**Article**

# Non-invasive Indicators of Stress and Bioenergy Disruption & Benefit of Meditation in Relieving Stress

Pradeep B. Deshpande[*1] & Konstantin Korotkov[3]

[1]Department of Chemical Engineering, University of Louisville; & Six Sigma & Advanced Controls, Inc. P.O. Box 22664, Louisville, KY

[3]Department of Biophysics and Computers, St. Petersburg Federal University of Informational Technologies, Optics, and Mechanics, St. Petersburg, Russia

## Abstract

The bioenergy field of seven individuals known to be suffering from chronically high stress levels was measured with a gas-discharge-visualization (GDV) device revealing that their bioenergy fields were severely disrupted recording high to very high numerical values of stress levels and severely off-balance chakras. Stress is known to be a marker for a number of ailments and has been shown to have a negative effect on aging. Since meditation has been shown to reverse the negative effect of stress, the information reported in this paper nicely supplements and complements traditional medical approaches to illnesses and should be useful in the light of the ever-increasing healthcare costs.

**Keywords:** stress, bioenergy, telomeres, aging, sickness, meditation.

## Introduction

High level of stress has been shown to shorten telomere length and lower telomerase level with an adverse effect on aging as well as a variety of ailments but the telomere measurement requires the analysis of blood samples. Disruptions in our bioenergy levels are suggested to occur well before the negative effect of stress is revealed in the form of telomeres shortening and lowering of telomerase levels and subsequent manifestation of ailments in the body.

High level of stress is also known to be a root cause of number of ailments and has been implicated in accelerated aging (Epel, et al., 2004). Developing restorative methods to slow down or even reverse the negative effects of stress on health consists of two tasks: (1) To find measurement methods indicative of elevated stress levels, in addition to routine measurements such as blood pressure, and (2) Develop methods to reverse the negative effects of stress and demonstrate their efficacy with the measurement methodology in (1).

Elizabeth Blackburn and associates discovered in the seventies that the tips of human chromosomes called telomeres act as caps to protect the ends of our chromosomes each time our cells are divided and the DNA is copied. They also discovered that an enzyme called telomerase can protect and rebuild telomeres. As we age, telomeres dwindle and when they get too short,

---

* Correspondence: Prof. Pradeep B. Deshpande, Six Sigma & advanced Controls, Inc., 1209 Holsworth Lane, Louisville, KY 40222, http://www.sixsigmaquality.com  E-mail: pradeep@sixsigmaquality.com

our cells malfunction and lose their ability to divide and this is a key process that contributes to aging. This work eventually earned Dr. Blackburn the 2009 Nobel Prize in physiology and medicine.

Elissa Epel subsequently collaborated with Blackburn showing that telomerase levels and telomeres length are strongly correlated with stress levels and that they affect aging. For their project the team meticulously recruited fifty-eight women who were caring for their chronically ill children. The results showed that the more stressed the women said they were, the shorter were their telomeres and lower the telomerase levels (Epel, et al., 2004). This finding is significant since high stress levels are known to contribute to a large number of ailments including cancer. The investigators also found that while exercises, eating healthy, social support, etc., were all restorative, meditation was the most effective intervention capable of slowing the erosion of telomeres.

In this context, the work of Korotkov's group assumes significance. In the nineties, the Korotkov team developed a device called Gas Discharge Visualization (GDV) device for measuring the bioenergy field of humans (see also Pehlek, 1976). This device offers a painless, noninvasive, cost-effective, and virtually instantaneous measurement of bioenergy, stress levels, and the state of Chakras.

In this paper, we present the results of GDV measurements of seven volunteers in Russia with a specific focus on stress levels and show how this technology may offer prospects for large-scale applications and is a good tool in self-help programs. Evidence of the restorative benefits of meditation on the bioenergy field, stress levels, and the state of the chakras is also presented.


## Results of This Study

To begin, refer to Figure 1 which shows the bioenergy and chakras of an apparently healthy individual and another who is quite unwell. Notice the dramatic difference between a normal individual's energy field and the disrupted energy field of the unwell individual. Furthermore, all seven chakras of the normal individual are centered and properly sized. Conversely, the chakras of the unwell individual are small and off-centered.

This report involves seven individuals thought to be chronically stressed. Figure 2 shows the bioenergy, numerical values of stress, and the state of chakras of these individuals. The stress levels of all seven subject are high to very high; normal range is 2 to 4; The figures show that the higher the stress level, the more disrupted the energy field, and more unbalanced the chakras. Admittedly the sample size is rather small but the trends are unmistakable.

