

# Treating Tinnitus in Military Servicemembers Using the Neuromonics Tinnitus Treatment Device

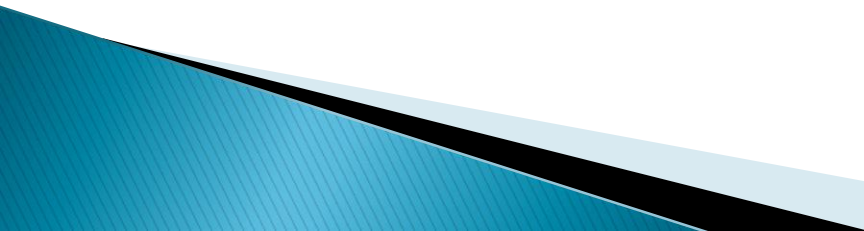
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**DISCLAIMER:** The views/opinions expressed in this presentation regarding this research are those of the investigators and does not represent the opinions of the Lyster Army Health Clinic, the U.S. Army or the U.S. Government.

# Objective

- ▶ To obtain information/feedback from military Servicemembers on the effectiveness of a new, patented, non-invasive, FDA-approved tinnitus treatment device developed by Neuromonics, Inc.

# Background–What we know

- ▶ Tinnitus is among #1 complaints of Servicemembers returning from Iraq and Afghanistan
  - ▶ Cave, Cornish & Chandler (2007)–49% of Servicemembers returning from GWOT complained of tinnitus
  - ▶ Difficulty in finding suitable treatment for tinnitus for these Servicemembers
  - ▶ Symptoms often lead to: insomnia, difficulty concentrating, annoyance, depression
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# Study Design

- ▶ Pilot study: Observational/Experimental
- ▶ Active Duty Servicemembers
- ▶ 18 subjects, randomized into two groups (9 in each group)
- ▶ Group 1: Neuromonics Program (NTTP)
- ▶ Group 2: Healing Rhythms Biofeedback Program (HR)
- ▶ Score of 17 or higher on Tinnitus Reaction Questionnaire (TRQ)--subjective
- ▶ Focus was on the stress reduction component of reducing tinnitus.

# Inclusion/Exclusion Criteria

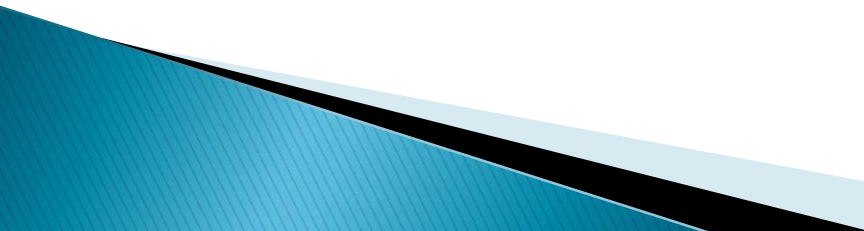
- ▶ Complaints of tinnitus
- ▶ Avg hearing level at 500Hz, 1kHz, 2kHz and 4kHz does not exceed 50 dBHL in one or both ears
- ▶ Score of 17–70 on TRQ
- ▶ Motivated to participate

Excluded: those with severe–profound HL, fluctuating hrg thresholds, severe cognitive impairment, comprehension problems, those unable to operate device, those who are subject to ongoing noise w/o hrg protection, pulsatile tinnitus

# NTTP Overview

- ▶ 26-week program
- ▶ Several forms to fill out, including:
  - TRQ
  - Tinnitus History Questionnaire
    - % Awareness
    - % Disturbance
    - Other factors/info
- ▶ MP-3 player-type device with headphones
- ▶ 4 tracks (2 classical/2 spa-type) to help induce relaxation and retrain limbic system of the brain
- ▶ 2-4 hours/day usage

# NTTP Overview (cont'd)

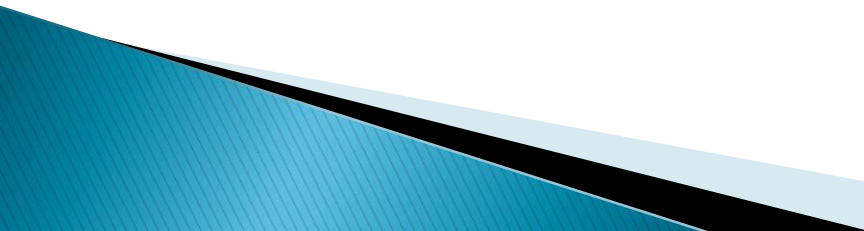
- ▶ Regular telephonic and/or clinic follow-ups (progress review)
  - ▶ 2 stages of treatment:
    - Pre-conditioning: 1–8 wks post fitting (week 8 transition)
    - Active Stage: 9–26 (+ weeks if needed)
  - ▶ Maintenance Phase
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# Neuromonics Device



With B & O headphones

# Healing Rhythms Biofeedback Program

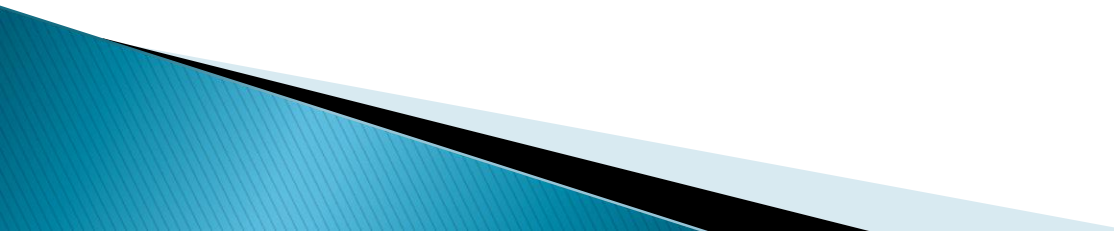
- ▶ 15-step, self-paced, computer-based program
  - ▶ Focuses on breathing, relaxation, meditation and stress reduction
  - ▶ Biofeedback monitors on fingers—monitors heart rate and skin conductance levels
  - ▶ 15–45 minute sessions
  - ▶ Practice technique 15–30 mins/day
  - ▶ TRQ at beginning and end
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# Healing Rhythms Biofeedback Program




