

September 2021

**Float Therapy as an adjunct to TBI management : A case study
Dr. David A. Berv, Certified Chiropractic Sports Physician**

Background

Brain research and brain mapping technology has far outpaced treatment options for those with mild traumatic brain injury (“mild TBI”) and severe traumatic brain injuries (“TBI”). Because the symptoms and severity of brain injury vary with each trauma and each individual, treatment options are dependent upon the timely and detailed identification of a TBI. Considering the chameleon-like nature of brain injury, an individual may not be able to adequately recognize or communicate both mind and body dysfunction due to altered brain function over the short and long term. Head trauma and pain can be a good disguise and diversion from deeper brain issues that may not surface until a physical or emotional pain or problem leads to deeper investigation. Minor skull injuries are often dismissed or under reported by both patient and medical health care provider, as seen in a recent study in the Journal of Chiropractic Medicine, Vol 6, March 2017. Studying the brain under states of neurological dysfunction can offer an opportunity to gain insight into ways to impact the brain both during times of brain injury and times of the various stages of physical and emotional health during a lifetime.

Despite a growing awareness and concern for those with mild TBI and TBI, there are individuals who are cleared medically but then are left to figure out their own self-care with no definitive long-term recovery plan or regular checkups for a trauma requiring such attention. In the maze of seeking TBI treatment options, floating, known also as floatation therapy or restricted environmental stimulus therapy (“REST”) is showing promise by itself and as an adjunct to any TBI treatment option.

The following is a clinical case study involving a 45 year-old female, who sustained a traumatic brain injury and was in the process of symptomatic recovery. She had been trying various methods and at the initiation of the study and was under the care of an osteopathic physician.

After her initial float therapy session at The Float Zone, we mutually decided to monitor her progress via having her commit to a “therapeutic dose” of float therapy in order to see if and how much positive progress could be made, and would therefore give an indication of a clinically/medically justified frequency for floating after this initial period. The intention was to reduce the frequency if significant progress was being made.

Method

The intervention for this case study involved “floating” in a 9’ long x 5’ wide fiberglass tank with a hinged lid, shaped like a large egg and filled with 175 gallons (10” deep) of a salt solution. This solution contains 1000 pounds of medical grade Epsom salt, or magnesium sulfate (MgSO₄) and is maintained at skin temperature (approximately 94 degrees F). The tank is within a private room containing a shower. To “float” the individual disrobes, showers, inserts earplugs, turns off the overhead room light, then climbs inside the tank which has internal light and music controls. The individual closes the float tank lid and then transitions onto a supine (face up) position and begins to float, face up, effortlessly. The float lasts for an hour.

The study lasted approximately eight (8) weeks, during the period of 5/20/21-7/27/21. The subject floated twice weekly during this period (except for a brief period when she was traveling in July). She floated a total of 13 times, on the following dates:

5/20/21, 5/23/21, 5/27,21, 5/28/21, 6/3/21, 6/4/21, 6/7/21, 6/10/21, 6/16/21, 6/23,21, 6/30/21, 7/19/21. Note that there was a 3 week gap between the float on 6/30 and 7/19.

A subjective survey was sent to her via email/text to be filled out and returned electronically, at least a few times a week. To appeal to the participant's concern for being "monitored", the surveys were sent out sporadically/randomly, as opposed to daily or every other day. The subject would fill out and return the surveys the same day, electronically, where she would not be able to see her previous answers. Using a numeric scale on a 0-10 continuum with descriptors, this eight (8) week survey was initiated on day one (1) of the study (5/21/21). For purposes of comparison, a baseline survey with the same questions was completed by the participant prior to the initiation of the study, on 5/19/21. Over this time, she floated 13 times and filled out 14 surveys. As mentioned, the surveys were not necessarily sent to her immediately after a float.

When interpreting the graphs, please reference corresponding questions and descriptors along with the graphs, such that 0=best/least pain/feel awesome and 10 = terrible, worst, most symptoms. There is also an associated baseline score in the description of each graph, denoted as a single number (rather than included within the comparison graph).

