BRAIN STATE CONDITIONING IN NEURODEGENERATIVE DISEASE

By Vijendra Singh and Lee Gerdes

Neurodegenerative diseases such as Alzheimer's disease (AD) and Parkinson's disease (PD) affect the lives of millions of people worldwide. Patients show a wide range of neurological and psychiatric problems, including cognitive deficit, memory loss, confusion, motor disability, depression, stress and anxiety (Poewe, 2009; Singh, 1997). We performed a preliminary study of Brain State Conditioning (BSC) (Gerdes, 2008), a computer-based brain technology that we modified from electroencephalogram (EEG), on cognition of people with AD and PD and the findings are described here. We conducted an open-label study of BSC in 6 subjects suffering from AD (two females, 61 and 83 years old) or PD (one female of 61 years old and three males, from 61 to 76 years old) BSC was employed to observe brain wave maps that were used to design protocols specific for each subject depending on the nature of the individual brain map (Gerdes, 2008). Subjects were administered with 10 sessions (90 min each) typically over a period of 5 days that also included the initial assessment. Training staff compiled the effects of BSC on these subjects.

We found that each person had a distinct brain map, which had the fingerprint of a functionally imbalanced brain. The administration of BSC sessions brought about better balance and harmony result-

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Subject code	Subject Age (yr)	Subject gender	Health problem	Numbers of sessions after 1 assessment	Response to BSC
BH	61	Female	Alzheimer	15	Dramatic improvement of cognitive functions, from being totally non-responsive to very responsive, able to recognize and communicate with family member and staff members, more lucid and coherent, steadily improving in communication and ambulatory care.
JS	83	Female	Alzheimer	10	Definite augmentation of cognitive performance, able to recognize and converse with family member, more relaxed and peaceful, improved overall health.
MB	61	Female	Parkinson	10	Improved sleep; more energy and relaxed, less headache.
GB	64	Male	Parkinson	10	Enhanced confidence and focus; reduction in anxiety, depression, agitation, lethargy and pain.
RH	65	Male	Parkinson	10	Relief in both hand tremors, better attention and focus.
RF	76	Male	Parkinson	10	Enhanced cognitive performance, remembering names; better speech and thinking; easier movement and improved mobility.

Table 1. Subject characteristics and Brain State Conditioning (BSC) outcomes

ing in a more functionally balanced brain. All subjects showed considerable improvement of neurological and behavioral characteristics (Table 1). The improvement was evident as early as 3-4 days in some cases while the others took longer. Some subjects showed dramatic improvement while the others exhibited modest improvement but they all showed improvement. Overall, there was improvement in physical health and lifestyle that led to better sleep and attention span and reduction in depression, agitation, stress and anxiety behaviors. The improvement was also noticeable in cognitive functions like language, speech and communication skills. This was particularly obvious in two cases of AD who suffered from severe memory loss and dementia. They have made a remarkable recovery of cognitive function as reflected by their ability to recognize and communicate with family members and BSC trainers.

Recent advances in neuroscience have demonstrated that there exists a neurobiological basis of brain plasticity, brain wave oscillations and EEG (Dolan, 2002; Sandi, 2008; Stein and Hoffman, 2003). To that end, we recently developed a computer-based technology that measures brain waves and referred to it as Brain State Conditioning™ (Gerdes, 2008). The technology intends to create balance and harmony in the brain, thereby helping people with brain diseases and mental illnesses. Thus BSC is a process that involves seeing one's brain electrical activity relayed to a computer followed by a visual display on a monitor. The brain electrical view is very fast and occurs in a few thousandths of a second. The brain is able to observe itself and the areas of imbalance are encouraged towards balance. When the brain is in optimized state, pathologies like AD and PD are suppressed and the person gradually attains a more normally-functioning brain state. In conclusion, BSC is an innovative approach to brain training that can be used to help people with neurological problems, including augmenting their cognition.

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