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Zur Information

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Somit ist diese Studie sowohl für die Geonado GmbH als auch für die Geowave Research Forschung und Handes GmbH gültig.

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Biomedical Evidence for Influences of „Geopathic Zones“ on the Human Body: Scientifically Traceable Effects and a Way for Harmonization

(Einflüsse geopathischer Störzonen auf den menschlichen Organismus: Nachweis stressender Effekte und Möglichkeit für Harmonisierung)

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Kurztitel der Arbeit: „geopathic stress“: Influences and Harmonization
Deutscher Kurztitel: Geopathische Störzonen: Effekte und Harmonisierung

Schlüsselwörter
geopathische Störzonen – geopathischer Stress – “Wasseradern” – Standortabhängigkeit – elektromagnetische Felder – Gasentladungs-Visualisierung (GDV) – Ausgleichsmaßnahmen – Harmonisierung

Zusammenfassung
Hintergrund und Fragestellung: Empirisches Wissen um die Existenz geopathogener Störzonen („Wasseradern“ u.a.) ist vermutlich so alt wie die Menschheit. Die Publikation eines Nachweises möglicher Wirkungen in anerkannten medizinischen Zeitschriften steht bisher aus. Ziele der vorliegenden Arbeit waren der Versuch, standortabhängige Einflüsse auf den Menschen zu belegen und eine Vorrichtung zu testen, der man ausgleichende Wirkung nachsagte. **Material und Methoden:** In einer randomisierten nicht-klinischen Doppelblindstudie wurden 52 Testpersonen unter Verwendung der Gasentladungs-Visualisierung (GDV) auf je zwei Standorten mit und ohne der sogen. „*Geowave*®“-Vorrichtung (Geowave-Research, Salzburg) untersucht. Die beiden Messstandorte waren zuvor von erfahrenen Radiästheten „gemutet“ und die gefundene „geopathische Störzone“ bzw. eine „neutralere Zone“ auf dem Boden nicht-persuasiv mit schwarzen Punkten markiert worden. Als Haupt-Auswerteparameter diente die „Gasentladungsfläche“ (Glow-Image-Area). Komplementär wurden auch die spatiale Fraktalität, Corona-Projektionen und Corona-Diagramme einbezogen. **Ergebnisse:** Auf der „geopathischen Zone“ fanden sich statistisch hochsignifikant kleinere Werte der Glow-Image-Area als auf der „neutraleren Zone“. War die *Geowave* im Nebenraum montiert, fand sich auf beiden Zonen eine hochsignifikante Vergrößerung der Glow-Image-Area. Bei den Corona-Projektionen und –Diagrammen fanden sich auf der Störzone gut erkennbare Einbrüche, zumeist in den Bereichen, die mit dem lymphatischen System, dem Herz-Kreislauf-System und dem Pinealorgan assoziiert werden. Auf der neutraleren Zone waren diese als Energiedefizite gewerteten Glow-Verminderungen weniger ausgeprägt. Die Verwendung der *Geowave*-Vorrichtung führte bei den meisten Probanden zu einem deutlich erkennbaren Ausgleich auf beiden Zonen. **Schlussfolgerungen:** Die dargestellten Unterschiede des biophysikalischen Parameters Glow-Image-Area, welche sich analog auch bei den komplementären Parametern deutlich zeigten, lassen den Schluss zu, dass an beiden unterschiedlichen Aufenthaltsorten im gleichen Raum („geopathische Störzone“ *versus* „neutralere Zone“) tatsächlich unterschiedliche Einflüsse auf den Menschen vorhanden waren, die besonders im Fall der „Störzone“ ein geopathisches Stressphänomen bewirkt haben. Damit einhergehend kann es zu individuell unterschiedlichen Belastungen des Immunsystems und einiger anderer Organsysteme kommen. Die untersuchte Vorrichtung zeigte auf beiden Standorten messbar harmonisierende Effekte, mit denen bestimmte Aspekte äußerer Einflüsse geopathischer Art und vermutlich auch von anderen überlagerten (z.B. elektromagnetischen) Belastungen her rührend ausgeglichen werden können.

Key Words
Geopathic Stress – Location Dependency – “Water Veins” – Ground Anomalies – Gas Discharge Visualization (GDV) – Compensation – Harmonization

Summary
Background: Empiric knowledge on the existence of “geopathic zones” (popularly, often also called “water veins” etc.) appears to be as old as humankind. It has often been tried to experimentally detect a direct influence on the body by scientific measures, however, publication in accepted biomedical journals appears not yet available. It was the target of this study to try detecting influences of two different zones above ground onto the human body, and to test whether a device of which pilot studies had indicated a possible benign effect would be helpful in this context. **Material and Methods:** Using a randomized, non-clinical double-blinded trial design, 52 persons had been tested with a gas-discharge visualization (GDV) system whilst staying on two zones, with and without the “*Geowave*®” device (Geowave-Research, Salzburg). The two zones investigated had been “dowsed” by experienced professional dowsers and labeled with black dots in a non-persuasive manner, thereby blindly representing areas of “geopathy” or a “more neutral zone”. As main parameter, the GDV glow image area (= area of glow) was analyzed. As complementary calculated parameters, spatial fractality, corona projections, and corona diagrams have been included. **Results:** At the “geopathic zone”, statistically highly significant smaller areas of glow were detected than present on the “more neutral zone”. With the *Geowave* blindly mounted in an adjacent room situated in an above story, on both zones a marked increase of the glow image area was found. The corona projections showed well-recognizable points of “body energy” deficits, mostly associated with the lymphatic system, heart and circulation, and the pineal gland at the “geopathic zone”, which were, to a distinctly lesser degree, also present at the “more neutral zone”. The device tested yielded compensation or harmonization on both zones in most of the test persons. **Conclusion:** The significant differences of the physical area of glow parameter, which were also noticed for the complementary parameters analyzed, allow to conclude that at the two different zones within the same room (“geopathic” *versus* “more neutral” zone) different influences on the human body were present which may have caused a „geopathic stress“ phenomenon. Following such, individually different retardation of the immune system and other organs may occur. The device tested on both zones showed harmonizing effects, which may help to compensate some influences of geopathy, and possibly also superimposed stressors derived from certain other sources such as electromagnetic fields.

Introduction

The influence of “geopathic zones” on the human body has not yet been convincingly proven using scientifically accepted techniques. The existence of the phenomenon has probably been recognized since the early roots of humankind, and at least, since a few thousands of years. Publications presenting scientific evidence for directly measurable effects on the human body of presumed geopathic zones are very rare, but in a more popular way, numerous effects of harmful, and sometimes also of beneficial nature had been reported, e.g. [1-6]. Dowsing, as a valuable and low-priced means to detect promising places for drilling wells and also to circumvent effects of possible geopathy e.g. in sleeping rooms, is being used all over the world, but only very few studies exist dealing with „dowsers abilities“ in a scientifically sound experimental way. The incredibly well-designed “Munich Scheunen-experiments” and extensive field-studies on the dowsing phenomenon conducted by an interdisciplinary research team during the 1980ies and 90ies can still be understood as today’s state of the art investigating the usability of dowsing for finding water access [7-11].

Possible influences attributed to “geopathy” phenomenons have been numerously reported in mass media, although without scientific prove. Geopathy apparently does not exclusively influence human beings, but also all kinds of animals, plants, fungi and bacteria. „Geopathic stress“ is thought to be related to different kinds of natural radiation, at least in part rising up through the earth ground. Some of the effects appear to be associated with naturally occurring moving streams of underground water and with above ground bands of interference fields. Other, hitherto unknown causes are likely to be present too. It is beyond the scope of this article to explain, measure and prove their origin. The subject is being discussed controversially, even amongst geologists and biophysicists, and is to be understood as being extremely complex. For more detailed information, see [8].

In the present manuscript, an experimental study is presented involving a technology known from biophysics and complementary medicine as *gas discharge visualization* (GDV) [12-16]. The results are being discussed in context to briefly reviewing the existing literature cited in MedLine and other scientific databases, dealing with geopathy-related phenomenons. Using the latest generation of scientifically designed GDV equipment and software, we wanted to investigate if certain zones above ground, suggested by professional dowsers to represent a “geopathic zone” or a “more neutral zone”, would show an influence the human body. In the very same setup, a device called the “*Geowave*” was to be tested for possible “harmonizing effects” on geopathy-related stress. The present study combines measurement and analysis of the evoked electrobiophotonic “image glow area” with complementary conclusions drawn from whole body corona diagrams and projections.

At this place, we would like to clearly state the following: The “image glow area” parameter appears to gain more and more acceptance in the scientific community and is to be understood as the main measurement data relied on in our study. All other (calculated) parameters (such as fractality and corona diagrams / projections) presented in this manuscript are to be understood as complementary data; their real value has not yet been convincingly proven but is presented here because the results obtained herewith appear to go in line with published data on stress in general.

Material and Methods

Test Persons and Setup of Measurement:

The test design used was that of a randomized double-blinded non-clinical trial [17-19] using non-invasive techniques only. Ethical guidelines of the expanded Helsinki declaration had been fully maintained [18] including special attention to data security. All test persons gave their written consent to enter the study. Fifty-two voluntary test persons (28 women and 24 men) aged 17 to 68 (mean: 44.2 years; median: 46 years) were included, and all of them had been informed on the purpose of the study and the methods to be applied. They knew that they would participate in a study investigating weather any influence of “water veins” (the German word “Wasser-Adern” was used) could be measured, but not what the different areas in the laboratory room corresponded to. They were also informed on the GDV system and related safety issues, and that they would possibly feel the sensation of a slight “crawling” in their fingers. In order to obtain a sample comparable to “real life”, smokers and persons with slight health variations were not excluded. Exclusion criteria were persons with pacemakers, persons suffering from epilepsy and other forms of heavier psychoses, persons with skin problems, and persons with severe heart and circulation problems.

