EEG Assessment And Training

Peter Van Deusen

Peter Van Deusen began training his own brain in 1991 and studied the theories, philosophies and techniques of many leaders in the field of brain training. With no clinical background, but impressed by the changes that occurred in his own life, he began working with clients and built his practice to 4 sites in metro Atlanta. In 2001 he moved to Miami, FL and began training other professionals, as well as home users. He presents throughout the US, Europe and South America. The assessment tools he has developed are used by hundreds of professionals and brain trainers around the world. For more information about his center and his philosophy go to: *www.brain-trainer.com*

Francois Dupont, Ph.D.

Dr. François Dupont is a Clinical Psychologist in private practice at the University of Ottawa, Health Services. His first contact with bio/neurofeedback was in 1991 under Paul Swingle's doctoral supervision. He has used bio/neurofeedback in the context of chronic pain, high blood pressure, ADD/H, anxiety, mild head-injury, trauma, etc. Dr. Dupont often combines bio/neurofeedback with techniques borrowed from cognitive-behavioural, dynamic/humanistic and experiential approaches. His doctoral comprehensive examination looked at the psycho-socio-existential adjustment to cancer while his doctoral dissertation dealt with the effect of sub-threshold audio recording on EEG and on behavioural changes in ADD/H children. For more information go to: *www3.sympatico.ca/fdupont-phd.*

Do you think it is important to assess people before you train them?
Yes, both Peter and I think that adding an EEG assessment can be of particular value to help see the client's status prior to training and measure improvement over sessions. With this basic information in hand, the neurofeedback practitioner can establish a training program finely-tuned to the patient or client's needs. We don't like to use a recipe approach. The TLC assessment is an excellent tool to help determine each person's brainwaves before training. It certainly changed the way I practiced when I started running an assessment as a routine before I begin training.

What makes Peter Van Deusen's approach so popular?
First, the TLC assessment provides multiple accurate pictures of brain activation patterns that are practically oriented toward telling us what and where to train. What differentiates the TLC is that it is easy to do, with your regular encoder, fast to do, more focused on training than data, and yet it gives the trainers data that is very consistent with what they learn from QEEG's. Also, it includes a training approach designed to broaden the effectiveness of training

Peter Van Deusen and Francois Dupont introduce some of the key techniques being used in EEG (electroencephalography) assessment and training using the latest BioGraph Infiniti biofeedback software. The TLC system (The Learning Curve) created by Peter Van Deusen integrates an elaborate, yet simple, assessment procedure using regular EEG encoders (2, 4 or 6 EEG channels plus physiological channels, with the Infiniti platform), with a powerful 2 channel training approach, which is easy to use for the trainee and for the trainer. The TLC system also includes a computerized subjective assessment form, which guides trainers to sites of special interest based on symptom constellations in a way that is firmly based on quantitative EEG research.

The Biofeedback Foundation of Europe is a non-profit organization located in the Netherlands. The BFE was founded to promote a greater awareness of biofeedback among European health professionals, and, through training workshops, educate clinicians in the use of biofeedback techniques and technology. For more information on BFE online courses, workshops and conferences worldwide see our website www.bfe.org.

Biofeedback Foundation of Europe

by using two-channel protocols, to simplify the trainer's technical job by using summed-channel protocols and to mini-mize negative effects by focusing mainly on inhibit-only protocols.

Mr. Van Deusen, how does the assessment part of the TLC system work?

My approach to EEG assessment is based on the fact that common patterns of activation in the brain tend to be linked to specific sets of strengths and weaknesses. My assessment tools link subjective information about the client's day to day life and thinking style to the

> **"My goal in the training I do is to take the insights and information from the pioneers of the field and to integrate them into a system that makes the best decision-making available to as many neurofeedback practitioners as possible".**

objective information gathered from EEG data. Together, these suggest training strategies for a successful neurofeedback program. The TLC System provides two tools used by hundreds of clinicians and trainers around the world to guide and inform their development of training plans: The TLC Assess Pro and the TLC Subjective Evaluation.

