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The Impact of Virtual Reality-based Therapies on Pain and Range of Joint Movement in Burn Injuries

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Perspective

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INTRODUCTION

Burns are lesions that form in living tissues, primarily affecting the human body's largest organ, the skin. They are caused by various agents and can range from mild to severe lesions. The World Health Organization (WHO, Geneva, Switzerland) ranks this pathology as the third leading cause of accidental death worldwide. Every year in Spain, approximately 1000 patients are admitted to major burn units of referral hospitals. Burn injuries account for 6-10% of emergency department visits. The most common complications are pulmonary failure, acute renal failure, infection of the affected parts, sepsis, or multiorgan failure. All of these complications can be fatal if left untreated. Those who survive typically have physical, functional, aesthetic, and psychological sequelae that interfere with the patient's life. Pain is one of the most disabling sequelae in these patients, leading to poor posture and a reduced range of joint movement.

To avoid all of these complications, a series of intensive care-based preventive measures must be implemented (mobilization and postural control). The goal of medical treatment is usually to prevent infection, promote healing, and avoid retractions and sequelae. All medical treatments are effective for the person's survival but do not result in a full and complete recovery.

DESCRIPTION

Burns have now become a problem that affects a significant portion of the world's population, causing a slew of physical and psychological changes [1-3] in those who suffer from them, as well as disrupting their routines and daily rhythms. Because of the complexities of these patients' conditions, treatment by a single specialist will not suffice. This multidisciplinary approach is critical because the complex treatment that people with burns require should aim for optimal recovery of function, allowing them to participate in society both psychologically and physically. According to scientific evidence, technological advances have aided in the rehabilitation treatment of burn patients, reducing pain during mobilisation and increasing motivation and participation in the entire process. As a result, virtual reality has been recommended as a tool for these patients.

Virtual reality (VR) has gained popularity in clinical research studies as a novel distractor technique based on the use of computers and other devices to recreate life-like settings in a digitalized world. It allows people to actively interact with this new environment in order to create an appearance of reality that gives the user the sensation of being present in it. This technique has been used to manage pain and distress during a wide range of painful medical procedures. Furthermore, the technique appears to be beneficial for a wide age range of paediatric patients [4,5] and is exceptionally well-suited for paediatric medicine, a difficult-to-manage population in clinical burn situations. VR is thus a technology with many interactive possibilities, particularly in an immersive approach related to 3D images and sound, which also allows for the incorporation of other human senses. Furthermore, perceptual VR can be both immersive and non-immersive.

CONCLUSION

Virtual reality is an immersive simulation technology that allows the user to interact with a three-dimensional (3D) image generated by the computer. The scenes are primarily visual and are manipulated using helmets, gloves, or other devices that capture the rotation and position of various body parts. The interactivity of virtual reality is made possible by a tracking system that tracks the Virtual reality requires three components for motor learning repetition, sensory feedback, and subject motivatio. Because plasticity is practice-dependent, repetition improves motor and functional skill learning. Virtual environments can provide massive and intense sensorimotor stimulation and feedback, which is required to induce brain reorganisation. Patient motivation

is achieved by emphasizing various activities that present the subject's therapy in a pleasant and engaging manner. Patients' movements and allows the user to feel involved in the virtual environment, providing the sensation of being there.

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