

REPORT TO THE NORTH CAROLINA LEGISLATURE ON THE FY 2021 AND 2022:

Military Hyperbaric Oxygen Therapy (HBOT) Program



NORTH CAROLINA MILITARY HBOT PROGRAM
REPORT: FY 2021 AND FY 2022

For:
Members of the NC Legislature

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PROGRAM EXECUTIVE SUMMARY
TO THE NORTH CAROLINA LEGISLATURE ON THE FY 2021 AND FY 2022
MILITARY HYPERBARIC OXYGEN THERAPY (HBOT) PROGRAM

This report contains HBOT results for 32 traumatic brain (TBI) and post-traumatic stress disorder (PTSD) injured military personnel; test documentation for 16 personnel in each year's program are provided. The following summarizes this data:

- All 32 patients demonstrated significant recovery from multiple debilitating injury symptoms.
- Suicide inducing symptoms demonstrated increasingly significant reductions in personnel from the FY 2021 to the FY 2022 program.
- Post therapy testimony from 6 of 10 patients reported:
 - Improved sleep.
 - Increased cognitive performance.
 - Decreased pain and discomfort.
 - Increased happiness.

These results once again confirmed HBOT as an effective, life changing, suicide reduction therapy, for TBI/PTSD injured military families. These outcomes have had a major impact on Extivita's clinic throughput, which now has a sustained demand and backlog.



April 2, 2024

To the Esteemed Members of the North Carolina Legislature,

We are honored to share the profoundly significant findings and achievements of HBOT4Heroes in the fight to reverse military suicide in North Carolina, including the information contained in the attached 2021/2022 NC HBOT Program report. Under the leadership of HBOT4Heroes, we have dedicated ourselves to identifying and treating military personnel, both active duty and veterans, in dire need of Hyperbaric Oxygen Therapy (HBOT), while enhancing public awareness of its benefits. This effort was marked by significant outreach, engaging over 50 Veteran Service Organizations (VSOs) through a variety of channels, including social media, direct meetings, and event participation. This effort has also resulted in treating active-duty special forces Army soldiers from Fort Liberty and Marines from the Wounded Warrior Battalion at Camp Lejeune.

Our accomplishments have been significant, yet the path ahead remains challenging. Our efforts in 2021-22 illuminated the staggering number of veterans requiring access to HBOT, revealing a need well beyond our current capacity. Despite this, we have made strides in raising private funds, paired with state funds, to treat 140 veterans to date, aiming to substantially reduce the waiting list.

The efficacy of our program in reducing suicidal ideation and reversing suicide is unmatched, as documented in the attached report. This remarkable achievement underscores the vital role of HBOT in providing life-saving treatments to our heroes in need.

Our focus is clear. With sustained support from the state, we are poised to substantially impact North Carolina's severely wounded military personnel effected by TBI and PTSD. Our proposed budget aims to treat 2,500 of the 620,000 veterans in the state, requiring funding of \$10 million from the state and in-kind private sector contributions. This funding will enable the expansion of our program, increasing access to HBOT across the state through six clinics equipped with multi-seat chambers. By leveraging both public and private investments, we can maintain current treatment costs while ensuring broad, subsidized access through HBOT4Heroes.

The mission of HBOT4Heroes is more than a call to action—it's a pledge to our veterans to provide them with the care they deserve. With the support of our North Carolina legislators, we will transform our vision and mission into the tangible reality of reigniting hope and rebuilding the lives of our military heroes and their families, ensuring they can fully embrace and enjoy the freedoms they so bravely fought to protect.

Respectfully,

Edward R. di Girolamo, Chairman, HBOT4Heroes



STOP SUICIDE & RESTORE LIVES WITH HYPERBARIC OXYGEN

P.O. Box 13887, Durham, NC 27709

919.874.5754 | www.hbot4heroes.org

HBOT4Heroes is a 501c3 nonprofit registered in the US under EIN 92-3494632

TAB - A

A-1 HOUSE BILL 50 AUTHORIZING VETERANS HBOT

AN ACT AUTHORIZING MEDICAL PROFESSIONALS TO
PRESCRIBE HYPERBARIC OXYGEN THERAPY FOR VETERANS WITH
TRAUMATIC BRAIN AND POSTRAUMATIC STRESS DISORDER INJURIES.

STATE OF NORTH CAROLINA



Department of The Secretary of State

To all whom these presents shall come, Greeting:

I, Elaine F. Marshall, Secretary of State of the State of North Carolina, do hereby certify the following and hereto two (2) sheets to be a true copy of Session Law 2019-175, House Bill 50, of the 2019 Legislative Session, entitled

**AN ACT AUTHORIZING CERTAIN MEDICAL PROFESSIONALS TO
PRESCRIBE HYPERBARIC OXYGEN THERAPY FOR VETERANS
WITH TRAUMATIC BRAIN INJURY AND POSTTRAUMATIC STRESS
DISORDER.**

ratified on the 18th day of July, 2019, by

The General Assembly of North Carolina

the original of which is now on file and a matter of record in this office.

In Witness Whereof, I have hereunto set my hand and affixed my official seal.

Done in This Office, at Raleigh, this the 15th day of August, 2019.



Elaine F. Marshall
Secretary of State

GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2019

HOUSE BILL 50
RATIFIED BILL

Steven Blessing
RECEIVED JUL 19 2019
2:37 pm

AN ACT AUTHORIZING CERTAIN MEDICAL PROFESSIONALS TO PRESCRIBE
HYPERBARIC OXYGEN THERAPY FOR VETERANS WITH TRAUMATIC BRAIN
INJURY AND POSTTRAUMATIC STRESS DISORDER.

Whereas, hyperbaric oxygen therapy is a recognized and accepted treatment for wound care and inflammation disorders; and

Whereas, traumatic brain injury and posttraumatic stress disorder are recognized to result from brain injuries and subsequent inflammation; Now, therefore,

The General Assembly of North Carolina enacts:

SECTION 1. This act shall be known and may be cited as the "North Carolina Veterans Traumatic Brain Injury and Posttraumatic Stress Disorder Treatment and Recovery Act of 2019."

SECTION 2.(a) G.S. 122C-455 through G.S. 122C-464. Reserved for future codification purposes.

SECTION 2.(b) Article 6 of Chapter 122C of the General Statutes is amended by adding a new Part to read:

"Part 5. Traumatic Brain Injury and Posttraumatic Stress Disorder Services for Veterans.

"§ 122C-465. Definitions.

As used in this Part, the following definitions apply:

- (1) Authorized medical professional. – A doctor of medicine, nurse practitioner, physician assistant, or doctor of osteopathy licensed to practice in this State.
- (2) Hyperbaric oxygen therapy treatment. – Treatment with a valid prescription from an authorized medical professional in either a hyperbaric chamber approved by the United States Food and Drug Administration (FDA), or a device with an appropriate FDA-approved investigational device exemption.
- (3) Veteran. – A person who served on active duty, other than for training, in any component of the Armed Forces of the United States for a period of 180 days or more, unless released earlier because of service-connected disability, and who was discharged or released from the Armed Forces of the United States under other than dishonorable conditions.

"§ 122C-465.1. Hyperbaric oxygen therapy treatment authorized.

(a) No person other than an authorized medical professional shall prescribe hyperbaric oxygen therapy treatment to a veteran for the treatment of traumatic brain injury or posttraumatic stress disorder. Any authorized medical professional who prescribes hyperbaric oxygen therapy treatment to a veteran for traumatic brain injury or posttraumatic stress disorder shall do so in a manner that complies with the standard approved treatment protocols for this therapy.

(b) Any veteran residing in North Carolina who has been diagnosed with a traumatic brain injury or posttraumatic stress disorder by an authorized medical professional may receive hyperbaric oxygen therapy treatment in this State."



SECTION 2.(c) G.S. 122C-465.2 through G.S. 122C-465.5. Reserved for future codification purposes.

SECTION 3. This act becomes effective October 1, 2019.

In the General Assembly read three times and ratified this the 18th day of July, 2019.