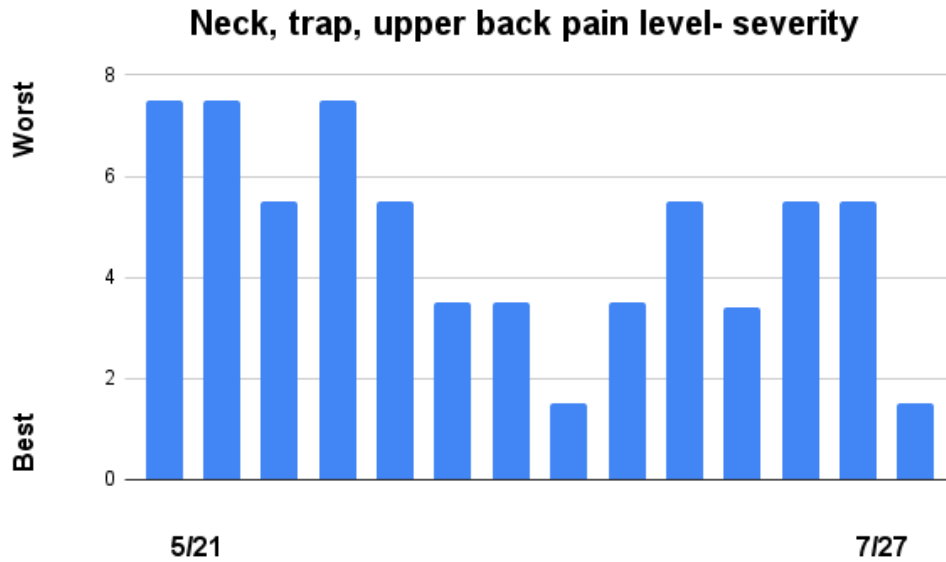
Each solid bar represents a single survey. The following dates correspond to the dates that the subject filed out a survey and relate to the 14 individual bars on each graph, moving from 5/21/21 on the far left, to 7/27/21 on the far right:

(1) 5/21/21, (2) 5/24/21, (3) 5/26/21, (4) 5/28/21 (5) 5/31/21, (6) 6/4/21, (7) 6/9/21, (8)6/14/21, (9) 6/21/21, (10) 6/29/21, (11) 7/5/21, (12) 7/9/21, (13) 7/14/21, (14) 7/27/21.

(2) A baseline survey on 5/19/21 asked the same questions, but to estimate symptoms over the previous **2 months** vs. the past few days.

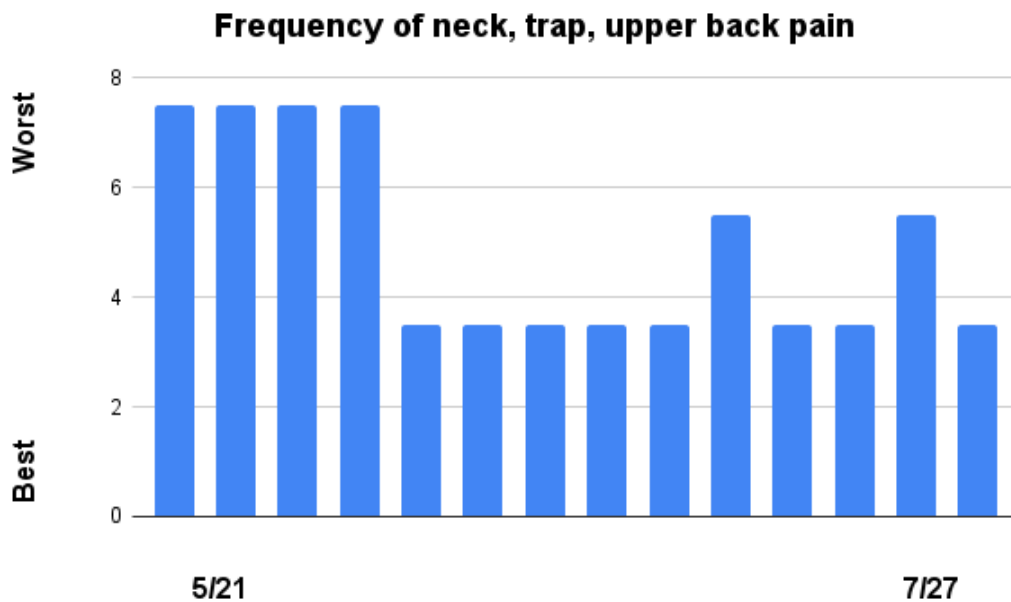
Results

1. On a scale of 0-10 with 0 = no pain and 10=worst pain ever, rate your average level of neck, trap and upper back pain over the past few days. **Baseline:** 7.5



2. On a scale of 0-10 with 0= no pain and 10=worst pain ever, rate your average frequency of neck, trap, upper back pain over the past few days.

