

Gas Discharge Visualization (GDV) Technique

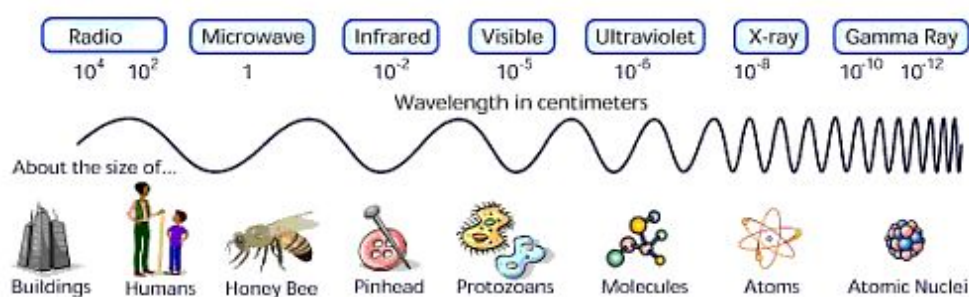
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Introduction to the Concept of Energy Fields

In the *Living Energy Universe*, Drs. Gary Schwartz and Linda Russek, Directors of the Human Energy Systems Laboratory at The University of Arizona, stated “it is possible to organize the entire universe in terms of nested levels of systems, from the micro to the macro. Nested means that one level is inside another level.” (1999, p.160). The concept of a system requires that the components be connected energetically. Energy can be thought of as the force that maintains each system and also enables it to emerge and evolve into a higher level system.

Research converging from many fields of investigation indicates that the body is a complex energy system, rather than the mere clockwork machine of biological gears and parts that is often espoused in conventional medicine. Examples of energy transmission within the body are *metabolic energy* conversions of fats and sugars into ATP (adenosine-tri-phosphate), *bioelectrical energy* triggered by charged ions which influence the heart, nerves and brain, and *biophotonic energy* from ultraviolet biophotons which are located in the nucleus of cells. In a 1992 book by F. Popp *et al.*, entitled *Recent Advances in Biophoton Research and Its Applications*, the authors indicate that the low-level light known as biophoton emission, a type of internally produced electro-magnetic radiation, is important in understanding bioregulation, membrane transport, and gene expression.

The electromagnetic spectrum spans a broad range of frequencies and wavelengths and living systems have evolved within the context of this energy spectrum.



<http://imagers.gsfc.nasa.gov/ems/waves3.html>

Figure 1: The Electromagnetic Spectrum

Bioelectromagnetics (BEM) is the name given to the emerging science that studies how living organisms interact with electromagnetic (EM) fields. In *Alternative Medicine: Expanding Medical Horizons-A Report to the National Institutes of Health on Alternative Medical Systems and Practices in the United States*, a distinguished group of scientists

concluded in 1992: “Elucidation of the physical mechanisms of BEM medical modalities is the single most powerful key to developing efficient and optimal clinical intervention. Even a relatively small advance beyond the present knowledge of fundamental mechanisms would be of considerable practical value” (pg. 59). “BEM potentially offers a powerful new approach to understanding the neuro-endocrine and immunological bases of certain major medical problems (wound healing, cancer, and AIDS)” (pg. 60). “In biomedical research, BEM can provide a better understanding of fundamental mechanisms of communication and regulation at levels ranging from intracellular to organismic. Improved knowledge of fundamental mechanisms of EM field interactions could lead directly to major advances in diagnostic and treatment methods” (pg. 61).

This panel of investigators proposed that BEM offers a unified conceptual framework that might help to explain how certain diagnostic and alternative therapeutic techniques (e.g. acupuncture, homeopathy, certain types of ethnomedicine and healer effects) that are now difficult to understand from a more conventional viewpoint could be understood from an electromagnetic energy point of view. For example, it is now known that electrical currents exist in the body that are capable of producing magnetic fields that extend outside the body. This could possibly help to explain various types of “hands-on” healing in which the healer seems to transfer and increase the level of electromagnetic energy available to the patient.

