OMICS Group International through its Open Access Initiative is committed to make genuine and reliable contributions to the scientific community. OMICS Group hosts over 400 leading-edge peer reviewed Open Access Journals and organizes over 300 International Conferences annually all over the world. OMICS Publishing Group journals have over 3 million readers and the fame and success of the same can be attributed to the strong editorial board which contains over 30000 eminent personalities that ensure a rapid, quality and quick review process. OMICS Group signed an agreement with more than 1000 International Societies to make healthcare information Open Access.
OMICS Group welcomes submissions that are original and technically so as to serve both the developing world and developed countries in the best possible way. OMICS Journals are poised in excellence by publishing high quality research. OMICS Group follows an Editorial Manager® System peer review process and boasts of a strong and active editorial board. Editors and reviewers are experts in their field and provide anonymous, unbiased and detailed reviews of all submissions. The journal gives the options of multiple language translations for all the articles and all archived articles are available in HTML, XML, PDF and audio formats. Also, all the published articles are archived in repositories and indexing services like DOAJ, CAS, Google Scholar, Scientific Commons, Index Copernicus, EBSCO, HINARI and GALE.

For more details please visit our website:
http://omicsonline.org/Submitmanuscript.php
Electrical Brain Imaging-Brain Mapping
(QEEG)-LORETA
Z-score Neurofeedback in Neuropsychiatric Practice

J. Lucas Koberda, MD, PhD,
Professor of Neurology
Tallahassee NeuroBalance Center,
4838 Kerry Forest Parkway,
Tallahassee, FL
Brodmann cortical areas 1909

Described by Dr. Brodmann approximately 100 years ago but still widely used in research and clinical practice which links specific cortical brain areas to particular functions.
Electrical imaging

- Blood electrolytes abnormalities – imbalance-hypo- or hyper-(Na, K, Ca) gives well known clinical symptoms-Electrolyte abnormalities are detected based on previously determined normative values.

- Brain electrical imbalance (normative database) gives symptoms based on cortical localization-see Brodmann’s Areas
Neuropsychiatric work up

- Detailed history (symptoms and complains)
- Neurobehavioral questionnaire
- Cognitive computerized testing
- Brain MRI, LAB’s (B12 deficiency)
- QEEG/LORETA
Materials and Methods

LORETA is a 3D mathematical transformation of QEEG data enabling relatively precise 7-10 mm localization of cortical dysfunction.

Neurotrax Corp. is a computerized cognitive testing where patient is compared to aged and education matched healthy controls where mean=100 with 1 standard deviation=15. This testing has been previously extensively tested for reliability. To minimize learning across sessions, 3 alternate forms of cognitive tests were developed with identical psychometric properties but different items. Equivalence for all three alternate forms was demonstrated to have an acceptable test-retest reliability.
Z score NFB

The clinical use of NFB in neuropsychiatry involves 3 steps:

1. Evaluation of patients symptoms and complaints
2. Linking the patient’s symptoms to functional specialization in the brain
3. Real-time Z score neurofeedback of deviant or deregulated brain regions associated with the patient’s symptoms.

Use of real time to an age matched normative database with Z scores or standard deviations to train patients toward $Z=0$ in brain regions associated with particular disorders.
Z-score surface/LORETA 19 electrodes NFB

58 year old female with long history of chronic migraine and daily HA.

Pre-NFB QEEG (brain maps) showed marked increase in frontal and central beta power as well as increased delta and theta powers.
Z-scored surface and LORETA 19-electrodes NFB-continuation

After initiation of NFB and completion of 10 sessions of therapy patient’s HAs practically resolved and were in remission for 2-3 months.

F/U QEEG showed the resolution of frontal and central excess of beta activity (power).
15 year old female competitive horse rider who was complaining of major anxiety before competitions and poor performance. Brain Mapping (QEEG) was completed before Neurofeedback (NFB) and after 15 sessions of NFB. See major reduction of beta activity (red color indicates increased beta activity - responsible for the anxiety) in after NFB maps. After NFB marked improvement of anxiety and performance during the competitions was noted.
15 F with anxiety-LORETA-before and after
15 NFB sessions: BA 25
Clinical Advantages of Quantitative Electroencephalogram (QEEG)—Electrical Neuroimaging Application in General Neurology Practice

