Virtual Reality and Stroke Rehab

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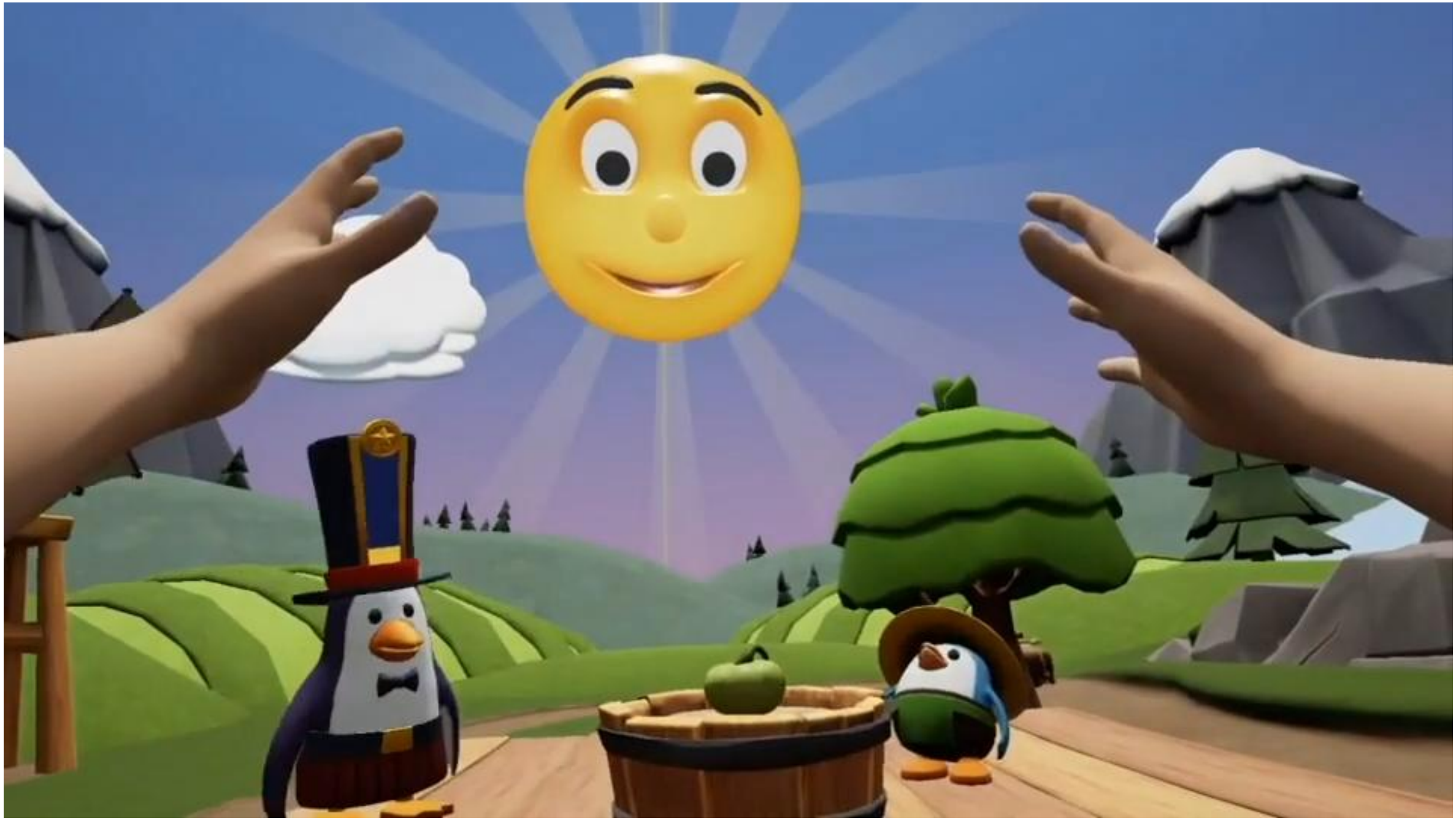

Purpose:

Introduce How the Use of Virtual Reality can Provide Clinical Staff with a New Way to Rehab Stroke Patients

Objectives:

Define immersive technology

Explain what Virtual Reality is and different ways it can be used in Stroke Rehabilitation

Describe patient interventions and modifications used to increase independence of the post-acute stroke patient as it relates to mobility, ADLs, and communication." how Virtual Reality can be used in Stroke Rehabilitation

