

# Journal of Neurotherapy: Investigations in Neuromodulation, Neurofeedback and Applied Neuroscience

## News from Other Journals and Websites

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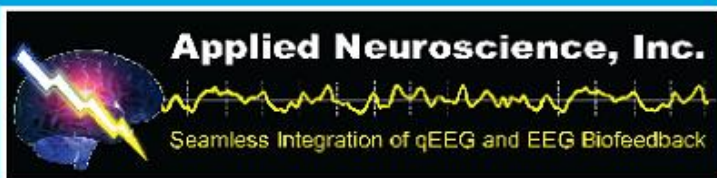
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## NEWS FROM OTHER JOURNALS AND WEBSITES

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David A. Kaiser, PhD, Editor

*Neuroimaging is flourishing and its papers dominate this section in the current issue. Also, the precursors of Firefox are reviewed. (In the 1982 film Firefox, Clint Eastwood steals a Soviet fighter that is controlled by a direct neural link. He has trouble piloting the prototype jet with his brainwaves and almost crashes, until he realizes he has to think in Russian.)*

*Authors are encouraged to submit recent reprints or preprints for this section and anyone can submit reviews or recommend websites. Contact David Kaiser at [dakaiser@mail.rit.edu](mailto:dakaiser@mail.rit.edu)*

### **RECENT MUST-READ PAPERS**

Kubler, A., Kotchoubey, B., Kaiser, J., Wolpaw, J. R., & Birbaumer, N. (2001). Brain-computer communication: Unlocking the locked in. *Psychological Bulletin*, 127, 358-375.

Until recently, all human communication required some degree of muscular control. However, more and more patients are surviving severe injuries of the brain and spinal cord or neurodegenerative diseases such as amyotrophic lateral sclerosis (ALS or Lou Gehrig's disease) and many of these patients experience locked-in syndrome: an active mind in a paralyzed body. In these patients, communication is ex-

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tremely restricted or impossible and the inability to communicate often leads to low quality of life and rapid deterioration. Fortunately, the development of EEG-based communication devices can provide a muscle-independent communication channel. Kubler et al. review promising analysis techniques of EEG in the pursuit of creating a feasible brain-computer interface. Using operant conditioning, locked-in patients are taught to elicit specific EEG components—be they in spontaneous EEG, ERPs, or slow cortical potentials—with which they control a cursor on a personal computer. Current techniques are very limited due to psychological and physiological obstacles such as habituation, distractions, and poor understanding of this fundamentally divided attention task (communication plus control of communication device).

### **EEG AND NEUROIMAGING**

Bauer, L. O. (2001). Predicting relapse to alcohol and drug abuse via quantitative electroencephalography. *Neuropsychopharmacology*, *25*, 332-340.

Enhanced amount of high frequency (19.5-39.8 Hz) beta activity was observed in patients who later relapsed compared to those who maintained abstinence and controls.

Brody, A. L., Saxena, S., Mandelkern, M. A., Fairbanks, L. A., Ho, M. L., & Baxter, L. R. (2001). Brain metabolic changes associated with symptom factor improvement in major depressive disorder. *Biological Psychiatry*, *50*, 171-178.

Improvement in cognitive disturbance in depression is associated with increasing dorsolateral prefrontal cortex metabolism.

Cabeza, R. (2001). Cognitive neuroscience of aging: Contributions of functional neuroimaging. *Scandinavian Journal of Psychology*, *42*, 277-286.

Brain activity tends to be less lateralized in older adults than in younger adults.

Clarke, A. R., Barry, R. J., McCarthy, R., & Selikowitz, M. (2001). EEG-defined subtypes of children with attention-deficit/hyperactivity disorder. *Clinical Neurophysiology*, *112*, 2098-2105.

Three distinct EEG clusters of children with ADHD were found: (a) an increased slow wave activity and deficiencies of fast wave sub-

type, (b) an increased high amplitude theta with beta deficiencies subtype, and (c) an excess beta subtype.

Clarke, A. R., Barry, R. J., McCarthy, R., & Selikowitz, M. (2001). Excess beta activity in children with attention-deficit/hyperactivity disorder: An atypical electrophysiological group. *Psychiatry Research, 103*, 205-218.

Excess-beta group (primarily in frontal lobe) were more prone to temper tantrums and to be moody, but otherwise were similar to other ADHD children.

Gaetz, M. & Bernstein, D. M. (2001). The current status of electrophysiologic procedures for the assessment of mild traumatic brain injury. *Journal of Head Trauma Rehabilitation, 16*, 386-405.

Standard clinical EEG is determined not to be useful; however, an assessment battery that includes EEG, EPs, cognitive ERPs, and neuropsychological testing should be.

Giedd, J. N., Blumenthal, J., Molloy, E., & Castellanos, F. X. (2001). Brain imaging of attention deficit/hyperactivity disorder. *Annals of the New York Academy of Sciences, 931*, 33-49.

Imaging studies reveal involvement of right frontal-basal ganglia with modulatory influence from the cerebellum.

Hagemann, D., Naumann, E., & Thayer, J. F. (2001). The quest for the EEG reference revisited: A glance from brain asymmetry research. *Psychophysiology, 38*, 847-857.