J. Lucas Koberda¹, Andrew Moses¹,², Paula Koberda¹,² and Laura Koberda¹,²

Abstract

QEEG-electrical neuroimaging has been underutilized in general neurology practice for uncertain reasons. Recent advances in computer technology have made this electrophysiological testing relatively inexpensive. Therefore, this study was conducted to evaluate the clinical usefulness of QEEG/electrical neuroimaging in neurological practice. Over the period of approximately 6 months, 100 consecutive QEEG recordings were analyzed for potential clinical benefits. The patients who completed QEEG
Autistic Spectrum Disorder as a Potential Target of Z-Score LORETA Neurofeedback

J. Lucas Koberda, MD, PhD

Autism is a neurodevelopmental disorder characterized by impaired social interaction and communication, and by restricted and repetitive behavior. It is one of three recognized disorders in the autism spectrum disorders (ASDs), the other two being Asperger Syndrome (AS), which lacks delays in cognitive development and language, and Pervasive Developmental Disorder, not otherwise specified (PDD-NOS), which is diagnosed when the full set of criteria for autism or Asperger syndrome are not met.

The prevalence of autism is about 1-2 per 1,000 people worldwide, and it is estimated that about 400,000 people in the United States are diagnosed with ASD as of 2020. Parents usually notice signs in the first two years of their child's life. Early behavioral or cognitive intervention can help autistic children gain skills, social, and communicative skills.

Asperger Syndrome (AS), frequently considered a mild form of AD, is characterized by significant difficulties in social interaction, alongside restricted and repetitive patterns of behavior and interests. It differs from other autism spectrum disorders by its relative preservation of language and cognitive development. Although not required for diagnosis, physical abnormalities and atypical use of language are frequently reported. The syndrome was named after the Austrian pediatrician Hans Asperger, who, in 1944, studied and described in his practice which lacked nonverbal communication skills, demonstrated limited empathy with their peers, and were physically clumsy. There is doubt about whether it is distinct from High-Functioning Autism (HFA) partly because of this; its prevalence is not firmly established. Although research suggests the likelihood of a genetic basis, there is no known definitive genetic etiology. The lack of demonstrated empathy is possibly the most dysfunctional aspect of Asperger syndrome.

Individuals with AS experience difficulties in basic elements of social interaction, which may include a failure to develop friendships or to seek shared enjoyment or achievements with others. Stereotyped and repetitive motor behaviors are a core part of the diagnosis of AS and other ASDs. They include hand movements such as flapping or twirling, and complex whole-body movements. Although individuals with Asperger syndrome acquire language skills without significant general delay and their speech typically lacks significant dyspraxia, they still have difficulties with language, language acquisition, and use, often being atypical. Abnormalities include verbosity, abrupt transitions, literal interpretations, and miscomprehension of nuance, use of metaphors, and anomalous perception deficits (unusually pedantic).

Formal or idiomatic speech, and oddities in loudness, pitch, intonation, prosody, and rhythm, Echolalia has also been observed in individuals with AS. There is no single treatment, and the effectiveness of particular interventions is supported by only limited data. Intervention is aimed at improving symptoms and function. The main strategy is behavioral therapy, focusing on specific deficits to address poor communication skills, obsessive or repetitive routines, and physical clumsiness. Most children improve as they mature to adulthood, but social and communication difficulties may persist. More recently, neurofeedback (NFB) has been reported as a potential treatment modality which could benefit ASD individuals. Therefore, the following case of Z-score Low Resolution Electro-magnetic Tomography Analysis (LORETA) NFB treatment, which is one of the newest forms of neurofeedback, is presented as an example of successful outcomes.

A Case Study

Victor is a 18-year-old male student who presented for an initial evaluation with his mother. The mother reported that he had problems with focusing, concentration, and speech expressive functions. In addition, social interaction problems were reported including difficulty in making friends and generalized clumsiness. Victor was not taking any medications. He was a freshman at a local university with very good performance in mathematics and physics (A) however poorer performance in English and philosophy (B, C). His examination showed monotonous type of speech with decreased speech output and reduced facial expression. Some reduction of fine motor movements was also noted during the exam.

Initial workup was unremarkable except for the quantitative electromyography (qEMG) (Neuroguide, Inc. St. Petersburg, FL) which showed increased theta activity in the frontal-temporal (see Fig. 1) region.

Victor and his mother were not interested in medication therapy.

