

REPORT ON THE 19TH BFE EUROPEAN CONFERENCE ON NEUROTHERAPIES, 8–12 JUNE 2016, MADRID, SPAIN

Rafal Milner¹, Agnieszka Dubikowska^{2,3}

¹ World Hearing Center, Institute of Physiology and Pathology of Hearing, Warsaw/Kajetany, Poland

² Neurosfera, EEG Biofeedback Private Practice, Cracow, Poland

³ Specialist Psychological and Pedagogical Counselling Centre, Skawina, Poland

Corresponding author: Rafal Milner, World Hearing Center, Institute of Physiology and Pathology of Hearing, Mokra 17 Str., Kajetany, 05-830 Nadarzyn, Poland, e-mail: r.milner@ifps.org.pl

The 19th BFE (Biofeedback Federation of Europe) European Conference on Neurotherapies took place at Madrid, Spain, on 8–12 June 2016.

As with every BFE conference, the main theme was the use of different kinds of biofeedback to treat people with dysfunctions related to the central nervous system. Also discussed were uses of biofeedback to reduce stress, improve various brain functions, and enhance sport or musical performance in healthy people.

The meeting was attended by scientists and clinicians from all over the world: North America (USA, Canada), Europe (Spain, Switzerland, Germany, Slovakia, Lithuania, Russia), and Asia (South Korea). This year also saw a large group from Mexico. There were four participants from Poland: Rafal Milner (World Hearing Center, Institute of Physiology and Pathology of Hearing, Kajetany/Warsaw), Dariusz Skorupa and Gabriel Skorupa (Academy of EEG Biofeedback, Training and Therapeutic Center, Warsaw), and Agnieszka Dubikowska (Neurosfera, EEG Biofeedback Private Practice, Cracow, and Specialist Psychological and Pedagogical Counselling Center, Skawina).

The meeting was divided into several parts: oral presentations, posters, and workshops. Topics included classical biofeedback and neurofeedback training, hemoencephalography (HEG), and evaluating the effects of biofeedback and neurofeedback using quantitative methods. A lecture by Christine Stucke and Ralph Warnke from Magdeburg University and the Meditech company concerned HEG biofeedback and was one of the presentations which attracted much attention. Dr Warnke, who presented the study, showed how the method could be applied with good results to different sport disciplines.

Another interesting lecture was given by Dr Thomas Feiner from Munich. It focused on the practical application of low-resolution brain electromagnetic tomography (LORETA). Conference participants heard how these method could be applied to monitor and assess brain activity changes in specific regions before and after neurofeedback training.

An interesting study conducted by Dr Esteban de Vicente Alvarez-Manzaneda and his team from Clinic Alevia in Elche, Spain, was also described. The aim of this work was to evaluate the effectiveness of neurofeedback and biofeedback using coherence analysis – a mathematical technique which calculates the relationship between EEG

signals recorded from different places on a subject's skull. The great advantage of coherence analysis is that the results can indicate the connectivity and functional state of different brain networks. Using coherence analysis, Dr Vicente Alvarez-Manzaneda and his team showed how neurofeedback and biofeedback training altered the functional state of cortico-cortical connectivity in a group of athletes.

Dr Il-Ju Lee from the Clinical Psychology Department at Duksung Women's University in South Korea described how neurofeedback could be used to effectively treat insomnia. In a case study, a subject participated in beta-wave (16–20 Hz) neurofeedback training with good results.

Dr Denise Medici from the Doctor Peset University Hospital in Valencia showed preliminary results of the first Spanish study to compare the efficacy of pharmacological and neurofeedback therapy. To locate specific patterns of brain activity (biomarkers), the relationship between non-invasive electrophysiological tests (QEEG and ERPs – event-related potentials) and behavioral symptoms seen in children with ADHD was first determined. As Dr Medici's results showed, neurofeedback could have a larger therapeutic effect in children with ADHD than commonly applied drug treatment. The work shows significant potential, and in the future it could ultimately lead to a reduction, or even completely eliminate, pharmacological therapy for the treatment of attention deficit disorders.

