Current Stage Of VR Clinical Simulation

Definition:

VR Clinical Simulation allows medical professionals to train in a variety of clinical fields prior to working with real people by using VR technology, thus giving them more experience and preparation. It has been beneficial considering how difficult it is to train for live medical situations, such as brain surgery.

<http://engeniumstaffing.com/blog/files/How-Effective-Is-Medical-Simulation-Training-Using-AR-And-VR.html>

Benefits:

* **Decrease the complicated process of clinical simulation.**
  + It has been beneficial considering how difficult it is to train for live medical situations, such as brain surgery. AR and VR training technology allows health professionals to train in a variety of fields prior to working with real people, thus giving them more experience and preparation. In [a study to validate a Haptic VR education platform with the British Orthopaedic Training Association](https://www.fundamentalsurgery.com/wp-content/uploads/2019/01/FINALValidationversion2.pdf?fwd=cd&data=%7B%22emails%22:%7B%7D,%22phones%22:%7B%7D,%22first_name%22:%22Lance%22,%22timezone%22:%22Europe/London%22,%22title%22:%22Director%20-%20Clinical%20Simulation%22,%22company_fix%22:%22Healthy%20Simulation%22,%22email%22:%22lance@healthysimulation.com%22,%22email_work%22:%22lance@healthysimulation.com%22,%22company%22:%22Healthy%20Simulation%22,%22last_name%22:%22Baily%22%7D), 92.5% of participants agreed that, “the simulator would be a useful tool for rehearsal prior to an operation.” 90% agreed that “the simulator represents a useful training and assessment tool”.

<http://engeniumstaffing.com/blog/files/How-Effective-Is-Medical-Simulation-Training-Using-AR-And-VR.html>

* **Make the clinical simulation more accessible to medical students in developing areas.**
  + Although simulation-based medical education is a valuable tool in the acquisition and maintenance of knowledge and skills; simulators are often located in urban centers and they are not easily accessible outside these centers due to geographic, cost and time constraints. Unfortunately lack of clinical simulation training is more evident in rural areas and regions of the world with limited resources that do not have access to costly simulation laboratories, supplies, or trained instructors. By using VR, it can eliminate the distance and cost consuming of clinical simulation training.

Shortages:

* **The simulation is not as real as the real life experience.**
  + For example, the real human’s knee joint in the simulation are varies, and the weight of the tools in her hand didn't feel accurate in the VR simulation training.
  + "Right now [VR] is just another instrument or tool to give younger residents—not older residents because older residents are going to use more cadaver and live surgery—the basic surgical skill sets, such as understanding anatomy, tactile feel and understanding the steps of the procedure," Ranawat said.

<https://www.modernhealthcare.com/article/20180820/NEWS/180829997/virtual-reality-simulations-offer-medical-residents-hands-on-practice>

Not suitable for operation simulation for now.

Current Stage:

There are many XR technology companies are doing the simulation for medical field. But they are more focusing on the simulation stage, there is less information about tele-simulation and tele-cooperation.

* Osso (<https://ossovr.com/>)
* SimX (<https://www.simxar.com/>)
* Holoeyes(<https://holoeyes.jp/en/>)
* The VR/AR association(<https://www.thevrara.com/industry-committees>)