Since that NIH report was published almost a decade ago, both the public and professional acceptance of alternative and complementary healing practices has greatly increased. Documentation of this rapidly exploding interest can be found in several recent books such as K. Scott-Mumby’s *Virtual Medicine: A New Dimension in Energy Healing*, published in 1999 and R. Gerber’s *Vibrational Medicine for the 21st Century: a Complete Guide to Energy Healing and Spiritual Transformation*, published in 2000. These books contain extensive reviews of various techniques which are based upon the assumption that alterations in energy fields can result in improved biological, psychological, and spiritual functioning.

Photographing Energy Fields

Although claims for the existence of energy fields have been widely accepted in various Eastern medical practices for many centuries, claims concerning the reality of human energy fields were rejected by Western scientists because they considered that objective evidence for their existence was not available. This situation began to change somewhat during the latter part of the nineteenth century when photographs were made of the electrical discharges from animate and inanimate objects. The term “electrography” was coined to describe these images explored by the Czech physicist Navratil in 1888, Russian biologist Nardkevitch-Jodko and Brazilian priest Landel de Morua in the beginning of 1900th. In 1939, Semyon Kirlian, a Russian electrician, rediscovered this phenomenon and he and his wife Valentina began exploring the possible significance of the colored “auras” or coronas that he found surrounding the various objects that he photographed with his technique (Kirlian and Kirlian, 1961). Kirlian photography subsequently became a topic of wide interest to European and American investigators and a bibliography compiled in 1994 by L. Wigh listed several hundred publications in this area.

One of the most extensive American investigations was carried out at the UCLA Center for the Health Sciences. T. Moss and K. Johnson (1973) indicated that they had taken more than 10,000 ‘modified’ Kirlian photographs, chiefly of the human fingertip, leaves, and metal objects. More than 500 hundred persons and more than 1,000 leaves were photographed. They found that a subject’s energy field was affected by ingesting alcohol, performing yogic

breathing, undergoing hypnosis, or experiencing emotional states. After carrying out several careful experiments, the investigators were able to conclude that the electrophotographs were not due to skin resistance, nor to the state of the peripheral vascular system.

In an interesting series of experiments, the researchers found intriguing patterns of interpersonal influence on the photographs. The corona usually differed when the experimenter and subject were of different genders as opposed to when they were of the same gender, and a strict authority figure, such as an elderly experimenter, usually produced a much smaller corona than an informal friendly assistant. In research with four “healers”, the healers’ coronas were found to be much larger and brighter before the healing session than during or after healing. In contrast, the patients’ coronas increased sharply over their pre-healing states, as if an actual transfer of energy were occurring between the healer and her patient. Dramatic differences in the corona were found before and after acupuncture treatment. The brightness and clarity of the corona were particularly noticeable if the needles were inserted at points known to be related to a patient’s specific physical complaints.

Another American researcher, L.W. Konikiewicz (1979), under careful laboratory conditions using double-blind studies, correctly identified cystic fibrosis patients and carriers of the gene with a high order of accuracy. He also found that the day of the menstrual cycle influenced variations in the brightness of the energy field and that the day of ovulation could be detected. The patterns were different for subjects taking an oral contraceptive. In a later revised edition of his book, co-authored with L.C. Griff (1984), results were reported about their success in detecting cancer and other abnormal physiological conditions.

Scientific acceptance of Kirlian photography has been rather limited, however, because the type of equipment used in earlier years varied quite markedly from investigator to investigator and there was a wide range of parameters that needed to be controlled for the successful operation of the method (Tiller, 1988). An important first step to quantifying electrographic pictures was made by Poock in 1976 at the US Navy Post Graduate School in California, when he introduced an image-analytic technique. A multi-disciplinary team, headed for several years by William Eidson at Drexel University in Philadelphia, concluded it was possible to image electrical parameters of a specimen in real time, making it a possible field- mapping tool for energy fields. This work was summarized in an article in the prestigious journal *Science* (Pehek et al. 1976). Attempts to develop computerized devices for the analysis of Kirlian photos were carried out by Inyushin in Russia (Gris and Dick, 1978). Many other theoretical and technical advances have been made in recent years to move bioelectrography into the mainstream of western science. Quantum theory has made a significant contribution toward providing a theoretical framework for energy-field imaging and explaining some of its previously puzzling aspects.

In the technological area, an organization to help standardize equipment output parameters, research methods, data presentation standards etc. called the International Union of Medical and Applied Bio-Electrography was formed in 1997. At the present time, investigators in 28 countries outside the USA are currently pursuing a variety of studies with the latest Kirlian Imaging technology that will be described in the next section. International conferences to present the latest findings have been held for the last several years in St. Petersburg, Russia.