Dr David Arroyo (StarMedica Centro Hospital, Mexico) outlined a holistic approach to patient treatment which combined professional medical procedures and psychological, social, and cultural aspects. He noted the necessity for therapists practicing biofeedback and neurofeedback to continue their education and improve their skills so as to provide the most professional and effective assistance.

Rafal Milner from the Institute of Physiology and Pathology of Hearing in Warsaw, Poland, presented studies on brain regions active in patients with chronic tinnitus when they are paying attention to their symptoms. The effectiveness of slow cortical potential (SCP) neurofeedback in treating chronic tinnitus patients, and the impact of this intervention on the activity of different brain structures and neuronal networks, was also presented. Based on the results of quantitative electroencephalography, LORETA, and LORETA source correlation analysis, the normalization of bioelectrical activity in many structures, areas, and neuronal networks in the patients' brains were shown.



Participants of the 19th BFE European Conference on Neurotherapies

A significant part of the BFE conference was assigned to specialist workshops. They took place during the first four days of the conference and were conducted by experts in neurofeedback and biofeedback. Two very interesting workshops were conducted by Dr Michel Linden, a therapist and clinical psychologist who is director of the Attention Learning Center and the Attention Performance Center in Southern California (USA). During the first workshop, „Neurofeedback and biofeedback for peak performance with Olympic athletes and athletes with ADD and Asperger’s; QEEG concussion detection and neurofeedback treatment”, Dr Linden gave details of biofeedback techniques used in athletes diagnosed with attention deficit disorder (ADD) or Asperger syndrome. Cases of athletes who suffered repeated concussions or various types of brain injuries were discussed. Dr Linden outlined the risk factors and symptoms that could accompany different types of brain injury, as well as the intervention plans and neurotherapy accompanying such cases. The second of Dr Linden’s workshops, “QEEG subtypes and QEEG guided neurofeedback with ADD, Asperger’s and autism”, was devoted to different subtypes of attention deficit disorders, Asperger syndrome, and autism, which Dr Linden showed could be identified based on quantitative EEG results. In each of these QEEG subtypes, detailed intervention plans and neurofeedback protocols can be applied.

Linda Walker, President of the Midwest Society of Behavioral Medicine and Biofeedback, Western Michigan University, gave another very interesting workshop entirely devoted to a specific type of neurofeedback training involving a large normative database called “z-score neurofeedback”. The special aspect of this type of training is that the parameters monitored and used for feedback to the patient’s brain are derived from on-line measurement, and then compare to the average parameters from a large population of healthy people included in a normative EEG database. It provides z-score trainees with the option of continuously tracking the standard deviations of their own neurofeedback parameters, and normalizes these values to

the average results. As was shown, this type of training is very effective, particularly for very serious diseases when the damaged or malfunctioning brain areas are difficult to locate or highly dispersed, as in the case of epilepsy, stroke, or brain damage. In such cases, clinical improvement can be achieved after only several z-score neurofeedback sessions. During the workshop, Linda Walker described the software in detail and discussed different types of z-score neurofeedback trainings. Assessment before z-score neurofeedback, intervention plans, as well as the practical outcomes of training were discussed.

On the last day of the conference, participants could take part in a workshop led by a world-renowned expert specializing in heart rate variability (HRV) biofeedback training: Dr Donald Moss from Saybrook University. Dr Moss considers HRV biofeedback to be a very valuable therapeutic intervention. Many studies have shown that heart rate variability is significantly reduced in a variety of neurological, psychiatric, psychosomatic, and metabolic dysfunctions, in which cases HRV biofeedback can restore proper synchronization of the heart with the breath and maximize heart rate variability. This improves balance between the parasympathetic and sympathetic parts of the autonomic nervous system, and can thereby generate benefits like reduction of stress, improved quality of life, and restoration of various important brain functions. Dr Moss outlined the main idea of HRV biofeedback training, and also gave a number of practical guidelines on the method, starting with a discussion of the parameters related to the work of the heart and the respiratory system which have to be assessed and controlled.

On the penultimate day of the BFE meeting, a gala dinner for all participants was organized. Supplementing several days of learning about different neurofeedback and biofeedback methods, the dinner provided a less formal opportunity for participants to have a pleasant time, establish interesting contacts, and exchange clinical experience.