



Providing Accessible & Remote Neuroscience for
Dawson Community College Veterans & Families
Brain Balancing / Training to Increase Potentials & Resiliency

A Vitanya Remote Pilot Program

November 12th, 2019

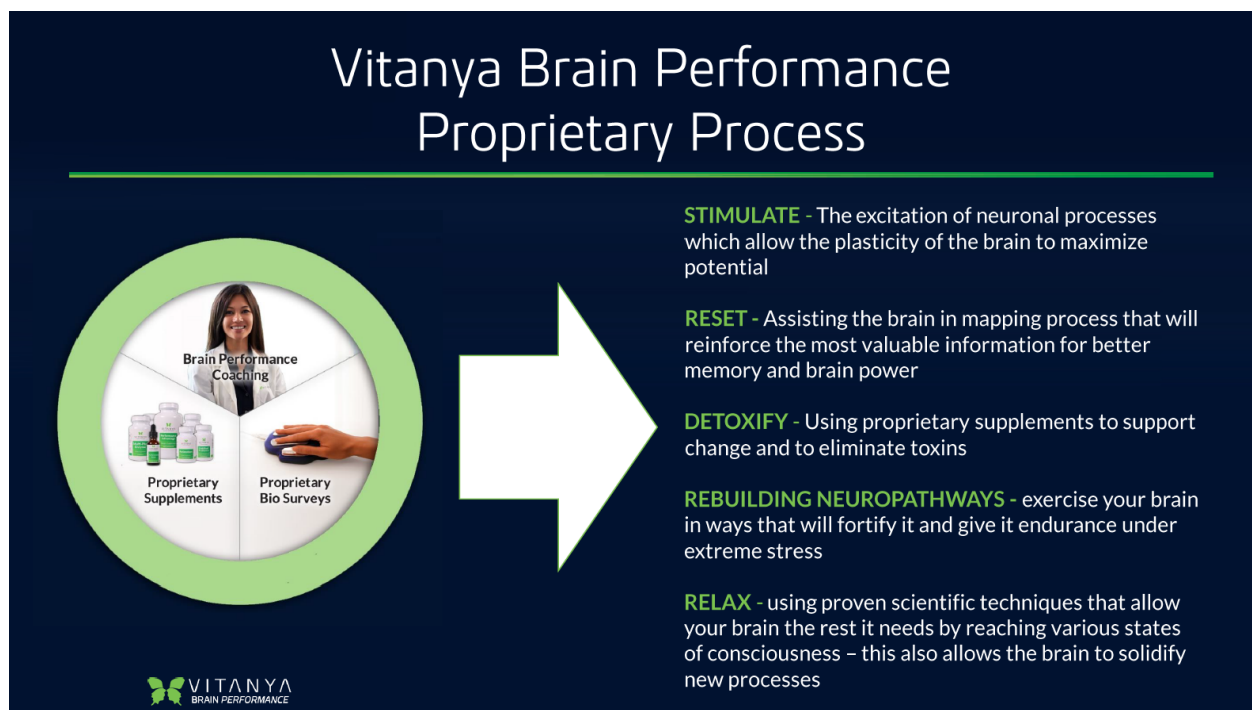


An Overview

Balancing and training the brain leads to enhancement of decision-making, quicker thinking, better reaction times, sleep and overall well-being. Training the brain involves utilizing neuroplasticity to create stress resiliency.

In support of Dawson Community College veterans and the urgent need to serve veterans and their families living in rural areas, Vitanya was excited to show that their process was able to have the same robust results providing a remote program as they had been getting during their in-person sessions. For this study, a Brain Performance Coach in Norman, Oklahoma would be providing services for the veterans of Glendive, Montana. The program's focus was designed to decrease any traumatic, anxiety or depressive symptoms that these veterans could be exhibiting. Another focus was to improve executive functioning and quality of life, so that these veterans and their families might have better work and scholastic achievement along with an improved quality of life.