Figure 3(a) depicts the Before and After GDV images of Rosa who was thought to be suffering from an elevated level of stress over a weekend meditation course in Spain's a few years ago. Rosa reportedly began the weekend program in a very distressed state. She had significantly low energy and high stress levels, and felt nervous and anxious. After just two and a half days of meditation, her energy levels had improved dramatically and her stress levels had reduced. She reported feeling comfortable and relaxed and could not believe the improvement she felt from

the weekend course. Figure 3(b) depicts the same information for Alfonso in another meditation program.

**Figure 1. Bioenergy Field and Chakras of an Apparently Healthy Individual (left) and one who is quite unwell (Right)**
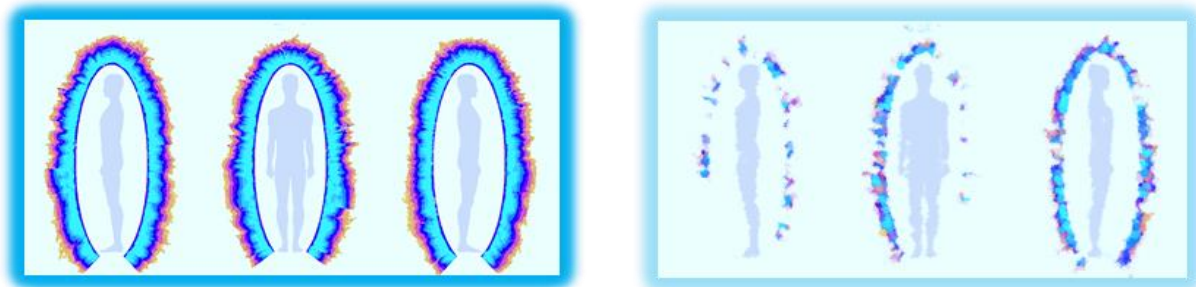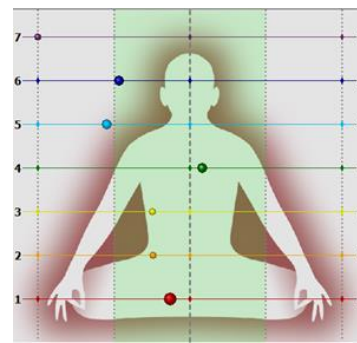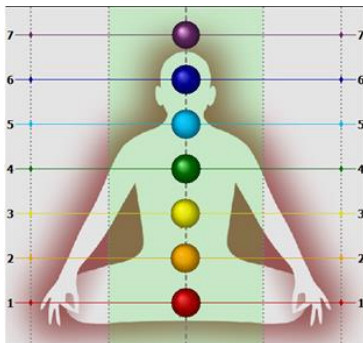