Each test person has been asked to complete a form in which a small number of anamnestic data was collected, and on these forms, instead of the name of the test person, a code number had been used. Test persons had been asked not to drink coffee and also not to drink or eat any other stimulating beverages or food the evening before and at the morning on which the tests have been performed.

For choosing optimum zones above ground for the detection of influences of „geopathic stress“, six professional dowsers used different types of dowsing rods (one hand and two hand rods and a “Lecher-rod”, as also described in [8]) in a specially adapted laboratory room of the Federal Hospital of Salzburg (Salzburger Landeskliniken). The dowsers involved had been chosen because of their reputation and apparently high rates of dowsing success. We had asked them to search for representative areas for potentially “geopathic” and for “more neutral zones”. Each of the dowsers had to label their presumed zones of increased „geopathic stress“ and a “more neutral zone” in a map. None of the dowsers had been informed which zones their other dowser colleagues had found. Finally, the principal study conductor compared the individual hand-drawn maps obtained from the six dowsers, and convincingly enough agreement was found to define two definite specific zones in that room. Those areas were now labeled on the floor, using identical black dots with insulation tape in a non-persuasive manner. One was designated a „geopathic stress zone”, the other one a “more neutral zone”. All six dowsers had classified the geopathic zone found as a “medium-strength” stress-causing zone. The operator performing the GDV measurements had not been informed on which of the “black dot”-labeled areas would corresponded to “stress” or to “more neutral”.

In addition to test possible influences of geopathy in the human organism, we also attempted to test a device that, in a number of pilot studies, had shown promising effects towards harmonization (the *Geowave®-Welle* developed by A. Wiebecke of Geowave-Research, Salzburg; http://www.geowave.at). This tool was mounted or de-mounted in adjacent room at the above story, in an angle of about 60 degrees to the horizontal and about eight meters or eleven meters, resp., away from the location of the test person. Mounting or demounting of the device was performed at random, as suggested by a computer program. This was done by a second person that was informed via a telephone

on the sequence and timing to be used for the specific test person. “Mounting” equaled a horizontally “lying” device hanging at the ceiling of the second room located transversally in the above story, and “de-mounting” the device equaled to a collapsed, vertically / non-horizontally hanging device.

To ensure the vertically “de-mounted” device was not affecting the results of the measurements, numerous pre-study tests had been performed in which a comparison of a “vertically de-mounted” device with a situation where no device at all was present was carried out (i.e., the device had been completely de-mounted and taken into a car which as at least 100 meters away from the laboratory area). Comparisons had not shown any influence of the vertically “de-mounted” device on the measurement results obtained.

In principle, the *Geowave* device tested represents as a corrugated oval sheet made of a special metal alloy, additionally shaped in sigmoid manner (http://www.geowave-research.com/deutsch/index.html). In our test system, the so-called “*Geowave-D*” has been applied, measuring about 80 times 50 centimeters. In it’s mounted manner, the device horizontally and stably hangs on an appliance made of insulation material.

Each test person was subjected to each of four test periods, and the sequence of these test periods was varied in a randomized way as determined by computer: The four measurement setups included sitting of the person, a) at the neutral zone, b) at the stress zone, c) at the neutral zone with mounted *Geowave* device, and d) at the stress zone with mounted device. For chronobiological optimization, tests were performed only in between 8-10 hours a.m., or in between 10-12 hours a.m.: Every day, two persons only were tested. Before measurement, each test person was asked to quiescently sit at a chair placed over one of the two zones labeled in the test room for 15 minutes.

GDV Test System:

The GDV technique used to obtain electrophotonic Kirlian emission data, as well as safety and reproducibility issues have been described extensively in the literature, e.g. [12-16,20-23]. Principally, the “GDV camera” uses a very stable high intensity electric field (10 kV, 1024 Hz, square pulses) around a fingertip set on the electrified glass plate. The applied field, in practice, is pulsed on and off every 10 milliseconds, for a duration of 0.5 seconds. The electric field produces a visible gas discharge glow around the fingertip (a “Kirlian image”). These corona discharges of each of the ten fingertips of each test person are captured via sensitive digital imaging and analyzed using specialized hard- and software.

Throughout our study, a sophisticated latest generation GDV system, the “GDV Camera Pro” developed by Konstantin Korotkov (St. Petersburg, Russia; www.korotkov.org) was used. The model used has been specifically designed for high stability and reproducibility as required for scientific measurements. The GDV camera was connected to a computer, and the recorded glow images were digitally transferred using the “GDV Capture” software (version 1.9.9., from 2004). For further calculations and analysis, “GDV Meridian Analysis” and “GDV Diagram” software (both: versions 1.9.9.), and the “GDV Scientific Laboratory” (*SciLab*) software (version 1.1.5.) have been applied. We have not used other types of GDV software sold from the St. Petersburg laboratories, such as the “Chakra” program, as we have no any convincing data available if these programs would meet scientific standards.

Figure 1 shows a simplified schematic drawing of the setup used. As the main parameter investigated in this study, the GDV system provides the mean glow image

area (sometimes also described as the mean “area of glow”) of the Kirlian image recorded on a high-sensitivity CCD camera, processed and analyzed by computer. Steps for analyzing finger’s “GDV-grams” have been described elsewhere in detail, as are the different parameters obtained from measurement and other means of evaluation calculated by the software (e.g., [12,16]).

During the experiments, the GDV system was used mounted on a trolley, and measurements took place directly at the two different location zones investigated. For each person and test period, 50 single “static” measurements of GDV glow areas were performed (each finger of both hands for five times, 0.5 seconds each). In addition, dynamic GDV measurements for both “ring fingers” were performed and repeated three times each (thus, measuring 3 * 2 * 100 single images, i.e. 600 images per test sub-period). An example of a sole image obtained from single fingertip imaging is shown in *figure 2*.

After recording the fingertip glow images, the software applied calculates a number of types of output: The *mean GDV image area* is derived from the single “areas of glow” (the number of pixels with non-zero intensity in each single electrophotonic finger image) and is being calculated as the mean obtained from the sum all single finger images captured during one specific measurement circle, divided by their number [24-26]. In the specific setup for the static GDV images used in our study, the overall GDV image area values therefore are to be understood as mean values of altogether 50 single finger GDV images. In the case of the dynamic overall GDV image areas, the values used for further analysis by us represent mean values of 600 single images obtained on both ring fingers. In addition to the mean, a number of standard values of descriptive statistics are being calculated internally, such as the standard error of the mean (SEM).

In addition to the mean image area of glow, a parameter which has gained increasing acceptance in the biomedical research community, GDV also delivers what we refer to as being “complementary data” [12,21,22,27-32]. One of these types of output calculated has been called the *spatial fractality*, and is defined as the fractal dimension of isoline of the image [12]. Fractality appears, in its scientific validity, not as reliable as the mean area of glow, also as it can be calculated with certain error only. In the present study, we therefore present the fractality data complementary and in short form only.

Additional types of output are related to the energy meridian system derived from Traditional Chinese Medicine (TCM) and therefore also not to be regarded as pure “physical” measures. For example, images and diagrams of the whole body “aura” are constructed from the single images of the representative fingers. This wording, however, appears to be very misleading to us, and we tend to use the terms *corona projections* and *corona diagrams* instead. The Korotkov GDV system uses a combination of the applications described in Mandel’s “Energy Emission Analysis” work and the Su-Jok system of acupuncture [12,33-35] to construct these corona projections and diagrams (*figure 3*). For example, the left side of the middle finger relates to blood circulation and heart, the top of the thumb relates to the head, or the bottom part of the little finger would represent the respiratory system, and so on. The reconstruction from the sectors of the finger image also forms the basis for diagnostic implications in the form of the *corona diagrams* (sometimes also called *beograms*). Excess or deficiency of the image in various sectors is considered to be indicative of imbalance in the corresponding body systems [12,14,21,29]. In this manuscript, we present these diagrams and projections supplementary to GDV image areas and fractality. Although these corona diagram analyses appear very promising, at least for

complementary medicine, yet little is known scientifically on their real meaning [12,29,31,35,36].

Reproducibility and Safety Issues

In order to gain reliable data and to minimize machine effects, we have taken careful attention to a number of issues influencing stability, reproducibility and safety [16,37,38]. We have used one and the same GDV system throughout the study. Before each testing period, the GDV camera (which was always kept inside the laboratory at constant room temperature) was switched on at least 30 minutes prior to measurement. Careful calibration was performed before each test sub-period and person to be measured. Each test person was asked to carefully wash their hands using a neutral-pH laboratory soap, and this was followed by wiping the fingertips with alcohol. This was done at least 20 minutes before the first measurements. The use of hand-cream or lotion was not allowed. The glass plate surface of the GDV camera was cleaned using alcohol before each measurement sub-period. It was controlled that none of the test persons had wet hands. For the measurements, the test persons were asked to hold their fingers still and in a natural manner, without special pressure, in an angle of approximately 30 degrees in relation to the instrument axis. Deliberate pressure would influence the result by changing the peripheral blood circulation [39].