The following report is the data we have collected at the 6-month conclusion of the program.



Overview of Program Results

(Final Scores from a 6-Month Program)

Vitanya Assessment Results

Reduction of the impacts of Trauma, Depression, and Anxiety

- ❖ 36% reduction in Trauma
- ❖ 23% reduction in Depressive Symptoms
- ❖ 33% reduction in Anxiety Symptoms

Improvement to Employee Quality of Life

- ❖ 34 % Psychological Health
- ❖ 23% Physical Health
- ❖ 17% General Feeling about life
- ❖ 12% Environment
- ❖ 8% Social Relationships
- ❖ 18% *Overall Quality of Life (total)*

Improved Executive Functioning for Increased Work Performance

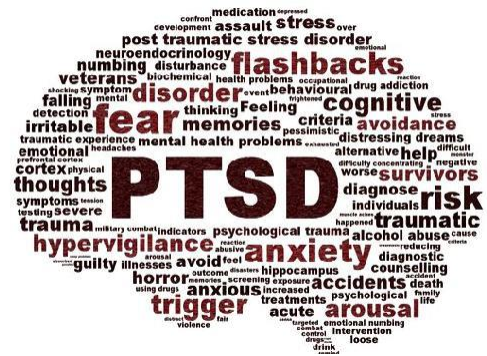
- ❖ 41% Attention
- ❖ 35% Emotion Regulation
- ❖ 35% Working Memory
- ❖ 31% Self-Monitoring
- ❖ 31% Inhibitory Control
- ❖ 31% Planning
- ❖ 28% Flexibility
- ❖ 26% Initiation
- ❖ 25% Organization



VITANYA

Thinking well beyond

* Suggested PCL-C cut point scores 30-35 with general population samples



Measuring change

Good clinical practice often involves monitoring patient progress. ***Evidence suggests that a 5 to 10-point change is reliable (i.e., not due to chance) and a 10 to 20-point change is clinically meaningful.***²

Therefore, we recommend using 5 points as a minimum threshold for determining whether an individual has responded to treatment and 10 points as a minimum threshold for determining whether the improvement is clinically meaningful.

PCL-C (results)

32% (17-point change) improvement overall with 3 clients having clinically meaningful progress

- Beginning scores on the 4-participants ranged from 28 to 69 (28, 47, 66, 69); 3 of the 4 clients were above the cutoff scores and would be considered in the clinically significant category
- End-program scores ranged from 19 to 50 (19, 29, 34, 50) – overall point reduction is clinically significant (average 20-point reduction); 3 of 4 clients no longer meet criteria for PTSD.

On Sleep and productivity:

Individuals who have problems falling asleep, staying asleep, waking too early, and/or not feeling rested even after ample time in bed have been shown to have decreased work productivity, increased absenteeism, poorer performance and greater activity impairment. Improvement of client sleep can be critical in the school environment as well as improving home life as well.

Specifically, on sleep

“How satisfied are you with your sleep?”

The QoL assessment has an item that measures sleep on a scale of 1-5 (1 = Very Dissatisfied, 5 = Very Satisfied). Prior to the Vitanya program, participants (5) totals for sleep were reported as a 8 (out of 25). At the 6-month point, participants ranked their satisfaction with sleep at 15. ***This is an improvement of 88%.***



“Trouble falling or staying asleep?”

The PCL-C assessment has an item that measures sleep on a scale of 1-5 (1 = Not at all, 5 = Extremely). Prior to the Vitanya program, participants (5) totals for falling/staying asleep were reported as a 16 (out of 25). At the 6-month point, participants ranked falling/staying asleep difficulty as 10. ***This is an improvement of 38%.***

Center for Epidemiologic Studies Depression Scale: Revision (CESD-R)