**Illustrations**

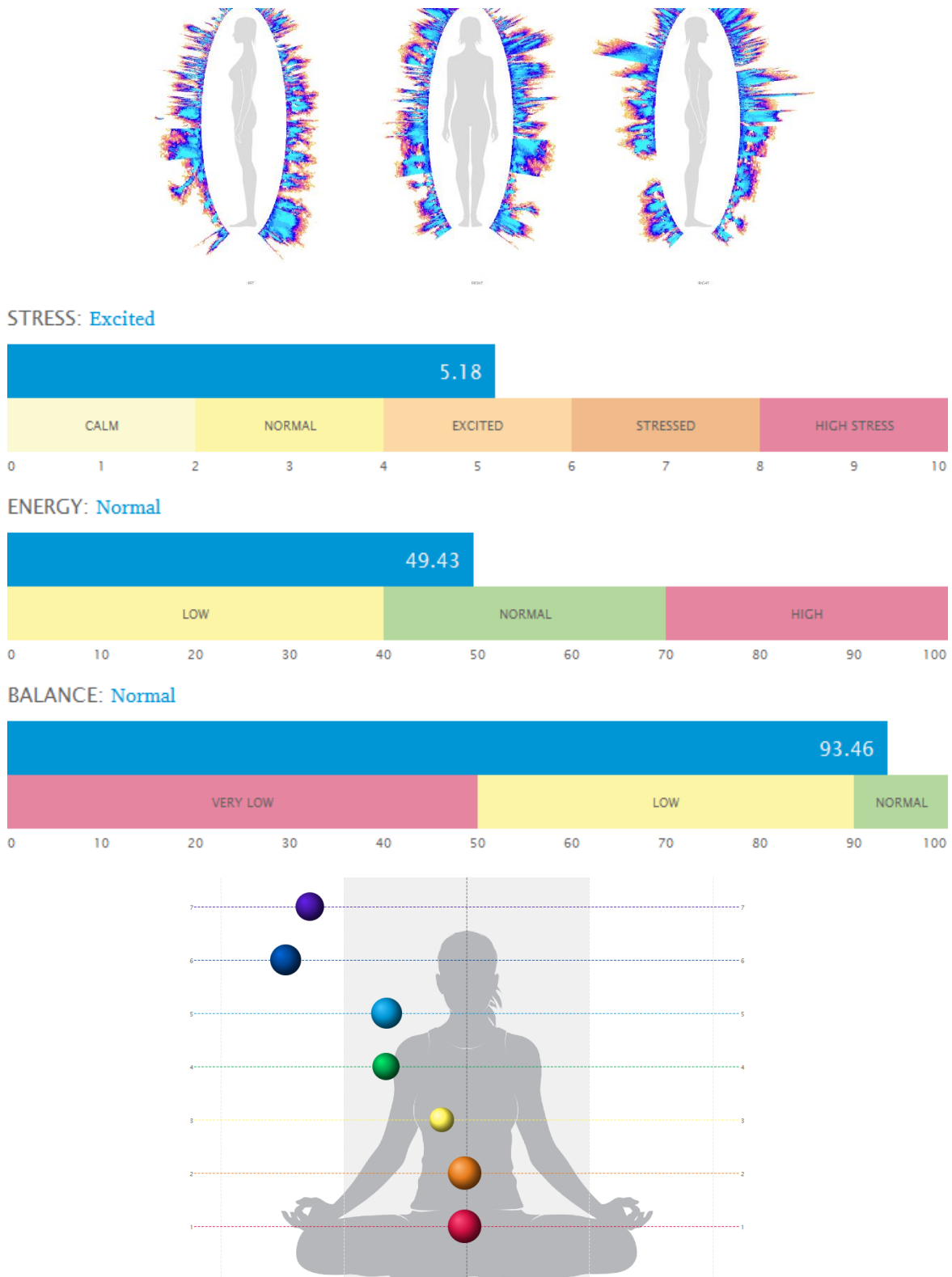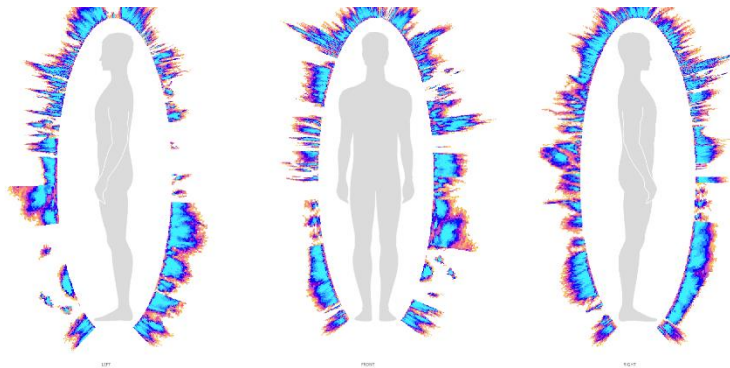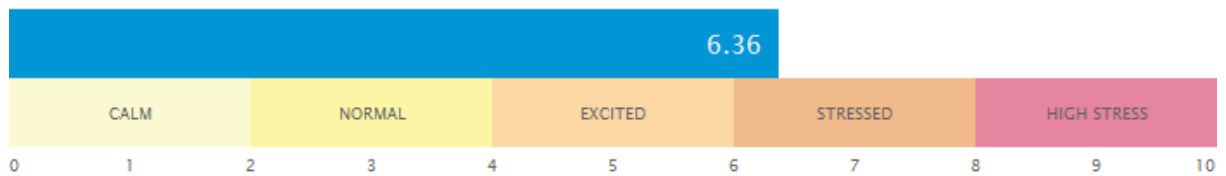**Figure 2(a). Bioenergy Field, Stress Level, and Chakras of Subject 1**

## Figure 2(b). Bioenergy Field, Stress Level, and Chakras of Subject 2

Journal of Consciousness Exploration & Research | September 2014 | Volume 5 | Issue 7 | pp. 617-633
Deshpande, P. B. & Korotkov, K., *Non-invasive Indicators of Stress and Bioenergy Disruption & Benefit of Meditation in Relieving Stress*