Statistical Analysis:

For analyzing the raw data from GDV image glow area and fractality, the software programs “Sigma-Plot 2002” (SPSS, Inc.) and “Excel 2003” (Microsoft) were used. In addition to calculating descriptive data such as mean, median, standard deviation, range etc., normality tests were carried out. Histograms of the glow image area and fractality raw data showed approximately normally distributed, near-Gaussian bell-shaped curves in each of the configuration samples and patients included in the study. Therefore, the paired two-sample t-test for dependent variables (pair comparison test) was used to determine weather significant differences of the mean GDV glow image areas and the fractality amongst the four test sub-period results would exist. Two-sided p-values were classified statistically significant if they were smaller than 0,01. Glow image data from each of the four above explained “setups” were compared in the following way: 1) “neutral zone” with “stress zone” (both zones without the *Geowave* device), 2) “neutral zone” without and with the device; 3) “stress zone” without and with the device; 4) “neutral zone” with “stress zone” (both with mounted device).

In addition, overall mean values obtained from all 52 test persons were calculated and presented as histograms and as grouped bar charts (*figures 3-6*). Corona diagrams and whole-body corona projections were evaluated descriptively, in a complementary manner.

Additional Precautions:

Being aware that overlaying technical electromagnetic fields would be present too, we have used sophisticated equipment from the Salzburg City division of environmental technology, Department of Town Planning and Building Authorities (Anritsu Spectrum Analyzer type MS 2711B, frequency range 100 kHz – 3 GHz; ARC Seibersdorf antenna type PCD 8250, frequency range 80 MHz – 2.5 GHz; Schwarzbeck USLP 9142 broad band log-per antenna; Fauser Elektrotechnik “Universal Measurement System” type UMS4, frequency range 5 Hz – 400 kHz). In the laboratory room used for our study, the level of technical electromagnetic fields in all frequency bands scanned was

considerably around a factor more than 1000 below the limit values valid in Austria. The accomplished acoustic measurements too showed no likely impairment of the test persons when measuring exposure to vibrations or sound using a RION Sound Analyzer (type NA-27, measuring range 24-141 dB(A)) and a Larson-Davis LD-2900 acoustic spectrum and vibration analyzer (0.5 kHz – 20 kHz).

Results

GDV Glow Area:

Appearance of Glow Area Images:

As an attempt for a qualitative description it can be stated that, at the „geopathic stress“ zone, the Kirlian (GDV) image patterns in most cases showed relatively uneven distributions of glow, often with “missing proportions” of glow at varying locations around the finger tip, and the overall glow area appeared to be relatively small. On the more neutral zone, images tending towards an intermediate size of area, and in a number of persons more evenly appearing patterns were seen. Though, the image patterns seen here, still relatively often showed “missing portions” too. With the *Geowave* device mounted, sometimes easily recognizable with the “naked eye”, an overall increase of the GDV glow image areas was observed, and a form of stable and harmonized activation of the image. The images obtained here from single fingertips showed consistently more “evenly distributed” glow distributions.

Static GDV Image Area:

Quantitatively comparing the images examined in the GDV software system, the mean static GDV glow areas obtained at the more neutral zone (mean: 10.152 pixels, SEM: 190) were statistically significantly larger than those obtained at the geopathic zone (mean: 9.354 pixels, SEM: 170) ($p<0,0001$). With the *Geowave* device mounted, the static GDV glow image areas were significantly larger on both locations (more neutral zone with mounted device: mean 11.792 pixels, SEM: 169, $p<0,0001$; and for the „geopathic stress“ zone with mounted device: mean 11.393 pixels, SEM: 160; $p<0,0001$). For a better overview, the histogram on *figure 3* shows a direct comparison of the overall static GDV image mean values of 52 test persons at a the more neutral zone without, and the „geopathic stress“ zone without and with the device tested.

Figure 4 presents a case-by-case comparison of the influence of the geopathic zone in comparison to the neutral zone individually for each of the test persons. From this grouped bar chart, it can be seen that, at the “geopathic zone”, the static GDV mean image glow area was influenced towards area reduction in 45 of the 52 persons tested. For the remaining seven persons slight or sometimes also pronounced adverse effect can be noted, towards an increase of image glow area.

Figure 5 and *figure 6* demonstrate the individual effects of the *Geowave* device at grouped bar charts. *Figure 5* thereby compares individual mean image area values obtained at the “geopathic zone”. It can be observed that in 50 out of 52 test persons, the GDV glow image area markedly increased when the device was present. One other person showed very little change (test person no. 51, a 51-years old man, represented as no. 32 in the age-sorted diagram), and the one remaining person showed a slightly adverse effect, i.e. here, the device produced a slightly decreased GDV area size (test person no. 52, a 48-years old man; represented in the diagram as no. 37). When

comparing these results of two persons with their glow areas shown in *figure 4*, it can be noted that they belonged to the group of seven, in which the suspected “geopathic zone” had shown slight or pronounced “adverse effects”.

Figure 6 compares individual mean glow image areas at the more neutral zone, without and with the device tested. A well comparable situation to that presented in *figure 5* was found: At the more neutral zone too, a glow area size-increasing influence of the device was found in 51 out of 52 test persons. The effect was marked at 49 persons, and slight at two. The one remaining person out of the 52 showed an adverse effect (test person no. 25, a 25-years old woman; represented in the age-sorted diagram as no. 10).

Dynamic GDV Image Area:

Results of the “dynamic GDV glow area” measurements were analogous to those obtained for the static images: The mean dynamic GDV glow areas were smaller at the „geopathic stress“ zone than at the “more neutral zone”, and with the *Geowave* mounted, a significant area increase was observed at both zones. It must be taken into account that these images were obtained from the ring fingers of both hands only, whereas the static area measurement reflected the images obtained on all 5 fingers of each hand. The “neutral zone” mean dynamic GDV area was 9.635 pixels (SEM: 133), the mean at the „geopathic stress“ zone was 8.780 pixels (SEM: 113). With the device at the “more neutral zone”, the mean dynamic GDV area was 10.722 pixels (SEM: 118), and with the device at the „geopathic stress“ zone it was 10.461 pixels (SEM: 113). The differences present between all setups tested were highly significant (each: $p<0,0001$).

Complementary Results:

GDV Image Fractality:

The mean fractality values were 1,897 (SEM: 0.0036) at the normal zone and 1,903 (SEM: 0.0030) at the geopathic zone. With the device mounted, the mean fractality at the more neutral zone was 1.896, whereas at the geopathic zone a mean of 1.895 (SEM: 0.0036) was obtained.

The fractality mean was significantly higher at the „geopathic stress“ zone without the device compared to the fractality with the mounted device ($p<0,012$). Comparison of neutral with geopathic zone was just below statistical significance ($p<0,056$), and the fractality values at the neutral area without and with *Geowave* device were not significantly different.

Corona Diagrams and Meridian Projections:

In *figure 7*, an example of glow area images after computer processing of each finger tip is seen, as well as the corresponding whole body corona projection obtained following meridian analysis according Korotkov’s modification of the Mandel and Su-Kok systems [12,33,40]. *Figure 8* presents a whole-body corona image calculated by the GDV software. The glow area patterns obtained from single fingers qualitatively appeared as more “evenly distributed” when the *Geowave* device had been mounted, whereas without this device, a more “disturbed” appearance was most often found.

Figure 9 shows the corona diagram obtained at the same measurement and test person of *figure 8*, without and with the device. On a large proportion of the corona diagrams

calculated, we could observe that test persons placed at the more “neutral zone”, and even more at the “geopathic zone”, showed body energy deficits, and that the appearance of the diagrams was a more “edgy” one, when no device was present. It can be seen that a “roundening” or “irruption-compensating” effect is being obtained using the device.

We counted how many percent of the test persons expressed conspicuous harmonizing changes in the corona diagrams when the *Geowave* was mounted. Results are summarized in *Table 1*. Retardation of a number of bodily organ system projection energy levels have been observed, in high amounts and frequencies especially notable for the lymphatic system, when no *Geowave* was present. However, when the device was mounted, nearly all of the corona diagrams showed that this had an “energy-increasing” effect when weak points (“Alpine valley skylines”) had been present before, at both, the geopathic and the more neutral zones. The effect was more marked, however, at the „geopathic stress“ areas. When the device was de-mounted, it was also observed that “energy retardation valleys” at the geopathic zone, and fewer, also at the more neutral zone, were especially striking for the heart region, the lymphatic system, and the pineal system, the latter two pointing towards a weakening effect at the immune system.

Discussion

One or our targets of the present study was to demonstrate weather there would be a detectable influence of different zones above ground on the human organism. Using a GDV system, we have obtained statistically significant data supporting the hypothesis of a location-dependency. We are well aware of the fact that GDV is relatively new and still controversially discussed. However, we feel its use to be justified for the specific purpose of this study, as the system employed was a stable latest generation setup specifically designed for scientific experiments. We have not used any of the commercial and “popular directed” paramedical borderline software also sold for GDV, but only the image capture program, calculation of the glow area pixel output, and the “scientific laboratory” software. Only in addition, as complementary data, fractality, corona diagrams and corona projections were included in the manuscript. GDV represents a relatively low-priced tool that, in the case of the glow image area parameter, provides a measure often suggested in the literature to highly sensitively detect stress-related bodily reactions [12-14,21]. We have taken special care in our study to continuously check stability of the machinery and to ensure the measurement results would have reproducible character.

It was found that the GDV glow image area was of intermediate size at a location defined herein as a “more neutral zone”, and was considerably decreased in size at the location defined as a „geopathic zone”. GDV glow image areas were much larger on both zones when the *Geowave* device was present and mounted in blinded manner. Assuming that the GDV area of glow represents some kind of stress level-related “overall energy state” of the human body, it may be concluded that 1) the “geopathic zone” was a location causing relatively large “energy-detracting” effects which might be understood as a “stress-factor”, that 2) the “more neutral zone” was not a real neutral zone – very likely due to overlapping of different factors other than from geological causes, and that 3) the *Geowave* device on both zones had harmonizing, “energy-donating” effects.

