

## Photobiomodulation Treatment for Brain Disorders

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**Summary:** Photobiomodulation (also known as Low Level Laser Therapy, LLLT, Cold Laser or Photo Medicine) has been a vital therapy in our clinical practice, totaling over 5 years. Observations of improvement in cognition and personality were noted in patients with vascular dementia, post –traumatic brain injury, and PTSD, which were treated at clinical practices in Buffalo, New York; Roswell, Georgia; Sarasota, Florida; Lafayette, Indiana; Phoenix, Arizona; and Baton Rouge, Louisiana. **Over 60 patients were treated an average of 4 times over an 8-day period all reported/exhibited significant improvement in their condition.**

However, in two cases men in their seventies and in robust health, with isolated short-term memory problems, no improvement was observed after four sessions and treatment was suspended. Due to concerns for therapeutic variability we chose Theralase [1] as a more safe and efficacious system, due to its capability of producing increased power for ATP activation through the Krebb's cycle utilizing 660 nm. laser diodes wavelengths. Nitric oxide is synthesized by utilizing the 905 nm. laser diodes which produces dilatation of blood vessels.

Key words: Photobiomodulation, Photo Medicine (PM), neuroregeneration, neuro-degenerative disease, small vessel disease (SVD), LLLT, Krebbs cycle.



I am Dr. Randy Lamartiniere an internal medicine physician with 30 years of experience. I have long been interested in different types of therapy though I've been skeptical of unproven or unscientific treatments. I was first referred to Mr. Lou Banas by a patient of mine. He was said to be involved in something called "cold lasers". I had no clue what this was or how this could be used medically. Like most people I thought that lasers were used to cut tissue in surgical application. I agreed to meet with Mr. Banas and found the Cold laser therapy quite interesting. I was impressed by the science behind the therapy which included mainly accelerating the natural healing processes of tissue in general. We began treating patients with various conditions with quite impressive results. Since that time I have become a believer in this therapy after seeing patients suffering from several bothersome and painful conditions have dramatic and rapid resolution of these problems.

Two of the more interesting cases have been an adult male with long term PTSD from a childhood emotional trauma who had impressive results after only three treatments and a woman who suffered a recent concussion as well as PTSD from a motor vehicle accident with similar results despite a poor prognosis related by her neurologist. The results are almost too good to believe which is one of the hurdles in marketing this therapy.

My name is Rhett Bergeron I am alternative medicine physician trained as an internist. I have a very busy practice in Atlanta specializing in hormone replacement cancer therapy weight loss and now thanks to Mr. Banas pain management and neuro Rehabilitation, I'm always open to new type of Therapies but what Mr. Banas has provided is quite surprising and significant. Two cases come to mind which the reader will find interesting. The 42-year-old male suffering from severe PTSD and other brain damage due to meningitis. He served as a detective at a local community station. He had a very supportive wife because he was non-functional and could not drive a car without getting lost he scored very high on PTSD interview. After five treatments he was functional PTSD score came down may be able to drive his car with no problem. The second case involved a long-term patient who suffered from Lyme disease. This is a very intelligent young man who again scored very high on a PTSD score. He felt strongly that anyone suffering from a major disease like Lyme would have a PTSD element. Again after just a few treatments he was essentially much better and his PTSD score showed he was significantly healed. This is truly a breakthrough in medicine I am currently helping Mr. Banas quote spread the word and set up additional providers throughout the country.

AND, my name is Lou Banas, the testimonials you just read are not exceptions to the rule but are the rule and are seen in our everyday practice. I am now what is referred to as a Certified Laser Therapist. We are a new "breed" of therapists that are bringing medicine of the future here and now. This laser system is so revolutionary that for all practical purposes I am practically thrown out of a sports injury demonstration when I significantly heal athletes with one treatment, this has happened 7 universities and 2 NFL teams!

Although this chapter is dedicated to dementia and PTSD, this concussion case is worth noting. Six years ago, we treated a young man who was hit with a lead pipe 2-3 times and had intractable migraines for two years; he was healed with just 4 treatments and the case was published in November 2012 [2]. Because of this discovery, we started addressing the issue of dementia and PTSD which has reached epidemic proportions in this country. The following patients were treated utilizing the Theralase TLC 900 series, it utilizes 5- 905nm near infra-red diodes and 4 infra-red 660 laser diodes with a peak power of 50 W and pulse duration of 200 nanoseconds. [3] All patients received 6 treatments over a two-week period. Five sites were treated including four of the pre-frontal cortex and one at the Circle of Willis for duration of 2 minutes.