622

**Figure 2(c). Bioenergy Field, Stress Level, and Chakras of Subject 3**

**Figure 2(d). Bioenergy Field, Stress Level, and Chakras of Subject 4**
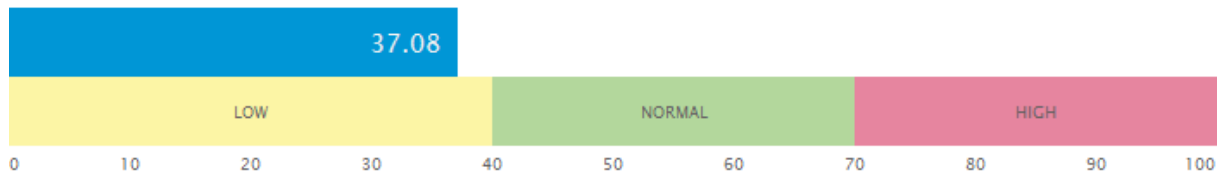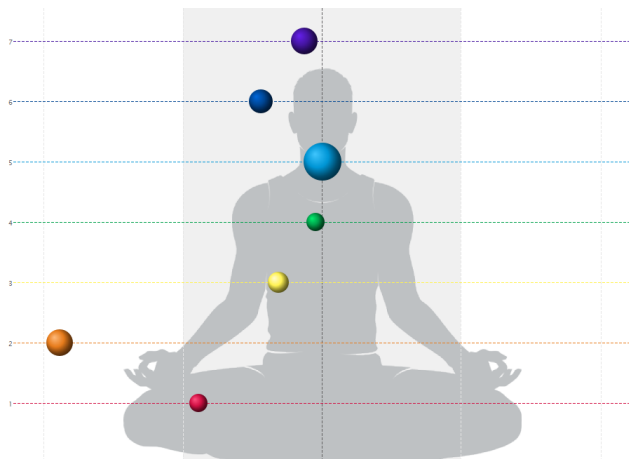
**Figure 2(e). Bioenergy Field, Stress Level, and Chakras of Subject 5**
**(Courtesy, Dr. Konstantin Korotkov)**