The validity of a reference scheme is a function of the electrical activities at target and reference sites. Reference choice affects alpha asymmetry in anterior sites but not posterior sites.

O'Neill, J., Cardenas, V. A., & Meyerhoff, D. J. (2001). Effects of abstinence on the brain: Quantitative magnetic resonance imaging and magnetic resonance spectroscopic imaging in chronic alcohol abuse. *Alcoholism, Clinical and Experimental Research, 25*, 1673-1682.

White matter lesions are widespread in active drinkers but partly resolve during long-term abstinence.

Reeves, R. R., Struve, F. A., & Patrick, G. (2001). Does EEG predict response to valproate versus lithium in patients with mania? *Annals of Clinical Psychiatry, 13*, 69-73.

The presence of nonepileptiform EEG abnormalities predicts response to valproate and non-response to lithium to a moderate degree.

Videbech, P., Ravnkilde, B., Pedersen, A. R., Egander, A., Landbo, B., Rasmussen, N. A., Andersen, F., Stodkilde-Jorgensen, H., Gjedde, A., & Rosenberg, R. (2001). The Danish PET/depression project: PET findings in patients with major depression. *Psychological Medicine*, *31*, 1147-1158.

Hippocampus appears to play an important role in major depression.

### **MENTAL HEALTH AND NEUROLOGICAL DISORDERS**

Holmes, M. D., Dodrill, C. B., Kutsy, R. L., Ojemann, G. A., & Miller, J. W. (2001). Is the left cerebral hemisphere more prone to epileptogenesis than the right? *Epileptic Disorders*, *3*, 137-141.

If there is greater left than right cerebral hemispheric vulnerability to epileptogenesis, it is only in left-handers.

Hyman, S. E., Hyman, S. E., & Malenka, R. C. (2001). Addiction and the brain: The neurobiology of compulsion and its persistence. *Nature Reviews Neuroscience*, *2*, 695-703.

Compulsion and its persistence may be based on pathological usurpation of molecular mechanisms normally involved in memory.

Mathew, S. J., Coplan, J. D., & Gorman, J. M. (2001). Neurobiological mechanisms of social anxiety disorder. *American Journal of Psychiatry*, *158*, 1558-1567.

Social anxiety disorder may be a chronic neurodevelopmental illness.

Mehr, S. H. & Gerdes, S. L. (2001). Medicolegal applications of PET scans. *NeuroRehabilitation*, *16*, 87-92.

Courts will allow doctors to testify about PET scans results if they can document proper recording techniques and they explain how PET scans are reliable for the case.

Mooney, G. & Speed, J. (2001). The association between mild traumatic brain injury and psychiatric conditions. *Brain Injury*, *15*, 865-877.

Individuals with brain injuries without psychiatric complication have good recoveries, but individuals with psychiatric comorbidity (notably depression, anxiety disorders or conversion disorder) do not.

Moselhy, H. F., Georgiou, G., & Kahn, A. (2001). Frontal lobe changes in alcoholism: A review of the literature. *Alcohol and Alcoholism*, 36, 357-368.

A review of literature supports the concept of frontal lobe pathology in alcoholism.

Stefanatos, G. A. & Wasserstein, J. (2001). Attention deficit/hyperactivity disorder as a right hemisphere syndrome. Selective literature review and detailed neuropsychological case studies. *Annals of the New York Academy of Sciences*, 931, 172-195.

Recent literature suggests differential involvement of right hemisphere mechanisms specialized for behavioral regulation and attention.

### **ONLINE RESOURCES**

Where should you start when you want to explore a topic online? Search engines can drop you smack in the middle of data smog—a network of useless, irrelevant sites. Often the best place to start is via a human—either a recommendation or an index page organized by a knowledgeable party in the field of interest. The following are helpful starting points:

[faculty.washington.edu/chudler/neurok.html](http://faculty.washington.edu/chudler/neurok.html)—Neuroscience for Kids—great introduction to the brain (not just for kids)

<http://solo17.abac.com/whatsnew/nf.htm>—Neurotherapy Gateway

[www.futurehealth.org/nfcentral.htm](http://www.futurehealth.org/nfcentral.htm)—Neurofeedback Central on FutureHealth

[www.futurehealth.org/qeeg\\_central.htm](http://www.futurehealth.org/qeeg_central.htm)—QEEG Central on FutureHealth

[www.latitudes.org](http://www.latitudes.org)—Latitudes

[www.epub.org.br/cm/n03/tecnologia/recursos.htm](http://www.epub.org.br/cm/n03/tecnologia/recursos.htm)—Brain Mapping

[homepages.kcbbs.gen.nz/af/cys\\_brain.htm](http://homepages.kcbbs.gen.nz/af/cys_brain.htm)—Brain Waves list of links

[www.phy.duke.edu/~hsg/eeg-research.html](http://www.phy.duke.edu/~hsg/eeg-research.html)—Krystal & Greenside EEG research

[www.appliedneurosciences.com/articles.htm](http://www.appliedneurosciences.com/articles.htm)—QEEG articles index

[groups.yahoo.com/search?query=neurofeedback](http://groups.yahoo.com/search?query=neurofeedback)—Neurofeedback on Yahoo Groups