Stress and Geopathy:

The idea of stress as a factor in ill health is now widely accepted, and numerous effects on the body are well-documented, e.g. [41-44]. „Geopathic stress“ as a causal link to disease is usually ignored, as many people are unaware of its presence. Most texts available, being popular descriptions in books, journals or the Internet, or also the relatively rare literature addressing it scientifically, discuss „geopathic stress“ as a complex phenomenon composed of weak electromagnetic fields of different wavelength (ranging from very low frequencies of below 1 Hz up to the several GHz-region), manifold waveforms and amplitudes expressing dynamic changes. Timely composition of electromagnetic field variations may play a major role. Other types of radiation are likely to contribute, and it appears possible that some of them have not yet been discovered. Part of the technical problem of measuring geopathic zones with scientific instrumentation is that the high level of background interference from other sources appears to mask and prevent an electronic detection of the very weak interference signals associated with „geopathic stress“. Interference and resonance effects with the human body could be critical triggers of health problems. A review addressing some of these assumptions has recently been published [6]. The various biophysically accepted possibilities contributing to location dependency and dowsing phenomenons have been discussed extensively by the Munich group [8].

Lack of awareness on the impact of certain “energetic” fields upon health and well-being might turn out dangerous. Electromagnetic fields – no matter what their source is – under certain circumstances may be hazardous to health, possibly affecting a number of important bodily systems, such as nervous system function, cardiovascular system, and immune system, thereby also elevating the risk for developing cancer (e.g., [6,44,45]. A recent Austrian study showed that the variability of the electrosensibility among the general population appears to be much larger than has yet been estimated, but much smaller than claimed by self-aid groups [46]. In their book, König and Betz have also critically discussed a number of earlier studies dealing with location-related effects on organisms [8].

In addition to „geopathic stress“ stimuli arising from the ground, electromagnetic fields created by modern technology (“technical fields”) today are always present at any place of the world and may also contribute, e.g. by interferences and resonance effects at certain areas above ground. Technical fields usually originate from telecommunication, radio and television antennas, radar, electricity wires and pylons as well as transformers. When we talk about „geopathic stress“, it is crucial to be aware that technical fields, and also factors from space or the irregularities of the Earth’s magnetic field are present too. This additionally implies that such zones may vary dynamically, also depending on ongoing changes of the artificial electromagnetic fields that overlay [47]. For this reason too, a “pure neutral zone” cannot exist.

Many minor but also serious illnesses and psychological malconditions have been attributed to the existence of „geopathic stress“. Assuming that a smaller GDV glow area represents an decreased overall energy state of the measured person, the strikingly smaller GDV glow area observed in our study at the “geopathic zone” when compared to the more “neutral zone” may be understood as a sign for increased stress induction, pointing towards an increased risk for weakening the immune system’s capabilities for defense and repair.

Dowsers reported that some persons, when staying on geopathic zones, relatively quickly sense that well-being for some reason is diminished [1,48,49]. Some people

appear to become nervous, and a number of symptoms may arise. Retardation the immune system may have a number of consequences. First, if the stress-inducing situation lasts for a longer time, the incidence of acquiring minor infections – e.g. such as a flu – increases. Also, a development of undesirable psychic effects appears likely. As a consequence of weakening the immune system, long-lasting exposure to geopathy may also prove to make the organism more likely to acquire cancer.

A number of publications present data underlining the potential hazard for the development of malignancies such as leukemia caused by some types of electromagnetic radiation. Some of these authors thereby speak about slightly elevated levels of relative risk (e.g., [50]), and others about highly significantly increased incidences for cardiovascular deficiencies, immune deficiency disorders, restless sleep, chronic body pains and migraine/headaches, sudden signs of physical aging, irritability, and even chronic fatigue. Stress of various causes, including geopathy and technical fields, has also been suggested to be a common factor in cases of infertility and miscarriages, learning difficulties, behavioral problems and neurological disabilities in children [2-6,50-62].

The experimental design used in our study allowed to examine short-time effects only. Concluding a general validity for long-time effects appears to be problematic. Though, relevant implications can be expected: Although acute stress sometimes may have stimulating effects on the immune system, certain stress-inducing conditions present for short time may already cause negative effects in organisms. Long-lasting exposures to stress-inducing factors usually influence the body in a “heavier negative” way. In such cases of chronic stress, it is generally known that the immune system may be down-regulated. Whole cascades of messenger factors are being released, directly debiting immunity, heart and circulation, nervous system function and psychic states. In severe cases, cancer, cardiopathy, autoimmune diseases, or major psychopathies may develop [41,42,44,62,71-73]. There is, however, considerable individual variability in the immune response to stress. To a large extent, this seems to be determined by the subject’s way of dealing with stress [72]. Meditation and life style improvements may help to cope with stress to a certain degree. Prolonged exposure to stressors may, however, sooner or later outweigh the person’s coping resources [72,74]. Long-time exposure to geopathy, e.g. sleeping in a geopathic area, may prove particularly stressful. In such conditions, the organism would not receive the full rest required for repair and regeneration. In our study, a harmonizing / compensatory effect of the *Geowave* device was detectable on almost all persons tested, with very few exceptions only. Provided that the short-time effect detected in our study is also a longer lasting one, this may have valuable consequences: For instance in places where people have a diminished resistance and health, such as hospitals, the device pay prove be beneficial for healing.

Geopathic / electromagnetic stress zones may influence the release of messenger substances (hormones, regulatory peptides, cytokines) needed to maintain a balanced function of the immune system. Special attention in this context has been paid in the literature to melatonin, which is suppressed by static and extremely low frequency electromagnetic / magnetic fields. This effect is well documented, and increased incidences of cancer may, in part, be attributed to it. The full complexity of the problem is, however, far from being understood, and discordant literature is also to be found [55,60,63-70]. One study related the melatonin-decrease to geomagnetic disturbances in conjunction with artificial magnetic field exposure: Increased geomagnetic activity has been shown to cause significant reduction of nocturnal melatonin excretion [63]. In the complementary data taken from the corona projection diagrams (beograms) obtained in

our study (*Table 1*), we could observe that the areas representative for the pineal organ and for the lymphatic system in many of our test persons showed a “lower energy level” (indicating higher stress levels for these particular bodily systems) than average. This may be understood as an indirect, complementary finding supporting the melatonin-suppressing and immune-system retarding effects described by others for stress situations in general.

It has been speculated that not only the central nervous system (CNS) and the lymphatic system are likely to be affected by „geopathic stress“. It is known that electromagnetic radiation from various sources can also interfere with the peripheral nervous system (PNS) and the (diffuse) neuroendocrine (regulatory peptide involving) system (DNES), thereby influencing glandular functions, heart and circulation, the intestine, and uro-genital system (e.g., [42,43,75]). The GDV corona diagrams obtained in our study present indirect support for this hypothesis: In more than 70% of the test persons, weakening of the heart / circulatory system energy levels was observed, and weak points were also found in other organ projections such as the uro-genital system or the gut.

Dowsing:

The experimental study presented here is based on the assumption that the areas at which the GDV measurements took place corresponded to a “geopathic zone” and a “more neutral zone”. Due to the lack of reliable geophysical equipment that could prove these assumptions (if yet available at all, such tools would be extremely costly and unfeasible for such kind of study), we had decided to use dowsing performed by highly reputed dowsers known for their apparently high success rate. It is undeniable that dowsing is being profitably used throughout the world for numerous applications, e.g. by governmental departments, engineering companies, geologists, water companies, armed forces, mining companies, building contractors, breweries etc., as an efficient low-cost alternative to all other methods known today when water supply or „geopathic stress“ is to be detected. From the studies of the Munich group, it is known that only a small proportion of dowsers is accurately able to detect water reservoirs, faults, fissures and fractures [8-11]. In our study, the six independent professional dowsers presented their “muting” results in drawn form, and those six maps showed good enough agreement with each other on where such zones would be present in the laboratory room. The results of the GDV measurements finally showed that the compromise taken for selecting the locations for testing by dowsing appeared should be an acceptable one.

GDV:

The question may arise whether GDV would be acceptable as a system that would provide scientifically exploitable data. Already in 1939, the Russian scientist Semyon Kirlian discovered by accident that by subjecting objects of different nature to strong impulsive electromagnetic fields, gas discharge image formation around these objects can be created (also called the Kirlian effect). It has turned out that gas discharge pictures around biological objects may provide substantial information about the internal state of the object. First generation GDV equipment, and also elder setups relying at the Kirlian effect, such as Mandel’s *energetic terminal point diagnosis* (ETD) had turned out to be not reliable enough to justify their use in medical research (e.g., [35]). Later generation GDV instruments have been suggested to be much more consistent and effective systems to evaluate responses to physiological or psychical stressors [12,15,16,22,29]. It should, however, also be mentioned that not all authors speak in favor for some of the claims made by Korotkov for GDV (e.g., [21,76]. But,

one parameter, the *mean GDV image area of glow,* appears to gain increasing scientific acceptance as being useful in examining the overall “level of energy”, sensitively showing up immediate influences of a certain stressor on the tested person (e.g., [12,14,21]).

