

5
DAYS

in-depth training course
with Prof. Juri Kropotov

A From Z to Z

**of Quantitative Electroencephalography
Event Related Potentials & Neurotherapy**

21-25 MARCH 2012

Twin Towns Resort
Coolangatta, Qld, Australia

Learn from the Masters !

Advanced Professional Development for clinicians and researchers involved in Brain and Mind Health. You will learn everything you need to start recording and analysing human brain electric activity. You will acquire deep insight into theoretical underpinning. You will also learn practical skills in using the software for EEG analysis.

We are entering a new era of psychiatry and neurology. Long awaited, the fifth revised edition of The Diagnostic and Statistical Manual of Mental Disorders (DSM-V) will become the main reference for psychiatrists and neurologists upon its release in 2013. The primary focus of the new revision is to classify brain disorders according to their biological markers – endophenotypes. The new approach assumes that a psychiatric diagnosis is made not only from behaviour, but also from the knowledge of which the brain system is impaired. The only dynamical (at millisecond time scale) parameters of the brain function are provided by EEG and MEG (Magneto encephalogram). Currently MEG machines are too expensive, while EEG machines being inexpensive currently remain the primary choice for clinicians.

Prof. Juri Kropotov

EEG Renaissance in Clinical and Cognitive Neurosciences and Medicine

“We are facing a renaissance of EEG. The renaissance is associated with the development of new methods of analysis and breakthrough discoveries pertaining to the neuronal mechanisms of EEG. The majority of the new methods were initiated in laboratory settings only a few years ago. There is an urgent need however to introduce these new methods into clinical practice. Unfortunately, none of the existing normative data bases use the newly developed technologies”

Prof. Juri Kropotov

Prof. Juri Kropotov

USSR State Prize Winner

*Director of laboratory of the Institute of the Human Brain,
of the Russian Academy of Sciences, St. Petersburg, Russia*

*Professor II of the Norwegian University of Science and
Technology, Trondheim, Norway*

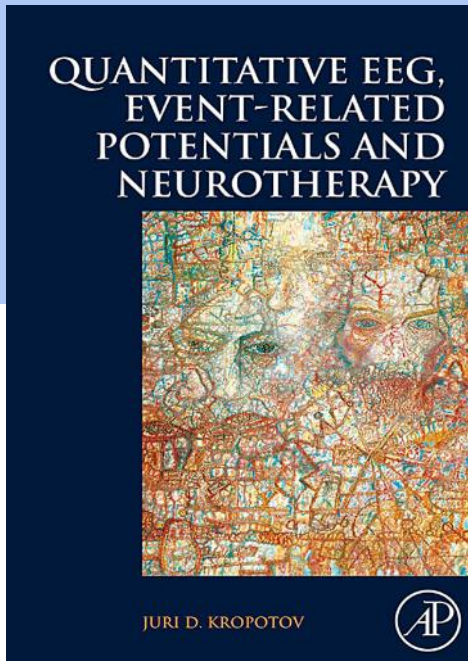


Juri is the director of the laboratory for neurobiology of action programming at the Institute of the Human Brain of the Russian Academy of Sciences, St. Petersburg, Russia. He is also Professor II at the Institute of Psychology at Norwegian University for Science and Technology in Trondheim, Norway. Juri graduated from the department of physics (major in quantum mechanics) of St. Petersburg State University in 1972. In 1975 he defended his PhD thesis on “Slow processes in the human brain” at the Institute for Experimental Medicine.

In 1985 for his research in the field of human physiology he was awarded the State Prize of the USSR – the highest award in the former Soviet Union. He was the first to show that the basal ganglia thalamo-cortical circuits of the human brain are involved in cognitive and affective functions.

In 1986-1992 he developed a mathematical model of the cortex – the canonical cortical module – that was able to explain most of the properties of neurons in the visual cortex. In 1990s he started the research in the field of quantitative EEG and evoked potentials in normal subjects, in ADHD population, and in neurological patients to whom intracranial electrodes were implanted for diagnosis and therapy. In 1998 he began using neurofeedback and transcranial Direct Current Stimulation for treatment of ADHD and some other brain dysfunctions. For his research he was awarded the Medal of Honor of Russian Federation, the Diploma of the USSR Academy of Sciences for the Highest Achievement (Discovery) in science. He published more than 180 papers and 7 books. For many years he served as an editor of the journal “Human Physiology” of Russian Academy of Sciences. He is ex-president of the European Chapter of international Society for Neuronal Regulation (iSNR) and an editor of the journal “Neurotherapy”.