Journal of Consciousness Exploration & Research | September 2014 | Volume 5 | Issue 7 | pp. 617-633
625
Deshpande, P. B. & Korotkov, K., *Non-invasive Indicators of Stress and Bioenergy Disruption & Benefit of Meditation in Relieving Stress*
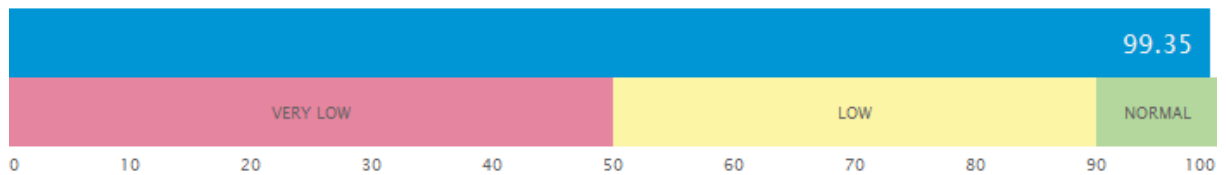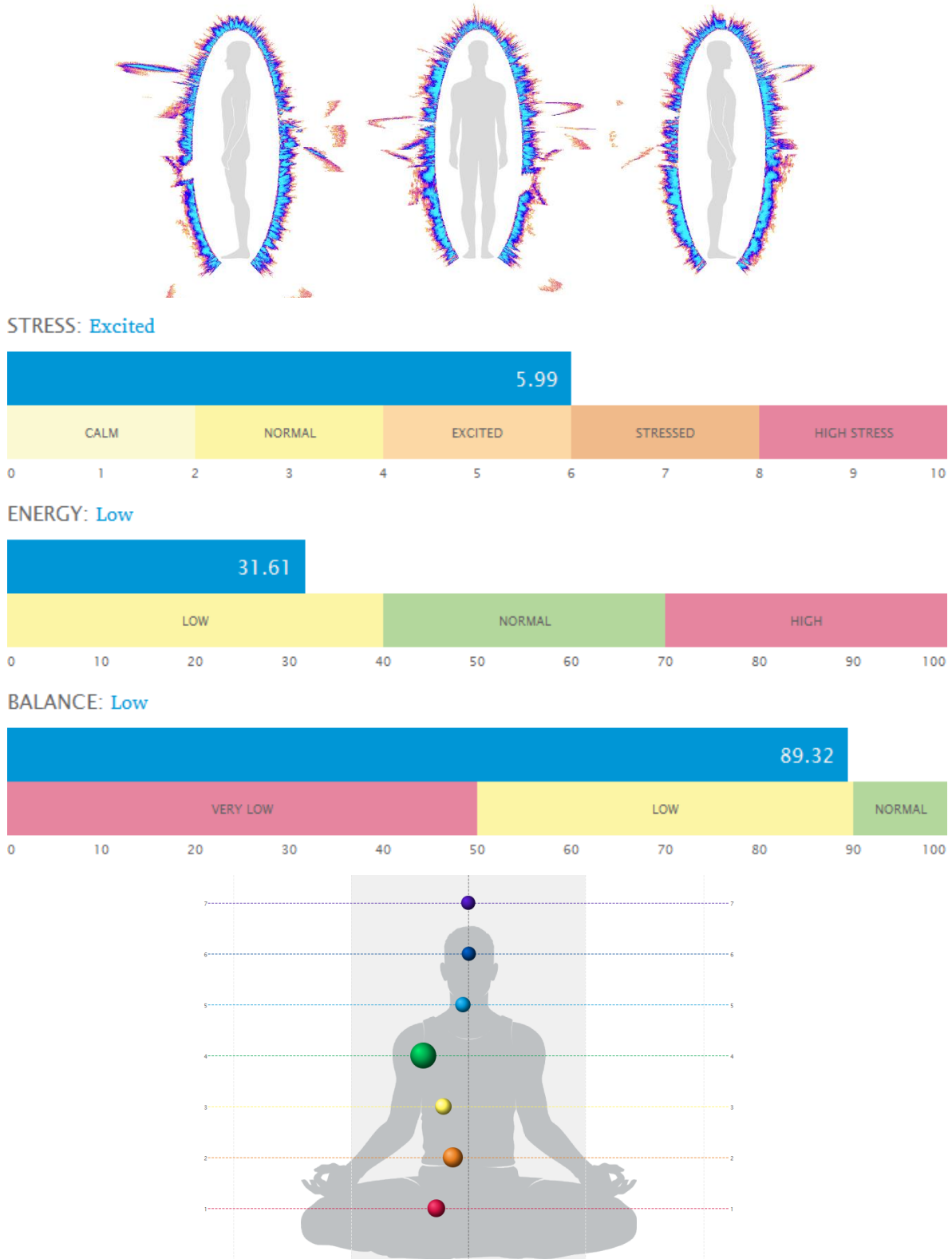
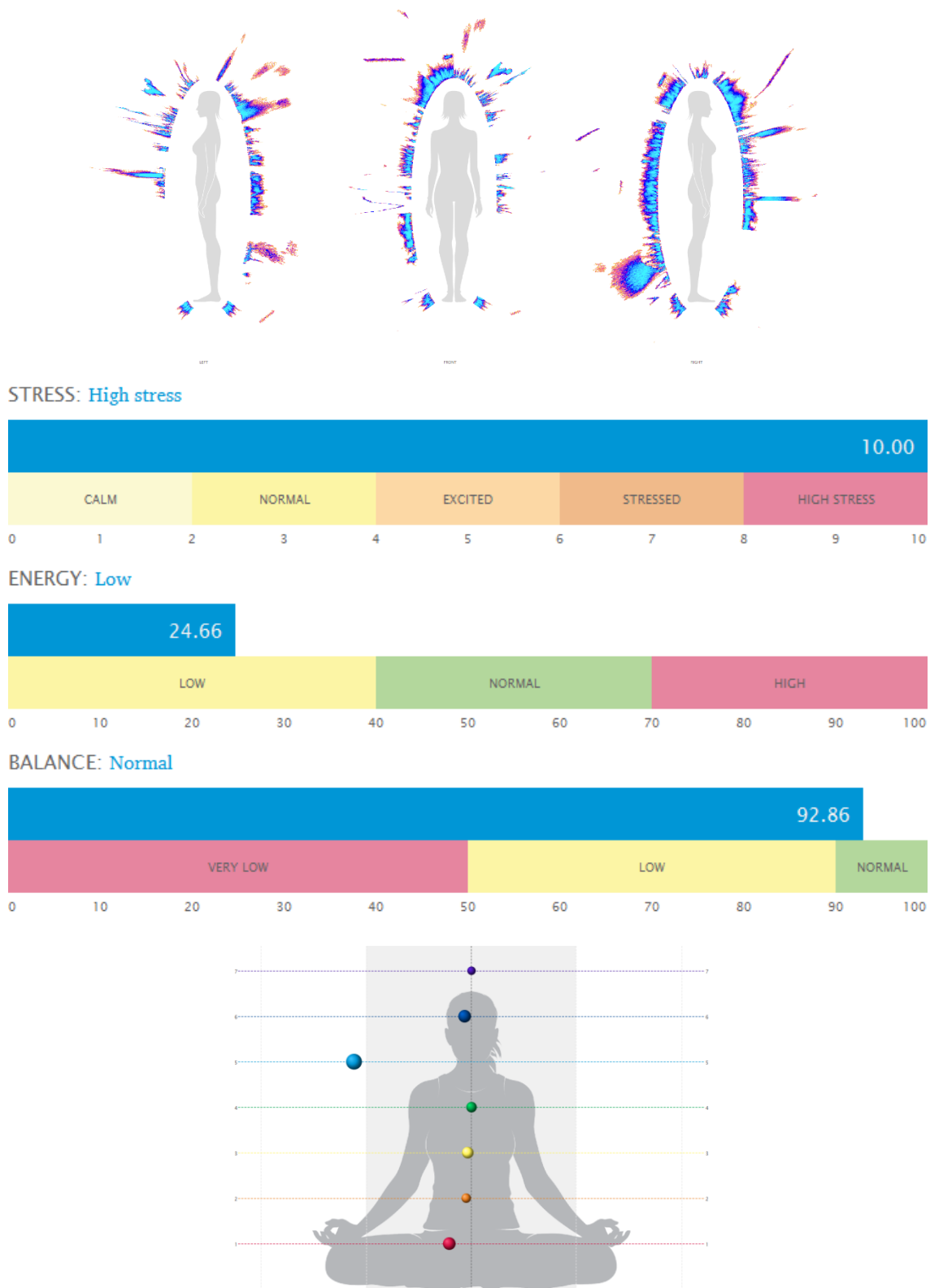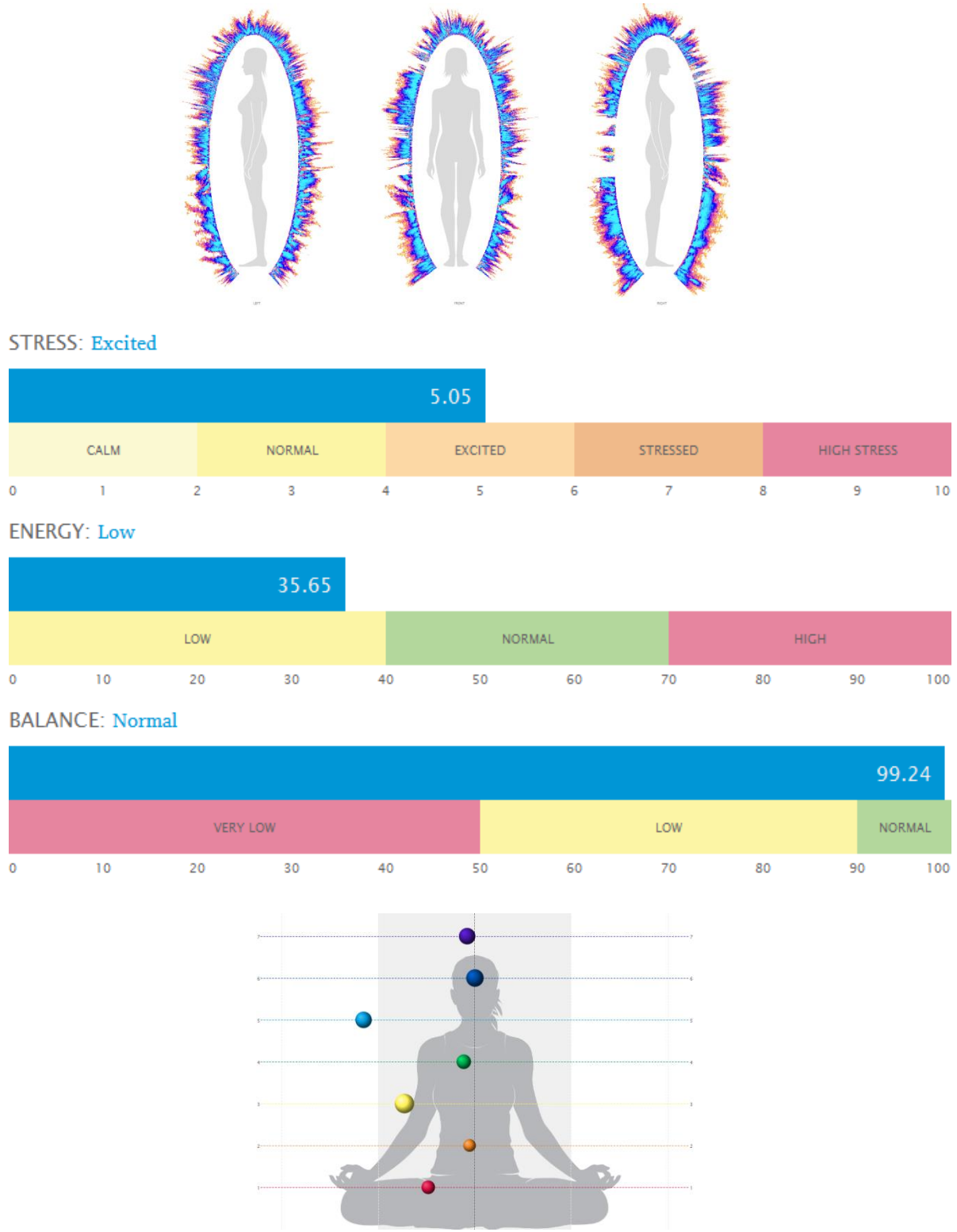## Figure 2(f). Bioenergy Field, Stress Level, and Chakras of Subject 6