Carl Ford

Presiding Officer of the Senate



Tim Moore

Speaker of the House of Representatives



Roy Cooper

Governor

Approved 12:12 p.m. this 26th day of July, 2019

TAB - A

A-2 PROGRAM RESOURCES

HBOT PROGRAM RESOURCES

NORTH CAROLINA TBI/PTSD WOUNDED MILITARY

TOTAL COSTS:

- COMMUNITY FOUNDATION OF NORTH CAROLINA EAST:
 - CY'S 2016 – 2022: \$49,950

- TSN:
 - HBOT CLINIC START UP: \$1,500,000
 - CY 2021 [(75 X 40) + 75] 16 \$49,200
 - CY 2022 [(75 X 40) + 75] 16 \$49,200

- NORTH CAROLINA LEGISLATURE:
 - FY 2021 \$100,000
 - FY 2022 \$150,000

- TOTAL COST TO DATE: \$1,898,350

EXTIVITA HBOT PROTOCOL CHARGES:

	<u>MILITARY</u>	<u>NON-MILITARY</u>
EACH DIVE	\$75	\$150
EQUIPMENT	\$0	\$150
CONSULTATION	\$0	\$150
ANAM TESTING	\$0	\$150
PROIMMUNE	\$75	\$75

TAB – B:

- NORTH CAROLINA HBOT ASSISTANCE APPLICATION
- APPLICATION AND APPROVAL PROCESS
- TREATMENT PROTOCOL
- HBOT PRESCRIPTION
- HBOT TEST BATTERY DESCRIPTIONS
- PRE-HBOT CONSULTATION:
 - o THERAPY DOCUMENTATION
- POST-CONSULTATION
- EXTIVITA DESCRIPTION

Application for North Carolina Hyperbaric Oxygen Therapy (HBOT) Assistance

1. Please complete all pages below --
 - a. Personal History Form
 - b. Sign and date the Code of Conduct & Consent Form
2. Please submit a copy of your Driver's License or Military ID, and one of the following:
 - a. Copy of DD214 (include the long version, which has seven additional blocks at the end (box 23-29) which provides your separation and character of service (i.e. honorable, general, etc).

OR

- b. An HR letter, or active papers if active duty

PLEASE NOTE: Everything listed above should be included in the submitted application to be considered for the program.

While not common, you may be subject to a background check.

Personal History Form

1. Name: _____
2. Birthdate: _____
3. Street Address: _____
4. Mailing Address (if different): _____
5. City: _____ State: _____ Zip: _____
6. Email Address: _____
7. Home Phone: _____ Cell Phone: _____
8. Gender: Male Female
9. Military Status (Check One): Active-Duty Veteran
10. If separated from the military what was your Character of Service?
Honorably
General, Under Honorable Conditions
Other: _____
11. If Character of Service is anything other than Honorably or General, please explain:

12. Branch of Service: _____
13. Are you a member of Special Operations? _____
14. Have you ever been diagnosed with one of the following? (Check all that apply)
TBI (Traumatic Brain Injury)
PTSD (Post-Traumatic Stress Disorder)
15. Have you had suicidal ideations within the past 60 days? Yes No
If you are currently experiencing suicidal ideations, know that confidential crisis help and support is available by calling the Veterans Crisis Line at 988.
16. How did you hear about this program? _____

Code of Conduct & Consent

This Hyperbaric Oxygen Therapy (HBOT) Program was established to address the significant need for safe and effective treatment for former military or active-duty military personnel who need help eliminating suicidal ideations and improving their overall health and well-being. Hyperbaric Oxygen Therapy (HBOT) is non-invasive and a clinically proven therapy. Learn more at <https://www.extivita.org/veterans/>

Military members residing in North Carolina who are coping with Traumatic Brain Injury (TBI) and/or Post-Traumatic Stress Disorder (PTSD) can qualify for 40 complimentary Hyperbaric Oxygen Therapy (HBOT) sessions at Extivita-RTP in Raleigh, NC. This opportunity is currently made possible by funding provided by the North Carolina legislature. Additionally, for those facing health issues not related to brain health, HBOT 4 Heroes, a 501(c)(3) nonprofit organization supporting the Extivita clinic, can still aid in the veteran receiving 40 HBOT treatments, this is supported by corporate sponsors and private donations.

Commitment to the program is crucial, with the expectation that all 40 treatments are completed within a reasonable time. Completing the full course of treatment is essential for optimal results, even if improvements are felt early on. The 40 treatment sessions can be completed in as little as 4 weeks (2 treatments a day, 5 days a week), or spaced out across 3-4 months.

ANAM testing is conducted at the start and end of the treatment protocol. These results not only provide valuable insights into each veteran's healing journey, but also contribute anonymously to our Legislative Report. This data is crucial in demonstrating our efficacy rate, which in turn supports our funding efforts to continue providing these life-changing treatments to our American heroes and ending veteran suicide.

It is imperative that each applicant sign and date the following Code of Conduct. If accepted into this HBOT Program and medically cleared for treatment, I agree to:

1. Attend treatment and/or therapy sessions consistently and timely as prescribed by the doctor and the treatment center.
2. Notify the treatment clinic as soon as possible of any deviation from prescribed treatment or schedule, regardless of the reason. Furthermore, this requires you to put a credit card on file and be responsible for payment of the scheduled session if you are a no-show.
3. Honestly and accurately describe my experiences and results.
4. Keep confidential any personal information that may be acquired during treatment or interaction with other patients while receiving treatment.
5. Be courteous and respectful of others in the care of the clinic, including the staff.
6. Refrain from abuse of prescription and non-prescription drugs during the entire duration of treatment.

By signing below, you agree to each of the above statements, and consent to sharing your ANAM test results & HBOT treatment results to substantiate additional support for others needing this therapy. You have the option to remain anonymous in the reporting of these results.

Print Name: _____ Date: _____

Signature: _____

**Electronic signatures are accepted.*

Please Submit Your Application:

Remember to send a copy of your ID, and DD214 or active papers in addition to this completed application

Email: Complete the application digitally, save & attach to email with supporting documents to:
Mills Lebo mills.lebo@extivita.org

OR

Fax: Please print & fax the application and supporting documents to:
919-645-4081

Once you submit your application you will typically hear back within a few business days. Feel free to reach out to Mills anytime for your application status.

Mills Lebo
Extivita-RTP
Customer Service Representative
Direct: 919-354-3770
mills.lebo@extivita.org

If you are working with HBOT 4 Heroes, please feel free to reach out to Kristy Andrews if you have questions or need further assistance.

Kristy Andrews
HBOT 4 Heroes
Development Manager
Direct: 919-354-3795
kandrews@hbot4heroes.org

APPLICATION AND APPROVAL PROCESS

Applicants may respond to a referral or an advertising campaign which sends them to the program website: HBOT4HEROES.org. This site contains the application and instructions on preparation and forwarding for consideration. Each application must include a DD214 and North Carolina identification. Applicants are subsequently interviewed to determine their basic qualifications for the program, including honorable military service, and TBI and/or PTSD diagnosis. Approved applicants are referred to Extivita. Extivita's Nurse Practitioner examines relevant medical history, and conducts a thorough physical exam to verify the patient is medically able to receive HBOT. After the patient is medically cleared, a series of tests are administered to quantify and record symptoms severity. At this point, the applicant is prepared to begin therapy.

HBOT TREATMENT PROTOCOL

- HBOT is applied in a pressurized and sealed multi-seat chamber:
 - Hyperbaric oxygen 100 % medical grade is administered at 2.0 atmospheres absolute (ATA) pressure.
 - Patients spend approximately 90 min in the chamber, 60 min of which is at 100% oxygen and 2.0 ATA. A qualified attendant is in the chamber at all times.
 - The treatment is monitored by a trained Hyperbaric Console Technician.
- The full treatment protocol is 40 sessions.
- Sessions are provided as often as 1-2 times per day and administered 4 hours apart in any 24-hour period.
- Patient vital signs are verified prior to each therapy session.
- A daily oral amino acid supplement is provided to support detoxification during HBOT treatments.

The Pre and Post Treatment Test Battery to be used is found on the following HBOT Test Battery Description section.

The following doctor's prescription is completed for each patient as part of the patient Pre-HBOT consultation:

Name: _____

DOB: _____

Address: _____

Phone Number: _____

HBOT Prescription

Breathing Gas:

- ☐ 100% Oxygen
☒ 100% Oxygen with
Air Breaks [**specify below*]
☐ Breathing Air

Pressure [ATA]:

- ☐ 1.5
☐ 1.75
☒ 2.0
☐ Linear increase from 1.0
to 2.0 ATA for duration.
☐ Other _____

Duration [minutes]:

- ☒ 60
☐ 75
☐ 90
☐ Other see below

Frequency:

- ☒ 1-2x Time(s) Per Day
☐ _____ Time(s) Per Week
☐ Every Other Day
☐ Other _____

Total # of Treatments: 40

TREATMENT PROTOCOL:

FiO2 21% @1.0 ATA to 1.25 ATA then FiO2 100% from 1.25 ATA to 2 ATA over 10 min (total compression time) then FiO2 100% @ 2.0 ATA x 60 minutes then FiO2 100% @2.0 ATA to 1.25 ATA then FiO2 21% from 1.25 ATA to 1 ATA over 10 min (total decompression time). Give 5-minute air break x 1 after 30 minutes at bottom. Total dive time 85 minutes.