Development of the GDV Technique

Russia has been the most active country in developing new scientific applications of bioelectrography. This has been due in large part to the pioneering efforts of Konstantin Korotkov, Ph.D., a physicist who is a Senior Research Scientist at Saint Petersburg Federal

Technical University (Kortokov, 1999). Among his 12 patents in the field of biophysics is the device for the GDV technique (#110649), which was certified as a medical instrument in January 2000 by the Russian Ministry of Health. In essence, a high intensity electric field is created around an object which produces a gas discharge. Since this discharge is accompanied by photon emission it can be photographed. The device is safe for both the subject and the operator.

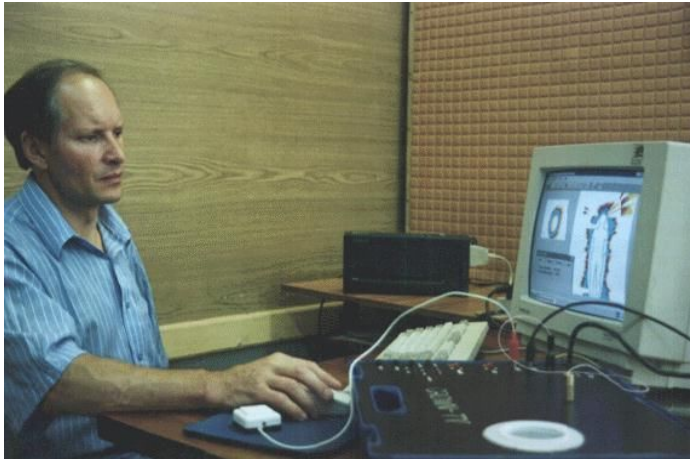


Figure 2: Professor Konstantin Korotkov, Ph.D.

Korotkov's invention, The Gas Discharge Visualization (GDV) technique, is based upon the Kirlian Effect but employs new scientific enhancements such as fiber-glass optics, a digitized TV matrix, and image processing with powerful computer software. The computer images generated by this sophisticated system are called GDV-grams and the class of pictures pertaining to biological effects are called BEO-grams. In the photos below, the original GDV camera and the newest 2001 version of the machine are shown. As can be seen in the photos, a subject places a fingertip on the special glass circular area which serves as a sensor.



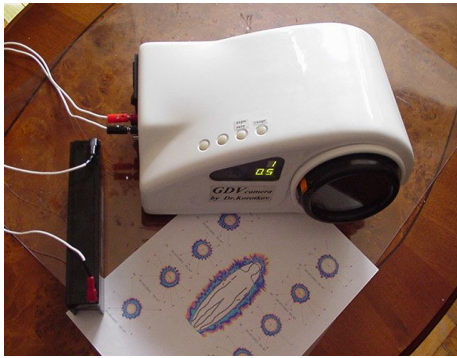


Figure 3: Original GDV Camera

Figure 4: 2001 Model of the GDV Camera

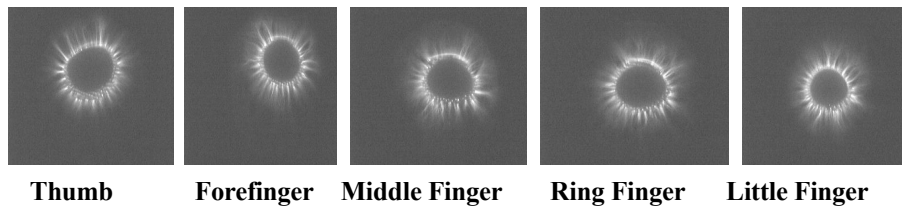
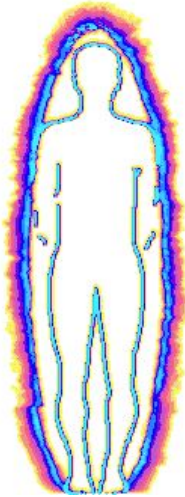
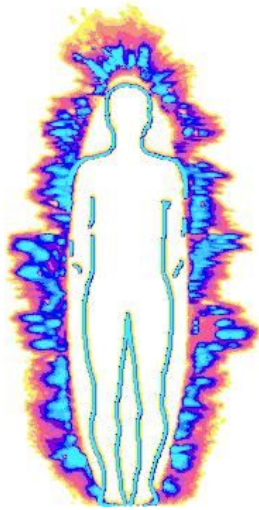