**Discussion.** Several years ago, Dr. Richard M. Restak published *The Brain, The Last Frontier* due to the fact it is the one organ we still want to learn more about and how to treat. [2] It is well documented that many scientific discoveries are the result of a serendipitous event (Isaac Newton?) We believe that in 2009, we were the witness' and the catalyst for such a discovery. The opportunity to use this new technology, originally called Low Level Laser Therapy (LLLT) now referred to as Photobiomodulation was in Dr. Stephan's private practice in Buffalo New York. Dr. Stephan, a well-respected, primary care physician, placed heavy emphasis on preventive and alternative medicine. He has been using MB for over 11 years and as a primary care physician sees all types of injuries. On several occasions, I was able to assist him with the treatment of patients. Although we had a great success treating many different types of injuries, the most remarkable treatments were for migraine, concussion and dementia. Patients who had suffered a concussion or migraine had significant and sometimes total healing with these treatments. We knew this was remarkable, but we assumed we were only treating superficially, eventually realizing the skull is translucent!





Pictured above is the Theralase 1000 and 2000 Series. The 2000 has sensors that recommend settings for specific patient profiles and injuries and has significantly more power.

## PTSD

PTSD evaluation. The Co-Occurring Disorders Program Screening Assessment questionnaire is universally accepted as a valid assessment of an individual's degree of emotional distress due to a traumatic event(s). A score of 35 indicates a mild case and a

score of 55 or above indicates a severe disorder. The individuals here all presented here had scores over 55 and unless indicated; scores are presented before the first and after a fourth session. Over 50 individuals were treated over a one-year period at 5 different locations which included: Phoenix Az.; Buffalo, NY; Lafayette Ind., Bossier City, La.; and Sarasota, Fla. virtually all patients exhibited and proclaimed remarkable improvement in their emotional stability and quality of life which is indicated in their scores. Below is a copy of the interview questionnaire:

**Instructions:** This questionnaire asks about problems you may have had after a very stressful experience involving actual or threatened death, serious injury, or sexual violence. It could be something that happened to you directly, something you witnessed, or something you learned happened to a close family member or close friend. Some examples are a serious accident; fire; disaster such as a hurricane, tornado, or earthquake; physical or sexual attack or abuse; war; homicide; or suicide.

First, please answer a few questions about your worst event, which for this questionnaire means the event that currently bothers you the most. This could be one of the examples above or some other very stressful experience. Also, it could be a single event (for example, a car crash) or multiple similar events (for example, multiple stressful events in a war-zone or repeated sexual abuse). **How long ago did it happen?** \_\_\_\_\_ (please estimate if you are not sure)

**Did it involve actual or threatened death, serious injury, or sexual violence?**

Yes No

**How did you experience it?**

It happened to me directly

I witnessed it

I learned about it happening to a close family member or close friend

I was repeatedly exposed to details about it as part of my job (for example, paramedic, police, military, or other first responder)

Other, please describe

**If the event involved the death of a close family member or close friend, was it due to accident or violence, or was it due to natural causes?**

Here is a copy of the questionnaire like the one we used.

Below is a list of problems that people sometimes have in response to a very stressful experience. Keeping your worst event in mind, please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem <u>in the past month</u> . <b>In the past month, how much were you bothered by:</b>	<b>Not at all</b>	<b>A little bit</b>	<b>Moderate problem</b>	<b>Quite a bit</b>	<b>Extreme problem</b>
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were happening again (as if you were actually back there reliving it)?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4



14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being "super alert" or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

The following case studies are cited by the providers in the cities indicated followed by a excel spread sheet of our documented results using the questionnaire.

**My first PTSD case.** It was presented as depression. realizing later it was PTSD. A 34-year-old business owner in Buffalo New York claimed he had fired at least 32 people in his small company in the last two-and-a-half years. He suffered from depression was all he told me. Much research suggests that by increasing blood flow severe depression may be alleviated. After the third session he told me how much better he was and that the real problem that had been haunting him. He had witnessed the murder of his mother when he was only 9 years old and the murderer was never convicted! You can just imagine the psychological damage. He returned for his fourth 12-minute treatment. His life was totally turned around and he is forever grateful.

Case 2: A 69-year-old Vietnam Vet from Rochester New York after 50 years cited emotional problems had just coincidently contacted the VA the week before becoming aware of the treatments. He holds executive management position but knew he had issues. After completing a series of 4 treatments over an eight-day period he felt significant relief. He did not follow up with the VA. Scores: 47/27

Case 3: A 54-year-old woman from Rochester, NY was on SSI due to a diagnosis for PTSD as the result of an abusive spouse. After 6 treatments, her score indicated remarkable improvement in her emotional well-being. She was given a 3 more "maintenance" treatments over a 4-month period and her testimonial video can be viewed at [www.paintherapyusa.com](http://www.paintherapyusa.com). Scores 62/25.