Notes:

Signature: _____

Date: _____

HBOT TEST BATTERY DESCRIPTIONS

Neuropsychological self-assessment tests:

These tests are administered to determine the effects of hyperbaric oxygen therapy (HBOT) on symptoms and quality of life among military personnel with mTBI and PTSD. These tests measure the number and severity of the veteran's symptoms prior to the beginning of therapy and after 40 HBOT treatments. Tests include the Automated Neuropsychological Assessment Metrics (ANAM) and three additional self-reported questionnaires: the Post Concussion Symptom Checklist (PCSS), Posttraumatic Stress Disorder Checklist (PCL-M), and the Patient Health Questionnaire-9 (PHQ-9). These latter three self-reported questionnaires are also given after completing 20 HBOT sessions.

1. **ANAM- Automated Neuropsychological Assessment Metrics-** is an FDA cleared computer-based neurocognitive assessment tool patented by the U.S. Army. ANAM is used by DOD to establish the brain baseline capability of all military personnel prior to deployment. ANAM has a three-decade long history of use in basic and applied research as well as in clinical practice. Over 350 peer-reviewed publications demonstrate its effectiveness in assessing cognition and measuring cognitive change. ANAM is used to measure the cognitive effects of stressful, extreme, or hazardous conditions; to quantify the effects and progression of neurological and other medical disorders; and to measure the effects of mild traumatic brain injury and sports concussion on cognitive function. In this application, a Core battery set was used, comprising 7 neurocognitive performance-based tests, as well as subtests reflecting mood scores. ANAM is used to assess the likelihood that a change in symptom reporting is reliable and clinically meaningful compared to military personnel sample as well as their own pre-treatment baseline.
2. **Post-concussion syndrome (PCS)** is a collection of symptoms that can include cognitive, physical, and psychosocial complaints. It has been estimated that 10-15% complain of persistent post concussive symptoms which can last from months to years after injury and result in sometimes progressive, long term debilitating effects.
The Post-Concussion Symptom Scale (PCSS) is a self-reported questionnaire widely used by health care professionals to document the intensity, and impact of symptoms after a concussion. It consists of a list of 22 symptoms for which the applicants rate the intensity from 0 (none) to 6 (severe). A total score is then calculated, with a maximum of 132 points possible.

Research has shown that the PCSS questionnaire can accurately detect meaningful changes in a patient's condition (responsiveness) and used by clinicians and researchers to evaluate change over time in patients with persistent symptoms after concussion (1). It consistently provides similar results when used more than once, and its questions effectively measure the same aspect of health. A change of 12.3 points in the score is the smallest change that indicates a real difference in symptoms. Additionally, a change of

26.5 points in the score is significant enough to be considered significant for a patient's health (1).

3. It is recognized that there is an association of modern warfare with TBI and PTSD. **The PTSD Check List military version (PCL-M)** is a 17 item self-report instrument developed by staff at the Veterans Administration National Center for PTSD, to measure symptom severity, symptoms in response to “stressful military experiences” within the past month. A total symptom severity score (range = 17-85) can be obtained by summing the scores from each of the items that have response options ranging from 1 “Not at all” to 5 “Extremely.” It can be self-administered and completed in approximately 5-10 minutes. Its 17 items are based on criteria from the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-V). It can be used to screen individuals for PTSD and make provisional diagnosis. For this purpose, this checklist is used to monitor change in PTSD symptoms during and after HBOT treatment. Evidence suggests that a 5–10-point change represents reliable change (i.e., change not due to chance) and a 10–20-point change represents clinically significant change (3). According to studies, The PCL-M, which is specifically designed for military service members, is a well-established and reliable tool. It is effective in measuring the severity of PTSD symptoms and can accurately detect changes in these symptoms over time (3,4).
4. **PHQ-9- Patient Health Questionnaire-9** is a reliable, valid, rapid and effective tool for detection as well as for monitoring the severity of depression (5). It has been widely used in community-based settings, in the general population, and among people with physical diseases.
 - a. PHQ-9 is self-administered, which scores each of the 9 items/criteria (for depression) from 0 (not at all) to 3 (nearly every day.) PHQ-9 scores of 5, 10, 15, and 20 represented mild, moderate, moderately severe, and severe depression, respectively. Scores range from 0-27. Research suggests that a change of 3.7 points, or about 23%, is considered a meaningful improvement or change in a person's condition. (5,6).

References

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- Foa, Edna B et al. "Psychometric properties of the Posttraumatic Diagnostic Scale for DSM-5 (PDS-5)." *Psychological assessment* vol. 28,10 (2016): 1166-1171. doi:10.1037/pas0000258
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- Bauer-Staeb, Clarissa et al. "Effective dose 50 method as the minimal clinically important difference: Evidence from depression trials." *Journal of clinical epidemiology* vol. 137 (2021): 200-208. doi:10.1016/j.jclinepi.2021.04.002

SAMPLE PRE HBOT-CONSULTATION INTERVIEW RESULTS

Jane Doe is a 64-year-old female marine here for health and wellness via NCHBOT program.

History of multiple traumatic brain injuries from blast exposures and direct impact with + loss of consciousness. Presenting complaints include- exhaustion, multiple chemical sensitivities, anxiety, agoraphobia, easily overwhelmed, irritable bowel syndrome, migraines, photo and noise sensitivities, joint pain, tinnitus (left>right), and sleep issues.

Past medical history: Chronic fatigue, Military sexual trauma, hypothyroidism, Temporomandibular joint dysfunction, vertigo, and Post Traumatic Stress Disorder

Neuro: Migraines initiated by stress and chemical exposures, occurring about once a month, lasting up to 1-2 weeks. Conventional medications prove ineffectual. Found relief with glutathione and magnesium supplementation. Dizziness triggered by sinus problems, transitioning from sitting to standing, and exposure to specific chemicals. Experiences pronounced sensitivity to light and sound. Struggles with incessant brain activity. Additionally, reports symptoms of neuropathy.

Musculoskeletal-Arthritis: Experiencing joint pain, without reported range of motion limitations. Occasionally faces balance issues due to joint discomfort. Struggles with tasks like opening lids, bending over, and walking on stairs (feels knee instability, particularly while descending). Getting up from the floor is challenging. Joint pain more pronounced in ankles and knees, with the right side affected slightly more than the left.

Sleep: Relies on sleep aids including L-theanine and valerian root, which provide some relief. Typically takes 2-3 hours to fall asleep initially, with occasional interruptions; resuming sleep can be challenging. Experiences nightmares and discomfort while changing positions, both of which disrupt sleep. She reports not feeling rested when waking up. Achieves around 5 hours of sleep on better nights. While not engaging in daytime naps, occasionally takes short rests.

Exercise: Does tai chi, yoga, pilates, for 22 minutes 5 days a week. In addition, she uses the stationary bike at least 15 min (cumulative) a day. Energy level- 2/10

Diet: Gluten-free, with minimal sugar intake limited to fruits. Occasional dairy consumption, especially cheese, is enjoyed, along with a focus on animal proteins and vegetables. Alcohol is consumed occasionally in the form of wine. Coffee consumption ranges from 1 to 3 cups per day, with a maximum of 36 oz.

Gastrointestinal: typically has regular bowel movements; has more diarrhea vs constipation type irritable bowel (can be explosive)

Psych: Stress level 9/10.

Social: Loves living alone. Family nearby, not as supportive as her friends. Spouse died 2018

Other therapies: acupuncture

Goal: Achieve normal life functions including sleep improvement, pain reduction, and increased energy.

Assessment scores:

Post Concussion Syndrome (PCS) = 94,

Patient Health Questionnaire –9 (PHQ-9) = 24,

Post traumatic stress disorder Checklist (PCL- M) = 75

Automated Neuropsychological Assessment Metrics (ANAM) = ____

Name: _____ Date of Birth: _____ Date: _____

PATIENT MEDICAL HISTORY & CONTRAINDICATIONS:

- 1) Review the patient's medical history to ensure for accuracy and completion.
- 2) Identify any contraindications this patient may have [listed below].