Figure 5: BEO-grams of a Well Balanced Healthy Individual

Each of the 10 fingertips are photographed and the resulting BEO-grams are displayed separately. The initial BEO-grams from one hand of a healthy individual are shown above in Figure 5. The BEO-grams are analyzed by the processor and subsequently displayed in color and presented along with a sector analysis for each fingertip. An example of a color sector analysis of an individual fingertip is shown in Figure 6.

Figure 6: Sector Analysis of the Little Finger Left Hand

Complex mathematical calculations are performed to derive statistics that characterize the strength, shape, dimensions, and irregularities of the fingertip images. These calculations are used in the analysis of areas or sectors of fingertip images that are believed to reflect different organs and systems of the body. Relying upon extensive research utilizing the application of small electrical potentials to detect the location of acupuncture points and the energy “meridians” which connect them together, and with their end points on the fingertips, it is possible to carry out “sector analysis” of these fingertip images. Each individual sector or portion of the fingertip is connected energetically with specific organs and organ systems such as the respiratory system. When the data of the 10 individual BEO-grams are collated and interpolated, an image of the entire “aura” or full body energy field is created. An example of a full body energy field from a healthy and unhealthy individual is shown below. The gaps and the reduced emissions are quite obvious in the energy field of the unhealthy individual.



Healthy Energy Field

Unhealthy Energy Field

Figure 7: Examples of Healthy and Unhealthy Energy Fields.

The next step in analysis involves an examination of the two GDV Diagrams which result from summing the fingertip information from each of the two hands. The energy states of various organs and systems are assessed in comparison to the energetic levels of a relatively healthy person. Excess energy is shown in the outer pink zone, while low energy areas appear in the inner yellow ring. Normal or balanced energy is represented in the middle green ring. An example of a GDV Diagram from an elderly man with irritable bowel syndrome and spinal problems is shown in Figure 8.

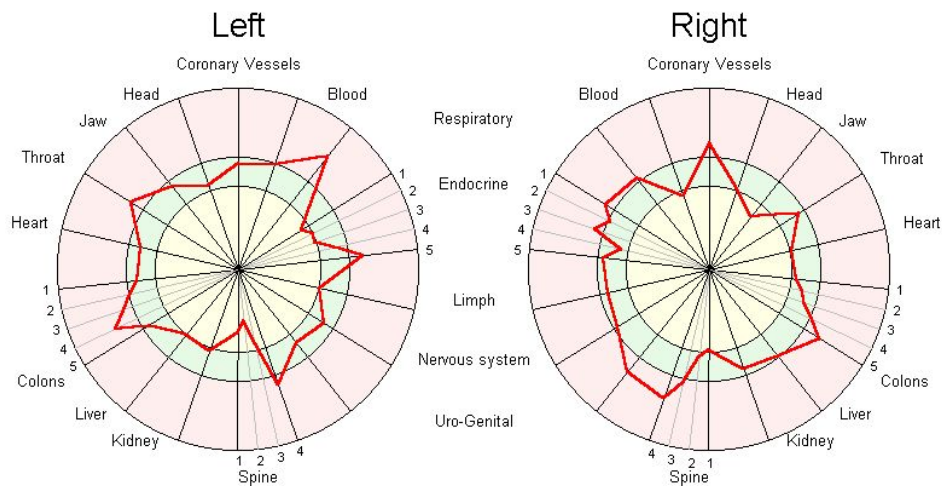
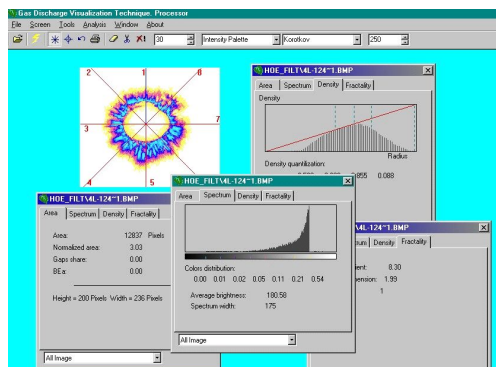
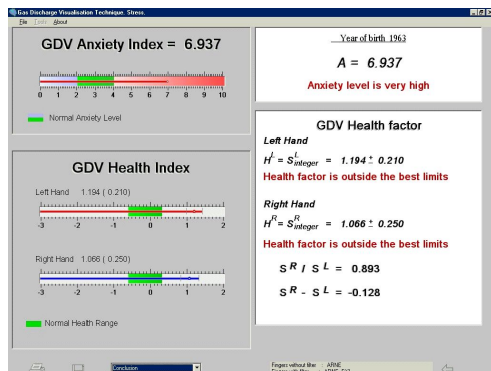