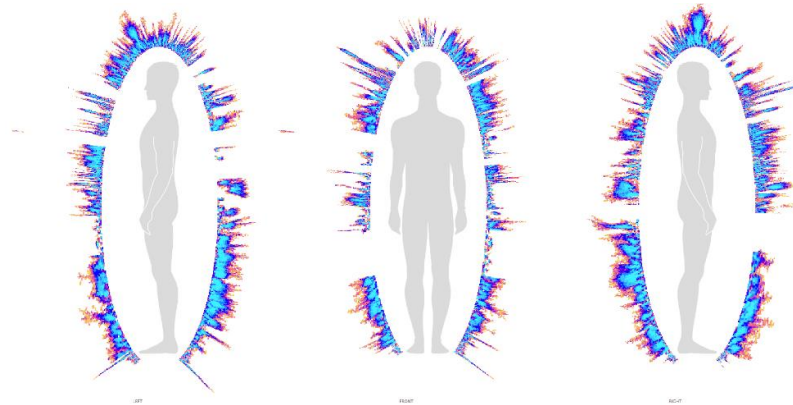## (Courtesy Dr. Konstantin Korotkov)
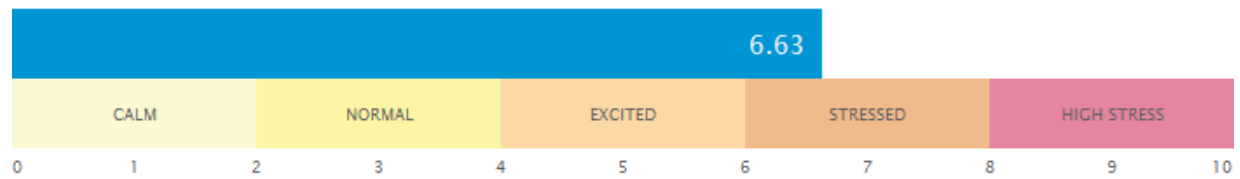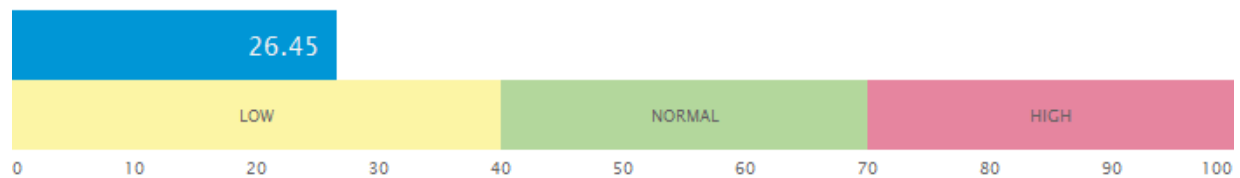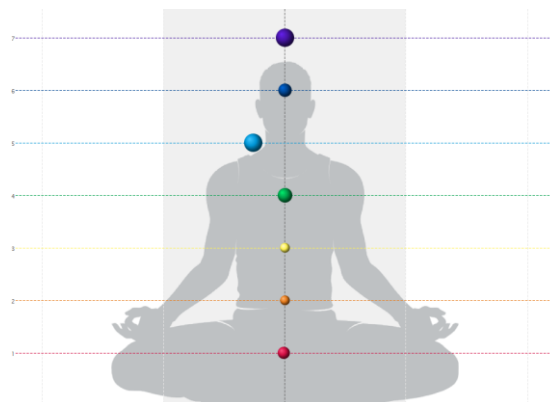