Absolute Contraindications	Absolute Drug Contraindications
<input type="checkbox"/> Untreated [tension] pneumothorax	<input type="checkbox"/> Bleomycin (<6 mos) (interstitial pneumonitis)
	<input type="checkbox"/> Cisplatin/Cis-platinum (impair wound healing)
	<input type="checkbox"/> Disulfiram [Antabuse] (blocks SOD)
	<input type="checkbox"/> Doxorubicin [Adriamycin] (cardiotoxicity)
	<input type="checkbox"/> Mafenide acetate [Sulfamylon] (cause local carbon dioxide production and acidosis)

Relative Contraindications	
<input type="checkbox"/> Asymptomatic lesions, air cysts or blebs in lungs [seen on chest x-ray]	<input type="checkbox"/> Known atherosclerotic disease and/or other risk factors for heart disease
<input type="checkbox"/> Claustrophobia OR anxiety due to confinement	<input type="checkbox"/> Large skull defects following surgery
<input type="checkbox"/> Compromised tympanic membrane integrity	<input type="checkbox"/> Latex allergy
<input type="checkbox"/> Congenital spherocytosis	<input type="checkbox"/> Malignant disease [ex. cancer]
<input type="checkbox"/> Emphysema, COPD (hypercarbia), asthma (pulm baro/air trap)	<input type="checkbox"/> Pneumonia and/or any air-trapping evidenced by air bronchogram [i.e. due to asthma or emphysema]
<input type="checkbox"/> Diabetes insulin dependent	<input type="checkbox"/> Pregnancy (unknown side effects on fetus)
<input type="checkbox"/> History of ear surgery [ex. surgery for otosclerosis]	<input type="checkbox"/> Psychiatric/psychological/behavior disorders
<input type="checkbox"/> History of lung disease	<input type="checkbox"/> Seizure disorders [including epilepsy & convulsions due to vitamin E deficiency]
<input type="checkbox"/> History of optic neuritis or eye surgery	<input type="checkbox"/> Smoking
<input type="checkbox"/> History of spontaneous pneumothorax or pneumo-mediastinum [even if treated]	<input type="checkbox"/> Uncontrolled high fever (decreases seizure threshold)
<input type="checkbox"/> History of thoracic surgery (pneumo/atelectasis)	<input type="checkbox"/> Upper respiratory infection [URI], colds, flu, sinus infections/chronic sinusitis, allergies [i.e. anything that causes excessive mucus, congestion, and/or cough]
<input type="checkbox"/> Inability to "clear ears" [i.e. equalize middle ear pressure] during chamber pressurization	<input type="checkbox"/> Perilymph fistulas (vertigo and other vestibular symptoms)

Adverse Device/Object Interactions	
<input type="checkbox"/> Dentures	<input type="checkbox"/> Implanted devices affected by INCREASED PRESSURE [pacemakers, deep brain stimulators, pain/intrathecal pumps, defibrillators, glucose pumps, etc.]
<input type="checkbox"/> Hearing aids	<input type="checkbox"/> Transdermal medication patches [*including nicotine patches] → must be removed PRIOR to treatment, but can be replaced AFTER treatment

Name: _____ Date of Birth: _____ Date: _____

PATIENT MEDICAL HISTORY & CONTRAINDICATIONS [continued]:

Drugs with Potential for Adverse Reactions/Oxygen Toxicity Enhancement	
<input type="checkbox"/> Acetazolamide	<input type="checkbox"/> Heparin
<input type="checkbox"/> Adrenomimetic, adrenolytic, and ganglion-blocking agents	<input type="checkbox"/> Insulin
<input type="checkbox"/> Ammonium chloride [NH ₄ Cl]	<input type="checkbox"/> Narcotic analgesics
<input type="checkbox"/> Antianginal drugs	<input type="checkbox"/> Perfluorocarbon [PFC]
<input type="checkbox"/> Aspirin	<input type="checkbox"/> Recent drug abuse and/or other intoxications
<input type="checkbox"/> CNS stimulants [ex. dextroamphetamine]	<input type="checkbox"/> Reserpine
<input type="checkbox"/> Digitalis/Digoxin	<input type="checkbox"/> Scopolamine
<input type="checkbox"/> Ethanol	<input type="checkbox"/> Thyroid extract
<input type="checkbox"/> Guanethidine	

Factors that Enhance Oxygen Toxicity	
Gases	Physiological States of Increased Metabolism
Carbon dioxide	Scuba diving
Nitrous oxide	High humidity
Hormones	Hyperthermia
Thyroid hormones	Physical exercise
Adrenocortical hormones	Trace Metals
Neurotransmitters	Iron
Epinephrine	Copper
Norepinephrine	

PHYSICAL EXAM

Vital Signs			
Blood Glucose Level		O ₂ Saturation	
Blood Pressure		Respiratory Rate	
Lungs		Temperature	
Pulse Rate		TM Integrity	
Notes:			

SAMPLE POST-HBOT CONSULTATION

Jane Doe is a 64-year-old female here for health and wellness. She is a retired marine who initially came to Extivita via NCHBOT program. She has completed 40 HBOT treatments and 5 nutrient IV's since starting treatments about a month ago. Presenting complaints: exhaustion, sleep issues, migraines, Multiple Chemical Sensitivities, anxiety, agoraphobia, easily overwhelmed, irritable bowel syndrome, migraines, photo and noise sensitivities, joint pain throughout, nerve pain, tinnitus. Her goal was to achieve normal life functions including sleep improvement, pain reduction, and increased energy.

Med History: multiple Traumatic Brain Injuries with loss of consciousness, Civilian- PTSD, chronic fatigue, military sexual trauma, hypothyroidism, and vertigo.

Today, upon completion of 40 sessions, she reports:

- Neuro-
 - Migraines- immediate resolution after the first week of starting HBOT. Reported only having had 2 minor headaches since starting treatments.
 - Tinnitus: Left ear- decreased intensity. Resolved in Right ear.
 - Light Sensitivity- decreased: is 5/ 10 (was 10/10).
 - Noise Sensitivity- decreased and is now 5/10 (was 10/10)
- Immune-
 - Decreased multiple chemical sensitivities (MCS)
- Energy-
 - Continues to feel improvement in energy.
 - Chronic Fatigue: has not noticed since starting treatments.
- Pain-
 - Pain is still present but overall pain has improved by 80%. Patient rates pain 2/10 now.
 - Fibromyalgia and nerve pain: improved by 75%
- Sleep-
 - Quality: improved. Falls asleep easier and in shorter amt of time (20 min vs 2-3 hrs) Sleeping 6 - 7 hours per night uninterrupted (was 5 hours), only wakes up to use restroom with easy resleep. Rested when waking. Has stated she has started dreaming, versus nightmares patient was experiencing prior to treatment.
- Musculoskeletal-
 - Increase mobility and flexibility. Joints not as swollen and painful. Able to walk up and down stairs without pain and difficulty. Continues to use the treadmill daily.

SAMPLE POST CONSULTATION TEST SUMMARY RESULTS

Assesment and scores	Initial:	Post 20:	Post 40:	% Change
PCS	94	26	13	86% improvement
PHQ-9	24	9	8	67% improvement
PCL-M	75	54	42	44% improvement
ANAM	Please see clinical report			

In summary, she has improved in test scores post 40 sessions, now performing within expected range of functioning compared to her normative group. This includes improvement in reaction time, processing speed, attention span, and memory. Per mood scale, she has less anxiety, depression, fatigue, and restlessness. She is happier and has increased vigor. During her pre HBOT ANAM test, she appeared to have a high level of anxiety, which resulted in comprehension issues, trouble following directions, fidgeting, needed reassurance, frustrated and tearful. She did not exemplify any of these qualities during her post 40 ANAM testing, and where she performed much better, reflected in her scores.

Jane has been a pleasure having around. She is cheerful and interacts with other patients and staff appropriately. She is more relaxed. She reports that she is finally feeling as if she is getting her life back. She would likely benefit from another 20 HBOT sessions given the severities of her symptoms as per assessment forms.

Thank you,

Elena Schertz, NP

State of the Art Hyperbaric Oxygen Therapy Clinic



Extivita-RTP, located in Durham, NC on the edge of Research Triangle Park (RTP), is a medical clinic which operates one of the largest, private, hyperbaric oxygen therapy centers in the United States. The Extivita team is dedicated to extending and improving patients' quality of life by providing scientifically proven integrative therapies. The outpatient clinic houses two state-of-the-art multi-seat Hyperbaric Oxygen Chambers, a Nutritional IV Clinic, Infrared Sauna, Pulsed Electromagnetic Field Therapy, Neurofeedback Therapy, and Premium Supplements. A medical director oversees Extivita's operations, and the team is committed to treating patients successfully. Extivita-RTP's integrative therapies have effectively and consistently demonstrated a significant improvement in a patient's quality of life.



Our state-of-the-art Hyperbaric Oxygen Therapy (HBOT) chambers are designed to elevate patient experience while delivering effective treatment. Uniquely engineered to accommodate multiple patients simultaneously, these chambers offer a spacious and comfortable environment for therapy sessions. Each patient has access to their own individual seat, ensuring personal space and comfort throughout the treatment.

Understanding the importance of relaxation and engagement during therapy, each seat is equipped with a dedicated tablet. This innovative feature allows patients to immerse themselves in a world of entertainment during their session. Whether it's catching up on their favorite Netflix shows, browsing the web, or enjoying other online content, these tablets provide a distraction-free and enjoyable experience, making the time spent in therapy both therapeutic and enjoyable.