Quantitative EEG, Event-Related Potentials and Neurotherapy



The Academic Press published his new book

Editorial Reviews

While the brain is ruled to a large extent by chemical neurotransmitters, it is also a bioelectric organ. The collective study of Quantitative ElectroEncephaloGraphs (QEEG-the conversion of brainwaves to digital form to allow for comparison between neurologically normative and dysfunctional individuals), Event Related Potentials (ERPs – electrophysiological response to stimulus) and Neurotherapy (the process of actually retraining brain processes to) offers a window into brain physiology and function via computer and statistical analyses of

traditional EEG patterns, suggesting innovative approaches to the improvement of attention, anxiety, mood and behavior.

While it does not offer the breadth provided by an edited work, this volume does provide a level of depth and detail that a single author can deliver, as well as giving readers insight into the personal theories of one of the preeminent leaders in the field.

Features & Benefits

- Provide a holistic picture of quantitative EEG and event related potentials as a unified scientific field
- Present a unified description of the methods of quantitative EEG and event related potentials
- Give a scientifically based overview of existing approaches in the field of neurotherapy
- Provide practical information for the better understanding and treatment of disorders, such as ADHD, Schizophrenia, Addiction, OCD, Depression, and Alzheimer's Disease
- Companion web site containing software which analyzes EEG patterns and database sample EEGs/Reader can see actual examples of EEG patterns discussed in book and can upload their own library of EEGs for analysis
- Registered participants can purchase this book with a 20% discount and free delivery

WORKSHOP PROGRAM

From A to Z
of Quantitative Electroencephalography
Event Related Potentials & Neurotherapy

DAY 1

Morning

TOPICS

- 1 Mechanisms of the generation of EEG rhythms Background EEG as a reflection of cortical self regulation
- 2 What does clinical EEG mean?
- 3 Pathological EEG patterns (slow waves, spikes, paroxysms...) in epilepsy, brain tumors, and some other brain disorders
- 4 Mapping potentials
- 5 Making Low Resolution Electromagnetic Tomography (LORETA and s-LORETA) from the potential maps

EDUCATIONAL OBJECTIVE

- Understand the foundations of clinical EEG, namely
- neuronal basics of brain rhythms generation
 - methods of recording and montaging
 - distinguish non-EEG artifacts from EEG records
 - correct for artifacts using various approaches available by means of software tools
 - distinguish pathological EEG patterns by means of visual inspection as well as by means of automated tools
 - use brain maps and s-LORETA imaging for depicting the data

PROCEDURE

Lecture (Power Point presentation is supplied)

Practice with EEG records of healthy subjects and patients from the HBI database (software and EEG files are supplied)

Afternoon

TOPICS

- 1 Recording an EEG in resting state (eyes open, eyes closed, hyperventilation)
- 2 Visual inspection of the EEG recording
- 3 Artifact correction
- 4 Automated spike detection

EDUCATIONAL OBJECTIVE

- to place electrodes on the patient's head according to 10-20 system
- to start, to end and to store an EEG recording
- to be able to use the built-in user database to manage the datasets
- to re-montage the recording

PROCEDURE

The attendees will be divided into groups. Each group will be supplied with hardware/software for recording and analysis. One of the attendees will serve as a subject (to be recorded) while the others will do recording

DAY 2

Morning

TOPICS

- 1 Quantitative EEG as a method for neuro-metrics
- 2 QEEG-endophenotypes (biological markers) in healthy population
- 3 QEEG-endophenotypes in brain disorders

EDUCATIONAL OBJECTIVE

Methods of spectral analysis, including

- Fourier and wavelet transformations recording and analysis. One of the attendees will serve as a subject (to be recorded) while the others will do recording. An EEG in the VCPT task will be recorded and analyzed
- coherence
- event related de-synchronization
- show how these methods enable us to reveal QEEG-endophenotypes of brain disorders such as ADHD, dyslexia, anxiety

PROCEDURE

Lecture, practising with EEG records of healthy subjects and patients from the HBI database

Afternoon

TOPICS

- 1 Spectral and coherence analysis of EEG recorded on the first day
- 2 Comparing spectral characteristics of recorded EEG with the normative data of the HBI reference database

EDUCATIONAL OBJECTIVE

- to remontage the recording into the HBI database montage
- to perform spectral and coherence analysis
- to compare the results of the analysis with the HBI database
- to make interpretations of the results

PROCEDURE

The attendees will be divided into groups. Each group will be supplied with software for analysis

The analysis of EEG of the subjects recorded on the first day will be done

Spectra, coherence, theta/beta ratios, asymmetry maps for EEGs recorded on the first day will be computed and analyzed

DAY 3

Morning

TOPICS

- 1 Event related potentials (ERPs) as markers of stages of information flow in the brain
- 2 Association of ERPs components with functioning of brain systems
- 3 Reflection of dysfunctioning of brain systems in ERPs components

EDUCATIONAL OBJECTIVE

Methods of Event Related Potentials, including

- averaging technique
- Independent Component Analysis (ICA)
- to show the discriminative power of ERPs in ADHD, dyslexia, traumatic brain injury

