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Book Review: Electroencephalography: Basic Principles, Clinical Applications and Related Fields

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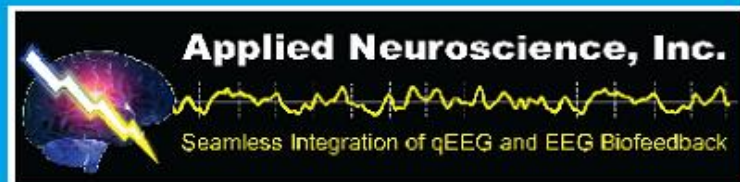
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Book Review

Electroencephalography: Basic Principles, Clinical Applications and Related Fields

By Ernst Niedermeyer, et al. ISBN 0-683-06511-4, William and Wilkins, 1993

Reviewed by: Jay Gunkelman, QEEGT

I was asked to review this important reference by a friend, with the statement that this should be an easy task. I did find the task especially appealing, as a contrast from his earlier edition which I have totally dog-eared and sitting on the shelf.

Niedermeyer's prior edition is like an unabridged encyclopedic treatment of the field of EEG, with a smaller section on the history of digital analysis. He built on that awesome prior work and added a quite thorough treatment of the quantitative analysis of the EEG.

There are significant chapters contributed by Fernando Lopes da Silva, Ernst Rodin and E. Roy John that are quite an interesting set of chapters. Chapter 55 by E. Roy John is a concise and accurate detailing of one of the most brilliant careers in the field. His development and precise execution of the field of neurometrics is impressive.

Chapter 59 by Lopes da Silva on Computer-assisted EEG Diagnosis: Pattern Recognition and Brain Mapping is a wonderful survey of the classification and analysis methods used. This ranges from Topographic Analysis, reference styles including laplacian and even a light coverage of the issue of the "inverse problem." He includes discussion of the sleep staging and artifact rejection programs; computer assisted diagnosis and neural net pattern recognition. He finishes the chapter with a too-brief discussion of magnetoencephalography.

Lopes da Silva also wrote chapter 61, EEG Analysis: Theory and Practice. In this detail oriented chapter there is a wonderfully technical

systematic journey through the various forms of signal analysis. He includes full technical with mathematical models.

One of the better discussions of coherence and phase that I have ever seen is included, with all the proper technical detail of how the measurements are done and the calculations are presented.

I think the discussion of the Hjorth descriptors, activity, mobility and complexity is too brief, as is the survey of the "inverse problem." The details that are present and the authority of the source are equally impressive despite my desire for more depth in some areas.

Another chapter of interest is the field of qEEG in chapter 60. Ernst Rodin presents Clinical Use of EEG Topography as his contribution to this section of the Niedermeyer tome. I eagerly read this chapter, as the clinical use of qEEG is my primary interest. He provides a good survey of the problems in the field, though gives little of the many solutions available and controls used today.

Rodin gives only a couple of paragraphs to the area of head trauma and merely mentions Thatcher's work with no reference to E. Roy John's work. He gives Duffy credit for starting this whole clinical discussion, with clinical applications he began and his database. He further takes great effort to constantly point out cautions with a generally critical tone.

Just when I was getting "worked up" Rodin is positive in his tone and in his conclusion about the

clinical applications, though cautious about keeping it in expert hands. He even speculates about possible applications in metabolic and infectious disease monitoring. This chapter is like a book with a surprise ending.

Taken in its entirety, Niedermeyer's compilation far exceeds the previous edition and is

a must in any collection, but good luck finding this, as it is not even available on Amazon.com! There are only a few of these scattered across the country, still in stock in some obscure locations. So, hurry and snap up this wonderful reference off those remaining shelves. It is definitely a keeper.

Jay Gunkleman started in EEG Biofeedback in 1972, co-founding the first State Hospital based biofeedback laboratory. He manufactured EEG equipment and lectured on EEG and instrumentation at The Biofeedback Institute of San Francisco's professional training program in the mid 1970's.

In 1981 he was registered as an EEG technologist, reviewing over 200,000 EEGs and thousands of qEEGs since his start in the field. In 1996 Jay became the first person certified as a QEEGT.

Jay currently is the President of NeuroNet Diagnostic Services, Inc., of Beverly Hills, as well as being a Board of Directors member of SNR and the program committee co-chair since 1997.