Victor was diagnosed with possible Asperger syndrome and was initially treated with 1-electrode basic type of NFB guided...
PAIN MANAGEMENT USING 19-ELECTRODE Z-SCORE LORETA NEUROFEEDBACK

J. Lucas Koberda, Paula Koberda, Andrew A. Bienkiewicz, Andrew Moses, Laura Koberda
Tallahassee Neurobalance Center, Tallahassee, Florida, USA

Z-score LORETA neurofeedback (NFB) has been found in case reports to be an effective and promising form of neuromodulation, relieving many neuropsychiatric symptoms. LORETA imaging that identifies dysregulation in the structures of the brain that are involved in pain regulation has made it possible to design a targeted NFB therapy. This article describes the effective delivery of targeted LORETA NFB to treat chronic pain in four selected patients.

INTRODUCTION

Previous reports from our clinic have described LORETA Z-score NFB as highly effective in the treatment of chronic pain. The current investigation, in collaboration with other researchers, is a continuation of this work. The goal of this study was to further explore the use of LORETA Z-score NFB in the treatment of chronic pain.

Stern, Jeanmonod, & Samthein, 2006; Walker, 2011).

Neurofeedback (NFB) is becoming an increasingly popular modality of therapeutic intervention for a variety of conditions, including chronic pain. NFB involves the use of biofeedback to train the brain to reduce or increase brain activity, which can help to alleviate symptoms. In this study, we investigated the use of LORETA Z-score NFB for the treatment of chronic pain in four selected patients.
COGNITIVE ENHANCEMENT USING 19-ELECTRODE Z-SCORE NEUROFEEDBACK

J. Lucas Koberda, Andrew Moses, Laura Koberda, Paula Koberda
Tallahassee NeuroBalance Center, Tallahassee, Florida, USA

A 23-year-old man presented for a neurological evaluation due to cognitive problems restricting him from college education. He graduated successfully from high school but had problems in college, which caused his subsequent withdrawal. He was interested in trying neurofeedback (NFB) for possible cognitive enhancement. His initial computerized neurocognitive testing showed global cognitive standard score (GCS) of 93.1. The information processing speed standard score was 64.5 and was the lowest of scored domains. Quantitative electroencephalography revealed right frontal and temporal increase in delta power and left frontal and temporal beta power excess. Fifteen sessions of 19-electrode Z-score NFB lead to marked improvement of the patient’s subjective cognitive perception as well as significant quantitative improvement in GCS.
Z-score LORETA Neurofeedback as a Potential Rehabilitation Modality in Patients with CVA

Abstract
This is multi-case presentation describing promising rehabilitation results of Z-score LORETA neurofeedback therapy of patients suffering from prior stroke. Potential benefits include improved cognitive function and motor performance.

Keywords
CVA; LORETA; Neurofeedback; Rehabilitation; Z-score, Imaging

Abbreviations
NFB: Neurofeedback; LORETA: Low Resolution Electromagnetic Tomography Analysis; CVA: Cerebrovascular

Case Report
Volume 1 Issue 5 - 2014

J. Lucas Koberda* and Urszula Stodolska-Koberda

1Department of Neurology, Tallahassee Neurobalance Center, USA
2Department of Ophtalmology, Medical University of Gdansk, Poland

*Corresponding author: J. Lucas Koberda, Department of Neurology, Tallahassee NeuroBalance Center, Tallahassee, FL 32309, USA, Tel: 850-877-2802; Fax:
Z-Score LORETA Neurofeedback as a Potential Therapy in Cognitive Dysfunction and Dementia

Abstract

Introduction of QEEG/LORETA electrical brain imaging has improved our diagnostic ability in neuropsychiatric practice by enhancing identification of dysregulated cortical areas implicated in patient symptoms. Additional use of LORETA Z-score neuro feedback (NFB) enables us to directly target these areas of dysregulation in order to improve associated symptoms. Based on the review of 250 patients treated in our clinic suffering from neuropsychiatric illness and treated with Z-score LORETA NFB, analysis of cases of cognitive dysfunction and dementia are presented. Specific areas of dysregulation attributed to particular conditions identified by LORETA are discussed. Follow up findings of QEEG/LORETA electrical imaging after NFB therapy (including computerized cognitive testing results) are shown. This paper summarizes my experience with LORETA Z-score NFB as a tool for therapy of cognitive dysfunction. In addition, this form of NFB is able to improve cognitive functions of individuals suffering from memory, information processing and other cognitive dysfunctions. Extensive presentations of selected cases are used for demonstration of results from
16 M after mTBI - Computerized cognitive testing after 10 sessions of NFB