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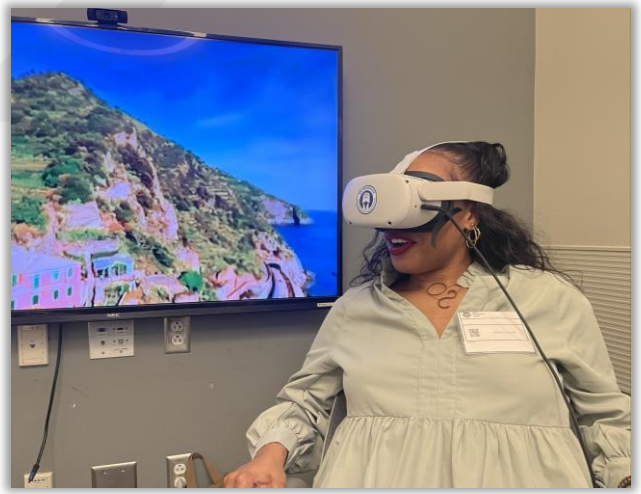
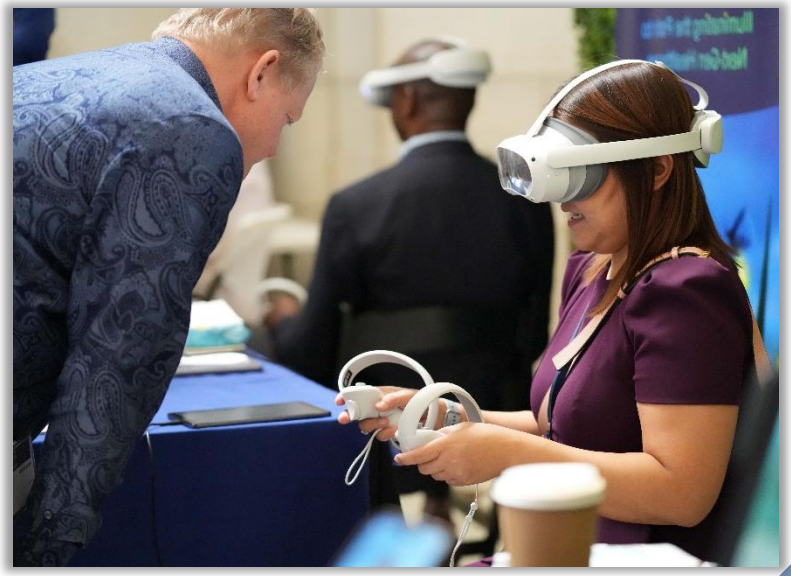
DISCLAIMERS AND GUIDANCE:

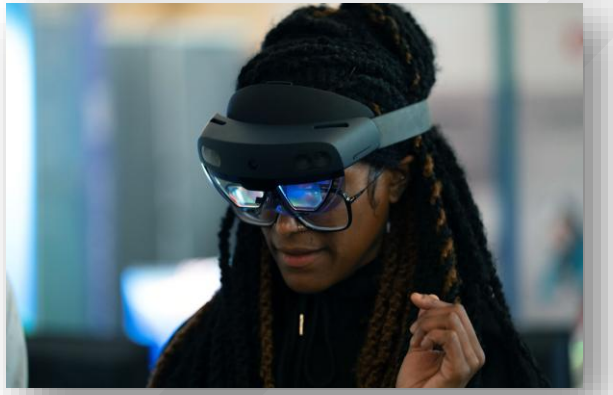
VA does not endorse and has not approved any specific product or company.

Immersive technology (like VR) is not intended to replace treatment with a provider. Additionally, immersive technology is not meant to be used as a standalone treatment for any condition; it can be used to supplement or support self-care.