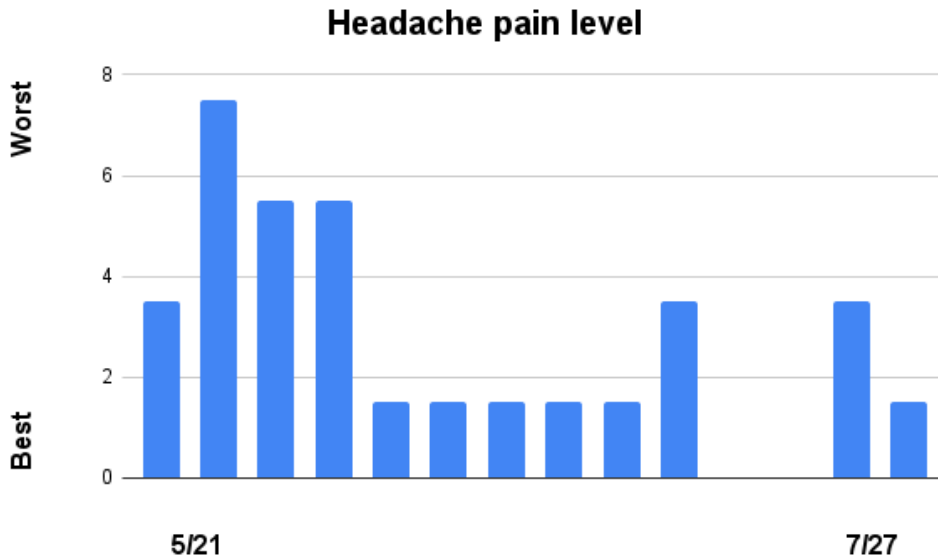
Baseline: 7.5



3. On a scale of 0-10 with 0= no pain and 10=worst pain ever, rate your average headache pain level over the past few days.

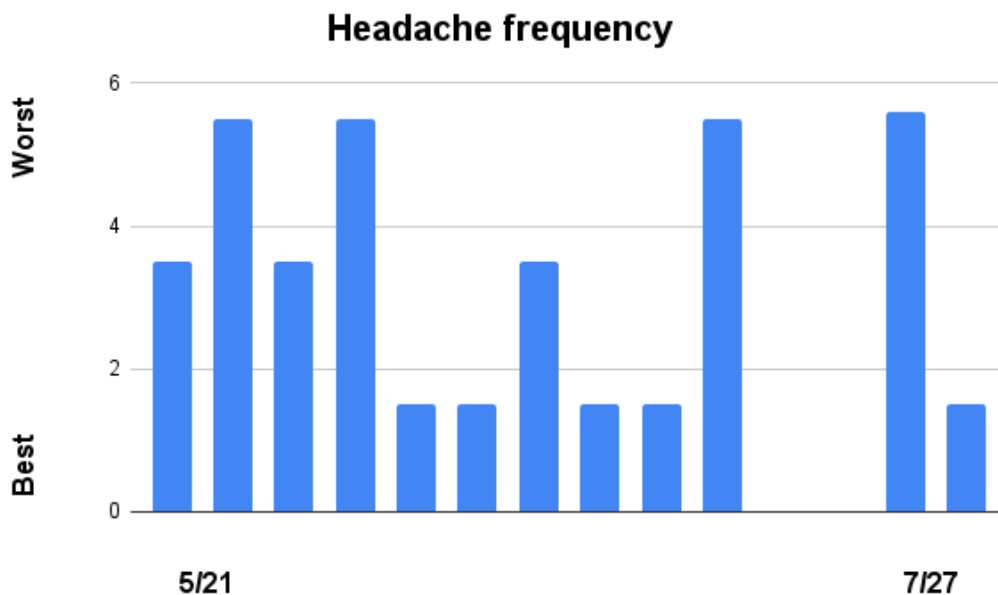
The area of the graph with no bars = 0 or no headache