- **Global CS:**
  - Before: 82.3
  - After: 110.7

- **Memory:**
  - Before: 85.9
  - After: 105.6

- **Executive Function:**
  - Before: 65.7
  - After: 108.4

- **Attention:**
  - Before: 49.2
  - After: 108.1

- **Info Proc. Speed:**
  - Before: 82.7
  - After: 113.1

- **Visual Spatial:**
  - Before: 107.3
  - After: 113.9

- **Verbal Function:**
  - Before: 85.3
  - After: 114.2

- **Motor Skills:**
  - Before: 100.1
  - After: 111.6
32 M-with mTBI-after he was assaulted in psychiatric hospital-computerized cognitive testing before and after NFB

<table>
<thead>
<tr>
<th></th>
<th>Before NFB</th>
<th>After NFB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global CS</td>
<td>91.5</td>
<td>95.6</td>
</tr>
<tr>
<td></td>
<td>101</td>
<td>104</td>
</tr>
<tr>
<td>Memory</td>
<td>90.5</td>
<td>99.6</td>
</tr>
<tr>
<td></td>
<td>101.3</td>
<td>107.8</td>
</tr>
<tr>
<td>Info Processing Speed</td>
<td>64.2</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>89.9</td>
<td>90.3</td>
</tr>
</tbody>
</table>
32 M-with mTBI-after he was assaulted in psychiatric hospital-computerized cognitive testing before and after NFB

<table>
<thead>
<tr>
<th>Category</th>
<th>Before NFB</th>
<th>After NFB</th>
<th>Before NFB</th>
<th>After NFB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global CS</td>
<td>91.5</td>
<td>95.6</td>
<td>101</td>
<td>104</td>
</tr>
<tr>
<td>Memory</td>
<td>90.5</td>
<td>99.6</td>
<td>101.3</td>
<td>107.8</td>
</tr>
<tr>
<td>Info Processing Speed</td>
<td>64.2</td>
<td>74</td>
<td>89.9</td>
<td>90.3</td>
</tr>
</tbody>
</table>
68 y.o. female with 1-2 years of progressive forgetfulness due to mild AD (second opinion after visit with another neurologist/neuropsychologist—recommended Aricept)
OMICS Group International through its Open Access Initiative is committed to make genuine and reliable contributions to the scientific community. OMICS Group hosts over 400 leading-edge peer reviewed Open Access Journals and organizes over 300 International Conferences annually all over the world. OMICS Publishing Group journals have over 3 million readers and the fame and success of the same can be attributed to the strong editorial board which contains over 30000 eminent personalities that ensure a rapid, quality and quick review process. OMICS Group signed an agreement with more than 1000 International Societies to make healthcare information Open Access.
OMICS Journals are welcoming Submissions

OMICS Group welcomes submissions that are original and technically so as to serve both the developing world and developed countries in the best possible way. OMICS Journals are poised in excellence by publishing high quality research. OMICS Group follows an Editorial Manager® System peer review process and boasts of a strong and active editorial board. Editors and reviewers are experts in their field and provide anonymous, unbiased and detailed reviews of all submissions.

The journal gives the options of multiple language translations for all the articles and all archived articles are available in HTML, XML, PDF and audio formats. Also, all the published articles are archived in repositories and indexing services like DOAJ, CAS, Google Scholar, Scientific Commons, Index Copernicus, EBSCO, HINARI and GALE.

For more details please visit our website: http://omicsonline.org/Submitmanuscript.php
Emergency Mental Health
Related Journals

- International Journal of School and Cognitive Psychology
- Psychology & Psychotherapy
- Psychiatry: Open Access
- Psychological Abnormalities in Children
Annual Conference on Fostering Human Resilience
Annual Summit on Sleep Disorders and Medicine
Euro Global Summit and Medicare Expo on Psychiatry
OMICS publishing Group Open Access Membership enables academic and research institutions, funders and corporations to actively encourage open access in scholarly communication and the dissemination of research published by their authors.
For more details and benefits, click on the link below:
http://omicsonline.org/membership.php