The TLC Assess Pro is an assessment tool that provides 10-18 channels of EEG data in 7 different views (histograms, head-maps, ratio and peak frequency data, variance graphs, etc.), which allow you to compare eyes-closed, eyes-open and challenge task activation patterns across the head. The assessment form includes pages on which the trainer can note
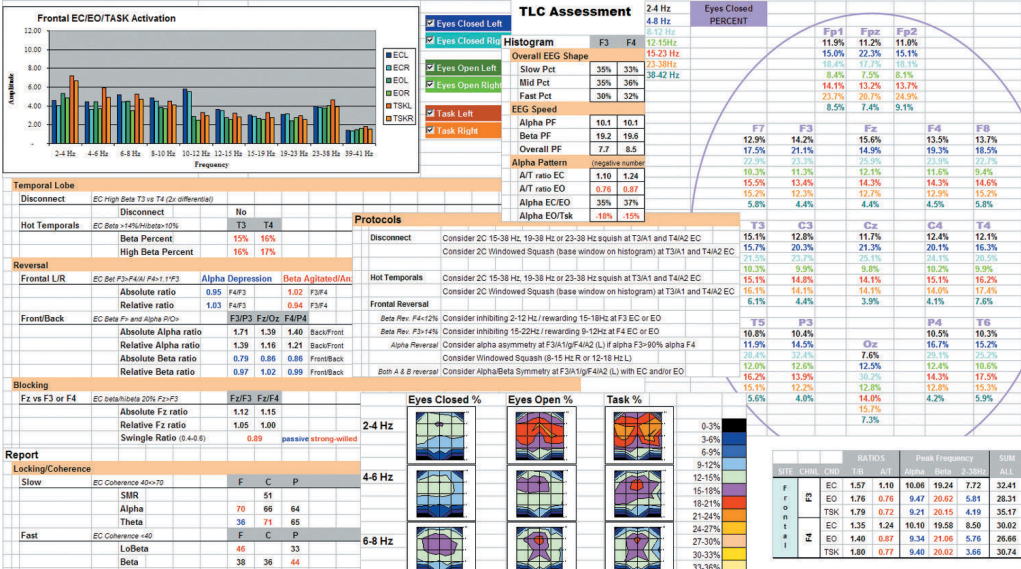
training options and define and track a training plan. In contains a built-in system for reviewing the data in a structured way focused on identifying highly effective training strategies. The TLC Assess Pro is not based on comparing your client against normative databases; rather it helps you to identify patterns and relationships between sites and frequencies within the client's own brain. These specific relationships (identified and validated by QEEG pattern analysis) stand out in the data and can be compared against the client's training goals. These lead more directly to training approaches.

The TLC Subjective Evaluation is a computerized file that allows clients to rate a wide range of subjective issues and then uses these ratings to identify brain structures that appear to be most involved in those problems. The assessment ranks the 5 standard site pairs from which assessment data is gathered and the 4 optional pairs (for a total of 18 channels) according to their involvement in client

problems. It also provides a list of the 20 highest rated problems. Since the entire process is performed and scored on the computer, it is a quick and efficient way to get a rough view of where training should focus.

Dr. Dupont, how easy is it to run the assessment using the Infiniti software?

Essentially, to run the assessment with the Infiniti Suite for TLC Assessment and Training (TLC Suite), all you have to do is press a key to start. This is made possible with the

CLIENT:	Sample Client		DATE:	4/20/2006
RATER:	self		AGE:	60

	PreFrontal	
	2.50	
LF	premotor	RF
2.10	1.90	2.05
T3	SMC	T4
2.08	1.25	1.00
LR	P3/Pz/P4	RR
1.39	1.23	1.29
	Posterior	
	1.23	

