

Virtual reality - in medicine

April 5, 2022 TECHNOSenior There are no comments HTC Vive , virtual reality

Virtual reality - in medicine

VR in medicine is used on a daily basis: in personnel education, surgical training, dentistry, in surgery planning, in the treatment of disorders and diseases, in patient counseling and many other applications, literally in every field of medicine.



For many years, the idea of virtual reality was mentioned only in literature and science fiction films. There was a lack of technology, knowledge and sufficient computing power to put it into practice. It was not until the beginning of the 90s that it was possible to ensure a sufficiently good visual and audio quality, as well as a quite realistic representation of physics. Even then, the use of VR was limited mainly to the entertainment, automotive and military industries. It was only in the 21st century that the technology of virtual reality developed enough to offer reliable virtual worlds with the help of efficient, convenient and affordable devices. Currently, the concept of virtual reality has found a new, practical application in various industries. It plays a particularly important role in medicine. Provides a virtual environment for therapy, rescue training or rehabilitation. It also serves as an educational platform for current and future healthcare professionals.



First aid course in 4HELP VR

Medical training in VR creates an area of fascinating opportunities. It not only touches the imaginations of science fiction fans, but also clinical researchers and doctors. Although the field is relatively new, there are more and more examples of the positive impact of VR on the lives of patients and the work of medics. Virtual reality can, for example, be used in the training of paramedics. It enables learning how to deal with emergency scenarios and high-risk situations in a simulated, virtual, and thus safe environment. Participants of such trainings, thanks to the training of appropriate reactions, become better prepared to deal with similar events in real situations.

HTC True Wireless Earbuds Plus test - great for long trips

The Wrocław-based 4HELP VR company used the potential of this technology and created a first aid course in virtual reality. The training was designed for all companies and educational institutions that benefit from health and safety training and first aid. 4HELP VR and HTC VIVE provide a reliable tool, thanks to which we will save time, reduce expenses and obtain unbeatable results. The set of equipment for virtual first aid learning consists of a phantom and a **VR VIVE Focus 3** set with proprietary software developed by a paramedic with 4HELP VR. The First Aid application allows you to undergo training and gain practical and effective life saving skills in a very short time.

The 4HELP VR program includes training in the following areas: safety at the scene of an emergency, emergency calls, cardiopulmonary resuscitation, the use of an Automatic External Defibrillator in CPR, lateral positioning and monitoring of vital functions, and dealing with traumatic injuries. The arguments in favor of conducting training using VR are:

- more possibilities expressed in a wider variety of simulations
- lower cost of conducting complete training

- the knowledge acquired in VR training is an experience that is very easy to reflect in reality

The latest research on virtual reality proves that if we experience something in VR, the next time our attitude and reaction to a threat in the real world will be faster, more self-confident, and therefore more effective. *



Treatment of depression in VR TierOne

Virtual Reality heals not only the body but also the soul. The proof of this is VR TierOne. The scientifically tested solution is dedicated in particular to people struggling with depression and anxiety, occurring alone or in the course of severe diseases such as depression, COVID-19, heart attack or stroke. VR TierOne was created as a therapeutic aid for patients, doctors, psychologists, physiotherapists and therapists. VR TierOne will also successfully help to ensure the mental well-being of both stressed employees and residents of nursing homes.

VR TierOne solution consists of three parts: **HTC VIVE Pro** goggles , computer and therapeutic program. The medical device allows you to go to the created Virtual Garden of Rebirth, full immersion in virtual reality and conducting effective therapy in these optimal conditions. The treatment is divided into eight sessions of 20 minutes each.

VR trains future generations of doctors

Used to educate students about diagnosis, treatment, rehabilitation, surgery, counseling techniques, and more, virtual reality in medicine helps train the next generation of healthcare professionals. Medical simulation technology has many advantages, such as allowing learners to test their skills without fear of making potentially life-threatening mistakes. Virtual Reality in Preventive Medicine and Counseling, on the other hand, can teach students to assess a patient's condition and provide insightful health feedback and guidance as part of the initial diagnosis.



What equipment to choose?

The right VR goggles are the basis for the success of any industry. Currently, we can find a fairly large selection of VR sets on the market, ranging from lightweight HTC VIVE Flow glasses that can easily fit in a jacket pocket, to portable HTC VIVE Focus 3 sets, which have a built-in battery and thanks to the latest technology, do not need a computer to operation, to the most advanced HTC VIVE Pro 2 sets with precise tracking of user movements using base stations located in the room. The VIVE offer also includes a wide selection of accessories that provide even more immersion and a more realistic experience.

VIVE Facial Tracker accurately tracks and maps the user's facial expressions in the VR environment. VIVE Tracker 3.0 movement tracking devices allow you to recreate the movement of each limb or torso, but can also be used to map the movement of a physical accessory from the real world in VR - a stethoscope, ultrasound head or even a lancet. Thanks to the VIVE Wireless Adapter, we will be completely free from cables connecting the VIVE Pro 2 to the computer.

The VIVE Pro Eye set, on the other hand, can reproduce the eye movements of the user, thanks to which the interlocutor or student can more accurately read the emotions and intentions of the lecturer, for example. There is also a whole lot of additional devices on the market, such as controllers that recognize the movement of individual fingers, or vests and haptic gloves, in which you can feel the physical touch or shape of virtual objects. New devices are also constantly being developed, responding to new needs that arise with the spread of VR applications in various areas of work and life.

The advantages of virtual reality in medicine are already indisputable. Its application in practical cases in health care has even greater potential. By providing a fully immersive environment that stimulates our various senses, medical treatment becomes less stressful and safer for both the patient and the

clinician. Although reaching for virtual reality is a relatively new trend in medicine, its constant development can be observed both in technological areas, but also in medicine itself.

Scientists have identified many of the beneficial effects brought by the use of VR technology. In addition, VR can be used in various areas of healthcare, offers a user experience in a controlled environment, also provides detailed 3D images, increases flexibility and training configuration options. However, the most important thing is that a potential error in the VR environment does not cost the patient's health or even life.

The article was written in cooperation with HTC VIVE