Figure 8: GDV Diagram of an individual with Irritable Bowel Syndrome (IBS) and curvature of the spine

Objective Evaluation of Results

The GDV computer software calculates more than 30 parameters, such as area, brightness, density, fractality, and entropy scores.



These various scores can then be statistically processed in order to evaluate how changes in health status, alteration in psychological states, or participation in various therapeutic regimes etc. are reflected in an individual's scores before and after such experiences.

Statistical comparisons can also be made between two or more groups known to differ in types of physical symptomatology, personality attributes, or identified levels of motor and performance skills.

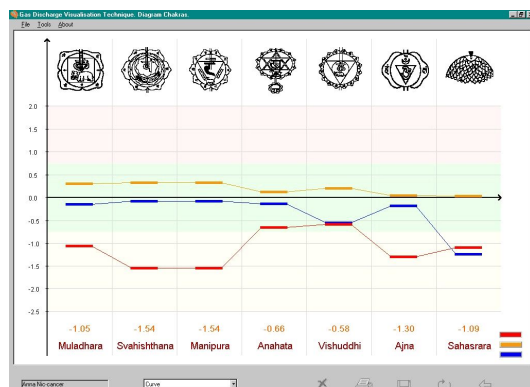
Figure 9: Sample mathematical and graphical output of the GDV Processor

Measurement of Stress Levels

Stress is a complex factor that has both an emotional component (anxiety) and a somatic component that results from prolonged exposure to stress (poor health). Through the employment of sensitive filters and the utilization of special software, it is possible to make a quantitative assessment of the anxiety and health index on a 10 point scale. An example of this type of printout is shown in Figure 10.

Figure 10: The GDV Stress Anxiety and Health Index

Chakra Measurement



According to Eastern metaphysical theories, there are seven “chakras” or integrated energy centers that are considered to affect physical, mental, emotional, and spiritual well-being. These energy “disks” are positioned or embedded into the spinal column at various locations starting at the coccyx and rising to the crown of the head. Each chakra is considered to resonate at a different frequency level (Simpson, 1999). With new GDV software, it is now possible to quantitatively estimate the energetics of chakras and graphically display their level of activation, and indicate whether this level of activation is above or below the level found from large numbers of subjects. An example of a chakra assessment profile is shown in Figure 11.

Figure 11: Chakra Analysis Profile

Supplementary Biological Assessment Techniques



Figure 12: The GDV +

Recent GDV technological advances make it possible to investigate energy circulation throughout the body by obtaining BEOgrams of human feet or other selected body parts. Some possible applications could be the investigation of peripheral circulation in the legs of diabetics or the elderly. This device is especially suitable for animals and it could be used to measure BEOgrams of animals' feet, ears and noses. This device, shown in Figure 12, is called the GDV+.

It attaches to the GDV camera and designed to measure BEOgrams of toes, different parts of the body, as well as animals. GDV+ can also be used to take dynamic ("real-time") GDV-grams. This feature has been used to evaluate the temporal factors involved in cognitive processes such as decision making.

Materials Testing Kit

A materials testing kit that attaches to the GDV camera can be used to assess the energy fields associated with seeds, plants, water, blood or other liquids. The kit contains a cup and syringe device and various electrodes to measure solid objects. A software package called GDV Compare enables quantitative assessment of various parameters for these different substances.



Figure 13: GDV Materials Testing Kit

Potential Applications of GDV Technology

After surveying the features of this remarkable, technologically sophisticated device for measuring energy fields, one can easily envision many exciting potential applications in numerous fields of investigation. Here are a few of the many projects that demonstrated high effectiveness in clinical trials and research applications in Russia, USA, England and Slovenia.

