

Auditory and Vestibular Disorders in the Military: Current Efforts and Future Directions Across the Services

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Disclosures

Presenter's have no interest to disclose.

AMSUS and ACE/PESG staff have no interest to disclose.

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Learning Objectives

At the conclusion of this activity, the participant will be able to:

- 1. Participants will learn and discuss future directions and gaps in knowledge regarding auditory disorders in the military across all service branches**
- 2. Participants will be able to identify sources of DoD data to perform auditory research**
- 3. Participants will learn about current uses of virtual reality for assessments and therapies, outcomes of participating patients, and areas for future investigations**

Hearing Center of Excellence

- VA-DoD Tinnitus Working Group Overview
- VA-DoD Central Auditory Processing Disorders Working Group Overview
- Collaborative Auditory & Vestibular Research Network (CAVRN)
- Integrated Platform for Clinical Audiometric Assessment & Monitoring
- Coding Standardization
- Introduction to the Joint Hearing Loss and Auditory System Injury Registry

US Air Force School of Aerospace Medicine

- Ongoing research efforts and clinical practice improvements

US Army Public Health Center

- Ongoing research efforts and clinical practice improvements

NHRC's Blast Related Auditory Injury Database

- Brief Description of Database and population

NHRC's Blast Related Auditory Injury Database

- Most important findings to date (bulleted)

NHRC's Blast Related Auditory Injury Database

- Interesting graph/chart highlighting findings

NHRC's Blast Related Auditory Injury Database

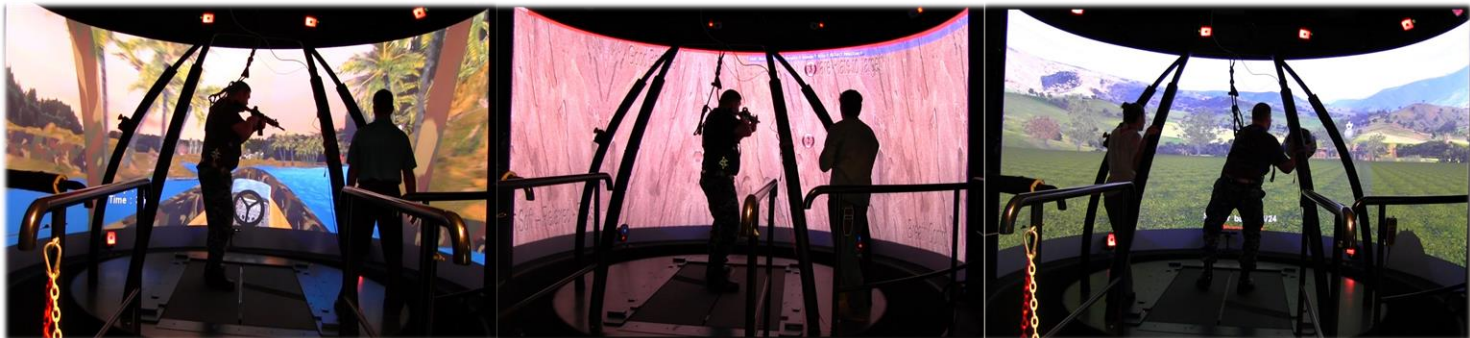
- Future Directions to fill current knowledge gaps in Epidemiology related to blast and hearing loss

NHRC's Blast Related Auditory Injury Database

- Future Directions to fill current knowledge gaps in Epidemiology related to blast and hearing loss

NHRC Vestibular Physical Therapy (VPT) and Virtual Reality (VR)

- Use VR for VPT to address clinical deficits:
 - Proprioceptive balance training
 - Vestibular balance training
 - Transitions on and off of moving surfaces
 - Balancing and walking on varying terrain (slopes)
 - Decision making
 - Dual/multi tasking



- Tasking static and dynamic stability with novel and engaging exercises relevant to patient's life.

VR Addresses Clinical Deficits

- Proprioceptive balance training
- Vestibular balance training
- Transitions on and off of moving surfaces
- Balancing and walking on varying terrain (slopes)
- Decision making
- Dual/multi tasking

NHRC Current research utilizing large scale VR for Vestibular Physical Therapy

MILITARY MEDICINE, 180, 3:143, 2015

Improvements in Gait Speed and Weight Shift of Persons With Traumatic Brain Injury and Vestibular Dysfunction Using a Virtual Reality Computer-Assisted Rehabilitation Environment

*Pinata H. Sessoms, PhD**; *Kim R. Gottshall, PT, PhD†*; *John-David Collins, MA**;
*Amanda E. Markham, MPH**; *Kathrine A. Service, BS**; *LT Seth A. Reini, MSC USN**

- All groups (traditional, VR-based, and hybrid) improved after 6 weeks of training
- There were no significant differences between the groups
- Therapy using multisensory immersive virtual reality environments (IVREs), like the CAREN, can achieve similar results to traditional therapy
- IVREs support enhanced treatment monitoring and may be a promising solution for vestibular rehabilitation

VR Applications Provide Ecological Validity

Methods, materials, tasks, and settings of VR applications best approximate the real-world – helps integration back into the community

2 Video's showing the VR activity

(Videos courtesy of NHRC)

VR Applications are Scalable to Patient Needs

- Tasks to create visual and balance challenges

2 videos showing this

New research utilizing VR for Vestibular Physical Therapy

- Transitioning High to Low Cost Technology for Use in Vestibular Therapy

1 Video



(Video courtesy of NHRC)

CE/CME Credit

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<http://amsus.cds.pesgce.com>

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