Lyme Brain and Neurofeedback

Excerpted from the book, “Lyme Brain” by Nicola McFadzean Ducharme, ND:
CHAPTER 26

Neurofeedback

“Neurofeedback is one of my favorite therapies, and I’ve seen it work wonders for Lyme Brain. I have had patients go from only sleeping two hours per night to sleeping full nights after a few sessions of neurofeedback. Others, after years of not feeling creative due to their Lyme disease, have started doing art again. Many others have reported significant gains in cognitive function after sessions of neurofeedback. It can also help with anxiety and depression. Neurofeedback works to stabilize the frequency patterns of the brain. These are the brainwave patterns that are measured when one has an electroencephalogram (EEG). …….we are talking about the electrical activity of the brain. Brainwave patterns can be classified as alpha, beta, delta, gamma, and theta. Each grouping encompasses a particular range of frequencies, and each has its own characteristics. For example, the alpha brainwave state is typically a relaxed state where one feels mindful and meditative. It is associated with increased creativity and a reduction in depression. Beta waves are heavily involved in cognitive functions; we are alert, focused, engaged, and task-oriented. Delta and theta waves appear in the realm of sleep or very deep meditative states. Gamma waves are the fastest brainwaves and relate to the processing of information from different brain areas. They have been associated with higher states of conscious perception. From these brief descriptions, we can see that one thing is clear. If you get stuck in one brainwave state or you have a dominance of a certain frequency range, it can impact your ability to function. If you have alpha dominance, you may feel dreamy or spacey, which could be a good thing or a bad thing depending on the context! Without sufficient beta waves, focusing or concentrating on anything will be challenging. Without the delta and theta waves, good quality, deep, restorative sleep could be elusive. Many psycho-emotional and psychological symptoms have some association with imbalances in brainwave activity. Neurofeedback works to bring erratic brainwave patterns back into balance. First, it detects where waves are out of balance via electrodes on the head that measure brain frequency activity, much like an EEG.

What happens from there depends on the fundamental principle of biofeedback: when the body is presented with information about its own functioning and given the encouragement and opportunity to change, it will do so. (This can also be done via heart rate, blood pressure, galvanic skin response, and other means, but I am talking about neurofeedback here, which in effect is biofeedback for the brain. The computer reads the brainwave activity and assesses where the imbalances are. The person receiving the therapy is listening to music, or in some neurofeedback systems, watching a video or playing games. When the brainwave patterns are healthy and balanced, the music plays uninterrupted. When the brainwave patterns are erratic, there are tiny breaks in the music that are barely perceptible to the ear. The brain learns that it gets rewarded for operating within healthy frequencies patterns and will start pulling itself into those patterns to continue the rewards. Over a series of sessions, the brain is trained to operate in those healthy frequency patterns more frequently. I use the analogy of going to the gym and doing a bicep curl. If you go to the gym one time and lift a weight twenty times, your muscle will not be stronger by the next day (even though it might be sore!). However, if you go to the gym two or three times a week for several weeks, your muscle will be stronger, even at rest. You have trained a stronger muscle, and you can use that muscle more effectively in your everyday life. So it is with neurofeedback and the brain. After a series of sessions, the brain will operate in its newly-learned, healthier pattern all the time, not just during the session. That means great things for your everyday functioning.”