Baseline: 7.5

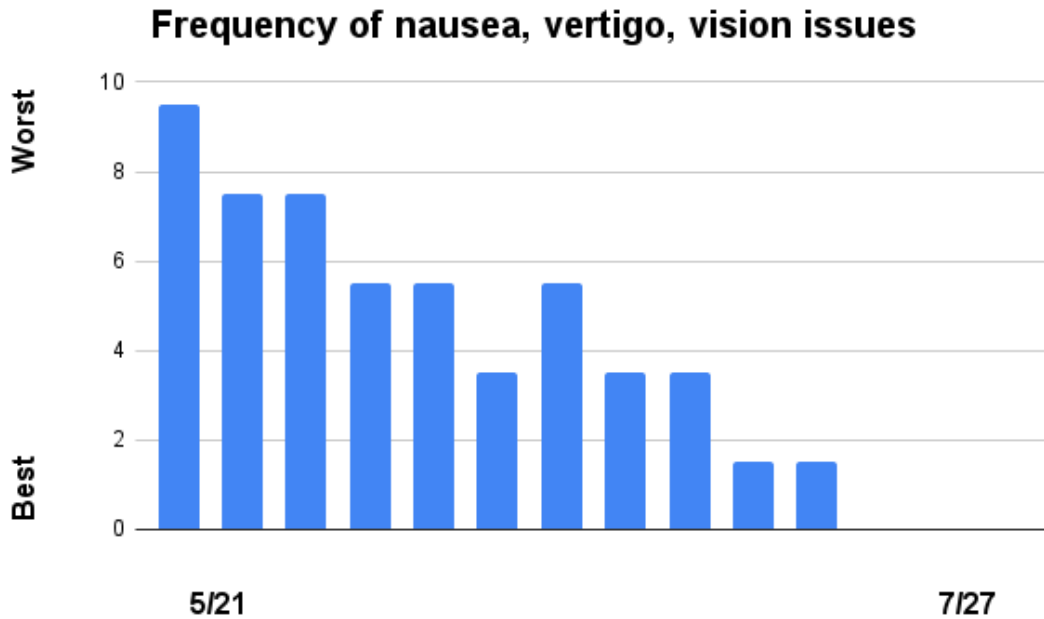


4. On a scale of 0-10 with 0= no pain and 10=worst pain ever, rate your average headache pain frequency over the past few days. The area of the graph with no bars = no headache