IMMERSIVE TECH, defined



Immersive Technology

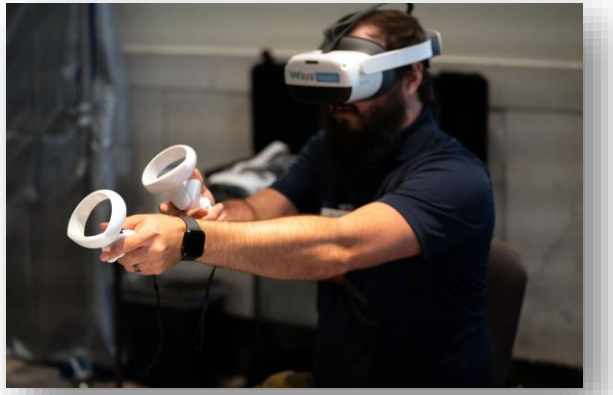
Extended Reality (XR)

Augmented Reality (AR)

Mixed Reality (MR)

Virtual Reality (VR)

Spatial Computing (SC)



Progressively Immersive

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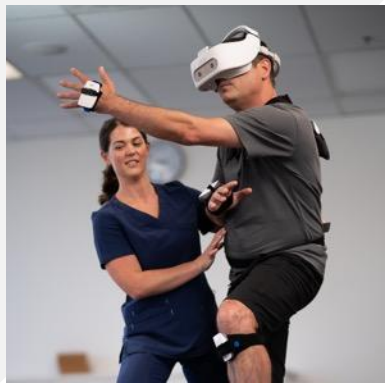
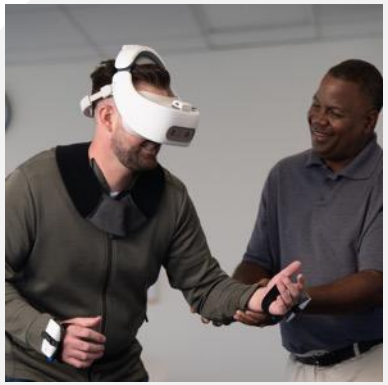
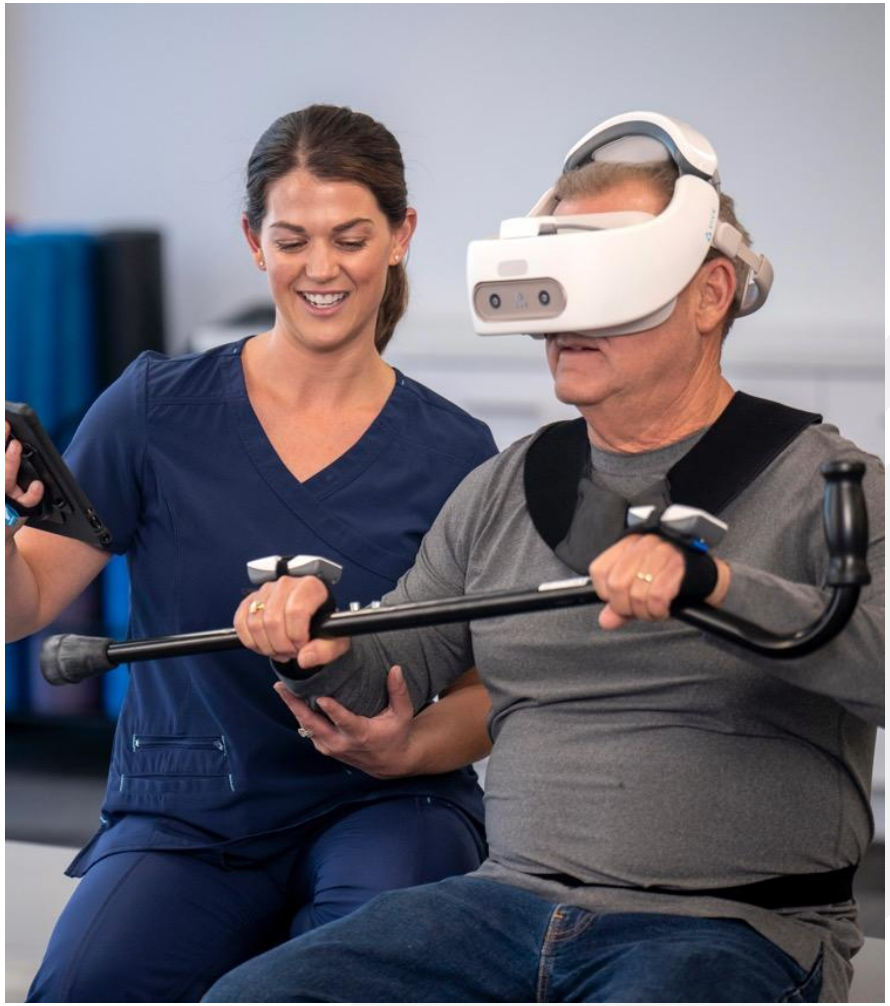
Pre-decisional