There is also convincing evidence that standardization and precise precautions and control during experimentation are of crucial importance (e.g., [12,13,37,77]). Only today, instruments for GDV are available which are stable enough to deliver reproducible and therefore scientifically acceptable raw data. One of the points to be considered is to test whether it would be valid to add up the single glow image area raw data of all fingers, to yield an overall mean. This question comes up because it is known that the images from single fingers are known to give different outputs, related to the different individual projections from the organ systems connected via meridians [12,14,21,29]. In the *SciLab*-GDV-Software used in our study, internal non-parametric controls assist to check the validity of the raw data and their summing (e.g., using the Kolmogorov-Smirnov-test). Before and during this study, we have additionally calculated mean values obtained from single finger measurements and compared them separately. As we did not see substantial differences in the outcome answering the target questions of our study when comparing mean values obtained from single fingers with those mean values derived from using area data from all fingers taken together (as is also used by other authors, e.g. [24-26]), we feel our assumption for the validity of using overall mean values for this kind of study to be confirmed. A third “internal” control was to also using dynamic measurements obtained from ring fingers only, which essentially yielded comparable statistical results of high significance.

The Geowave Device: Function?

Nothing is known yet why the device tested shows the detected harmonizing effects. A physical explanation cannot yet be convincingly given. Taking the human body as a “physical object”, we suspect that the device, instead of the body, in some way goes into resonance with the geologically and/or technically originating fields, as kind of a predominant “resonator antenna”. We have no clue if this is a valid explanation, but a number of academic physicists we discussed this with also could not come up yet with a better explanation. The overall size of the device, the distance between the corrugations, the shape and size of the sigmoid bending, the composition of the alloy used and a number of other factors may influence the effect.

Conclusions and Short Critical Appraisal:

Although people tend to, stress must not always be interpreted as being “negative”. Short-time stress may have beneficial effects too, e.g. to stimulate a person for maximum performance (eustress, in contrast to distress, e.g. [78]). Long-time exposure to stressors, however, has “negative” effects on the great majority of people. With the methods used in our study, we could find a few persons out of 52 from which the GDV glow image areas have not changed or even grown after exposure to „geopathic stress“. As seen here too, this appears not at all to be the rule, but is possible in certain persons as a short-time effect. The *Geowave* device tested had a harmonizing effect in nearly all test persons. No effect at all, or even the opposite was seen too, but only in a very small proportion of the test persons. It appears necessary therefore to carefully check the individual effect of the device before mounting. Again it should be emphasized that only short-time effects have been measured here; long-term studies are to be followed.

The study presented here is based on a number of assumptions: 1) We assume that the dowsed zones were areas representative as a geopathic zone and as a more neutral zone; 2) we assume that the specific GDV system employed provided valid measures allowing highly sensitive and reproducible detection of stress-related reactions of the body. Taking into account that we have done everything thinkable to us to ensure stability of the apparatus and towards standardization of the test procedures, that we carefully and repeatedly cross-checked the data obtained, and that randomized variation of the sequence of the experimental sub-phases took place, we feel presentation of our results to be justified. We are aware that this is a beginning only, and are already in the process of performing a number of additional experimental setups which will enable us to address the phenomenons attributed to location dependency or geopathy by different scientific approaches. The new studies will also employ direct measurement of various factors involved in neuroendocrine / hormonal and immunological regulation, as well as tests for efficiency at working areas, and reaction time testing.

In conclusion, our study may have opened a new approach towards understanding and measuring possible effects of „geopathic stress“, and we have obtained reproducible, statistically significant data indicating that the human body indeed reacts differently when staying at different areas. The zones investigated had been muted by professional dowsers; this is no scientific prove that the zones used for our measurement indeed corresponded to a geopathic and a more neutral zone. However, the results obtained in the specific setup used corroborate the validity of our assumptions. We could show too that the device tested statistically significantly provided a harmonizing effect. Also, a number of the findings obtained in this study support some earlier conjectures and studies related to stress and geopathy.

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Dedication:

This study is dedicated to one of the European “fathers” of geopathic stress research, the late Professor Otto Bergsmann. We would like to sincerely thank him for his ongoing stimulation of our work, and for his enthusiastic and professional approach towards clarification of geopathic phenomenons. His profound work can be understood as an invaluable basis of a multitude of knowledge in this field available today.

Legends:

Fig. 1: Schematic representation of the process used to obtain GDV images. Shielded from daylight, the fingertip is being held onto a glass plate, which is, on its opposite surface, coated with a thin translucent electrically conductive metal layer. In this way, the glass plate behaves like a transparent electrode. The glow obtained by the Kirlian principle from the fingertips is being recorded with a highly sensitive CCD camera and then image captured and processed using a computer. In essence, operation of the complex is based on computer registration of evoked bioelectrographic signals and estimation of energy state and stress levels by means of non-linear mathematics and "data mining" methods.

Fig. 2: Example of a GDV image obtained from a single finger. In this case, the gas discharge picture from the little finger of the left hand of a male test person is shown.

Fig. 3: Histogram showing a bar chart comparison of the overall mean glow image areas obtained from 52 test persons at the four different test variations examined. Areas are given in pixel numbers plus the corresponding SEMs superimposed. It can be seen that in comparison to an intermediate size of the GDV glow area values obtained at the more "neutral zone", the areas were decreased at the "„geopathic stress“" area, and markedly increased at both zones when the Geowave device had been mounted in double-blinded manner.

Fig. 4: Grouped bar chart diagram illustrating direct individual comparisons of GDV glow areas obtained at the "more neutral zone" (white bars) and the "„geopathic stress“ zone" (black bars). At the x-axis, 52 test persons are represented sorted according to their age, and the y-axis shows the GDV glow area of all test persons as numbers of pixels. Marked area reductions at the "geopathic zone" are seen in the great majority of test persons, however, a few test persons expressed an increase in glow area compared to the more "neutral zone".

Fig. 5: Grouped bar chart diagram illustrating direct individual comparisons of GDV glow areas obtained at the "„geopathic stress“ zone" without (white bars) and with the Geowave device mounted (black bars). A marked increase of glow area is seen in the overwhelming majority of test persons when the device was present. Only very few persons showed little change or adverse effects (bars 32 and 37).

Fig. 6: Grouped bar chart diagram illustrating direct individual comparisons of GDV glow areas obtained at the more "neutral zone" without (white bars) and with the Geowave device mounted (black bars). A marked increase of glow area is seen in the great majority of test persons when the device was present. Only very few persons showed little change (bars 32 and 42), and only one person an adverse effect (bar 10).

Fig. 7: Example of GDV glow images of all 10 fingertips with the corresponding processing into a whole body corona projection.

Fig. 8: Example of a whole body corona projection obtained for the same person within the same test at the more "neutral zone" without (left) and with the mounted Geowave device. Whereas without the device, a number of "irregularities" / "energy deficits" are present, the device produced a smoothing, harmonizing effect where most of the energy deficits appear to be compensated.

Fig. 9: Example of a corona diagram illustrating the smoothening, harmonizing effect of the Geowave device (red) in comparison to the situation obtained during the same experiment without the device mounted. Without the device, “Alpine valley” shapes are present to a much higher degree.

TABLE 1:

Percentages of conspicuous changes in whole body corona diagrams obtained with the Geowave device.
(Values are percentages of test persons (n=52))

"GEOPATHIC ZONE"			
Organ projection	**No change (% of test persons)**	**Energy increase (% of test persons)**	**Energy reduction (% of test persons)**
Pineal organ	34	57	9
Zerebral zone	34	57	9
Head zone	34	57	9
Nose & ears	21	70	9
Jaw	19	70	11
Throat & tonsils	21	67	12
Heart (right hand)	15	77	8
Heart (left hand)	23	72	5
Liver	21	68	11
Gut	23	73	4
Urogenital System	13	80	7
Blood Circulation	13	81	6
Lymphatic System	17	72	11

"NEUTRAL ZONE"			
Organ projection	**No change (% of test persons)**	**Energy increase (% of test persons)**	**Energy reduction (% of test persons)**
Pineal organ	33	59	8
Zerebral zone	37	59	4
Head zone	33	67	0
Nose & ears	23	69	8
Jaw	25	69	6
Throat & tonsils	14	74	12
Heart (right hand)	12	88	0
Heart (left hand)	18	69	13
Liver	22	73	5
Gut	23	77	0
Urogenital System	10	84	6
Blood Circulation	20	67	13
Lymphatic System	23	74	3

Figure 1:

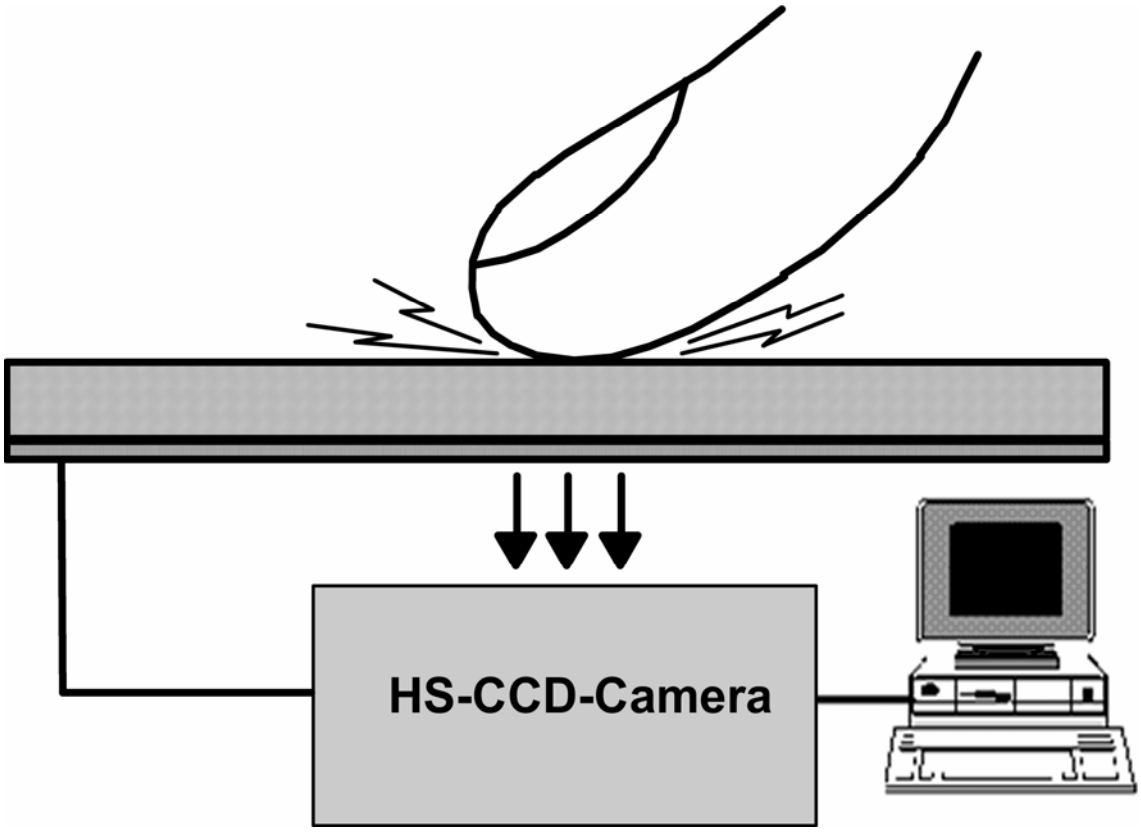
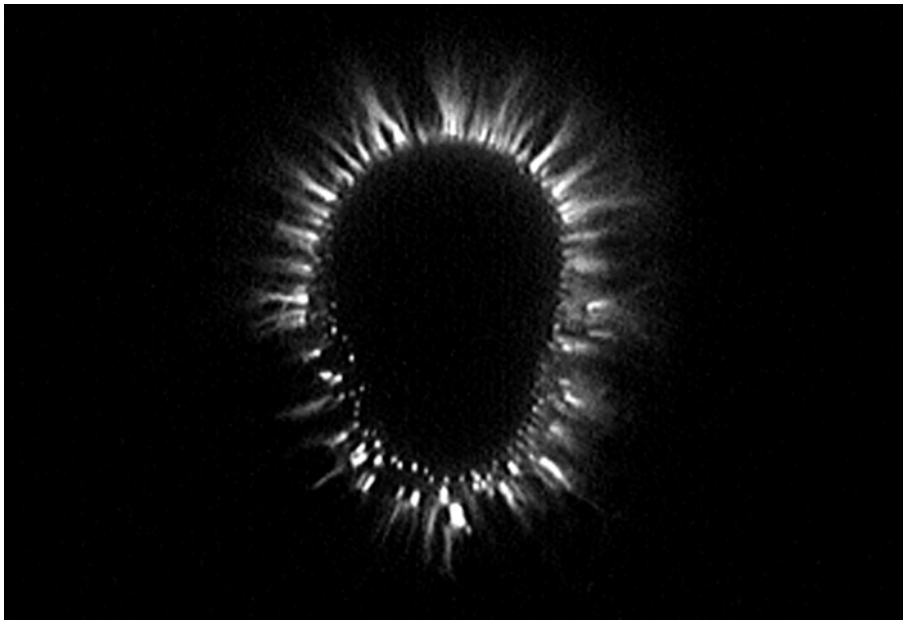


Figure 2:



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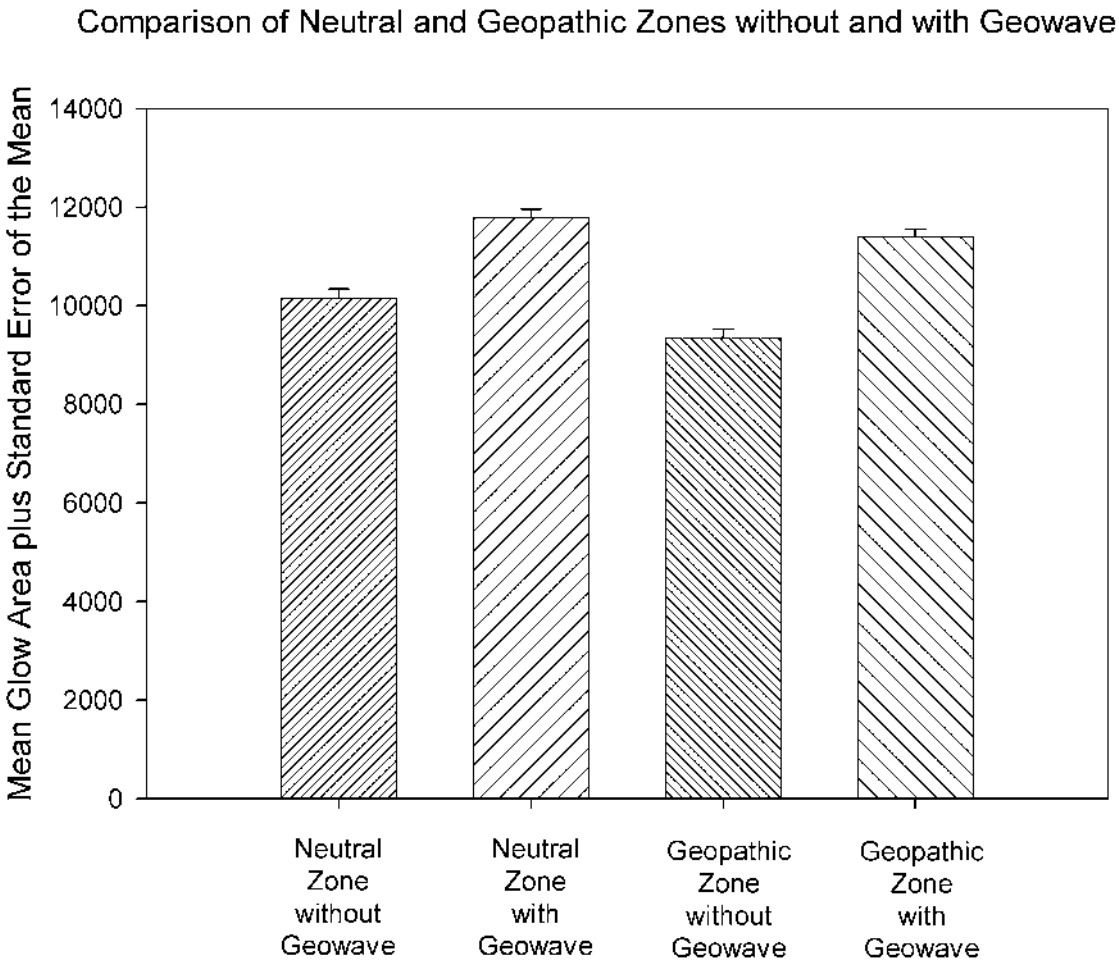

Comparison of Neutral and Geopathic Zones without and with Geowave
Mean Glow Area plus Standard Error of the Mean
14000
12000
10000
8000
6000
4000
2000
0
Neutral Zone without Geowave
Neutral Zone with Geowave
Geopathic Zone without Geowave
Geopathic Zone with Geowave

Figure 4:

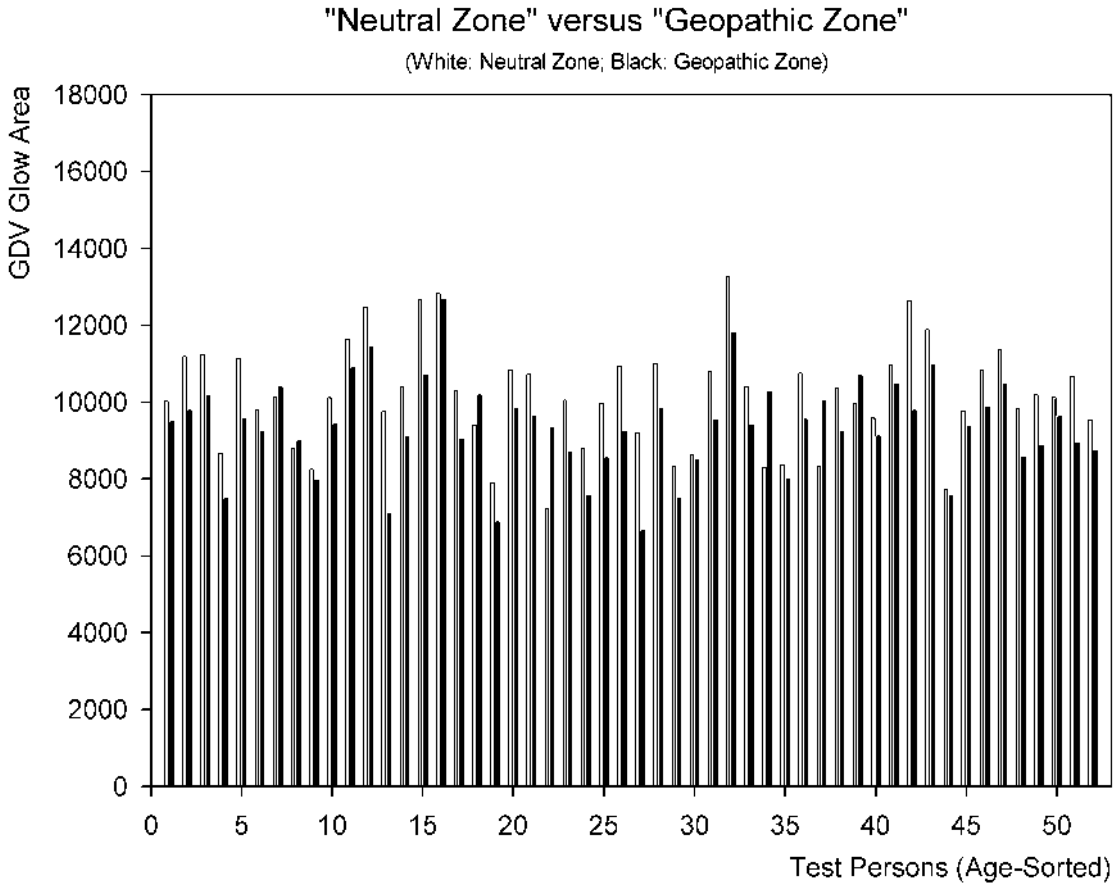

"Neutral Zone" versus "Geopathic Zone"
(White: Neutral Zone; Black: Geopathic Zone)
GDV Glow Area
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
0
5
10
15
20
25
30
35
40
45
50
Test Persons (Age-Sorted)