Medicine

- Locate the actual physical area of energy disturbance to determine whether or not it is consistent with the verbally described area of physical complaints.
- Demonstrate the client's level of vitality and stamina to determine their risk for significant medical interventions such as surgery.
- Study the effect of pharmaceutical treatments.
- Evaluate changes occurring after various forms of alternative and complementary medical regimes (acupuncture, massage etc.) are utilized.
- Evaluate whether disturbed energy imbalances during pregnancy may signal possible future obstetrical complications or a genetically malformed embryo.
- Analyze blood and urine samples for changes in energy fields before physical changes are perceptible through traditional testing methods.
- Analyze microbiological cultures.

Mental Health Practitioners

- Enable the therapist to reveal to the client how emotional states such as "anger" or "love" can affect their energy fields by measuring them before and after guided imagery of affect-laden situations.
- Demonstrate how the changes in energy fields evolve in response to regular participation in meditative or mental relaxation programs.
- Demonstrate to the client how their energy fields are impacted when they are in physical proximity to important social figures such as family members.

Industrial Applications

- Demonstrate how employees' energy levels are raised or lowered in response to interacting with different types of bosses or supervisors.
- Evaluate how energy fields are enhanced for production workers in response to certain types of music or different colored environments.
- Evaluate the effect of adverse environmental factors, (noise, noxious fumes etc.) upon production workers', energy fields and performance.
- Evaluate how close proximity to electronic products (TVs, computers, microwave

ovens, cell phones, power lines) can affect energy fields of users.

- Evaluate hidden defects in tensile strength of products caused by interior cracks, imperfect alloy processing, and over or under heating during manufacturing.
- Determine the energetic “shelf-life” of various products.

Agricultural Applications

- Demonstrate the differences in energy fields of organically grown foods versus foods treated with pesticides, herbicides, and fertilizers etc.
- Detect which seeds are most likely to demonstrate a high level of germination rate.
- Demonstrate how the energy fields change when genetic engineering or hybridization is introduced.
- Demonstrate how different processing procedures, (quick drying, slow brewing) and storage conditions (high humidity, low temperatures etc.) affect energy fields of foods.
- Study factors contributing to the composition of water (Skarja et al., 1998)
- Evaluate the purity of various brand names of bottled waters (Dasini, Fiji, Aquafina etc.). This is a multi-million dollar industry already and by 2004 it is estimated that Americans will consume more bottled water than they will milk, beer, and coffee.

An example of the testing of a few drops of water through the use of the materials testing kit is shown below. The diagram to the left shows the measurements obtained from the water initially and the diagram to the right shows the measurements from the same bottle of water after a healer had prayed over the water for 5 minutes to infuse it with energy. The different objective scores shown for several of the testing parameters are very obvious.

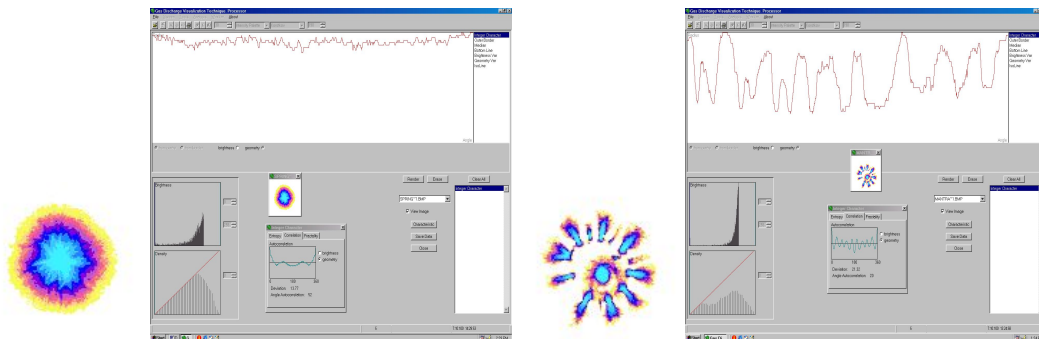


Figure 14: Two drops of water taken from the same bottle of Spring Water minutes apart. The one on the right was infused with prayer for 5 minutes.