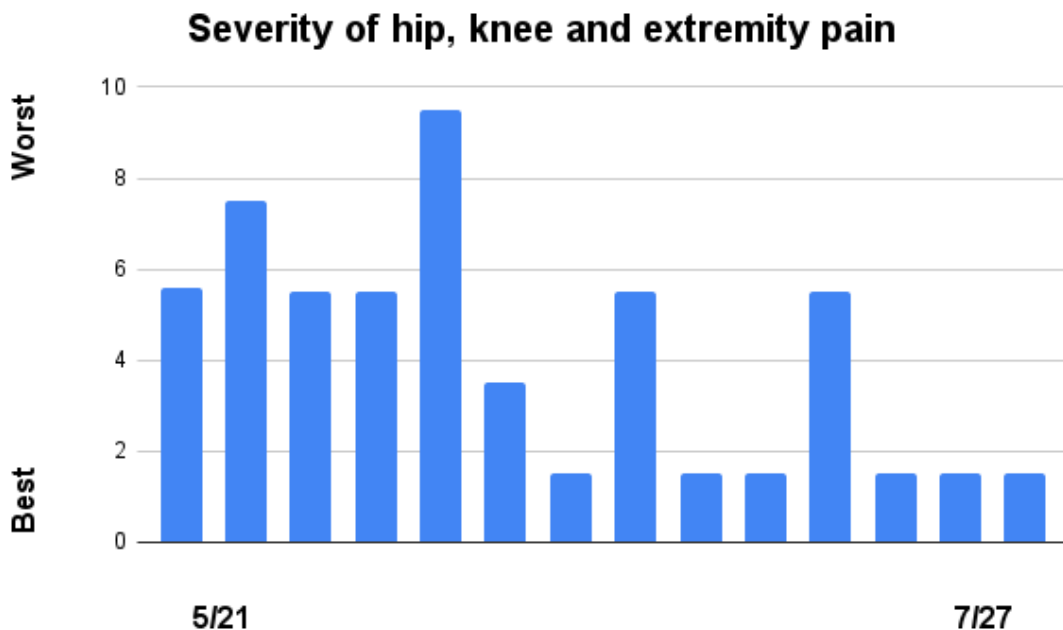
Baseline 7.5



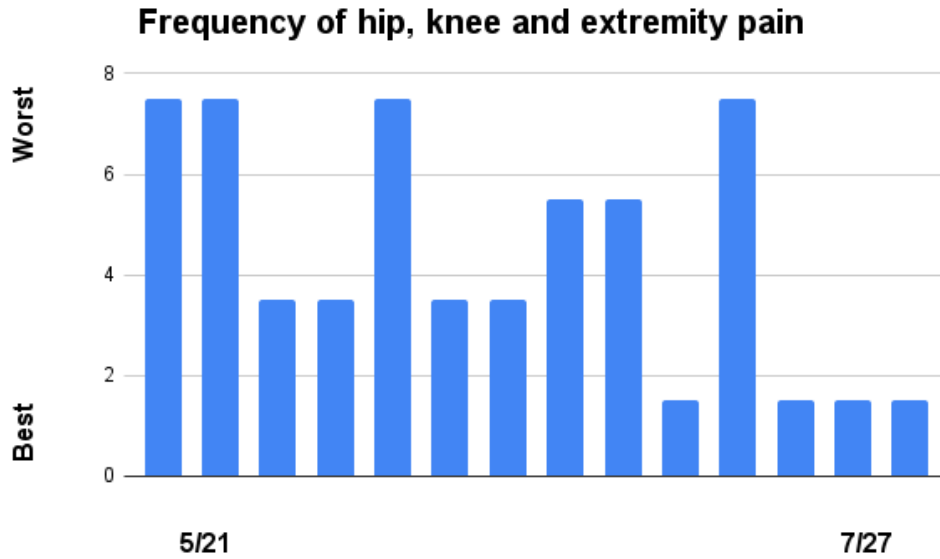
5. On a scale of 0-10 with 0= none and 10=constant, rate your frequency of nausea, vertigo, vision issues. The area of the graph with no bars = 0 or no issues. **Baseline: 7.5**



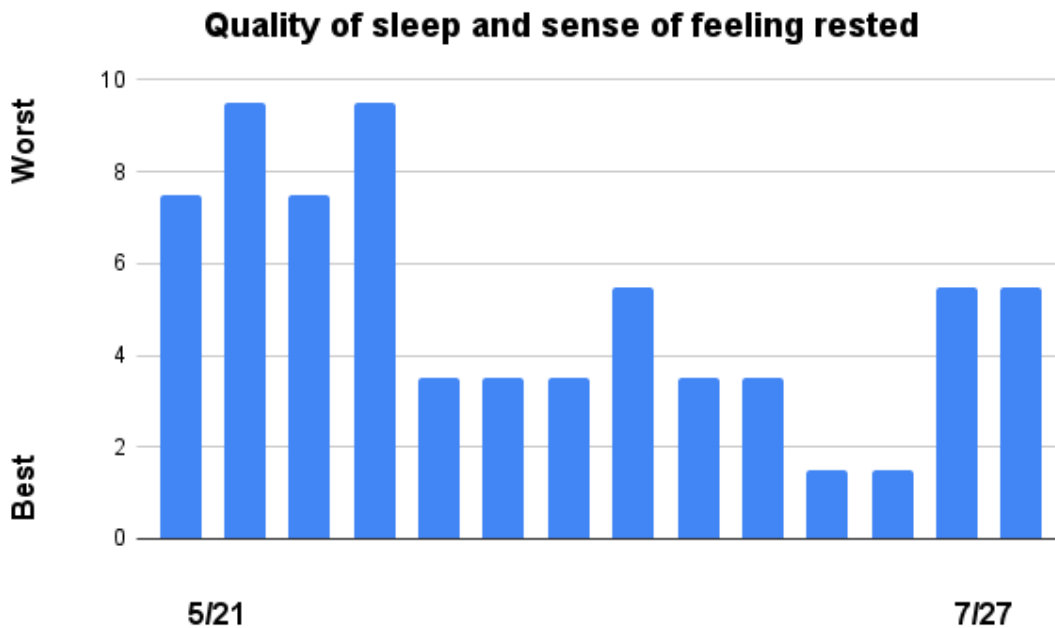
6. On a scale of 0-10 with 0= no pain and 10=worst pain ever, rate your average hip, knee and extremity pain over the past few days. **Baseline 7.5**