Case 4: A 75-year-old woman from Sarasota, Fla. was forced into prostitution at the age of 19 in New York City. After the second treatment, she had remembered she had an

abortion at the age of 21. This event was "blanked out" in her memory and she cried in the office on subsequent occasions stating she had "killed" a baby something deeply against her convictions. After the 5th treatment among other "improvements" she now could enjoy dining, driving her car by herself, and her handwriting was now legible. Questionnaire not utilized.

Case 5: A 45-year-old man in Phoenix, AZ endured multiple beatings as a child was accidentally electrocuted at work and thrown 30 feet to the ground; doctors felt the fall restarted his heart. Because of the accident, he underwent stress management, tempers management and had severe muscular skeletal pain for several months. The PTSD questionnaire was administered, and he scored very high. After 5 treatments over a 10-day period he no longer suffered from PTSD, was virtually pain free, was relaxed, no longer short tempered and was no longer prone to sudden outbursts of anger. Scores 67/32

In conclusion,

I personally have only five clients not respond. Three were veterans on full disability with "A" type personality's they there was no improvement to every question. The other two were still in the "situation" and the response was minimal. Attached is an appendix citing my success with over 35 clients.

Due to the remarkable success we have had treating PTSD in both the civilian and military population, I have set up a foundation **The Orthogenesis Project**. It is a 501c charitable, tax deductible foundation. For more information go to [www.paintherapyusa.com](http://www.paintherapyusa.com)

## DEMENTIA

There are more than 5 million Americans currently living with Alzheimer's disease and according to the American Alzheimer's Association every 67 seconds someone in the United States develops the disease. Estimates of costs to American society are \$214 billion including Medicare and Medicaid. These costs are staggering yet if we do not find a cure the cost in today's costs would be \$1.2 trillion by 2050. Extensive research is being conducted worldwide and recent studies that Alzheimer's (AD) could be more closely related to Small Vessel Disease (SVD) than previously thought. However, regarding this technology two controlled dementia studies are currently underway in San Francisco and Boston using similar technology. The technology used here which is similar is now in the mist of conducting a PTSD study in the Atlanta area. As recent as May of this year JAMA Network Journals reported "Cerebral SVD and AD disease pathology appear to be associated, new research indicates. Our study supports the hypothesis that the pathways of SVD and AD are inter-connected. SVD could provoke amyloid pathology while AD –associated cerebral amyloid pathology may lead to auxiliary vascular damage' researchers conclude." [4] Dr. Sandra Black a prominent

Alzheimer researcher in Toronto Canada during a recent radio talk show theorized that exercise is one area for prevention that could be a solution in mitigating the problem. The inference here is that increased blood during cardio vascular exercise might mitigate the buildup of plaque and protein. Specialist's concede that Vascular Dementia is directly related to SVD which by estimates accounts for 10- 20% of all dementia cases. Alzheimer's is a more insidious disease with the knowledge that the buildup of amyloid plaque and tau protein hamper the vascular system. Because of this build up much attention is being given to prevention as well as cure.

The following are a few dementia case studies I have published previously. Although I have carefully documented our work with PTSD this was not the case with dementia which it was too time consuming to ask the clients to cooperate, although we did utilize one like the one below on a few occasions.

Name    Age Is patient alert?    Level of education

1. Name and age

2. What is the year?

3. What state are we in?

4. Please remember these five objects. I will ask you what they are later. Apple Pen Tie House Car

for \$20. How much did you spend? How much do you have left?

6. Please name as many animals as you can in one minute. 0-4 animals 5-9 animals 10-14 animals 15+ animals

7. What were the five objects I asked you to remember? 1 point for each one correct.

8. I am going to give you a series of numbers and I would like you to give them to me backwards. For example, if I say 42, you would say 24. 87 649 8537

9. This is a clock face. Please put in the hour markers and the time at ten minutes to eleven o'clock. Hour markers okay Time correct

10. Please place an X in the triangle.

Which of the above figures is largest?

11. I am going to tell you a story. Please listen carefully because afterwards, I'm going to ask you some questions about it. Jill was a very successful stockbroker. She made a lot of money on the stock market. She then met Jack, a devastatingly handsome man. She married him and had three children. They lived in Chicago. She then stopped work and stayed at home to bring up her children. When they were teenagers, she went back to work. She and Jack lived happily ever after. What was the female's name? What work did she do? When did she go back to work? What state did she live in?

Case 1. An 88-year-old woman wheel chair bound started having simple memory problems (dementia) eight years previously. She recently was forced to move in with her son due to aberrant behavior in the skilled nursing facility. She would have violent outbursts towards others when confused or if more than two or three people were in her presence. Her energy level was very low. Six treatments were administered over a twelve-day period. Her son reported that she was much more relaxed, and outbursts were non-existent. In addition, in the evening she maintained a much higher energy level and was much more alert. The son was very pleased with the change in her entire demeanor and after a 5-week period notices a small decline in her condition. Therefore we have now decided on a regimen of bi-monthly treatments.

