Enhancing Neuroplasticity to Improve Peak Performance

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Peak performance appears to emerge from a brain that is both talented in the chosen profession and firmly established in higher values. To the extent one can remain anchored in the higher values of selflessness, peak performances can be maintained. The moment values degrade, even at the level of thoughts and feelings, performance is adversely affected. Higher values could be quantitatively measured in terms of applied neuroscience by sensorimotor rhythm values that appear at CPz (or above the default network in the brain). CPz refers to a location on the scalp, defined by the International 10–20 system, along the midline between central (Cz) and parietal (Pz) vertices. The higher the amplitude of SMR, the greater the self-regulation over one’s own default network. This would amount to the individual’s staying in a passive listening mode; this allows the real-time input from the environment to trigger action, rather than one’s actions being skewed by one’s own prerogatives. More critically, interpretations become more sensitive as resources dedicated to perceptions diminish. It has been empirically observed that as the SMR values increase (provided the Z-scores are largely within a normative database with respect to people performing at their peak), people gain regulation, control, and mastery over emotional, executive, and sensory quiescence, respectively. The individual Alpha frequency is also maintained above 8–9 μV in the eyes open condition and task condition, as one improves proficiency even over sensory quiescence. Well-being at the physical, emotional, and intellectual levels is accompanied by enhanced performance at each stage of sustainable growth.

Introduction

Working with peak performers in business, sports, artistry, and education is always a challenge. Individuals want different things than what the team or organization wants. The peak performer differs from the individual seeking help for problems. Peak performers want to climb to the top of their profession and are self-motivated to achieve the pinnacle through the dedication of heart, head, and often home.

Before becoming a neuroplasticity clinician, I spent about 15 years living in various ashrams across India. The perspective taken at these traditional and conservative places, with their outlook based on age-old traditions and eternal values, can be a foundation for customized practices that facilitate the quest for excellence in contemporary life and living. Yet one might ask, how can these ashrams provide the experience that increases chances of survival, without any individual or any group ever bothering to focus its attention on survival?

The Innate Quest for Quiescence

The Indian spiritual tradition, which has spread to every nook and corner of the world, has been eternally based on gaining quiescence. Although religious practices varied in different ashrams, the common thread that remained consistent throughout this entire period was the need to gain an experience of quiescence. Quiescence is often practiced initially as a break away from chaos within, the need to stay away from negative feelings, emotions, and thoughts by reinforcing a positive aspiration.

Emotional quiescence: the vistas to improved interpretation. Emotional quiescence is often facilitated by following a daily routine that needs to be engaged in, both physically and mentally. There is a legacy to this daily routine, and more often than not it is irrelevant to the contemporary needs of the individual and to those social responsibilities that one has to fulfill to even survive in the hypercompetitive, globally linked economy. The flipside of the whole daily routine saga, if understood in the right context, is that it provides a gateway to gaining an insight into one’s own intrapersonal needs while also providing a portal to comprehend the interpersonal needs of the community or society that one depends on for living one’s life in the present. So the daily routine can be used either to become mired in legacy or to gain an astonishing insight into one’s own and socially relevant needs. The insights gained make the inquirer (sadak) a responsible individual, and she or he learns to put the cart before the horse. The unselnishness gained helps the inquirer gain better self-regulation over negative self-talk and anxieties.
that emerge while being concerned about his or her own welfare or that of his or her kith and kin. The insights gained help individuals act in such a way that they are relevant to both their own needs and those of the society that they live in and need to serve to earn their daily bread and fulfill higher responsibilities. This in itself builds better connectivity in the brain compared with what one began with before the inquiry. Emotional quiescence, thus, opens the door to gaining better control over one’s emotional tone, thus setting the process rolling for mastering stillness of mind. More importantly, it helps one to engage consistently with the external environment until the data to be received from the environment are complete. This open attunement to the environment is critical, as in the previous more self-centered mode, the individual fails to tune into and recognize the needs and perspectives of others.

