

Rehab.XR

COGNITIVE
REHABILITATION



To return to duty, service members must have the physical and cognitive ability to effectively conduct their operational military tasks. Spatial navigation and fire team movement techniques require effective integration of visual, vestibular, and proprioceptive stimuli under cognitive and environmental stress. Service members must be able to multitask to be successful in their military duties both in garrison and while deployed. Commanders and medical providers need objective measures for return-to-duty (RTD) decision making, and these measures should encompass military-specific multitasking. Mobility testing with a cognitive dual task is a simple means to assess this. The addition of extended reality (XR) to rehabilitation and testing adds realism to training for combat situations without the risk of harm.

_Delivering Vocationally Relevant Rehabilitation

Rehab.XR is a portable XR-based platform for assessment and rehabilitation of multisensory and cognitive function after mild traumatic brain injury (mTBI) to expedite RTD. The platform assists elite service members by gamifying complex tasks in an operationally relevant context. The immersive XR games assess balance, mobility, eye movement (gaze stabilization, smooth pursuit, saccades, convergence), and cognition (executive function, working and spatial memory, attention).

Therapists can modify the visual complexity and cognitive demand of the games to adapt them to address individual service member needs.

_Immersive Games

Rehab.XR has three first-person shooting games that leverage an XR headset with eye tracking:

- > In Barricade Wave Defense, patients shoot enemies from behind a barricade which requires them to move their heads and bodies. This game challenges attention, dynamic stability, agility, reaction time, gaze stability, smooth pursuit, and monocular vision.
- > In Stroop Target Shoot, patients memorize the location of colored drones and shoot those matching the color of the cue (vs. the named color). This game challenges spatial memory, attention, response inhibition, reaction time, smooth pursuit, saccades, gaze stability, and dynamic stability.
- > In Directional Memorization, patients memorize a direction orientation and then shoot enemies in response to directional cues. This game challenges spatial memory, attention, smooth pursuit, gaze stability, and dynamic stability.

_Anytime, Anywhere—Always!

Rehab.XR uses a COTS XR headset and a simulated rifle to provide an immersive therapy environment that doesn't require expensive infrastructure and can be set up at the point of need.



THERAPIST VIEW



AFTER ACTION REPORT



COTS EQUIPMENT



SYSTEM IN ACTION

DISCLAIMER: Investigational device - limited by federal law to investigational use.