Benefits of VR





- Immersive Learning
- Safe Training Environment
- Clinically / Cognitively designed
- Individualized, customizable sessions
- Drives patient engagement and motivation
- Portable
- Age agnostic
- Multi-disciplinary tool
- Data Collection and Assessment
- Adjustable Settings
- Improve Overall Mental Health



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Uses	Outcomes
Physical Health	Pain management, ROM, activity tolerance/endurance, balance
Mental Health	Anxiety, depression. mindfulness, relaxation
Cognitive Health	Memory, direction following, matching, sustained attention, awareness, problem solving
ADL's / IADL's	Meal Prep & Feeding, Dressing, Toileting, Bathing / Grooming, Functional Mobility

Indications / Contraindications

Use Exclusion Criteria

Individuals should not use this virtual reality system if they have:
- History of seizures or epilepsy
- Head, neck, facial injury and/or surgery in the last 6 weeks
- Implanted medical device(s) potentially subject to electromagnetic interference

Unless under the direct supervision of a nurse, physician, or trained healthcare professional, individuals should not use this virtual reality system if they have any of the following:
- Severe frailty
- Active psychosis and/or delirium
- Active nausea or dizziness
- Stroke and/or head trauma in the last 6 weeks

Cybersickness Symptoms

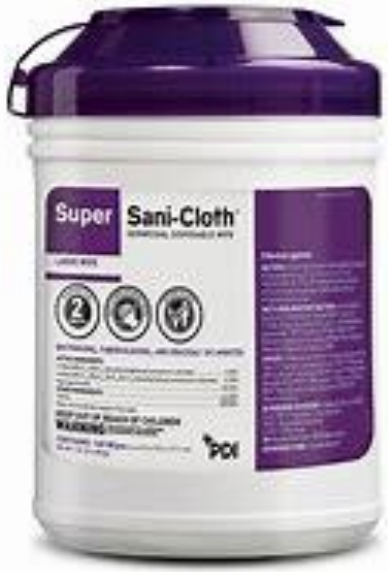
If the Veteran experiences any of the following symptoms associated with cybersickness discontinue the session:

Eye Strain
Sudden Fatigue
Headache
Dizziness
Vertigo
Nausea
Blurred Vision
Anxiety
Any exacerbation of pre-existing symptoms

INFECTION CONTROL

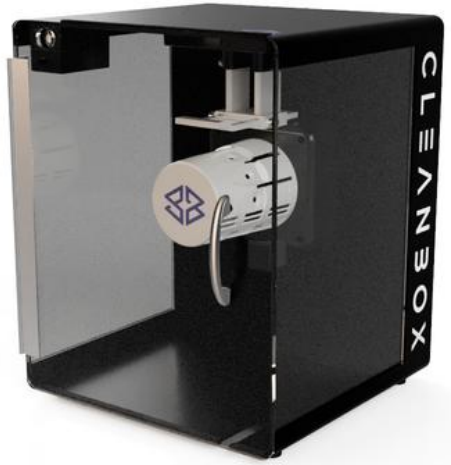
Disposable Wipes

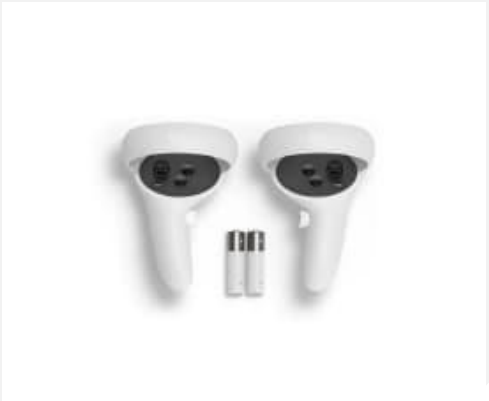
- All surfaces except lenses
- Lightly dampen soft cloth for lenses