Executive quiescence: allowing external stimuli to drive action. Those who graduate successfully discover their intrapersonal and interpersonal needs. They advance to the next higher level of quiescence. This stage focuses on fulfilling the needs of individuals, teams, and often other societies that the people are interdependent on. The innate quest for serenity, stillness of mind, and the ability to be in the present demands that different areas of the brain are primed for responding, rather than reacting, to real-time challenges from within and without. Initially, this level of practice strives to ensure that these issues to be tackled do not hijack one’s resources. Priming of areas used in processing mundane yet relevant data helps one in detailing, planning, scheduling, and strategizing more productively. Executive quiescence is a process facilitator. The major enabler of the mental states associated with these higher-order cognitive functions comes in the form of appropriate meditations, which are the internal components of the process. Practicing to be a witness in meditation is the external facilitator, which help one gain more self-regulation over one’s own fascination and anxiety for results associated with action. The objective at this stage of development of quiescence is to learn to remain engaged with the external environment until the issue at hand is resolved yet to allow the real-time input to drive execution rather than one’s preoccupations.

Sensory quiescence: enhancing the self-regulation over the default network. Motor and executive quiescence essentially establishes better self-regulation or control over the default network in the brain. The default network could be defined as the network for inward attention and is often balanced by the sensory network for externalizing attention. As one’s fascination for results dissipates, the subler emotional tone allows the brain to gradually slow down. Albert Einstein would call this time dilation. Barry Sterman would call this increasing the sensorimotor rhythm (SMR). Sterman (1996) showed that enhancing the SMR reduces motor activity and produces greater stillness in animals and humans. Vedanta and the Indian philosophical schools, including Buddhism, would have their own terms and terminologies.

The establishment of this condition is very important in terms of not engaging with stimuli from within and/or without even before the data or stimuli being received are complete. In students, emotionally charged stimuli coerce them toward socially unacceptable behaviors; sportspersons or corporate personnel are, more often than not, compelled by their fascination for results, to follow patterns of activities that lead to long-term difficulties for themselves, shareholders, stakeholders, and target customers. Fascination for results leads to execution before long-term consequences are clearly understood. A strong self-regulation over the default network provides the capability for the brain to remain in a standby mode or in executive quiescence, as David Kaiser would term it. It helps in allowing the real-time input to trigger execution rather than one’s predispositions coercing and skewing one to act. (In order to augment this, we, as an organization, also work on other aspects such as “learning to observe oneself from a stranger’s (third person) perspective,” in order to enhance clarity and objectivity with respect to judgment, decision making, and emotional intelligence.)

The more sophisticated state of sensory quiescence enhances the potential to excel at one’s chosen profession. The individual’s daily routine is determined increasingly by interpersonal responsibilities rather than one’s own intrapersonal needs and compulsions. This augments one’s ability to become more selfless. Altruism is the destination. The more altruistic one is in his or her activities, the greater is the ability of gain control over the default network and improve one’s interpretation of external data. As sensory quiescence gets established, the individual begins to stay mostly in the “zone.” The individual becomes better able to remain in the moment and remain centered, with consistency and constancy. Network connectivity in the brain is optimized for functional efficiency and effectiveness. The new competency gained is the ability comprehend and detail for action from the big-picture view. Gradually, the capability to “precognize” emerging scenarios is also enhanced. Peak performance is verily impossible without this critical component of quiescence. Although there are other states of quiescence development, they fall beyond the scope of peak performance.
Kindling Quiescence Is Synonymous with Cultivating Higher Values

With each stage of quiescence, higher values are established. Along with values comes wellness and the ability to initially become and thereafter maintain an aspiration orientation. The behavioral aspect of this capacity is to conserve and direct one’s energy toward the achievement of one’s stretch goal. With respect to brain function training, it can be understood as self-regulation or control over the default network in the brain. The control gained over the default network can be measured at CPz as SMR or individual Alpha frequency (IAF; or the individual posterior dominant rhythm, as Barry Sterman calls it). When aspiration orientation is established, the amplitude of SMR will be consistently greater than 3.5 μV in the eyes open condition. Another way to assess this is that the individual dominant rhythm (at a frequency of 10–12 Hz) will have an amplitude of about 8 μV even in the eyes open and sometimes even the task conditions.

All three stages of quiescence involve control over attention. In the initial stage of development of quiescence, the goal is to stay engaged until the data being received from the environment are complete. In the second stage of quiescence, one self-regulates engagement until the issue tackled is resolved. In the third stage of quiescence, engagement is consciously subtle with respect to external data while being more attuned to how the interpretation and execution are emerging.

