Virtual Reality

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Introductions

Courtney

Kristin

- Recreational Therapist at Special Tree Rehabilitation System, 7 years
- CMU Graduate (2011)
- CBIS (2013)
- Assistive Technology Professional-certified in 2017

- Recreational Therapist at Special Tree Rehabilitation System, 10 years
- Have been working in the field of brain injury for 22 years
- EMU Graduate (1996)
- CBIS (2011)
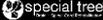
Objectives

By the end of this session:

1. Participants will be able to demonstrate knowledge of what Virtual Reality (VR) is.
2. Participants will learn why Virtual Reality can be beneficial to the TBI population.
3. Participants will learn how to develop a VR program within their own company.

What is Virtual Reality?

Virtual Reality is a 3D virtual environment that you can fully immerse yourself in. Through a headset, controllers, and a computer generated environment you can experience realistic images, sounds, and sensations, and manipulate objects in this virtual world.

Devices & Headsets

Mobile, Tethered, or Stand-Alone?

- **Mobile Headsets:**
  - Samsung Gear VR
    - $130

  - Google Daydream View
    - $99

- Google Cardboard
  - $15.00 (standard model)
  - Price ranges from $6.00-39.99 depending on model
  - Works with Android or iOS systems with screen sizes between 4"-6"
  - Need to download the Google Cardboard App
  - Great place to start if you're unsure if VR will work for you or your clients

Tethered Headsets (require a VR ready computer)

- Oculus Rift
  - $399

- HTC Vive
  - $499

- Sony PlayStation VR
  - $199
    (bundles $299)

Stand-Alone Headsets:

- Oculus Go 32GB
  - $199

- Mirage Solo with Daydream
  - $399

Special Tree's System

HTC Vive

- Most immersive "whole room" system
- More advanced motion controllers
- Accessories that you can add to controllers/headset

Populations

- TBI
- SCI
- Stroke
- Pediatrics
- Ortho
- Developmental disabilities
- PTSD/Mental Health population

Benefits

- Eye hand coordination
- Balance (sitting and standing, dynamic and static)
- Relaxation
- Increase interaction within their environment
- Vestibular
- Neuro re-education
- Reaction time
- Increased AROM head/ neck bilateral UEs and LEs
- Hand function

Benefits (continued)

- Visual perception scanning
- Sensory stimulation
- Topographic orientation
- Recreation
- Cognitive benefits (problem solving, sequencing, direction following)
- Community re-education
- Cause and effect

Contraindications

- Nausea
- Eyestrain
- Disorientation
- Motion sickness
- Some people can experience stress and anxiety after a short session
- Should limit time to 30 minutes. Take a break to come back to reality to rest the brain.

Why Virtual Reality?

- Interdisciplinary treatment modality
- Future of gaming/technology
- Is already being used in many facilities with success
- Keeps us current

https://i.cbc.ca/1.3010853.1433759435!/fileImage/httpImage/image.jpg_gen/derivatives/16x9_980/ottawa-hospital-virtual-reality-lab.jpg

How to use for Therapy

- Virtual Reality is just another therapy modality as an alternative to traditional therapy in the clinic.
- We work on the same functional skills but in a new innovative way.
- VR might motivate clients secondary to it being a "gaming" experience.
- Exposure therapy/PTSD

Experiences & Software

SteamVR Platform
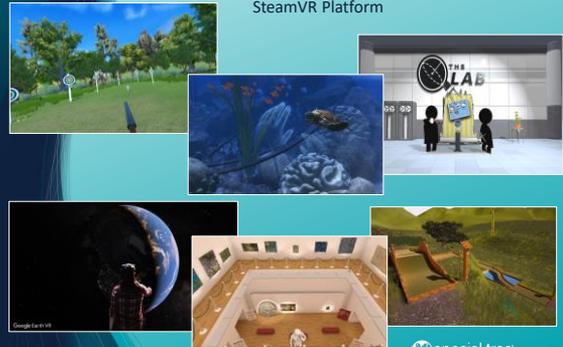
Adaptations

Adaptive Grips
$19.99

Controller Joy Stick
$20 or 3D printed

Eye Gaze

Vive Tracker
$99.99

HI5 VR Glove Business Edition
$999

Virtuix Omni Treadmill
$5,500-$6,200

Real Life Examples
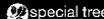
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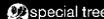
Occupational Therapy Sessions

- **Goals:**
  - Improvement of Bilateral Integration of upper extremities
  - Improvement of dynamic balance
  - Improvement of gross motor coordination
  - Improvements of eye-hand coordination

- **Feedback from therapist:**
  - "Taking him out of the traditional therapy environment and using an environment that was fun, creative, and out of the norm of the same repetitive therapy tasks we typically worked on was definitely beneficial. It allowed him to succeed in making gains in his goals".
  - "He enjoyed the immediate feedback that he received from doing well on the specific tasks he was completing"
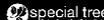
- Pediatric program
  - **Goals:** Improved decision making, direction following, coordination, processing, recall, etc.
  - **Feedback from therapists: "**Challenging but beneficial". Pediatric clients are working towards their goals while participating in a fun, different activity.
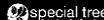
Hurdles

- Time (to setup software, download experiences, learn the system, and train staff)
- Frequent updates
- Lack of "therapy specific" experiences
- Quality of experiences
- Cost

Goals for Special Tree's Virtual Reality program

- Always evolving
- Continue adding adaptations and teaching our clients how to use VR independently as a leisure activity
- Outcomes
- **Driving simulator**

http://vrinflux.com/content/images/2015/12/72ZQZSI.jpg

https://www.amazon.com/Logitech-Dual-motor-Feedback-Driving-Responsive/dp/B00Z0AJWV98

Steps to Create a VR Program

- Determine interest, create team of therapists and staff, and set budget
- Find location for equipment (minimum space of 5' x 6.5')
- Research and trial devices
- Purchase VR compatible computer and VR device
- Download software and experiences
- Train staff
- Trial with clients
- Evaluate

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