

PROFESSIONAL ISSUES

The Case for Clinical Practice Guidelines for Neurofeedback and General Biofeedback

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The author calls for professional associations concerned with neurofeedback and general biofeedback to develop sets of clinical practice guidelines. Such guidelines could provide guidance to practitioners, third-party payers, and consumers alike on the best practices for treating specific complaints or diagnostic conditions. The guidelines could also help reduce unnecessary care, associated costs, and geographic variations in treatments used, while simultaneously improving treatment outcomes and the reputation and acceptance of neurofeedback and general biofeedback as legitimate treatment approaches.

Introduction

Is neurofeedback unique in terms of: 1) ethical principles, 2) ethical practice guidelines and standards, and 3) clinical practice guidelines in comparison to general biofeedback? The answer is probably no for the first two, and yes, for the third. There are more similarities between neurofeedback and general biofeedback than there are differences when it comes to ethical principles and ethical practice guidelines and standards. One could argue that the existing ethical principles developed by the Association for Applied Psychophysiology and Biofeedback (AAPB) for general biofeedback and neurofeedback (AAPB, 2003), the International Society for Neurofeedback and Research (ISNR) for neurotherapy, and the Biofeedback Certification Institute of America (BCIA) for general biofeedback and for neurofeedback are well developed and fairly comprehensive, are updated periodically, and currently serve those providing general biofeedback or neurofeedback services well. One could also argue that the ethical practice guidelines and standards developed and regularly updated by AAPB (Striefel, 2004) do the same in reference to general biofeedback and neurofeedback when it comes to ethical practice guidelines and standards. (Note that the document published by AAPB does not include the word ethical in the title; Striefel, 2004). One could also argue that some important guidance is missing; in other words, the clinical practice guidelines are missing that could help practitioners in their clinical decision-making process. Please note that only practice guidelines are being recommended at

this time because this author does not think that mandatory clinical standards are called for or justifiable at this time because of the implications of “cook-booking” rather than individualizing treatment.

Two Types of Practice Guidelines and/or Standards

There seem to be two types of practice guidelines and standards. The first, such as those available from AAPB (Striefel, 2004), really serve to provide guidance to providers on how to implement the ethical principles in daily practice. They might well be labeled, “Ethical Practice Guidelines and Standards.” The second are structured differently and serve a different purpose. These guidelines are more of a: “How do you apply best practices for condition X in clinical practice.” These might be labeled, “Clinical Practice Guidelines.” Until 1995, AAPB had a set of practice guidelines and standards that jointly tried to provide guidance on how to implement the ethical principles and simultaneously provide guidance on how to use a specific biofeedback modality in clinical practice, e.g., skin temperature training (Amar et al., 1992). The practice guidelines and standards published by AAPB since that time have focused only on how to apply ethical principles in practice within the confines of existing laws. No serious efforts have been made to provide specific clinical practice guidelines, although Striefel and Glaser are in the process of developing a tentative set of clinical practice guidelines for pelvic floor disorders in which biofeedback is the primary or one component of treatment.

Similarities

Some of the similarities between general biofeedback and neurofeedback in terms of ethical practice guidelines and standards are that both:

1. Require informing clients about a variety of factors such as: proposed assessments and treatments; major alternative treatments, pros and cons of each alternative treatment, including no treatment at all; rationale for each proposed assessment and/or treatment; level of support (clinical and research) that exists for the proposed

- and other alternative treatments (level of validation); insurance limitations; fees, billings, and collection policies; limits of confidentiality; HIPAA considerations; and use of home training devices.
2. Require practitioners to strive to be competent in all areas in which they practice or that they receive appropriate supervision/mentoring and/or consultation. In addition, practitioners must be able to demonstrate their competence via education, training, and experience if requested to do so by any relevant stakeholder, e.g., state licensing board or ethics committee.
 3. Require practitioners to avoid problematic dual relationships and other conflicts of interest and when they cannot be avoided, strive to keep all relevant parties informed of their responsibilities, loyalties, and the issues of concern, including potential solutions.
 4. Require practitioners to strive to do their best to maintain patient's rights to confidentiality and privacy within the guidelines provided by state and federal laws (e.g., Health Insurance Portability and Accountability Act), the ethical principles of their discipline and those of the organizations to which they belong (e.g., AAPB, 2003), and existing practice guidelines and standards for their discipline and for general biofeedback and/or neurofeedback (Striefel, 2004).
 5. Require practitioners to strive to use technology such as cell phones, fax machines, computers, home training devices, and other clinical and office equipment in a responsible manner so that no clients are injured, that confidentiality is protected, and so that clients know the limitations, if any.