The 20 items in CESD-R scale measure symptoms of depression in nine different groups as defined by the American Psychiatric Association Diagnostic and Statistical Manual, fifth edition. The CESD has been the workhorse of depression epidemiology since its first use in the Community Mental Health Assessment Surveys in the 1970's¹. The scale is well known and remains as one of the most widely used instruments in the field of psychiatric epidemiology². These symptom groups that are assessed by the CESD-R are:

1. Sadness (Dysphoria)
2. Loss of Interest (Anhedonia)
3. Appetite
4. Sleep
5. Thinking /Concentration
6. Guilt (Worthlessness)
7. Tired (Fatigue)
8. Movement (Agitation)
9. Suicidal ideation



Probable major depressive episode: Anhedonia or dysphoria nearly every day for the past two weeks, plus symptoms in an additional 3 DSM symptom groups reported as occurring either nearly every day for the past two weeks, or 5-7 days in the past week

Subthreshold depression symptoms: People who have a CESD-style score of at least 16 but do not meet criteria

No clinical significance: People who have a total CESD-style score less than 16 across all 20 questions.

CESD-R (results)

23% improvement overall

- Beginning scores on the 4-participants were (56, 26, 19, 4)
 - One of the participants measured as probable major depressive episode (56)
 - Two participants measured as having subthreshold depression symptoms (26, 19)
- Final-test results showed a significant reduction of symptoms for the 3 participants who were struggling with depression.
 - Participant that previously had probable major depressive episode moved to subthreshold depression symptoms (56 to 44)
 - Two participants previously noted as having subthreshold depression symptoms now was measured at no clinical significance (26 to 15; 19 to 13)

¹Radloff LS, Locke BZ. The community mental health assessment survey and the CES-D Scale. In: Weissman MM, Myers JK, Ross CE, eds. Community surveys of psychiatric disorders. New Brunswick, NJ: Rutgers University Press; 1986:177-189.

²Murphy JM. Symptom scales and diagnostic schedules in adult psychiatry. In: Tsuang MT, Tohen M, eds. Textbook in Psychiatric Epidemiology. New York: Wiley-Liss; 2002:273-332.

Burns Anxiety Inventory (BAI)

The Burns Anxiety Inventory (BAI) is an assessment tool used to measure anxiety. Developed by psychiatrist David Burns, the inventory, or checklist, can be self-administered or administered by a clinician.

It can help people to monitor their own anxiety over time, and to become more aware of anxious symptoms. It also aids clinicians in diagnosing anxiety disorders.

The inventory is a checklist of thirty-three symptoms related to anxiety. They are broken down into three categories: anxious feelings, anxious thoughts, and physical symptoms. A person taking the assessment ranks each item on a scale from zero, "not at all," to three, "a lot." Anxious feelings items include "feeling that things around you are strange, unreal, or foggy" and "apprehension or a sense of impending doom." Thoughts include such items as "difficulty concentrating" and "fears of being alone, isolated, or abandoned." Physical symptoms list sixteen items, including "pain, pressure, or tightness in the chest" and "restlessness or jumpiness."



Degrees of anxiety can be evaluated by score:

Score	Degree of Anxiety	Score	Degree of Anxiety
0-4	Minimal or no Anxiety	21-30	Moderate Anxiety
5-10	Borderline Anxiety	31-50	Severe Anxiety
11-20	Mild Anxiety	51-99	Extreme Anxiety or Panic

BAI (results)

33% improvement overall

- ☐ 35% reduction in anxious **Feelings**
- ☐ 31% reduction in anxious **Thoughts**
- ☐ 32% reduction in **Physical symptoms**

- ☐ Beginning scores on the 4-participants were (51, 30, 28, 13)
 - Participants scored in the range of Mild Anxiety to Extreme Anxiety or Panic
- ☐ Final-test results showed a reduction of anxiety symptoms for all participants, with all moving to lower categories
 - Participant moved from Extreme Anxiety or Panic to Severe Anxiety (51 to 47)
 - Two participants moved from Moderate Anxiety to Mild Anxiety (30 to 18; 28 to 17)
 - Participant moved from Mild Anxiety to Borderline Anxiety (13 to 7)

WHOQOL-Bref

Participants in the study experienced improvements all domains of Quality of Life as measured by the WHO-QoL-Bref.