TAB – C:

PROGRAM RESULTS

- TEST BATTERY COMPOSITION
- ANAM DATA ANALYSIS
- PCS, PCL-M, PHQ-9 ANALYSIS
- TESTING RESULTS BACKGROUND REGARDING SUICIDE
- VETERAN TESTIMONIALS (2022 PROGRAM)

TEST BATTERY COMPOSITION

The patient Pre and Post testing protocol is composed of:

- ANAM Testing: Automated Neuropsychological Assessment Metrics
- PCS: Post Concussion Syndrome
- PHQ-9: Patient Health Questionnaire
- PCL-M: PTSD Check List Military Version

ANAM DATA ANALYSIS

INTRODUCTION:

The data discussed in this analysis are a combination of the 2021 data set of 16 military veterans and the 2022 data set of 16 military veterans making the total number of veterans analyzed as 32. Each veteran was tested with the Automated Neuropsychological Assessment Metrics (ANAM) prior to treatment with HBOT and tested again at the conclusion of the treatment regimen. A Repeated Measures Analysis of Variance (ANOVA) was calculated and the results showed that the data from the two groups were very similar ($p=.83$). The first testing of each group was correlated well ($p=.79$) and the second testing also significantly correlated ($p=.91$). It is therefore possible to combine the two groups for analysis because of the above noted similarities and all subjects were treated with the same HBOT protocol. The testing performed at the outset and conclusion of the HBOT treatment, collected data on cognition as well as self-report emotional distress.

2021/2022 COMBINED ANAM ANALYSIS RESULTS:

Thirty-two military veterans were treated by HBOT; each had a pre-assessment (baseline) prior to beginning HBOT treatment and a post-assessment after HBOT. The tests and mood scales that are given in the ANAM are listed in the Table 1. Examining Table 1 shows that there was improvement in all scores from pre to post assessments, though two scales did not reach statistical significance (Mathematical Processing and Matching to Sample). Especially significant is the improvement in negative emotions such as anxiety, depression and anger scores. Lower scores indicated less anxiety, depression and anger. This is important given the work of Stanley, et al (2017), Harch et al. (2017) and Shytle et al. (2019) which reported that there was a compelling relationship between the presence of depression and anger and suicide. All three studies showed that a higher presence of depression and anger with a history of TBI was associated with more suicidal thoughts and attempts. Post HBOT reduced suicidality was reported as a result of reduced anger and depression and other negative emotions along with increases in positive emotions. The pre and post assessments showed reduced suicidality indicators with improved positive mood (Happiness and Vigor) and less negative mood (Anger, Anxiety, Depression, Restlessness and Fatigue).

Data from the 32 North Carolina HBOT program veterans showed improvement in cognitive performance in improved attention and concentration along with improvement in reasoning tasks. Improvement was shown in Simple Reaction Time, Code Substitution – Learning, Procedural Reaction Time and Code Substitution – Delayed.

A paired samples test was conducted; the results are presented in Table 2. This test measures the significance of the difference of the individual test items between the two assessments (pre and post). Items that are bolded showed a significant difference from the pre-assessment as shown in the column Test Significance (2-tailed) in Table 2. Thirteen of fifteen (86.6 %) test scores (Table 2) were significantly improved between pre and post HBOT therapy. The greatest improvement was in self-reported mood. The post treatment showed best improvement in mood with less negative emotions and improvement in positive emotions. Better sleep, less restlessness, less depression, and more general happiness were reported.

THESE ARE THE DATA THAT WAS USED TO CONSTRUCT THE FOLLOWING CHARTS 1-3

Table 1 Data from the Baseline and Post assessment on the ANAM			
(n=32)	Mean*	Std. Deviation	Std. Error Mean
<u>COGNITIVE TEST RESULT</u>			
Base Simple Reaction Time	61.19	26.72	4.72
Post Simple Reaction Time +	75.16	25.39	4.49
Base Code Substitution - Learning	84.59	15.28	2.70
Post Code Substitution – Learning +	90.75	17.06	3.02
Base Procedural Reaction Time	70.56	30.76	5.44
Post Procedural Reaction Time +	87.53	24.80	4.38
Base Mathematical Processing	84.22	22.29	3.94
Post Mathematical Processing +	87.97	19.78	3.50
Base Matching to Sample	84.16	20.04	3.54
Post Matching to Sample +	87.91	16.73	2.96
Base Code Substitution - Delayed	82.03	12.29	2.17
Post Code Substitution – Delayed +	91.91	12.69	2.24
Base Simple Reaction Time - Repeated	61.38	24.07	4.26
Post Simple Reaction Time – Repeated +	72.19	25.02	4.42
<u>MOOD TEST RESULTS</u>			
Base Anger	21.88	22.76	4.02
Post Anger -	5.82	8.18	1.45
Base Anxiety	32.38	29.85	5.28
Post Anxiety -	15.02	13.98	2.47
Base Depression	29.17	27.02	4.78
Post Depression -	10.76	12.50	2.21
Base Fatigue	43.14	23.15	4.09
Post Fatigue -	23.96	20.76	3.67
Base Happiness	32.12	17.82	3.15
Post Happiness +	61.28	22.10	3.91
Base Restlessness	32.38	24.29	4.29
Post Restlessness -	14.41	14.69	2.60
Base Vigor	26.39	19.11	3.38
Post Vigor +	46.44	25.12	4.44
Base Sleepiness	3.72	0.81	0.14
Post Sleepiness -	2.34	1.29	0.23

*Cognitive result improvements are demonstrated by an increase in mean

*Mood score improvements are demonstrated by a decrease in mean

PAIRED DIFFERENCE TEST PROVIDES A COMPARISON OF THE BASELINE AND POST TESTING TO DETERMINE WHETHER SIGNIFICANT CHANGE HAS OCCURRED

Table 2 ANAM Throughput Scores and Mood Scales							
	Paired Differences					Analysis Results (t)	Test Significance (2-tailed) *
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
				Lower	Upper		
<u>ANAM Tests</u>							
Simple Reaction Time	-13.97	22.83	4.04	-22.20	-5.74	-3.461	.002
Code Substitution - Learning	-6.16	9.46	1.67	-9.57	-2.74	-3.680	.001
Procedural Reaction Time	-16.97	20.71	3.66	-24.43	-9.50	-4.636	<.001
Mathematical Processing	-3.75	18.31	3.24	-10.35	2.85	-1.159	.255
Matching to Sample	-3.75	12.29	2.17	-8.18	0.68	-1.726	.094
Code Substitution - Delayed	-9.88	9.47	1.67	-13.29	-6.46	-5.899	<.001
Simple Reaction Time - Repeated	-10.81	24.09	4.26	-19.50	-2.13	-2.539	.016
<u>ANAM Mood Scales</u>							
Anger	16.06	22.23	3.93	8.04	24.07	4.087	<.001
Anxiety	17.36	25.87	4.57	8.03	26.69	3.797	.001
Depression	18.40	23.24	4.11	10.02	26.78	4.480	<.001
Fatigue	19.18	24.80	4.38	10.24	28.12	4.376	<.001
Happiness	-29.17	21.38	3.78	-36.87	-21.46	-7.718	<.001
Restlessness	17.97	20.76	3.67	10.48	25.45	4.896	<.001
Vigor	-20.05	22.58	3.99	-28.19	-11.91	-5.025	<.001
Sleepiness	1.38	1.31	0.23	0.90	1.85	5.921	<.001

*Bolded values are statistically significant

ANAM RESULTS

There were 32 individuals in the NC 2021 and 2022 HBOT program who were treated with HBOT, who had a pre-assessment prior to beginning the HBOT treatment and a post-assessment after HBOT. The tests and mood scales that are given in the ANAM are listed in charts 1,2, and 3 below. Examining chart 1 shows that there was improvement in scores from pre to post assessments. In chart 2, improvement in depression and anger scores is noted. Lower scores indicate less depression and anger, This is significant given the work of Stanley, Joiner, Bryan (2017), who showed that there was a relationship between the presence of depression and anger and suicide. They found that a higher presence of depression and anger with a history of TBI was associated with more suicidal thoughts and attempts. The pre and post assessment showed reduced suicidality indicators with improved positive mood (happiness and vigor) and less negative mood (anger, anxiety, depression, restlessness and fatigue).

The following analysis was performed using all 32 of the veterans from both 2021 and 2022 data sets.