Picture taken from [www.wilddevine.com](http://www.wilddevine.com)

# Results: Neuromonics

- ▶ 5 / 9 completed Neuromonics treatment
    - 1 still in treatment, 1 started over then unexpectedly ETSd, 2 dropped out of study (frustrated by tx)
  - ▶ Overall decrease in TRQ score (Avg 12 pts), tinnitus awareness and tinnitus disturbance
  - ▶ Slight increase in tolerance to loudness levels
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# Results: Healing Rhythms

- ▶ 8/9 completed program
  - ▶ 5 point decrease in TRQ scores for this group
  - ▶ Many said program helped them to relax; however, overall did not notice significant improvement in their tinnitus
  - ▶ Outlier: noticed significant decrease in tinnitus during the program
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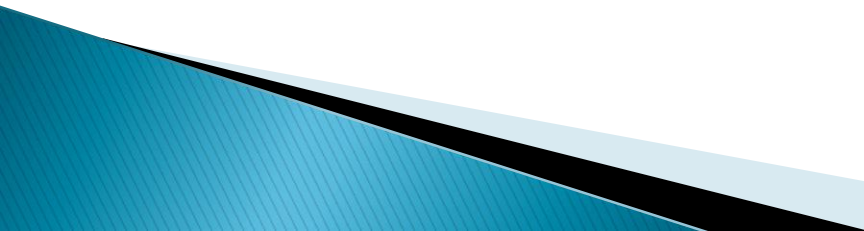
# Statistical Results (cont'd)

- ▶ Neuromonics (TRQ scores):
  - Pre to mid tx scores: no sig difference (.442)
  - Mid to post tx scores: sig difference (.003)
  - Pre to post tx scores: sig difference (.020)
- ▶ HR Biofeedback
  - Pre to post tx scores: no sig difference (.266)

Overall:

- Within subjects: significant (.048) when comparing groups.
- Between subjects: not significant (.238)

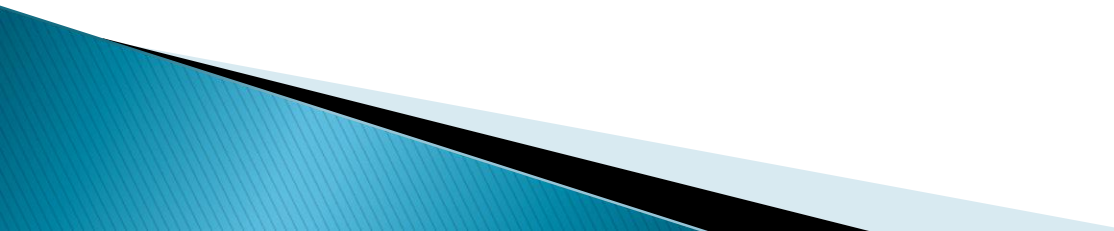
# TBI/PTSD Study Case

- ▶ Background: Aircraft accident, multiple injuries including TBI and PTSD
  - ▶ Initial TRQ: 50
  - ▶ Post TRQ: 11
  - ▶ Tinnitus Awareness Pre: 80, Post: 50
  - ▶ Tinnitus Disturbance: Pre: 25, Post: 50
  
  - ▶ Soldier felt Neuromonics treatment was beneficial overall
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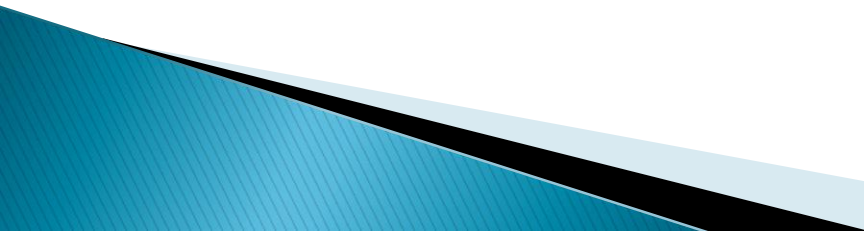
# Discussion/Direction

- ▶ Neuromonics Treatment program and device seems a promising tx for Servicemembers suffering from tinnitus.
- ▶ Biggest complaints:
  - \* # hours of usage/day during Stage 1 (reason: hard to fit into busy schedules)
  - \* increase in tinnitus during Stage 1
  - \* many got tired of same 4 tracks
  - \* overall length of program

# Discussion/Direction (cont'd)

- ▶ Current issue: Device is costly for clinic budgets; currently no known mechanism to procure it.
  - ▶ Consider motivation levels of Servicemembers and/or lower TRQ scores.
  - ▶ USAARL currently doing larger study with Neuromonics Device on Servicemembers
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# Acknowledgements

- ▶ Funding to purchase Neuromonics devices for this research was granted through the former CHPPM (now PHC) Health Promotions Programs Initiative (HPPI).
  - ▶ Credit is given to Melinda E. Hill, Au.D., for the idea of trying the Neuromonics Tinnitus Program and Device on Army Soldiers
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# ? QUESTIONS ?

Thanks to Winnie Keller from Neuromonics for her support and assistance in helping to train and teach us how to fit the devices.