Differences

The differences from a clinical practice guidelines perspective between general biofeedback and neurofeedback might well be summed up as being related to the specific client complaints, diagnosis, assessment approach, treatment modality to be utilized, specific treatment approach within the use of a modality, etc. There are large differences both within general biofeedback and within neurofeedback when these factors are considered in daily clinical practice. In essence, responsible clinical practice requires practitioners to be accountable and that means using assessment and treatment approaches that are individualized based on the specifics related to the client being treated. As such, there is a need for evidence-based clinical practice guidelines. The intent in developing such guidelines is not that they be used in a prescriptive or "cookbook" manner or as a means of limiting a practitioner's clinical judgment, but rather the intent is to provide evidence-based guidance in making

treatment related decisions. Standards become prescriptive and could be detrimental at this point in time to individual practitioner judgment.

Two Levels of Clinical Practice Guidelines

For the biofeedback and/or neurofeedback practitioner, clinical practice guidelines might well be developed on two levels. The first would be guidance on the minimal components and considerations when using a specific modality, whether it is using electromyography (EMG) or electroencephalography (EEG). For example, what components would be common when using neurofeedback regardless of client complaints or diagnosis? It might include factors such as components of a good, comprehensive, but relevant assessment, level of clinical and research support, medical consultation or clearance, knowledge of specific anatomy, specific clinical skills related to electrode placement so impedance is low, control of artifacts, equipment operation, etc. Developing such guidelines might help clarify how best to develop other more specific clinical practice guidelines, but it would take time and effort.

The second type of clinical practice guidelines seem to be more common and seem to be developed based on treating a specific diagnosable disorder such as Post-Traumatic Stress Disorder, Attention Deficit Hyperactivity Disorder (ADHD), etc. The Agency for Health Care Policy and Research (AHCPR) has been at the forefront in the development of evidence-based clinical practice guidelines, performance measures, and standards of quality since 1992, and is very willing to assist others in the process of developing such guidelines; they even issue invitations to do so (Clinton, McCormick, & Besteman, 1994). Many professional associations have been active in developing specific clinical practice guidelines, including, but not limited to groups such as the American Medical Association, the American Psychiatric Association, the American Psychological Association, and the American College of Rheumatology. Each group develops their own process, their own content and format, and areas in need of clinical guidelines. Clearly, AAPB and ISNR could collaborate on setting up specific clinical practice guidelines for neurofeedback in general or specific neurofeedback application areas. Doing so is not without challenges. Getting individuals to agree on "how to," when some parties have a vested interest can be difficult, but is doable.

For example, when I think about the treatment of a condition like ADHD, I see many fairly distinct neurofeedback approaches that could be used. Let me mention just three approaches for illustrating the challenge in this one area. First, one could use the common one or two channel training approach of increasing SMR or beta at a location such as CZ,

and do as is commonly done in such cases, provide the training without collecting a Quantitative electroencephalogram (QEEG). Second, one could use the Gunkelman approach of using a QEEG to identify which of the 11 phenotypes (EEG signatures) a specific client exhibits and use that to guide treatment (Kerson, Gunkelman, & Collura, 2008). Third, one could use the live z-score modality approach for guiding treatment as recommended by Collura (Kerson et al., 2008). Each approach has some unique features, each has its own, but differing level of clinical and research data support, and each has its adherents. Still within all of these approaches there are some common elements that could be included within a set of clinical practice guidelines. If a particular approach is deemed by an expert panel to not yet or no longer meet the requirements for best practice then the guidelines could make clear what components are needed. Some approaches do not yet have a sufficient clinical and research data base to be considered to be a validated procedure. The guidelines could make clear the type of informed consent that would need to be obtained from clients before using such an approach with a client.

