Procedural reaction time (ANAM) for mild traumatic brain injury in a hyperbaric oxygen clinical trial

SUSAN CHURCHILL[1] • R. SCOTT MILLER[2] • KAYLA DERU[1] • LINDELL K. WEAVER[1,3]

[1]*Division of Hyperbaric Medicine, Intermountain Medical Center, Murray, Utah and Intermountain LDS Hospital, Salt Lake City, Utah*

[2]*Department of Preventive Medicine, Uniformed Services University of the Health Science, Bethesda, MD*

[3]*Department of Medicine, University of Utah, Salt Lake City, Utah*

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BACKGROUND

The Procedural Reaction Time (PRT) is a speed of processing task in the Automated Neuropsychological Assessment Metrics (ANAM), and may be one of the more sensitive measures of performance following after mild traumatic brain injury (mTBI).[1] We evaluated PRT in a randomized, double-blind, sham-controlled clinical trial: "A Pilot Phase II Study of Hyperbaric Oxygen for Persistent Post-Concussive Symptoms After Mild Traumatic Brain Injury (HOPPS)."

METHODS

We measured the PRT at baseline and after 13 weeks in Servicemembers with mTBI randomized to Local Care vs. 40 chamber sessions (sham-1.2 ATA air or HBO_2-1.5 ATA O_2).

RESULTS

72 participants enrolled in the study (3 female, mean age 31 years, mean 3 lifetime concussion events, most recent mTBI 23 months prior to enrollment), and 64 had complete data at 13-week follow-up. PRT results, expressed as percentile scores ±1 standard deviation (SD), range (mean = 50%):

	Local Care (no chamber) (n=20)	HBO_2 (1.5 ATA) (n=23)	Sham (1.2 ATA air) (n=21)
Baseline	32±33 (0-99)	31±36 (0-97)	38±38 (0-95)
Follow-up	28±33 (0-100)	36±37 (0-100)	27±31 (0-95)

[1]Bleiberg J, et al. Consistency of within-day and across-day performance after mild brain injury *Neuropsychiatry Neuropsychol Behav Neurol* 1997;10(4):247-53

CONCLUSIONS

The ANAM PRT did not change over 13 weeks in the local care group. In the HBO_2 group, the PRT was insignificantly higher, and in the Sham group, insignificantly lower at 13 weeks compared to baseline. The group mean scores were below the 50th percentile, supporting underlying PRT dysfunction in the group.