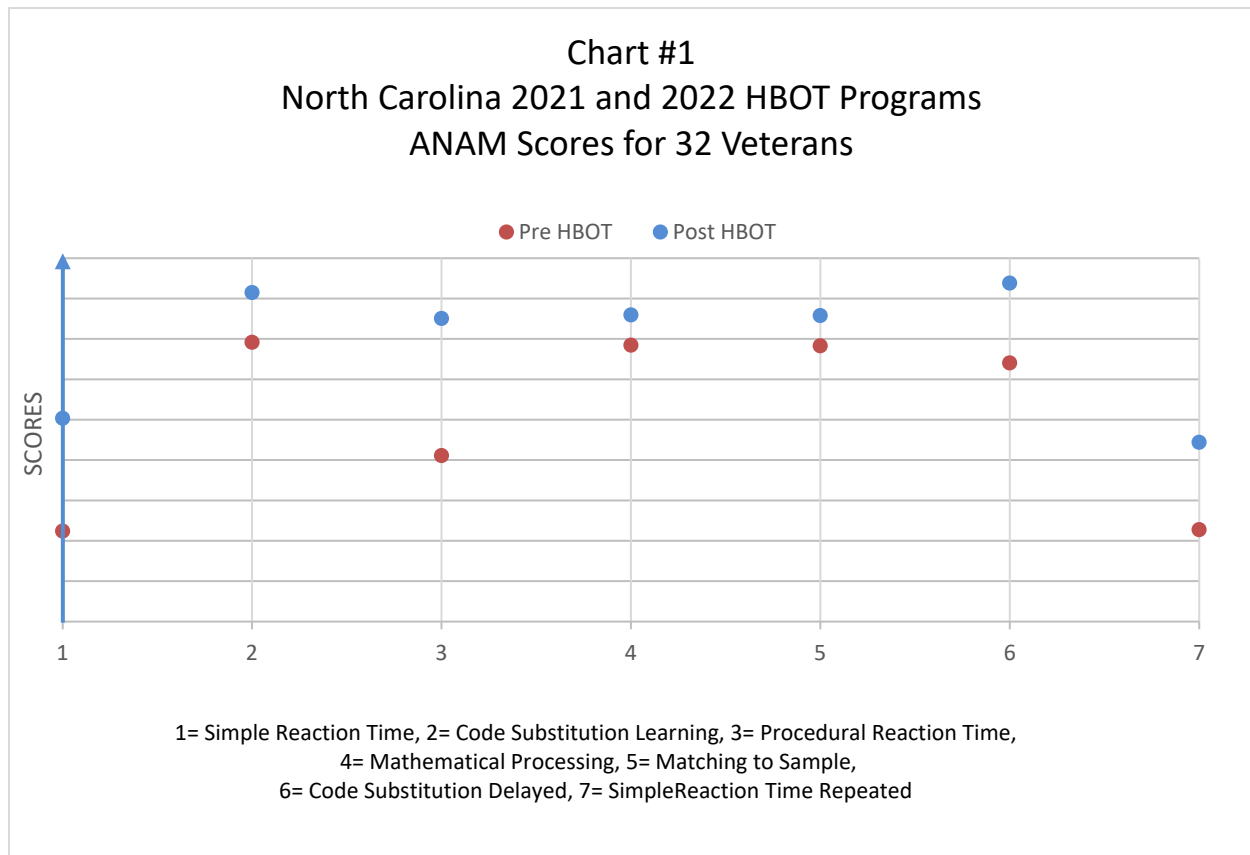
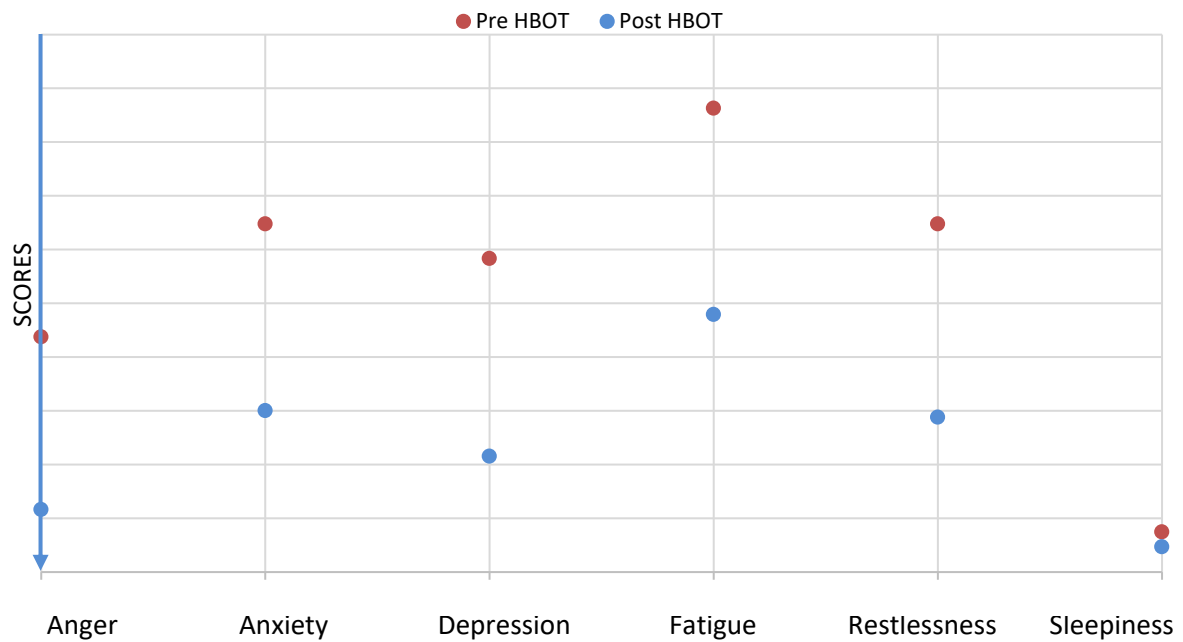
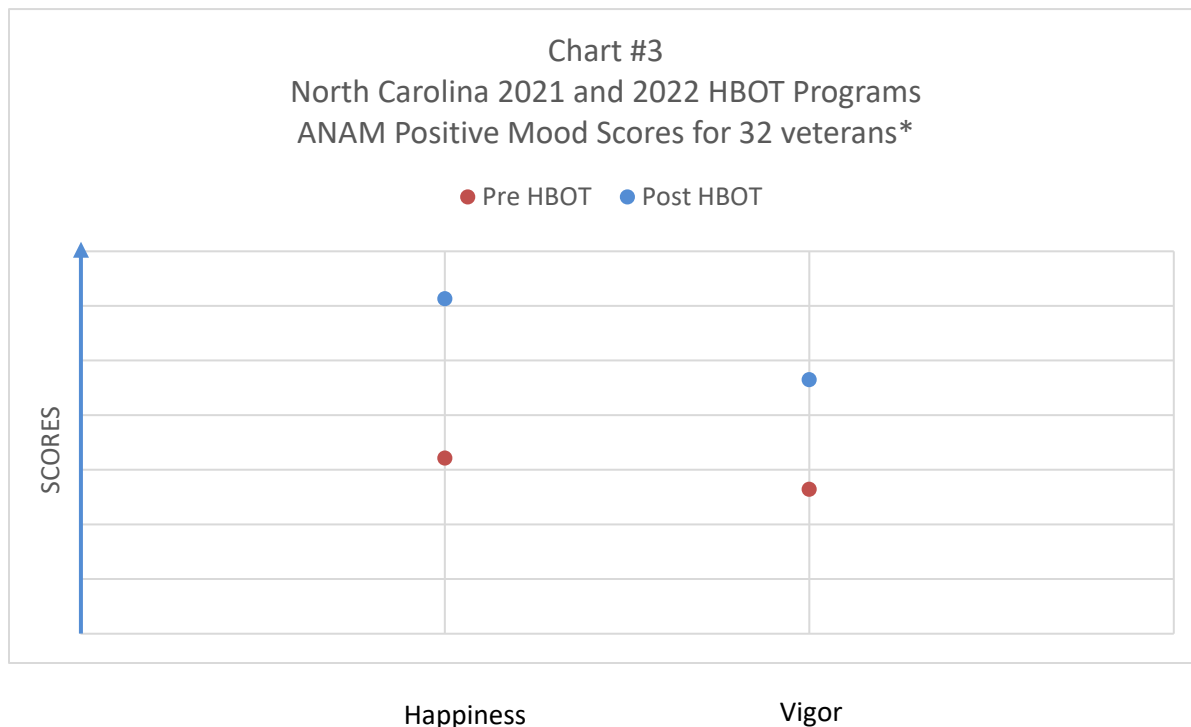


Chart #2
North Carolina 2021 and 2022 HBOT Programs
ANAM Negative Mood Scores for 32 veterans*



*All 32 veterans experienced a decrease in negative mood indicators shown in Chart #2 above. This outcome taken together with an increase in positive mood shown in Chart #3 below, is correlated with reduced suicidality.