PROCEDURE

Lecture, practicing with EEG records of healthy subjects and patients from the HBI database

Afternoon

TOPICS

- 1 Recording of EEG in Visual Continuous Performance Task (VCPT)
- 2 Preprocessing of EEG
- 3 Computing ERPs by averaging technique
- 4 Comparison of behavioral parameters (omission and commission errors, latencies and variances of responses) with the normative data of the HBI database
- 5 Comparison of ERPs with the HBI database
- 6 Comparison of ICA components of ERPs with the normative data

EDUCATIONAL OBJECTIVE

- to use Psytask software for presenting tasks provided with the HBI database
- to record EEG in one of the tasks (such as VCPT)
- to compute ERPs and behavioral parameters
- to analyze ERPs visually and to make maps as well as LORETA images of ERPs components, and
- to compare ERPs and ERPs components with the HBI reference database

PROCEDURE

The attendees will be divided into groups. Each group will be supplied with hardware/software for recording and analysis

DAY 4

Morning

TOPICS

- 1 Neurofeedback and tDCS as tools of neurotherapy
- 2 Neurotherapy for peak performance in healthy subjects
- 3 Neurotherapy for correcting cortical dysregulation in brain disorders
- 4 Neurotherapy for correcting disorders of information flow

EDUCATIONAL OBJECTIVE

- Methods of neurotherapy, including
- QEEG-based neurofeedback
 - s-LORETA neurofeedback
 - ICA-neurofeedback
 - ERP-based neurofeedback
 - Transcranial Direct Current Stimulation
 - Transcranial Magnetic Stimulation (TMS)

PROCEDURE

Lecture, practicing with EEG records of patients from the HBI database and constructing neurotherapy protocols

Afternoon

TOPICS

- 1 Analysis of EEG records made during the first days
- 2 Constructing neurotherapy protocols for peak performance by using the recorded EEG files
- 3 Analysis of EEG records of patients from the HBI reference database
- 4 Constructing neurotherapy protocols for treatment

EDUCATIONAL OBJECTIVE

- to use the HBI reference database for constructing protocols of neurotherapy

PROCEDURE

The attendees will be divided into groups. Each group will be supplied with an HBI database

The records made during the first days will be analyzed and neurofeedback protocols for peak performance will be suggested

Several records of patients of the HBI database will be analyzed

DAY 5

Morning

TOPICS

- 1 Overview equipment and software
- 2 How to make a report yourself
- 3 How to read reports made by HBI experts
- 4 How to monitor the results of treatment
- 5 What service is available
- 6 How can you contribute to the normative database

EDUCATIONAL OBJECTIVE

- how to incorporate the learned methodology in the clinical practice
- how to use information obtained by the methodology for diagnosis, treatment and monitoring treatment progress and result

PROCEDURE

Lecture: reviewing reports made by the HBImed experts (the template of the report will be supplied)

Practice: comparing the pre- and post EEG spectra and ERPs

At the end the attendees will be given a written multi-choice examination to test the knowledge they have obtained during the workshop

More about the workshop

This workshop is the next major step in our efforts to contribute to the establishment of the field of digital electroencephalography and event related potentials in Australia as a standard clinical assessment.

Included in the course fee:

- Lunch
- Morning/Afternoon Teas
- Course material (including booklet with all slides as well as CD)

Venue

The workshop venue is Outrigger Twin Towns Resort, Coolangatta Qld

With a prime position overlooking the beaches of the Southern Gold Coast and the sparkling waters of the Tweed River, this 4 ½ star (AAA Eco-friendly Star Accreditation) resort offers an unparalleled level of premium facilities, is adjacent to Twin Towns Club which offers endless dining and entertainment options and is a short stroll away from the heart of Coolangatta's cosmopolitan dining and shopping experience. Discover the Coolangatta Tweed Coast at Outrigger Twin Towns Resort.

Cost

All fees are in Australian dollars and include 10% GST

Workshop Registration	Cost pp AUD \$
Early Bird Rate: Register on or before 15 th January 2012 Includes Lunches, Morning/Afternoon Teas, course material (including booklet with all slides as well as CD)	\$1,650
Full Registration: After 15 th January 2012 (inclusions as above)	\$1,800
Student Registration: (inclusions)	\$950

Registration

The registration for the workshop is now open at www.braininstitute.com.au

All matters related to this workshop are managed by Brain Mind & Memory Institute and Solstice-Mind Matters Pty Ltd.

Contact Rustam Yumash by email: info@mindmatters.com.au

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Professional discounts available.

Applied Neuroscience Society of Australasia members are entitled to a further discount.

Please send your expression of interest or register
by email to info@mindmatters.com.au
or events@mindmatters.com.au