Standard Sites:		Optional Sites:	
F3/F4	2.07	Fp1/Fp2	2.50
C3/C4	1.90	F7/F8	2.07
Fz/Oz	1.79	Fpz/Cz	2.00
T3/T4	1.62	T5/T6	1.36
P3/P4	1.23		

HIGHEST RATED ISSUES:

Starts but doesn't finish	Fp1/Fp2
Rarely laughs	LF
Can't stay on task to completion	RF
Easily distracted from task	Fp1/Fp2
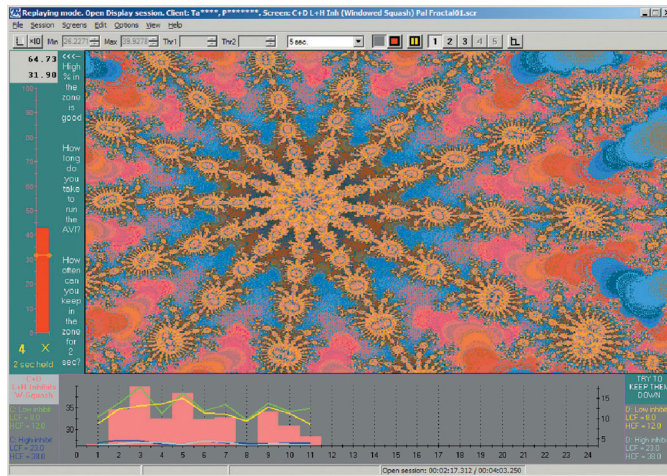
script sessions, a great feature unique to the Infiniti software. Script sessions are generally used (but not exclusively) for standardizing assessments and evaluations because they run through a prescribed sequence of activities, generate activity-specific statistics and automatically stop at the end of the script. When running, a script automatically gives instructions (text and image format) to the practitioner, and to the client, waits for a key to be pressed to move to the next step, loads display screens, records data and saves data at the end.

The scripts in the TLC Suite allow you to easily and accurately run the three activities needed: eyes closed, eyes open and a specific task associated with the electrode placements. After each activity you see the statistics for that activity and you have the option to repeat it if something went wrong, like if there are too many artefacts, allowing you to record the data over again for that specific activity only. When you are ready to proceed with an activity, all you have to do is press a key to continue. On-screen instructions guide you through the assessment and help you instruct your client. After each recording, you are offered to run the full script again, with all the previous settings, at the touch of a key. Special screens are included for automatic and manual artefact rejection.
One of the things I am most

pleased about with the TLC Suite is that it can be used to collect data 2, 4 or 6 EEG channels at a time; in addition to physiological measures, like muscular tension, skin conductance, heart rate, peripheral temperature and respiration. This means that new practitioners can get started right away with the ability to routinely run assessment before training; with the same encoder they use for training (ProComp Infiniti, ProComp2 and ProComp+).

Dr. Dupont, can you use the TLC Suite to create reports of changes between different sessions?
Yes, you can use the Infiniti TLC Suite to create trend reports between activities (eyes closed, eyes open and a task) in one session and across sessions. You could decide to run the 3 minute script every so many training sessions to assess your patient's improvement over time. This option (among others) combined with the fact that the TLC Suite is so easy to run, with its step by step guidance, make it a perfect tool to establish standardized baselines for research purpose (like with the BFE's International Research and Education Projects; IREP).

Peter, how do I learn how to interpret the session?
On my website *(www.brain-trainer.com)* you will find a series of workshop starting at beginner's level all the way to the 3-day Trainers' Practicum workshop, which is an advanced training on how to interpret assessments and create meaningful treatment plans. In addition to the interpretation that I teach, on the BFE website (www.bfe.org) you will find online courses like: Intro to Neurofeedback, Intro to the TLC Suite for EEG Assessment, and Intro to the TLC Suite for EEG Training. The latter is about the use of the specific training screens in the TLC Suite.