*All 32 Veterans experienced an increase in positive mood as shown in Chart #3 above; this outcome taken together with a decrease in negative

*All 32 Veterans experienced an increase in positive mood as shown in Chart #3 above. This outcome taken together with a decrease in negative mood indicators as shown in Chart #2, is correlated with reduced suicidality.

TESTING RESULTS BACKGROUND REGARDING SUICIDE:

A review of literature finds that a decrease in emotional distress is associated with a reduction in suicidality in military traumatic brain injured (TBI) veterans. Harch et al. (2017) used a group of 30 veterans with a history of TBI. Subjects were given a detailed evaluation including neurocognitive testing, questionnaires and SPECT imaging. Follow up testing at the conclusion of treatment with HBOT showed an improvement in cognitive performance as well as a decrease in emotional distress. Individuals also reported having less suicidality; 83% of subjects with suicidal ideation and 75% of subjects with panic attacks experienced a reduction or cessation in suicidal ideation or panic attacks after treatment.

The Shytle et al. (2019) article is a series of three case studies with use of HBOT. In these three studies there was commonality in the findings. First, there were significant cognitive deficits as well as emotional distress present at the pretreatment assessment. Following treatment, the post treatment assessment showed a unanimous improvement in cognition as well as a decrease in emotional distress. This was particularly noted in case number two, which had initially reported moderate levels of suicidality and had a complete remission of suicidality following HBOT treatment.

In the Stanley et al. (2017) study, a total of 149 military service members were referred for evaluation/treatment of a suspected head injury. Self-report measures included the Suicidal Behaviors Questionnaire-Revised (SBQ-R), Automated Neuropsychological Assessment Metrics (ANAM), anger and depression subscales, and Behavioral Health Measure-20 depression subscale. Findings indicated suicidality was associated with anger and depression and that the reduction in emotional distress showed a reduction in suicidality.

References:

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PCS, PCL-M, & PHQ-9 DATA ANALYSIS

Introduction:

The analysis combines data from two sets: one comprising 16 military personnel from 2021 and another consisting of 16 military personnel from 2022, bringing the total number of individuals analyzed to 32. Each military personnel filled out a PCS, PCL-M, and PHQ-9 assessment form prior to treatment with HBOT and retested after 20 and 40 HBOT sessions.

The significance of the data provided is focused on two important findings:

1. All 32 subjects in the FY 2021 and 2022 programs experienced major improvement in most tested categories.
2. We evaluated the impact of HBOT on suicidal ideations by utilizing the PHQ-9 test, (question #9 which assesses the presence of suicidal thoughts) for all 32 participants. Test scores that measure suicide ideation were also affected by the results of HBOT showing 81% improvement.

The significance of altering suicidal behavior in these veterans is particularly important for the following reasons:

1. The Veterans Administration, in the study by Hostetter et al reported that Veterans diagnosed with both PTSD and TBI have an elevated risk of suicide (1). These individuals are twice as likely to commit suicide compared to others. The study further revealed that Veterans with TBI often have coexisting psychiatric diagnoses, which are established risk factors for suicide. Specifically, conditions such as depression, bipolar disorder, substance abuse disorder, and anxiety disorder were notably prevalent and correlated with increased suicide hazard ratios (1).

The US Dept of Veterans Affairs, and research from Kennedy, J. (2019), Borinuoluwa, R. (2022) and Loignon, A. et al (2020), among others, report chronically elevated rates of comorbid PTSD and depressive disorders among service members with a history of traumatic brain injury (mTBI) (1-4). mTBI-related PTSD and depression are linked with impaired executive function, mood disorders, psychological impairments poor functional outcomes, and increased risk of suicide (5).

FY 2021 Report:

Patients exhibiting ongoing symptoms after mTBI (N = 16) were assessed using questionnaires at three intervals: baseline, after 20 hyperbaric oxygen treatments, and following 40 treatments. These questionnaires, used by clinicians and researchers for monitoring patient progress, comprised the PCSS, PCL-M, and the PHQ-9. Across all three evaluations, there were clinically significant reductions in both the number and severity of symptoms from baseline (prior to HBOT) to after the 40th hyperbaric oxygen treatment.

FY 2022 Report:

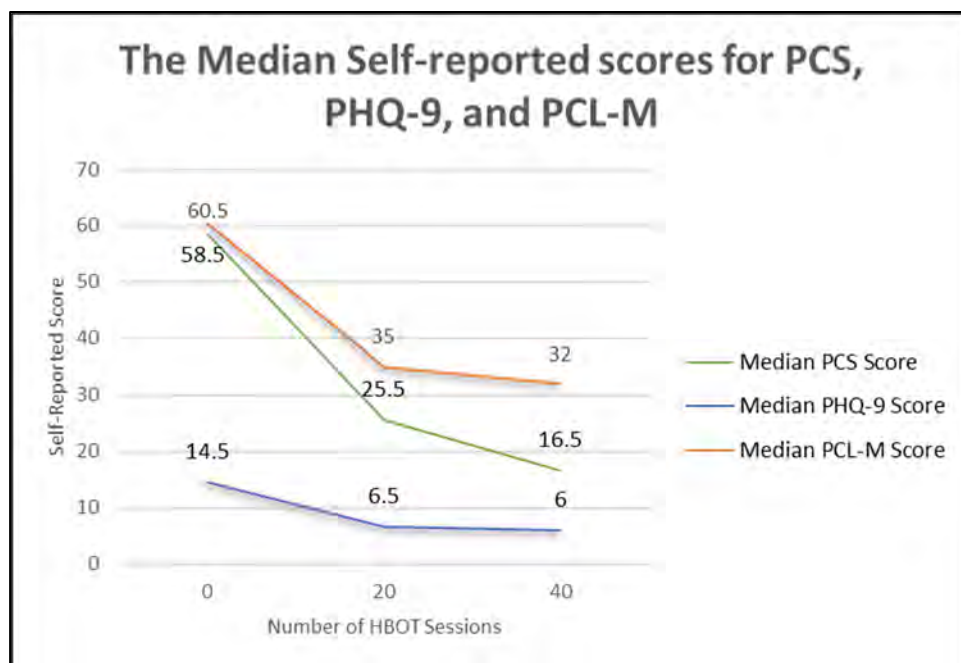
Patients who exhibited continuous symptoms following mTBI (N = 16) underwent evaluations using questionnaires at three distinct points: baseline, after 20 hyperbaric oxygen treatments, and after 40 treatments. The subjective questionnaires utilized were identical with those used in 2021. For the fiscal year 2022, all three evaluations demonstrated clinically significant reductions in both the number of symptoms and their severity scores from the baseline before hyperbaric oxygen therapy, to after 40 hyperbaric oxygen treatments.

FY 2021 & 2022 Comparison:

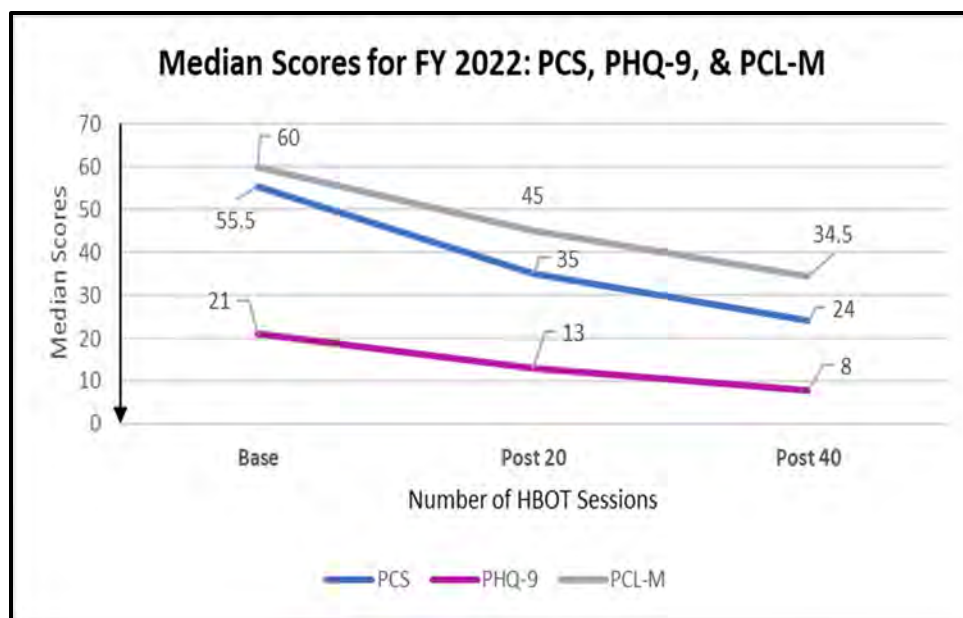
In FY2021 and FY2022, all 32 participants exhibited a clinically significant decrease in both the number and severity of symptoms (ranging from 47% to 72% in FY2021 and 39% to 58% in FY2022) from baseline to after 40 hyperbaric oxygen therapy sessions. In FY2021, the most significant improvements were observed in Post Concussion Symptom (PCS) scores, followed by depression (PHQ-9) and PTSD (PCL-M) scores. Conversely, in FY2022, the greatest changes were noted in depression scores (PHQ-9), followed by post-concussion symptoms and PTSD scores.