Figure 5:

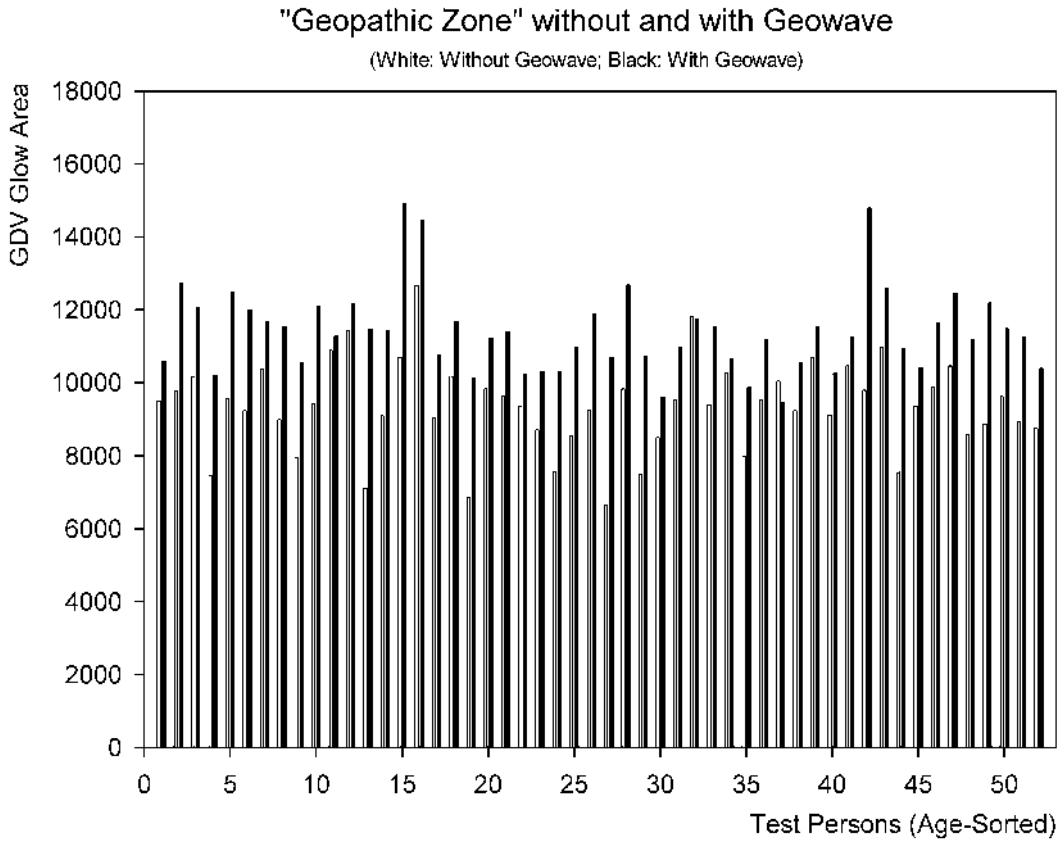

"Geopathic Zone" without and with Geowave
(White: Without Geowave; Black: With Geowave)
GDV Glow Area
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
0
5
10
15
20
25
30
35
40
45
50
Test Persons (Age-Sorted)

Figure 6:

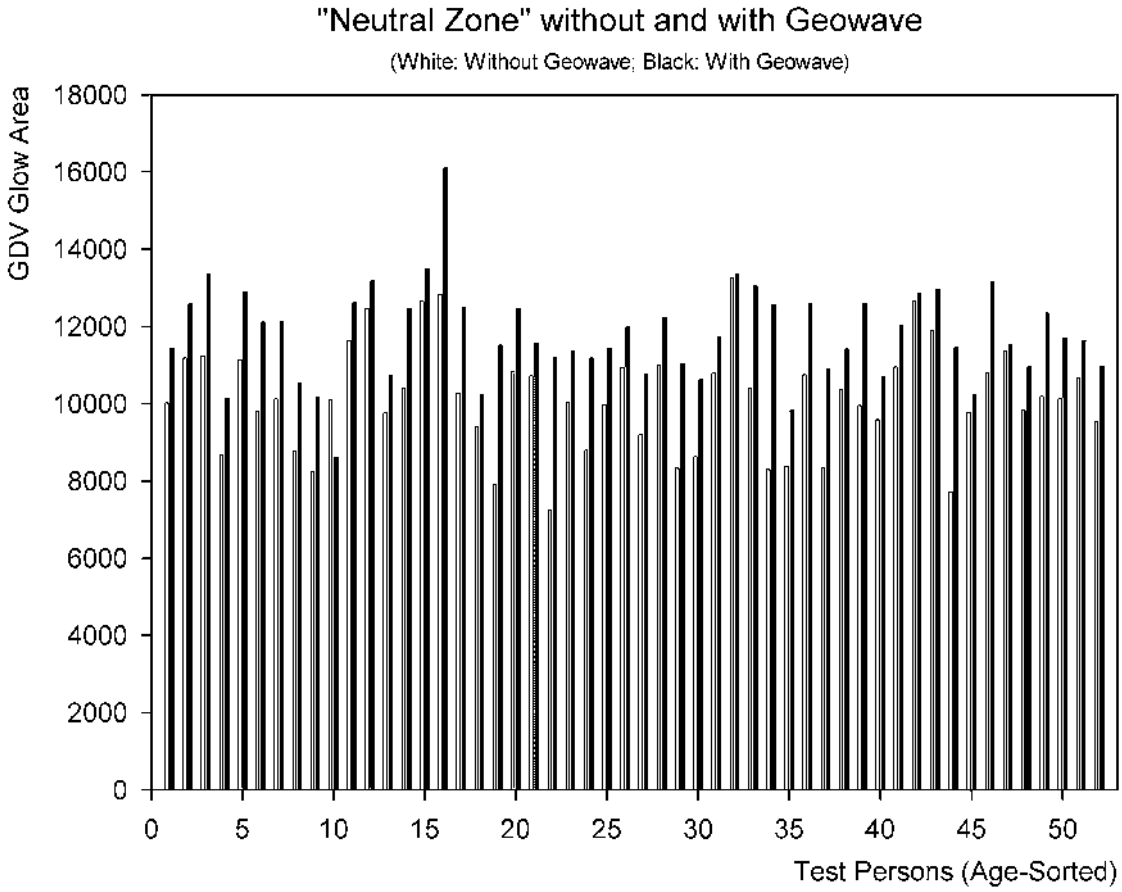
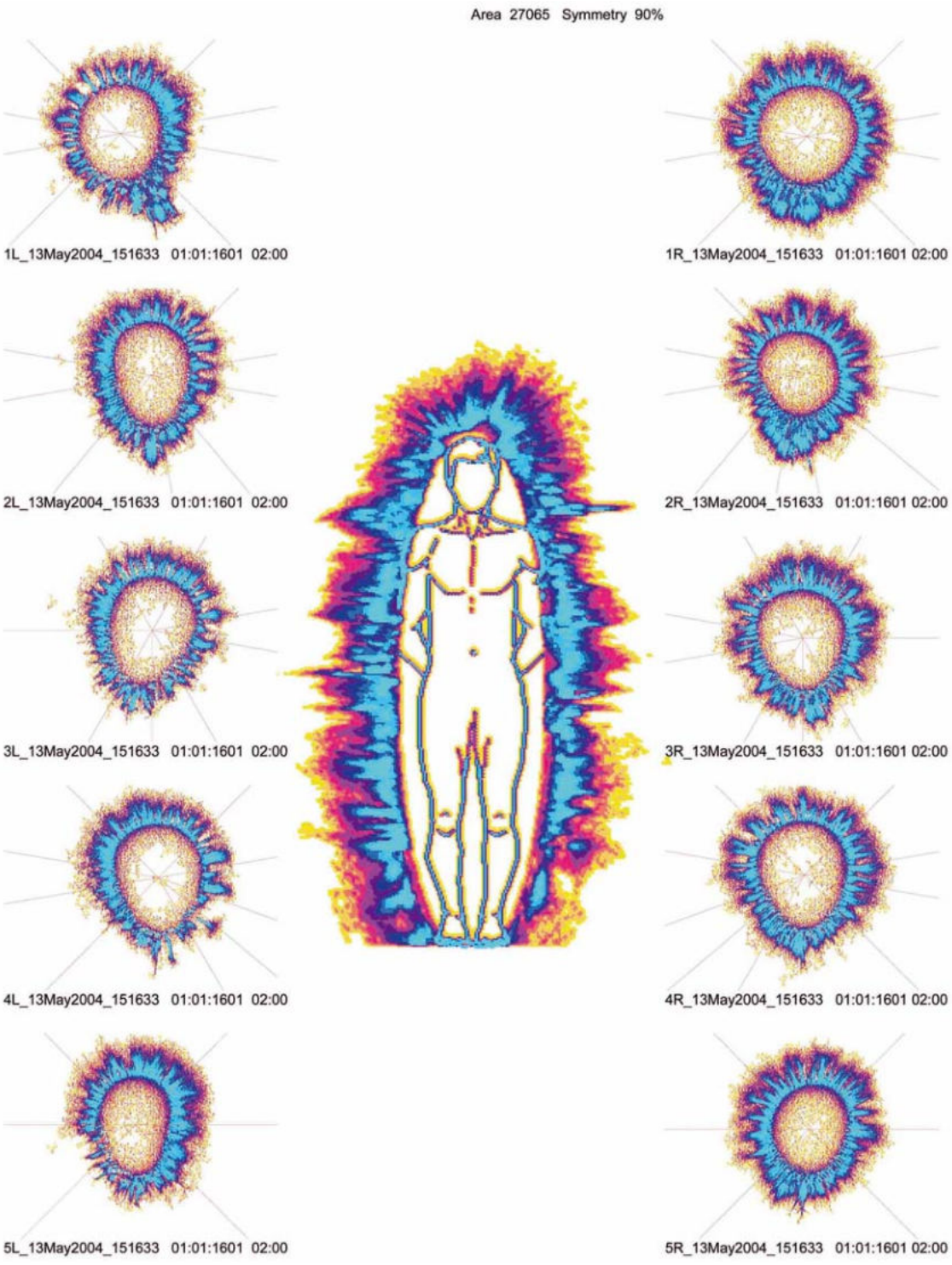