Examples of Recent GDV Research Studies

To give a brief sampling of some of the types of research currently underway by various investigators, a few abstracts of presentations will be given from the International Scientific Congresses on Bioelectrography held in St. Petersburg.

V. Gimbaut et al. (Rostov SRI of Obstetrics and Pediatrics), Gas Discharge Visualization

Parameters of the Acupuncture Points related to the Uterus in Cases of Normal Pregnancy and Disturbed Utero-placental Blood Circulation (pp 7-8).

Disturbances of utero-placental circulation in the early stages of pregnancy end up with spontaneous abortion in 45% of cases. In this study, 67 pregnant women in the first and second trimester with deviations from the normative values of utero-placental hemodynamics were compared to 18 patients in the first and second trimester of pregnancy who had regular values of blood circulation in the uterine artery and umbilical chord. The investigators reported "For the first time, when comparing GDV parameters and blood circulation in the uterine arteries a [statistically significant] reliable difference of the blood circulation values and GDV in the case of regular and pregnancy complications both in the first and second trimesters were revealed".

E. Semenikhin et al. (Dnepropetrovsk Medical Academy) Evaluating of Energy Information Properties of Water for Searching of Zones Optimal for Human Residing (pp 18-19).

A total of 460 samples of water were obtained from nine different regions of the Ukraine. The measure they used was the area of the luminescence (in pixels) of the water. The researchers found that water with a high energetic potential reduced its lighting 16% to 25% after being placed in a geopathogenical zone for 30 minutes. Boiling or processing water in a microwave device decreased the area of the BEOgram from 5% to 21%. Herbs infused in water increased the area of the BEOgrams from 7% to 23% depending on which herb was used. The authors concluded, "It is possible to investigate water for an evaluation of its energoinformational status...The obtained data enabled zones to be revealed that are most favorable for human residing".

B. Johansson (Center in Sports and Sports Medicine, Malmoe, Sweden) GDV Research in Sweden.(pp 37-38).

Heart Rate Variability (HRV) or Heart Rhythms, measured from 24 hour EKGs have been shown to be the most dynamic and reflective physiological measure of inner emotional states and stress. Negative emotions lead to increased disorder and the heart rhythms and in the autonomic nervous system (ANS). GDV technology was evaluated in relation to HRV measurements in two studies. The first involved Swedish top athletes and found that increased stability in HRV values and ANS activity after six months of emotional self-management training, i.e., Integrated Thought Field Training (ITT), was related to the GDV scores of fractality and bio-emissions. In the second study involving salesmen in a newspaper company, the known correlation between job dissatisfaction and lower back disturbances was studied. Salesmen with occupational stress had disturbances in GDV spine integer values, particularly on the right side. After four months of ITT training, significant improvement in the lower back GDV scores were found for both sides of the back.

P. Bundzen et al. (St. Petersburg State Research Institute of Physical Culture) Machine Learning Approach to the Bioelectrography Screening of the Human Psychosomatic Condition (pp 31-32).

Information on GDV data, heart activity parameters, psychological test scores, and excellence ratings in sports competition were obtained from 200 athletes at the Academy of Physical Culture of Lesgaft. Using a cluster analysis technique the investigators demonstrated

that the data could be statistically divided into three distinct groupings- a top group of athletes with the best psycho-physical form, an intermediate group, and a group of “pronounced neuropsychic disadaptation”. The GDV measures of predicted athletic success were highly correlated with ratings of coaches and medical personnel.

These investigators previously published a graph showing the distinct GDV groupings of a group of athletes who differed in athletic promise. This graph is shown in Figure 17.