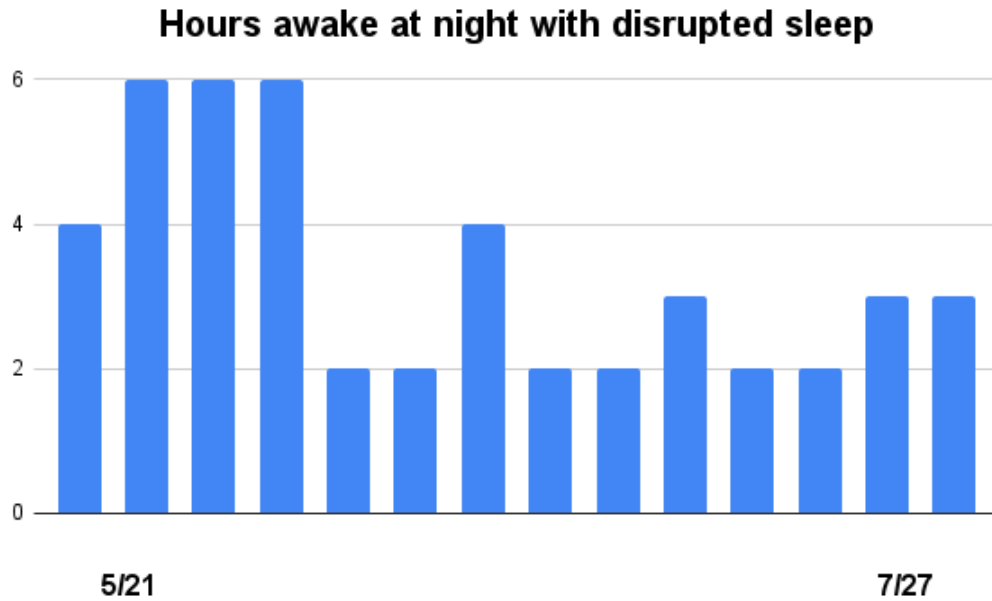
7. On a scale of 0-10 with 0= none and 10=constant, rate your frequency of hip, knee and extremity pain. **Baseline 7.5**



8. On a scale of 0-10 with 0= excellent sleep and 10=completely unrested, rate your quality of sleep over the past few days. **Baseline 9.5**



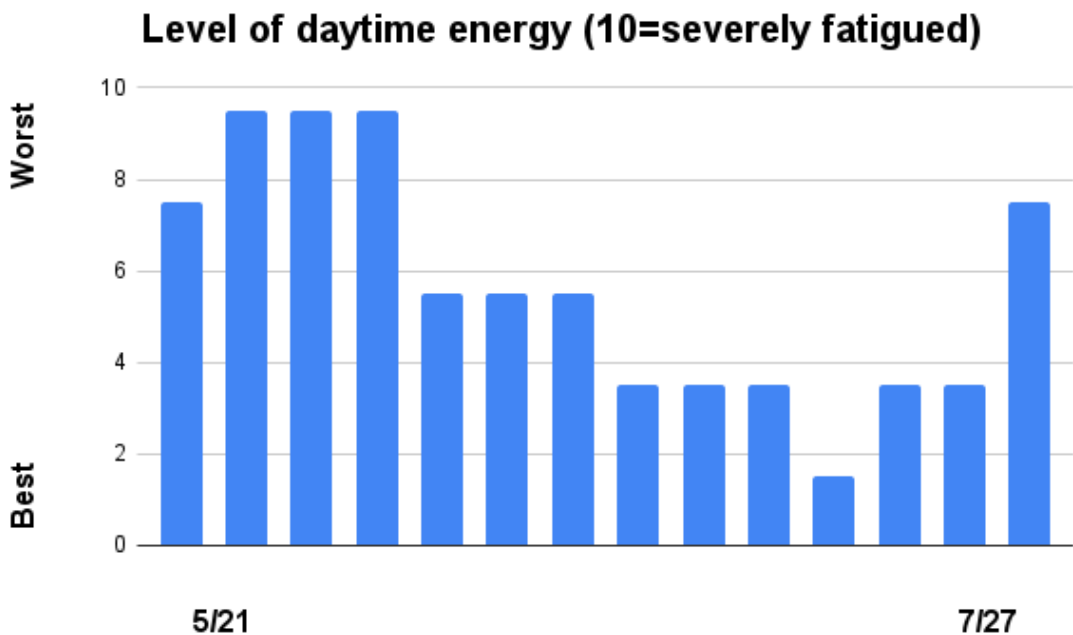
9. Rate how many hours you lie awake at night after your sleep is disrupted.