Case 2. A 38-year-old female, under the care of this primary care physician for 3 months had a history of stroke and possible TBI due to spousal abuse. She sought treatment for severe migraines of various degrees 3-4 times per week over a 5-year period. Her previous primary care physician had her on a very high dosage of OxyContin and I was asked by her current primary care physician if I could help wean her off. After the first

treatment her headache pain was almost eliminated, however due to cut back on her medication the migraines continued. A course of 8 treatments (some on an emergency basis) were administered over a 14-day period and she received significant relief every time. However, after the seventh treatment the mother reported her daughter began speaking in full sentences and her memory had returned. In addition she no longer needed to walk with a cane. The client was followed up intermittently over a two-year period and no regression was apparent.

Case 3. The practice manager of an orthopedic practice asked if I could possibly help her after observing my work with injured patients in her office. (Initial use of this type of modality was for muscular-skeletal injury.) Her 77-year-old father was first diagnosed with dementia 12 years previously and although taking several memory medications still had to be admitted to a memory home. His memory was severe, and he recognized his daughter but did not know her name even though she visited him 3-4 times per week. After the fourth treatment, the daughter called and reported to me that his brother stopped by to see him for the first time in months and he not only called him by name, they cried and had a conversation. He was treated the next day and upon our arrival while sitting in the dining room he recognized his daughter waved and called out to her by name. This indeed was a startling moment. A fifth treatment was administered however the daughter then left for ten a day vacation. Upon her return, he had reverted to his old self and several treatments later there was no change.

Case 4. A 67-year-old postal worker still working part time was getting concerned about memory lapse and sense of smell loss. Both his parents died of Alzheimer's in their 80's. We proposed a series of 6 treatments to start as a preventive measure to which he readily agreed. He reports that he has regained sense of smell. In addition, he reported he had 3 small, fleeting headaches something which he never experiences. We conjecture this may be the result plaque or tau protein moving through his system. We will continue to give him treatments monthly.

Case 5. A 61-year-old retired housewife had a very rapid decline over a 9-month period. They had planned to move to another city where she would have more family support. However we encouraged her caretaker the daughter to undergo a least a series of six treatments.

After the second treatment, the receptionist was shocked that she asked to sign her credit card receipt. After the sixth treatment, the daughter reported that she now dresses herself without help and if she makes a mistake the daughter points it out and

her seat belt without any assistance. Also, she had a problem eating a sandwich whereas she would pick up the top slice of bread and the daughter would need to correct her, which was no longer a problem.

Case 6. An 86-year-old male with a 10-year history is at this time has been treated continuously on a regular basis since November 2014. Subject is a retired medical researcher and wife a retired school teacher. Careful documentation is being kept by his wife and this clinician. At the outset within a two-week period the major improvement reported by the wife was the fact that he slept through the night giving the family much relief from anxiety and sleep deprivation; previous to this time he would wander around the house at all hours of the night. His echoing also was minimized in the first few months and conversation was improved. A memory test is administered twice a week and he showed stabilization. Although he has declined significantly this year (2018) which may be attributed to less frequent treatments due to his decline and inability to walk there is a new therapy to relate. He was taken to the hospital with pneumonia and could no longer swallow. Aspiration was a major fear and he was sent home and was told he "might have a week". Intensive laser treatments after one week brought him back to his previous state. Previously only his prefrontal cortex was treated (on occasion the Circle of Willis) However, we now treated the brainstem and along with dally doses of atropine he now eats normally and on occasion will respond with a nodding of his head or mouthing a thank you. His wife caretaker gives us much credit for his longevity. Much credit must be given to the wife for the many activities she engages him in including puzzles and the math games, but much credit is giving to the ongoing treatments.

**Conclusion.** Information cited in this paper gives us the foundation to conduct further formal controlled studies. Currently, such a study concerning dementia is currently on going in San Francisco and Boston using similar technology. We are planning a controlled, formal study regarding PTSD to be held in Atlanta in the fall of 2018. The providers who contributed to this chapter all are currently providing this service to everyone at minimal cost and free to the veterans. This technology is a breakthrough the treatment of brain disease and trauma.

1. Theralase Inc. Toronto, Canada.
2. Richard M. Restak M.D. *The Brain, The Last Frontier, Mass Market Paperbooks, January 1, 1980*
3. Network Journals, *Association between small vessel disease, Alzheimer pathology studied.* Jama Network Journals May 12, 2014