Can you both tell me a little about the TLC's method of training?
There are three main protocols I often use and teach. The Squash, Squish and Windowed Squash. All three have the following in common: All are two-channel (monopolar in each channel) protocols, all are sum-channel protocols (the two signals are added together to result in a single training signal) and all are inhibit-only protocols (no reward band).
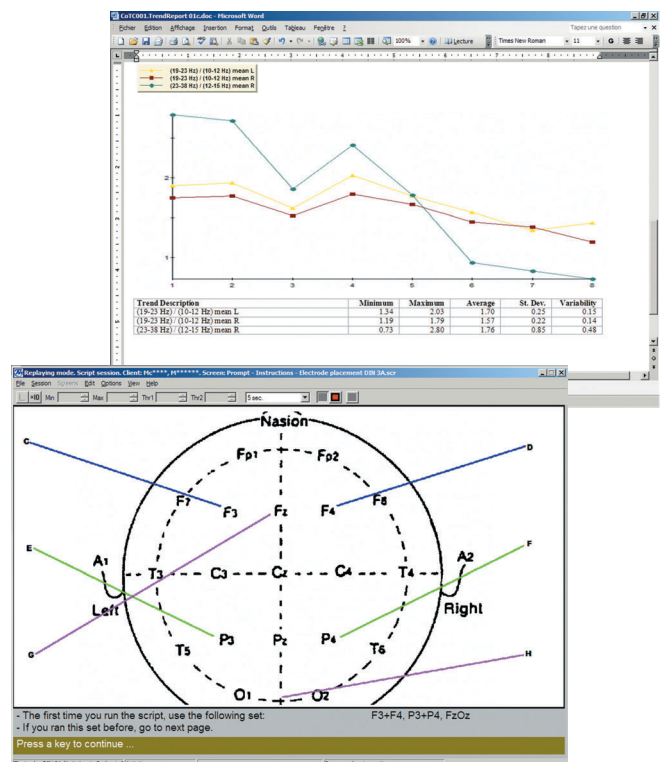
Improve Your Health & Performance

Francois Dupont, Ph.D.

Dr. François Dupont is a Clinical Psychologist in private practice with certification in General, Health, and Rehabilitation Psychology from the College of Psychologists of Ontario.

Dr. Francois Dupont provides the following services in French and English to the general population:

- **Individual short-term and long-term general psychotherapy** (self-esteem issues, interpersonal difficulties, depression, burnout, anxiety, trauma, post-traumatic stress disorder, etc.);

- **Behavioural management of health-related habits** (e.g. sleep hygiene, stress management, etc.) and therapy for individuals with different types of illnesses;

- **Biofeedback and neurofeedback** for relaxation and attention enhancement training, and also as an aid in the management of impairments such as chronic pain, high blood pressure, mild head-injury, Tourette syndrome, etc.

- **Assessment** of psychological / emotional, cognitive and behavioural functioning (including ADD/H).

The 8th Conference of the International Stress Management Association (ISMA)

Montréal, Québec, Canada July 9 - 13, 2007

The 8th Conference of the International Stress Management Association will explore the similarities and differences in the nature, perception and handling of human stress in countries around the world.

You are invited to 5 days of cutting edge sessions led by a distinguished group of researchers, practitioners, teachers and authors. This meeting takes place in Montreal, where Dr. Hans Selye spent over half a century researching stress and its positive and negative effects on the human body. Workshops, keynote addresses, lectures and continuing education credits providing a program strong in scientific and clinical content will meet the breadth of interests of professionals who recognize the escalating pervasiveness of stress throughout the world and want to do something about it. Come join us at historic Université de Quebec à Montreal (UQAM).

BfE
Biofeedback Foundation of Europe

Clinical, Health, and Rehabilitation Psychology
Therapy, assessment, and consultation

University of Ottawa; Health Services
100-100 Marie-Curie, Ottawa, Ontario, K1N 6N5 Canada
Tél. : (613) 564-3950 poste/ext. 225 ; Fax : (613) 564-0758
http://www3.sympatico.ca/fdupont-phd
fdupont-phd@sympatico.ca

www.bfe.org