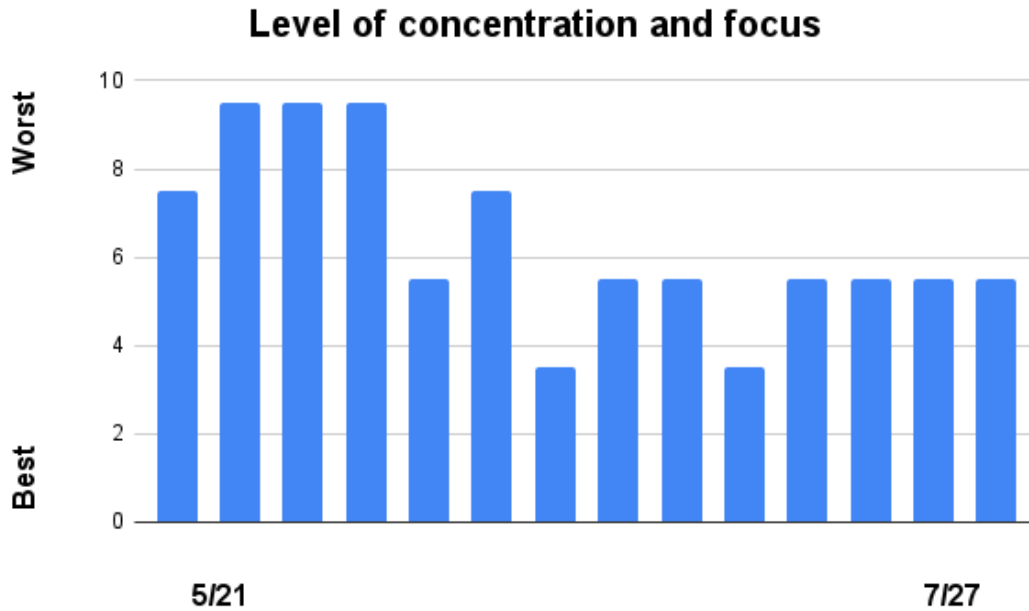
Baseline: 7. (Vertical rise relates to # of hours vs worse /better)

10. On a scale of 0-10 with 0= completely rested and 10=severely fatigued, rate your quality of daytime energy over the past few days.

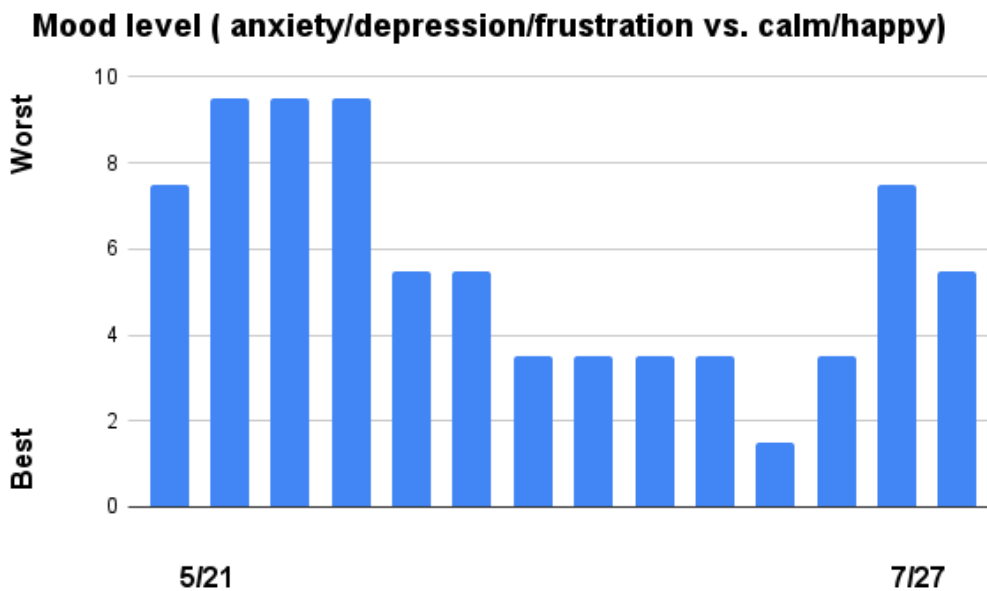
Baseline: 9.5



11. On a scale of 0-10 with 0= excellent concentration and focus and 10=extremely poor concentration/focus rate your quality of concentration and focus over the past few days. **Baseline: 7.5**