Cleanbox

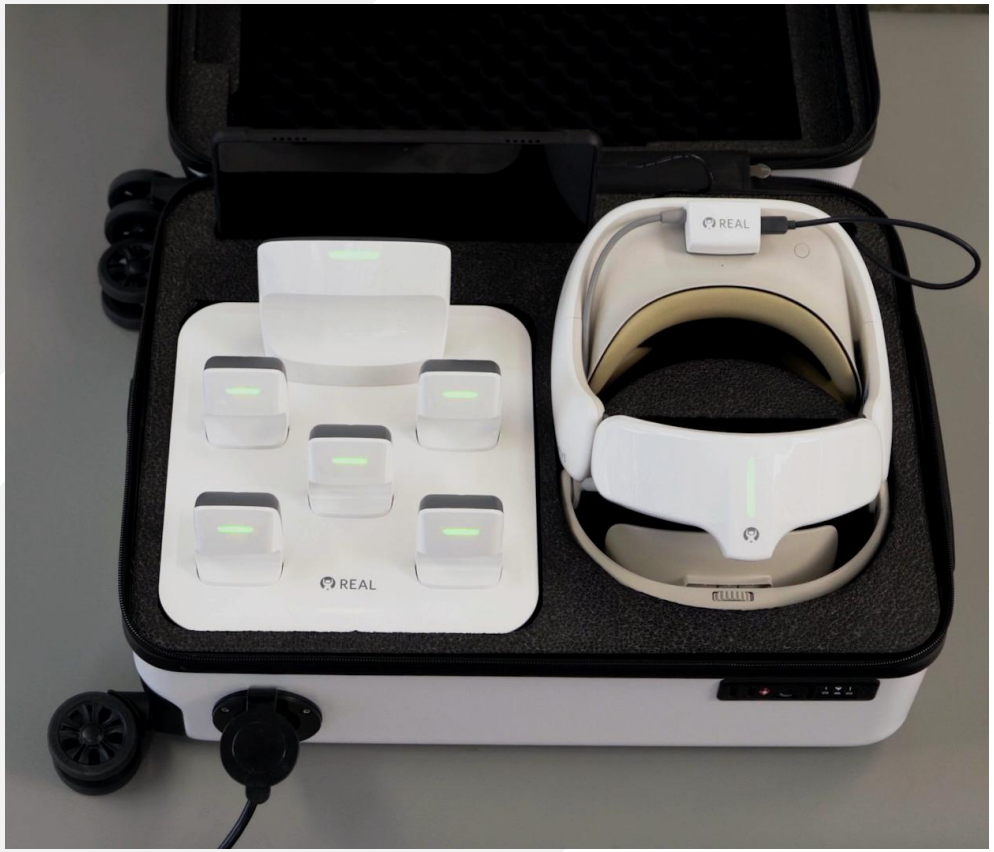
- UV lights to sanitize
- All parts of VR system can go inside
- 60 sec cycle
- Better for irregular surfaces





Oculus Quest / Meta

- Utilizes an app downloaded to a smart phone or tablet device
- Can download experiences through device or headset
- Requires Wi-Fi or hotspot connection
- Downloaded experiences of choice
- Some free options, some paid
- Price: $400 - $500



Real System Y Series

- No Controllers – Hands free
- No WiFi Required
- Rehabilitation-based Activities
- Clinician Required

Waya Health

- Headset and Hand Controllers
- No Wi-Fi needed
- Wellness and Rehab Activities
- VR & AR
- Gaze and Voice Control

Benefits of VR in Stroke Patients

- Improved motor function
  - Increased Repetitions
  - Task Specific Training
  - Intensity
- Increased Motivation and Engagement
- Accessibility
- Mood Improvement
- Adjunctive Rehabilitation Intervention

Considerations for use of VR in Stroke Patients

- Patient Capabilities and Performance
  - Controller-based vs Non-Controller Based
  - Ability to Grasp and control Fine Motor control
- Alternative Solutions
  - Control Straps
  - Gaze Based Systems
  - Voice Controlled Systems
- Non-Immersive vs Immersive Systems

Limits in Stroke VR Research

- Determining the optimal method of delivering VR (immersive, non-immersive, or semi-immersive).
- Identifying specific patient cohorts that would benefit most from VR therapy.
- Defining the technology and the dose of intervention appropriate for each patient.
- Improving the methodology of future reviews.

CASE STUDIES

Case Study #1

Location: CLC – PT/OT

Problem: Veteran suffering physical limitations after a recent stroke.

Solution: VR introduced for use during treatment to work on physical limitations.

Case Study #2

Location: Outpatient Spinal Cord Injury Clinic

Problem: Veteran with a C5 spinal cord injury decreased trunk control and right sided neglect.

Solution: VR introduced for use during treatment to work on trunk control and right sided neglect.

THANK YOU!

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