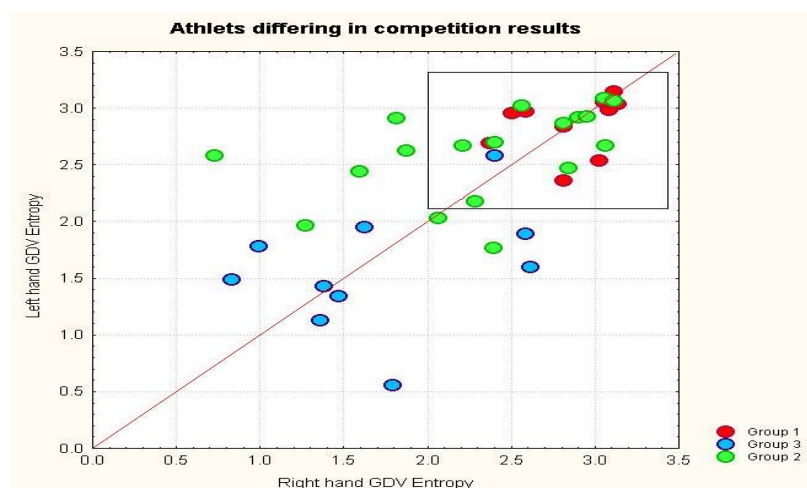


Figure 17: Level of Athletic Performance Correlated with GDV Entropy Scores

The promising group is represented by red dots: the least promising one by blue dots.

O. Hanninen et al. (Department of Physiology, University of Kuopio, Finland) Psychological Characteristics and Psycho-physiological Responses of Healers and Manual Therapists (p 39).

A group of 60 Finnish healers and 21 manual therapists carried out simulated healing under highly standardized conditions. A battery of physiological measures (e.g., blood flow, bilateral electrodermal activity etc.) were obtained as well as serial GDV images. The authors concluded: “During healing simulation, the pattern of GDV imagery changed significantly in both groups. More pronounced changes were, however, recorded among the healers”.

E. Kalashnikova et al. (IEPB, Russian Academy of Science) The Effect of Music Therapy on Drug-Addicted Juvenile Delinquents, (p 40).

This research was carried out at the St. Petersburg Isolation Unit # 4 with drug-addicted teenage delinquents. They were exposed to 40 minute sessions of audio recordings of Russian spiritual music and classical organ and harp music several times (7-10) times a month. BEO-grams were taken before and after each session. The GDV parameters demonstrated gradual improvement after each session and were stabilizing after the third session. A lower level of anxiety was found in 80% of the subjects and 90% showed a reduced level of aggression. Improvement in sleep and memory were also noted.

G. Rein et al. (Estee Lauder, New Venture Technologies, Melville, NY), Characterization of

Three different samples of gems from different families were obtained from mines in different geographical locations. GDV photographs were taken by placing the flat part of the gem on the glass electrode with the grounding electrode placed on the top surface. Average GDV values were calculated for the three samples from the same mine. With respect to brightness, the range was relatively constant. With respect to fractality, there are clear and marked differences between gems belonging to different families. Fractality measures can generally distinguish different gem samples from the same mine. In Figure 18 below, the gems are ordered from left to right by refractive index and the fractal dimension is plotted by squares. The authors note that fractality appears to oscillate while the refractive index increases linearly. These findings are intriguing enough to prompt the authors to speculate that GDV fractality may reflect quantum energetic properties of gems, and urge that more samples should be tested in an effort to replicate this effect.

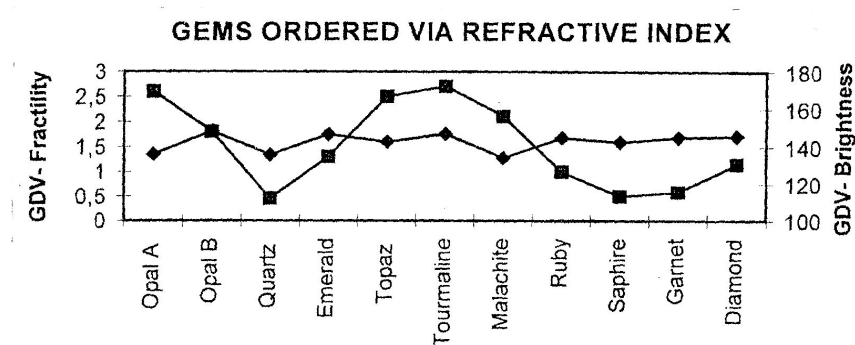


Figure 18: Cyclic Variation in GDV Fractality of Gems as Refractive Index Increases

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Additional Resource Materials

To read the most systematic treatment of the development and applications of the GDV device, the interested individual should consult the *Human Energy Fields* and *Aura and Consciousness* books, by K. Korotkov listed in the references.

To become familiar with Dr. Korotkov's use of the GDV technology to approach spiritual and metaphysical issues, the reader should consult: *Light after Life: A Scientific Journey into the Spiritual World*, also listed in the references.