One issue that would have to be dealt with in a set of clinical practice guidelines is whether to require a QEEG as a part of all assessments when doing neurofeedback or as both a pre and postassessment for planning treatment and for measuring outcomes (Striefel, 2006). Can practitioners really justify using fixed protocols rather than individualized treatments based on a comprehensive look at the client's EEG? Trial-and-error learning is costly. Gunkelman (Kerson et al., 2008) pointed out that there are eleven EEG signatures associated with ADHD. Trial-and-error is hard to justify as a means of finding out what and where to train when a QEEG could identify that information at the outset. Collura (2008) pointed out that data now exist to show that when one channel EEG training is done other EEG metrics often change as well and not all of them change in a direction that is beneficial to the client. So what should the practice guidelines and standards say about such issues?

Recommendation

This author strongly recommends that the board of AAPB, divisions therein, and sister organizations such as ISNR begin the process of deciding how to format and develop sets of clinical practice guidelines for neurofeedback and for general biofeedback applications. The process of writing efficacy documents on the level of clinical and research support for specific conditions is well underway. The development of clinical practice guidelines seems like a logical next step. Doing so could readily enhance the reputation of neurofeedback and biofeedback and could lead

to broader acceptance by professional groups, third-party payers, and the public per se. It could also help direct and enhance the training of the next generation of biofeedback and neurofeedback practitioners.

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Commentary

Because Dr. Striefel challenges the professional associations associated with biofeedback and neurofeedback to take action to establish clinical practice guidelines for the neurofeedback and biofeedback, the current Presidents of AAPB, ISNR, and AAPB's Neurofeedback Division were invited to review the article and provide commentary on the issues it raises.

Commentary by Aubrey K. Ewing, PhD, President, Association for Applied Psychophysiology and Biofeedback

Dr. Striefel's call for clinical practice guidelines is timely as general biofeedback and neurofeedback are more

frequently the focus of media attention, and the terms more recognizable to the consuming public. Forty years of scientific research and clinical practice have born the fruit of our field's emergence as a mainstream health care alternative, and as such, we must promote evidence-based, best practices to the extent that our scientific foundations allow. The development of clinical practice guidelines seems an appropriate means of doing so, but as we embark on such an endeavor, I believe we must be cognizant of what we know versus what we believe.

Certainly what we know has to do with the fundamentals of operant conditioning, clinical assessment, electrophysiological measurement, and clinical methodology that increase the probability that what we are reinforcing is more signal than noise. We may also know, based on the literature, that certain treatment methods are highly efficacious and may even represent the standard of care for a particular diagnosis. There is sufficient and long-standing evidence regarding the treatment of pelvic floor disorders, particularly incontinence, for example, that suggests that biofeedback treatment rises to this level of efficacy (e.g., Burgio et al., 1998). Can we say the same, at present, about peripheral methods for the treatment of IBS, or neurofeedback treatment of autism, and if not, does this preclude us from developing clinical practice guidelines for these applications? In the case of autism, for which no good conventional treatment exists, there is an emerging body of clinical and scientific data from respected clinics and researchers that suggests neurofeedback interventions may offer promise for individuals with autism spectrum disorders (e.g., Coben, 2007). These issues and questions about what constitutes best practices should be part of a professional dialogue in which we engage as we consider adopting clinical practice guidelines for general biofeedback and neurofeedback.

The National Guideline Clearinghouse (Institute of Medicine, 1990) defines clinical practice guidelines as "systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances." On the face, this sounds like something desirable for any health care enterprise, but for AAPB and the other professional organizations representing the field to adopt such guidelines, we should first be convinced that there is sufficient legal, public, and professional need to do so. I believe there is a compelling argument from all three perspectives if, as Dr. Striefel posits, clinical practice guidelines for biofeedback and neurofeedback can improve treatment outcomes, support the argument for insurance coverage, contain costs, serve as a resource for practitioners and educators, and improve our standing in the eyes of the public and within the healthcare community.

