

Clinical Applications of Virtual Reality

Graded exposure therapy is a method of psychological treatment that is intended to help patients overcome their fears or memories of traumatic experiences. To apply this therapy, a psychologist will typically create a safe environment in which he/she can expose the patient to the things that they tend to fear or avoid. This environment can be real one or, as has become more popular lately, a virtual one. It has been shown that beginning with minimal exposure and then gradually increasing exposure over the course of many sessions can successfully reduce the patient's fear or avoidance. Virtual reality allows us to easily create a safe environment and gives us the ability to control the amount of stimulus that the patient is experiencing during each session.

The potential for VR to be used for therapy and rehabilitation purposes seems limitless with modern technology. Some of the best existing applications in these fields include:

- Treatment of phobias (fear of spiders, heights, flying, etc.)
- PTSD rehabilitation
- Pain distraction
- Therapy for various anxiety disorders
- Public speaking

One of the main reasons that VR can be so effective for these types of applications is due to the immersive nature of the experience. VR is great for pain distraction because the user gets the chance to focus his/her mind on this virtual environment and essentially block out stimuli from the physical world around them. The brain isn't focused on the painful procedure, therefore it becomes much more tolerable for the patient. For PTSD patients, VR allows one to enter the environment where they experienced trauma in a way that is completely safe for them. With the ability to fine-tune the amount of stimulus being applied in the environment, exposure therapy has been proven to help patients cope with these experiences and live a more normal life. Interaction is also very important. The more you allow the patient to interact with the virtual environment, whether it be through speech, gestures, sounds, etc., the more they will feel as though they are truly in that environment which adds to the immersive aspect of the application.

A significant issue with VR applications, especially ones that require the user to move around the virtual environment, is virtual sickness. Many users will experience physical sickness after extended usage of a VR application due to very slight lag between their physical movements and the response in the virtual environment.

My girlfriend is a student in vet school and one of the things I've noticed about her curriculum is how much anatomy they have to learn. Not just human anatomy, but that of dogs, cats, cows, sheep, pigs, horses, etc. I think it would be very interesting to see a VR application which would allow vet (or med) students to interact with a 3D model of some animal in order to identify different anatomical features. Perhaps some type of a virtual dissection could help this learning process. This could be helpful for students to learn the anatomy of more rare/exotic animals that maybe be difficult to acquire a real cadaver of for dissection.