General Quality of Life Improved by 17% which measured items such as “How satisfied are you with your health?”

Physical Health Improved by 23% which measured items such as “How satisfied are you with your sleep?”

“How satisfied are you with your capacity for work?”

Psychological Health Improved by 34% which measured items such as “How well are you able to concentrate?”

“How often do you have negative feelings, such as blue mood, despair, anxiety, depression?”

Social Relationships Improved by 8% which measured items such as “How satisfied are you with your personal relationships?”

“How satisfied are you with the support you get from your friends?”

Environment Improved by 12% which measured items such as “How healthy is your physical environment?”

“How available to you is the information that you need in your day-to-day life?”

Overall Quality of Life in all areas improved by a total of 18%



CEFI-A

Formal Definition of Executive Functioning

The executive functions are a set of processes that all have to do with managing oneself and one's resources in order to achieve a goal. It is an umbrella term for the neurologically-based skills involving mental control and self-regulation.

"Executive Function" is a term used to describe a set of mental processes that helps us connect past experience with present action. We use executive function when we perform such activities as planning, organizing, strategizing and paying attention to and remembering details.

The brain continues to mature and develop connections well into adulthood, and a person's executive function abilities are shaped by both physical changes in the brain and by life experiences, in the classroom and in the world at large.

Subscales to assess Executive Functioning

Emotional Regulation – The ability to modulate emotional responses by bringing rational thought to bear on feelings.

Flexibility – The ability to adapt to circumstances and to problem solve.

Inhibitory Control – The ability to stop one's own behavior at the appropriate time, including stopping actions and thoughts. The flip side of inhibition is impulsivity; if you have weak ability to stop yourself from acting on your impulses, then you are "impulsive."

Initiation – The ability to begin a task or activity and to independently generate ideas, responses, or problem-solving strategies.

Organization – The ability to impose order on work, play, and storage spaces.

Working Memory – The capacity to hold information in mind for the purpose of completing a task.

Attention – Measures the ability to avoid distractions, concentrate, and to sustain attention.

Self-Monitoring – The ability to monitor one's own performance and to measure it against some standard of what is needed or expected.



A New Frontier in Evaluation of Executive Functioning

Executive functions broadly encompass cognitive control processes responsible for the regulation of behavioral activities (Miller & Cohen, 2001)⁵. Furthermore, executive functions underlie general intelligence and are imperative to everyday functioning (Dujardin et al., 2004)⁶. Given the importance of executive functioning in everyday cognitive activities, it is striking that relatively little interest has been paid to the potential modifiability of these functions (Dahlin, et. al., 2008).⁷

Currently, research in the field of Executive Functioning is generally focused on children or populations with specific illnesses. Vitanya is committed to exploration of how the Vitanya process may impact Executive Functioning and lead to enhancement of human potential and performance. As shown above, other countries are focusing on Subjective Well-being (WHOQOL-Bref) and the importance to corporate performance and revenue. We wish to expand this concept to include executive functioning as a possible mechanism to increases in productivity as well.

⁵Miller, E. K., & Cohen, J. D. (2001). An integrative theory of prefrontal cortex function. *Annual Review of Neuroscience*, 24, 167–202.

⁶Dujardin, K., Blairy, S., Defebvre, L., Duhem, S., Noel, Y., Hess, U., & Deste'e, A. (2004). Deficits in decoding emotional facial expressions in Parkinson's disease. *Neuropsychologia*, 42(2), 239–250.

⁷Dahlin, E., Nyberg, L., Backman, L. & Neely, A. S. (2008). *Plasticity of Executive Functioning in Young and Older Adults: Immediate Training Gains, Transfer, and Long-Term Maintenance*. *Psychology and Aging*, 23, 4, p720-730. doi: 10.1037/a0014296