Groundwork has previously been laid by other professional organizations (American Psychological Association, 2002) and government agencies (Agency for Health Care Policy and Research, 1993) that lends ethical, procedural, and scientific guidance to the process of developing clinical practice guidelines. This information should be our roadmap as we endeavor to translate our field's current body of knowledge into guidance for clinical practice. An initiative to do so seems the logical purview of the newly formed Biofeedback Neurofeedback Alliance (comprised of AAPB, BCIA, and ISNR). We can certainly begin the dialogue by considering methodological clinical practice guidelines that are scientifically based, universal to electrophysiological measurement and learning theory, and the substance of what we know.

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Commentary by John K. Nash, PhD, President of International Society for Neurofeedback and Research

The Striefel article calls for the beginning of the development of practice guidelines for neurofeedback and neurotherapy. Neurotherapy being what I think of as the application of neurofeedback, often in combination with other methodologies like cognitive behavior therapy, peripheral biofeedback, etc., to effect positive clinical change in patients. I have already begun discussions with the ISNR Board regarding promoting consistent standards for neurofeedback equipment and software.

For example, many of us think it is critical that whatever signal processing the equipment does, it should be able to display the raw EEG signal. The frequency response and linearity of the equipment should be well known and accurately portrayed. The development of practice standards is something that would also be a good topic of discussion.

There are so many different approaches that defining guidelines will be difficult, to say the least. But I think at least some basic guidelines could be developed and endorsed. For example, I think anyone using neurofeedback equipment should know a lot about reading the raw EEG; anyone using neurofeedback to ameliorate clinical disorders should be licensed in a health care profession or be practicing under the direct supervision of a licensed person. They should also know the technical issues surrounding accurate EEG recording, including the artifacts, limitations of various types of filters, impedance issues, electrode issues, etc. There are some things we could likely agree upon.

The development of actual guidelines for treating specific problems, whether ADHD, depression, autism, or other disorders is, I fear, rather premature. Dr. Striefel mentions protocol based approaches, “phenotype” based approaches, and z-score based approaches. There are of course many people who use a basic understanding of what the EEG does under various conditions, what normal and abnormal EEG signatures are, coupled with statistical analysis of the EEG and the presenting symptoms to determine neurofeedback targets.

There will have to be significant clinical trial research demonstrating unequivocal efficacy of even one single approach for one of these disorders. Even then, group studies will necessarily never be able to define the “right” way to treat any particular individual. But guidelines should become possible. The ISNR Research Foundation is attempting to organize and fund research that could eventually make meaningful treatment guidelines possible. In the meantime, there is a very large literature in neuroscience, plus the smaller literature of neurofeedback that gives range of reasonable approaches to neurofeedback

treatments. Personally, I think it is most important that standardized measures of behavioral, emotional, and cognitive change be used to assess the effect of whatever neurofeedback methods the clinician is using. If measures are taken at intervals during treatment, then the clinician knows effects are occurring. Defining the approaches that are ultimately the most efficacious will require “head to head” clinical trials where one methodology is carefully compared to another. We hope to see this happen. So I welcome Dr. Striefel’s suggestions and provocation to serious discussion and I hope everyone reading the article will think deeply about the issues it raises.

Commentary by Jonathan Walker, MD, President of the AAPB Neurofeedback Division

There probably are ideal approaches to neurofeedback for any given disorder or for peak performance training. It is unlikely that we are using such an ideal approach at this time. What we can do is evaluate the efficacy of a given approach compared to the efficacy of other approaches. This issue of *Biofeedback* addresses the efficacy of QEEG-driven approaches vs. standard (non-QEEG-guided) training for several disorders. There is no question that the standard approaches are somewhat effective or they would not continue to be used by so many practitioners. If a practitioner continues to use a less effective form of treatment, is he to be drummed out of the corps? Lose his certification? Perhaps we need to develop a set of *minimum* standards, based on published data using some objective measure of efficacy (such as Test of Variables of Attention or intermediate visual auditory changes for ADHD). I do agree that clinical practice guidelines should be developed as suggested by Dr. Striefel.