Spellcasters: Physical Therapy Re-Imagined

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BACKGROUND

Almost 800,000 people suffer a stroke each year in the U.S. and approximately two-thirds survive and require rehabilitation. Stroke is a leading cause of serious long-term disability. Between 2017 and 2018, stroke-related costs in the U.S. were about $53B. This total includes the cost of health care services, medicines to treat stroke, and missed days of work. According to the U.S. National Institute of Neurological Disorders and Stroke, research shows the most important element in any neurorehabilitation program is carefully directed, well-focused, repetitive practice, which is the same kind of practice used by all people when they learn a new skill, such as playing the piano or pitching a baseball. The emergence of gaming technologies, such as videogames and virtual reality (VR), opens the door to a variety of possibilities for neurorehabilitation activities.

TECHNOLOGY DESCRIPTION

Researchers at UC Santa Cruz (UCSC) developed “Spellcasters”, a virtual reality physical therapy experience aiming to support stroke patients in their quest to regain arm movements. Once inside the game, players perform therapeutic arm exercises while holding a controller, which casts spells inside the game to create gardens. Trace magical spells and get instant feedback in VR. Decorate your own garden and interact with the animals. You can also create your own customized scalable spells. Spellcasters has a multiplayer option so that the stroke patient can play with other people, including other patients, physical therapists, family, and friends.

APPLICATIONS

VR-based physical therapy

RELATED MATERIALS

- Duval, Jared & Thakkar, Rutul & Du, Delong & Chin, Kassandra & Luo, Sherry & Elor, Aviv & El-Nasr, Magy & John, Michael. (2022). Designing Spellcasters from Clinician Perspectives: A Customizable Gesture-Based Immersive Virtual Reality Game for Stroke Rehabilitation. ACM Transactions on Accessible Computing. 15. 10.1145/3530820. - 08/19/2022

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OTHER INFORMATION

KEYWORDS

rehabilitation, neurorehabilitation, stroke, stroke rehabilitation, digital therapeutics, therapy, immersive virtual reality, immersive VR, VR, gaming, physical therapy, e-therapy, teletherapy

CATEGORIZED AS

- **Computer**
  - Software
- **Medical**
  - Rehabilitation
  - Software

RELATED CASES

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