

HEG Instructions

We place an optical or temperature probe on the desired position, display the tissue color or temperature in a form we can sense. With this indicator of success we can use our well developed previously described learning method to activate the chosen bit of cortical brain tissue.

In my experience, the first thing asked by a new client is how to make the indicator increase. My first response is “Just make it go up.” After several minutes there will usually be a significant increase. I like to help increase the response if it is too limited. Sometimes a simple demonstration helps. I ask the client to hold my hand as tightly as possible. Then I ask, “How did you do that? I’m from Pluto and don’t know anything about that.” Of course this question can’t be answered in any detail. All we really know is that we wanted to do it. That is exactly the way to make things happen. Concentrated attention and intense wanting will do it.

HEG is not relaxation. It is concentrated attention. In spite of information from others, I have not been able to access a blood flow mode that relaxation improves.

I assume that you have successfully installed the software.

The nirHEG headband has two optodes, a light generating LED pair and a sensor optode. An LED of the first optode is red and shines brightly when the power is on and the program is running. The other LED of the pair is invisible infrared. The optodes are placed in contact with skin on the head. Where hair is in the way, carefully make a part along which the optodes can lie and make skin contact. It may be necessary to remove a small batch of hair to aid in making optode skin contact. Short stiff hair makes skin contact very difficult. Hair lifts the headband from the skin and provides a light path that does not contact the brain. This results in excessively high readings.

Your first experience with HEG

There is a white velcro dot on the front (outside) of the headband marking the center of the HEG exercise area. Place the headband on the forehead with Fp1 under the dot. We suggest you get experience using the Fp1, Fpz and Fp2 sites first, on yourself then others. You can then expand to other sites. We start off by training Fp1 for 10 minutes, then Fp2 for 10 minutes, and then Fpz for 10 minutes. After about 10 seconds the value will stabilize. This baseline value will be used with the 10-minute average to measure HEG gain.

Percent Gain is defined as 100 times (average minus baseline) divided by baseline.

You will note that the HEG value does not immediately return to baseline after the first 10-minute segment. Consequently the gain after the first placement will decrease. It is therefore sensible to rotate the training sites on subsequent sessions.

In practice, sites are chosen as indicated by client needs

Brain activation is an exercise. Fresh blood brings in the necessary nutrition, oxygen and the glucose, that supplies the energy for a brain module to efficiently do its assigned job. Exercise affects the brain much like it affects muscles. New capillaries are formed to feed neurons. New connections between neurons are formed to carry information. Like a muscle, with exercise, the brain builds a vascular system, enabling more brain tissue for use by this brain area. The brain grows physically. With exercise, the brain builds a vascular system, enabling more brain efficiency in its use. Exercise is the road to a healthy brain!

The relevant part of brain training involves making the targeted brain area active

Activity makes a demand for more blood to be brought into the area. Each active 10 minutes can be thought of a segment in a session. Repeating sessions is necessary for useful results. Each segment is like a grain of wheat as you fill the measuring cup before you can make a loaf of bread. Best efficiency (least number of sessions) requires at least one night’s sleep between sessions. Clients, long deprived of brain activity, will need to expose the newly developing brain capability to necessary new information. We call this education.

You need to know where to place the sensor to exercise any under-active bit of brain tissue.

With any new client, the first three sessions are devoted to forming a written history and understanding the client's problem. A prime objective is finding pointers to brain areas not serving the client well. I am interested in time of onset and duration of the difficulty. If I can isolate a cause such as a brain injury perhaps the injury can point to a training site. I have developed a questionnaire that uses known brain function locations to help locate potential training areas. I have included it in Appendix I.

A QEEG brain map can be helpful if it tests the prefrontal lobes. A check of the Beta/Theta ratio under rest and then under challenge is very useful in selecting training areas. A significant drop in the ratio under challenge finds suspect areas. I favor choice of challenge by the client according to the function that is giving the most trouble. Biocomp Research makes a montage switch kit that allows most instruments to do a simplified, convenient, adequate brain map.

It is not enough to use only QEEG brain map or the history and questionnaire to finally define training areas. I also try for objective information ratifying those areas. I use two computer administered and scored tests, the Test of Variables of Attention (T.O.V.A.©) and MicroCog©: Assessment of Mental Functioning. Appendices II and III will help your use of objective tests to check your questionnaire results.

You need to know how much increase in indicated values is needed to be useful and how long to continue a given session

I have determined that in daily living the HEG varies during the day about 10% at any position on the frontal cortices. Our process is dependent on making greater demands on the deficient module than would be made in normal life. I have therefore chosen 10% as the minimum HEG gain, defined above, as a lower limit for acceptable training. A common gain is 15%. It is not unusual to see 20% to 30%. I have seen a maximum of more than 100%.

The system is calibrated to read 100% on the average normal person. I don't put much faith in the general initial readings. There is much fluctuation during daily life. However, if the readings are very low such as 40 or 50, I take heed and begin to watch carefully.

HEG is an energy intensive process. Some clients tire easily. The length of a segment and number of segments to include in a session is determined by the available time and energy of the client. I try to determine a reasonable session length in the first session. Some times a 5 minute session is best. I find a 10 minutes session length fits most clients.

Tiring is indicated by falling values even with intense effort after a good start. I try to get 3 segments in a session hour. If tiring shows consistently in less than 5 minutes breathing or lung capacity may be inadequate. I may try supplementary O2 to determine if the breathing is adequate. If supplementary O2 results in a stable increase, then breathing instructions may be useful. Breathing instruction and Heart rate variability (HRV) training are good bets. Finding the cause will help restore health.

If there is a dramatic increase due to the extra O2 followed by a rapid decay early fatigue may be the cause. If normal breathing exercises don't improve adequately, then the help of a physician specializing in heart and lung disorders may be in order. Smoking, asthma, emphysema or Chronic Obstructive Pulmonary Disease (COPD) can reduce lung efficiency and foster an oxygen-starved brain.

You need to know how many sessions might be needed to reach a satisfactory training conclusion

As a good rule of thumb I have found that clients gain about 1.0 (T.O.V.A.©) points per session. Knowing the beginning average of the T.O.V.A.© scores then allows an estimate of the required number of sessions needed for a T.O.V.A.© score of 100.

Number of required sessions is approximately (100 - present score).

You will need to know what disorders will be alleviated by HEG

In general, those brain difficulties that have physical etiology such as developmental, hereditary, or injury yield best to HEG. Among these are ADD/ADHD, Dyslexia, Migraine, Traumatic Brain injury, Toxic Encephalopathy, Epilepsy, Endogenous Depression, Ageing Dementia, Autism, Aspergers Syndrome, Schizophrenia, and perhaps Alzheimers Disease. (see EEG or HEG; That is the question)

There are so many useful relevant things that help along the process.

None of the things you need to know are cast in stone.