"Neutral Zone" without and with Geowave
(White: Without Geowave; Black: With Geowave)
GDV Glow Area
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
0
5
10
15
20
25
30
35
40
45
50
Test Persons (Age-Sorted)

Figure 7:


Area 27065 Symmetry 90%
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1R_13May2004_151633 01:01:1601 02:00
2L_13May2004_151633 01:01:1601 02:00
2R_13May2004_151633 01:01:1601 02:00
3L_13May2004_151633 01:01:1601 02:00
3R_13May2004_151633 01:01:1601 02:00
4L_13May2004_151633 01:01:1601 02:00
4R_13May2004_151633 01:01:1601 02:00
5L_13May2004_151633 01:01:1601 02:00
5R_13May2004_151633 01:01:1601 02:00

Figure 8:

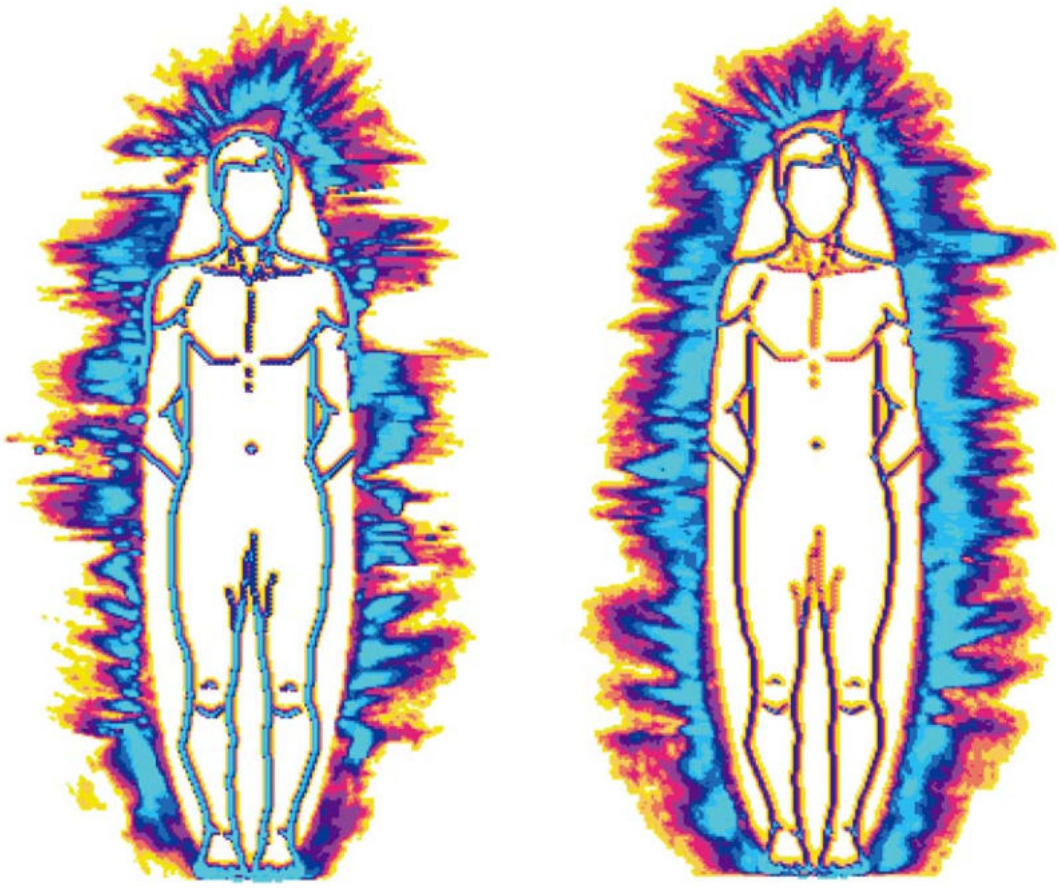
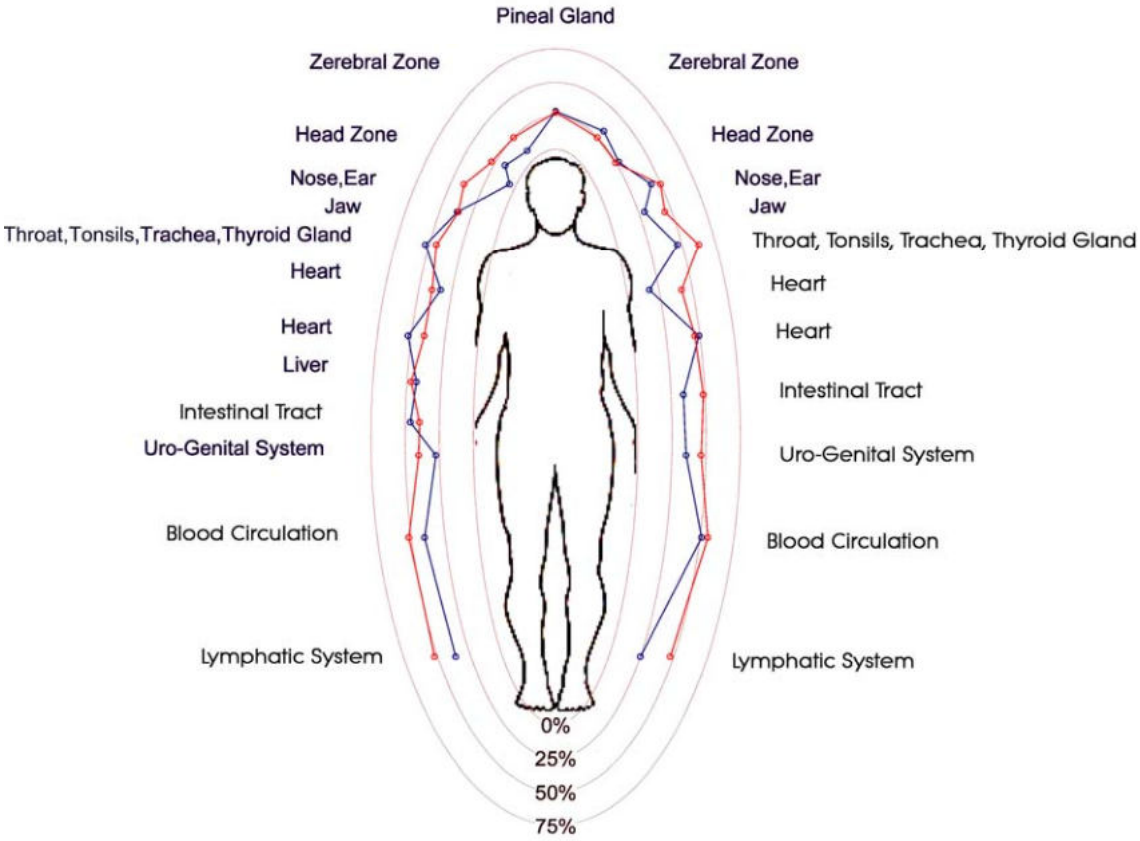


Figure 9:


Pineal Gland
Zerebral Zone
Zerebral Zone
Head Zone
Head Zone
Nose,Ear
Jaw
Nose,Ear
Jaw
Throat,Tonsils,Trachea,Thyroid Gland
Throat, Tonsils, Trachea, Thyroid Gland
Heart
Heart
Heart
Heart
Liver
Intestinal Tract
Intestinal Tract
Uro-Genital System
Uro-Genital System
Blood Circulation
Blood Circulation
Lymphatic System
Lymphatic System
0%
25%
50%
75%