures are needed.

Treatment treats a problem that may lead to its cure, but is often work just as long as the treatment is continued, especially for chronic diseases [5]. The example is that there was no cures for specific types of cancer, but there still a treatment that may slower the damage suffered from them. Treatments did not always work. Like in

some cases, chemotherapy may cure, but it did not always worked for all cases of cancer.

Cures are treatments that reverse an illness completely or end a medical condition permanently. Many diseases that cannot be cured still could be treated.

Therapy is an attempted remediation of a medical condition usually following a diagnosis. There are 3 kinds of therapy [5]. The first was preventive therapy or prophylactic therapy, which is a treatment to prevent a medical condition to occur, such as vaccine. The second one was abortive therapy, which is a treatment to stop the development of a medical condition from progressing any further. Medicine used at the earlier stage of the symptoms was one of the examples from abortive therapy. The last was supportive therapy, which did not treat nor cure a medical condition, and just used to increase the patient comfort [6].

III. GAME THERAPY

For understanding the effects of game therapy in stroke patients better, there is one example of game that made especially for this purpose, named Circus Challenge that developed by neuroscientists at Newcastle University. This is the first title they developed from a series of motion controlled games to make stroke rehabilitation more fun. This game let patients digitally throw pies, tame lions, juggling, plate spinning, high diving and flying the trapeze to help them build strength and regain their motion skills. As players progress, the game will increase its difficulty to match pace with their recovery and gradually build up the strength and skills of the patient. Patients also can play the game with their relatives and friends. Research has already shown that 45 minutes of exercises a day, everyday can lead to an improvement that people can care for themselves and return to work [3].

IV. SYSTEM MODELING

Using wireless controllers, players can try to do some activities such as lion taming, juggling, plate spinning, high diving and flying the trapeze through increasingly

difficult levels. The movements required are designed to gradually build up the strength and skills of the patient.

Besides, to provide home therapy, the developing team planning to build a system that will allow therapists to monitor patient progress remotely so their therapist can watch the patient's progress remotely and help the patients to plan their therapy menu.

Data analysis from 12 studies with 195 patients ranged from 26 to 88 years old done by Dr. Gustavo Saposnik, the director of the Stroke Outcomes Research Unit at the St. Michael, Toronto University prove that games had a significant effects towards minor stroke patients.

In the research, they choose random patients and give them two different types of therapy, game therapy and conventional therapy. The result of that research was that patient with game therapy have progress 4.89 times faster than patients with conventional therapy. [7]

V. CONCLUSION

Game had an important role in medical field as a tool for patient treatment. Because of its fun nature, game therapy had an advantage over conventional therapy that repetitive and boring. It could make the patients forget their pain and enjoy the therapy more. It also gave them motivation needed to continue their therapy longer.

Some researcher had already proven that patients with game therapy had faster progress than patients with conventional therapy. The gameplay for this kind of therapy should be developed to improve the three important factors in improving their health, which are the happiness in doing the therapy, the joy to play the game, and the motivation for next therapy.

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