FY 2021 & 2022 Comparison:

Scores for FY 2021



Scores for FY 2022



PHQ-9 & Suicidality:

Military personnel with TBI frequently face related depression and suicidality. The Patient Health Questionnaire (PHQ-9) is a key tool for screening the severity of depression in this group. Its ninth question (Q9) specifically asks about passive thoughts of death or self-injury, making it a significant indicator of suicidal ideation. Studies have shown that the PHQ-9 can effectively identify military personnel at risk of suicide, making it a valuable tool in clinical settings (6,7). This finding underscores the importance of the PHQ-9 in helping healthcare professionals accurately assess depression severity and the need for urgent intervention, particularly when there is strong evidence of suicidal thoughts.

HBOT, Traumatic Brain Injury, & Suicidality:

There is a well-documented association between TBI and the onset or exacerbation of depression, PTSD, and suicidality in military personnel. The complexities of these conditions, especially when coexisting, present significant challenges for treatment and management. HBOT is a scientifically proven intervention for TBI, with studies indicating its potential in promoting brain healing by enhancing oxygen delivery to damaged neural tissues (9). Utilizing assessment tools like the PHQ-9 for depression and the PCS for post-concussive symptoms, research has demonstrated a notable reduction in depressive symptoms and suicidal ideation in military

personnel with TBI post-HBOT treatment (10). The therapeutic effects of HBOT, which include anti-inflammatory properties and neuroplasticity enhancement, may contribute to its efficacy in mitigating the psychological distress often accompanying TBI (11). As such, HBOT presents a viable therapeutic option for addressing the intertwined challenges of TBI, depression, PTSD, and suicidality in veterans.

Results:

In the fiscal year 2021 and 2022 programs, 12 of the 32 veterans exhibited signs of suicidal ideation prior to undergoing HBOT; 7 showed improvement. However, one veteran's condition deteriorated. Among those who experienced positive changes, the rate of improvement, characterized by reduced suicidality, stood at 81%.

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VETERAN VIDEO TESTIMONY



To Access Video of These Cases, See: <https://vimeo.com/941219244/58b7154424>

"I normally have pressure on the right side of the brain, after six dives that pressure was alleviated."

"My arthritis has been alleviated significantly as well."

"My daily headaches have diminished, it made me feel 10 years younger."

"Irritability was still a huge factor of my everyday life, after I did HBOT, the first week, it just zapped it. It hasn't been back since then and I don't expect it return."

Sergeant Dan Campbell, USA, Retired

A 76-year-old Vietnam Veteran recovered from TBI/PTSD with HBOT



See: <https://vimeo.com/731784760> for his story.

"I just completed what I think was the best thing that I've ever done in my life. With PTSD, you don't have clarity of mind. I can't tell you how great that feels when you didn't have it all your life and all of a sudden you just your whole mind, everything improves. When I left there, I just seemed to be a new person. I don't have the rage anymore."

"Hyperbaric oxygen therapy is a wonderful thing. It's noninvasive. They put you in a chamber where you breathe in 100% oxygen and it kind of changes your life. It did me."

"So many Vets that have TBI don't know about this, and the story needs to be told and instead of some doctor giving you a pill, to confusion you even more. They need to start recommending this and I hope they do!"

Staff Sergeant Robert Dawson, USMC, Retired
Gulf War, Iraq War, Afghanistan War



See: <https://vimeo.com/734378418> for his story.

"Prior to the treatment I'd be very explosive, very agitated, very sluggish. After the first 5 treatments I already noticed a change; and that explosive, agitated, easily triggered mindset has definitely diminished."

"On my last ANAM, one of the portions where you have to hit the X and then not hit the circle; I could feel the communication. Where in the ANAM prior to my treatment I had hit maybe eight or nine circles, after HBOT I only hit one circle. But I could feel the tingling in my finger, the communication that I had not had when it comes to reflexes between my finger and my brain, and I sense that now with everyday things."

"It's improved and enhanced my way of life. I've been able to home in on certain prioritized tasks. Rather than stress out, lose my mind, run around. It's just enhanced my whole way of life; my thought process and it's just been phenomenal."

Master Gunnery Sergeant Malvin Haubenstein, USMC, Retired
Gulf War, Iraq War, Afghanistan War



See: <https://vimeo.com/748159060> for his story.

"In 2013 my deployments were to include Iwakuma, Japan four to five times. And I did Kosovo. I did Desert Storm. Did three tours in Iraq. And a couple months in Afghanistan. In 2013, I had a knee replaced then I had my neck surgery and then I had esophageal cancer which I spent a long time recovering from that and that really put me into a depression."

"After coming to the HBOT program, I noticed energy burst and then it was like my head just cleared after the second week and as it went on, things got just clearer. Like a fog had just lifted, my joints, my range of motion, and everything."

"I have more energy. I wasn't as fatigued all the time. I was able to get up and go do stuff instead of just sitting around. It's just been a wonderful program."

Staff Sergeant Mario Martinez, USMC, Retired
Iraq War, Afghanistan War



See: <https://vimeo.com/829462959/c119f50f52> for his story.

"Hyperbaric oxygen therapy does work, and I can't say anything else really, except that. So, all my brothers and sisters out there that are vets there are other resources out there. You just had to ask for it. We're always going to be hurting, but at least, you know, you can use this type of resource right here to help me out. So, I can continue on another day."

"Unfortunately, a lot of the veterans who deal with a lot of anxiety, PTSD and everything else have taken their own lives. I could have been one of those service members on that list as well. Thanks to me, finding out about HBOT through nonprofit organization Semper Fi America Fund utilized their resource and then told me about this place, and we added that to my arsenal."

"HBOT has been really remarkable for me. My memory has improved significantly and I also have greater recovery time. Each time my injuries would flare up. And that's one of the best things about it."

Chief Warrant Officer Jesse Olson, USA, Retired
Iraq War, Afghanistan War



See: <https://vimeo.com/850680020/a54d24abc6> for his story.

"Just how you feel every day is like huge. The sad part is I have veteran friends that have taken their own lives unfortunately. I've been in the suicidal ideation headspace, and I would say that doing HBOT has put a big separation between me and that headspace. My mind will not go there like I know that place, but now for some reason I kind of have like a standoff distance with that place mentally."

"Especially if I do my dives in the morning and it's a good way to start the day in my opinion because it frees up your mind and helps you feel more energized and ready to get ready for the day, essentially."

"I've been sober for a little over a year now and that irritability was still a huge factor in my everyday life. And when I did HBOT, after the first week it really zapped it. Like it was just gone and hasn't been back since and I don't expect it to return."

Major Thomas Dunphy, USMC, Retired
Vietnam War



See: <https://vimeo.com/903760210/407d616efb> for his story.

"Right away, my first impression, immediate effect, normally I have pressure on the right side of the brain. After six dives, that normal pressure that I have was alleviated."

"Prior to starting this program, I was on about a month and a half of physical therapy to do a workup for a pretty strenuous program of activity at a racetrack to get my legs in shape, which I survived that pretty well. So, this is an added bonus, an unexpected bonus, where the arthritis has been alleviated."

"The other thing I noticed is I have a, because of my high blood pressure, I have a situation called dry eye, which I am on medication for. And after the six dives, I have noticed that during the day, I do not have to use any over-the-counter medicine. So, at night I take my prescription medicine, but during the day I do not have to take any of the over-the-counter things to alleviate the dry eye situation."

TAB – D

NC HBOT PROGRAM TEAM BIO'S AVAILABLE BY REQUEST

- EDWARD DI GIROLAMO, PE, CEO, THE STEEL NETWORK
- MELISSA SPAIN, CEO COMMUNITY FOUNDATION OF NC EAST
- MICHAEL WEEKS, MEDIA CONSULTANT
- JAMES HOOKER, CDR, USN, (RET)
- JOHN MEYERS, ANAM CONSULTANT
- JAMES STEVENS, MD, MEDICAL DIRECTOR, EXTIVITA-RTP
- ELENA SCHERTZ, NP, CLINIC MANAGER, EXTIVITA-RTP
- SARAH FRAGNITO, MBA, CLINIC MANAGER, EXTIVITA-RTP
- JACKIE FAZ, LPN, SAFETY DIRECTOR, EXTIVITA-RTP
- KRISTY ANDREWS, DEVELOPMENT MANAGER, HBOT4HEROES