12. On a scale of 0-10 with 0= Extremely calm, happy, uplifted and and 10=terrible/worst mood, rate your quality of mood over the past few days. **Baseline: 9.5**



Conclusions/Discussion

Float therapy can positively impact the healing process of an individual suffering from traumatic brain injury. In this case, while it is clear to see progress in the graphical results for all categories, there were variations in progressive gains over time, influenced by external factors including, but not limited to :

- a. Travel + activity / vacation (affected 2x/week float schedule later in study)
- b. Initiating a detoxification/specialized diet that was different than pre- study
- c. Use of an electromagnetic PEMF device midway during the study, concurrent with floating schedule
- d. Getting ear crystals “put back in place” midway through study, which involved wearing a neck brace and sleeping upright for days, disrupting sleep
- e. Emotional factors of personal relationships, family, unsettled home life
- f. Stress of dealing with attorneys and doctors.
- g. Above factors influencing sleep, which was a huge and difficult issue to begin

TBI symptoms are unique to each individual. Some have more pain than others. Some have more sleep issues than others. Some have paradoxical responses to treatments outside of floating that complicate the progress and tracking of the effects of just floating. Further, many are caught between lawyers and doctors making recommendations and for some, it is hard to follow through with a program without complicating the playing field. Yet, the concept remains that floating works well in tandem with other healing and wellness modalities.

With a TBI, the brain is unconsciously keeping the nervous system in a state of fight or flight overdrive. This keeps the (autonomic) nervous system in a state of imbalance and leads to a higher level of cortisol and adrenaline. This in turn, affects sleep, energy, concentration, mood, immune system, pain and sleep.

The act of floating in a float tank allows for a deep reset of the brain and puts the brain in a very unique and healing state that cannot be found in a waking, conscious setting. As a result of minimizing or eliminating normal stimuli such as sight, sound, touch, smell, temperature and gravity, floating allows the brain to enter a restorative state. In particular, by floating effortlessly and by “defying gravity”, the brain and body do not have to pay attention to one’s place in space, balance, gait, posture, hearing, sight and other stimuli involving the senses.

The water temperature is at skin temperature neutral, which is 94 degrees F- the temperature of the skin at its most relaxed state. This tricks the brain into deep relaxation - something that is hard to replicate outside of this enveloped sense of constant water temperature.

There are also 1000 pounds of dissolved Epsom salts in the water (which is why one floats effortlessly) - Epsom salt is commonly and chemically known as Magnesium Sulphate. While floating, you (theoretically) absorb Magnesium through your skin while you float and breathe it in through the air. (Science has not completely confirmed the quantitative absorption, however.)

Magnesium is good for numerous reasons, including pain, sleep and mood and is involved in cardiovascular, neurologic, hormonal and musculoskeletal processes.

Floating on a regular basis, through body and brain relaxation, facilitated via the Vagus nerve network, can reduce cortisol and adrenaline output, while increasing hormones that induce calm. This allows for restored sleep patterns, improves energy and alertness, as well as less pain. By stimulating the “rest and digest” part of the nervous system (vs. the fight or flight), it allows for other therapies to be more effective and thus improves the effectiveness of all therapies that are done in tandem with floating.

Floating on a regular basis is the key to making improvements. The effects are cumulative and the results are longer lasting (as also evidenced in multiple other case studies conducted by Dr. David Berv).

As can be seen in the aforementioned graphical charts, improvements were made in multiple areas, including headache pain and frequency, neck, upper back and extremity pain and frequency, sleep quality - including less hours awake at night, better mood and better focus and concentration.

One final comment relates to the frequency of floating and as this case demonstrates, mirrored by other similar case studies, as the frequency began to move from weekly + floats to more spaced out 2 week apart floats (due to participants schedule), some symptoms did not respond with the same downward, improving trend and appeared more variable (also in light of the other factors mentioned above such as travel, etc.). Thus, it appears prudent to maintain a regular float schedule for the best and most consistent results.