Living in the ashrams, contrary to all expectations, allowed me to become more relevant to contemporary developmental needs, that is, to become self-aware and reinforce various mental states that improve, augment, and enhance productivity in normal individuals. It also made me become self-aware very early in my career that the facilitation of excellence or performance enhancement in others must be pursued through experience, not through explanations of these productive and dissipative mental states. The reinforcement (or disenchantment) needs to be brain based and can be learned by the brain through operant conditioning. Such an experience and technology-driven evidence-based methodology could help individuals achieve and actualize these states in the din and roar of the marketplace. Brain function training using biofeedback and neurofeedback thus became an integral part of our organizational strategy to produce sustainable productive change, along with reinforcement of higher values (often defined in the language of quantitative methods).

Case Study: Working with a CEO with Stevens-Johnson Syndrome

We will now discuss the case of a 36-year-old male CEO. His organization was started by his father and had been in business for more than 25 years. Along with this business, he was also heading three other smaller organizations that needed very little of this time. He was a victim of the tsunami that hit India on December 26, 2004, and he met me almost 5 years after the event. A set of unfortunate consequences led him to have Stevens-Johnson Syndrome. He struggled in the tsunami and escaped with his life but lost tear-gland activity in both his eyes. He was a productive, high-functioning executive; an avid golfer; and a socialite. He had a supportive family and two lovely kids. The individual and his organization were in a lot of trouble as he was getting more and more depressed and even contemplated suicide. He confided to his wife about his gloomy thoughts and sought psychiatric help. There were five physicians in various specialties in his wife’s family, and when they could not help, he just gave up. The very first thing that was said during our initial meeting was, “You are the only person who can help yourself.” This cleared any unrealistic expectations even before we began with the initial tests.

The underpinning assumption in peak performance is that people capable of achieving high-level performance have brains that are primed for execution. We gather both qualitative and quantitative data about individuals or teams, with whom our organization proposes to work. Most of the time, the peak performers whom we have met are very elusive. They seem to hate discussing their primary motives, goals, and aspiration. The reasons could be many, and it is rather difficult to get into any in-depth discussion about this in an article. A subjective Comprehensive Neurodiagnostic Checklist™ (CNC1020) was administered (three people answered: the participant, spouse, and a close friend).

Regarding the quantitative data, we did a quantitative electroencephalogram and Vietta Wilson’s Test for Optimal Performance, to help us assess the brain capability, especially the individual’s aspiration orientation. In this case, we also did a long diagnostic interview and a low energy neurofeedback system (LENS) map. The initial conclusion of our assessment was that we needed to use heart rate variability (HRV) biofeedback to rebalance his autonomic nervous system. We also used a photonic stimulator after a consultation with Len Ochs. The photonic stimulator uses light to trigger a biological response. The executive was using custom-made Boston contact lenses for his eyes. These are gas-permeable contact...
lenses. He was able to tolerate the lenses for just 3 hours at a time. After the first session with the photonic stimulator, this increased to 5 hours. We started the LENS sessions after 5 sessions of HRV biofeedback training, as Len Ochs recommended. After 10 sessions of LENS treatment, the executive was able to use the Boston lenses for more than 10 hours at a stretch without any irritation in his eyes. He used to fly all the way from Bangalore to Chennai twice a week, and he was very regular.

We decided that we needed to start neurofeedback and did SMR training at Cz (the vertex or center of the cortex) while training down 4–8 Hz and 25–32 Hz. After another 10 sessions of LENS and 10 sessions of SMR training, the patient was as good as new. Without our knowledge, he went for a test of his tear-gland activity and was delighted and confused to find that his right eye had completely normalized while his left eye was still lagging behind. Two weeks later, he retook the test and found that his left eye had also normalized, while his right eye stayed normal. He still continues to practice HRV biofeedback at his resonant frequency, as defined by Lehrer, Vaschillo, and Vaschillo (2000). The total time that he spent in neurofeedback training was close to 5 months and close to 40 to 45 sessions. The sessions were approximately 90 to 120 minutes in length. There were sessions in which we only spoke to each other about his life and business issues. In some sessions, we only conducted LENS treatment at one site or photonic stimulation at the tips of his fingers and toes.

One of the most important things during every HRV, LENS, and SMR training session was letting him speak about his values and ethics, which governed quiescence in his personal and professional life. As he moved from emotional to executive to sensory quiescence, his productivity and health improved. His social life became more active. There were still days that he was overcome by gloom and was compelled to be indulgent, but these days gradually became far and few between. His business also took a turn for the better as his empathy for his associates and attention span at meetings improved. He reported that this financial year will be the best that he has had in the past 10 years.

References