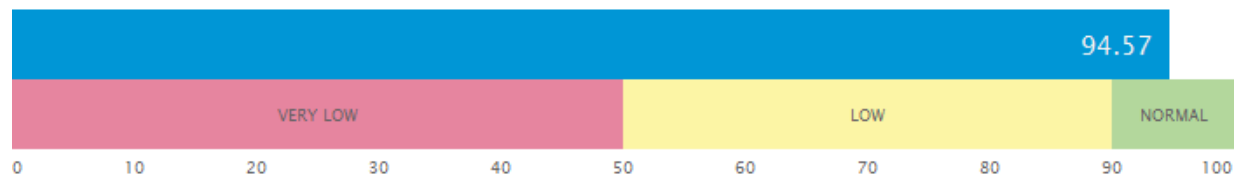
**Figure 2(g). Bioenergy Field, Stress Level, and Chakras of Subject 7**
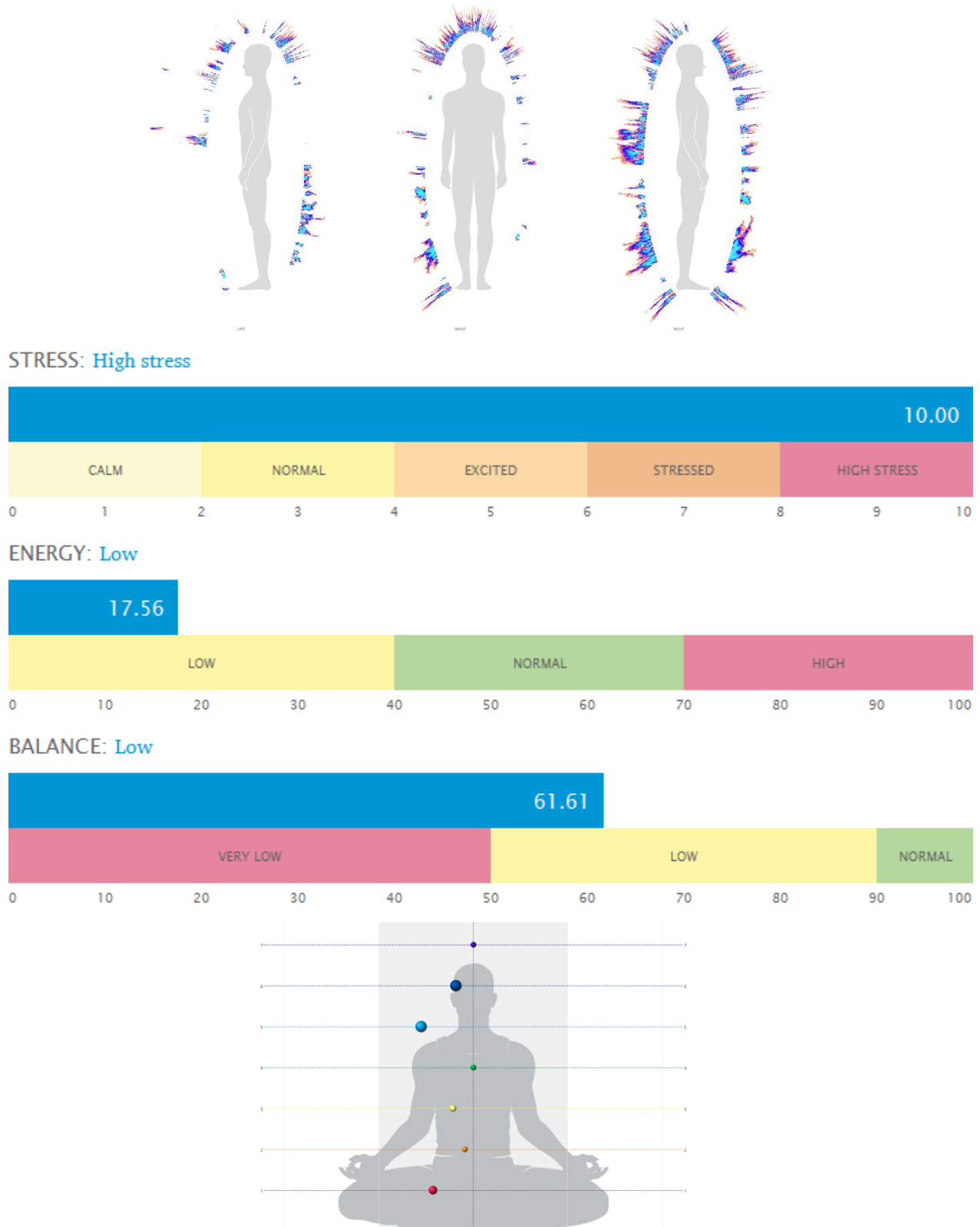
**Figure 3 (a). Bioenergy Field and Chakras of Rosa Before and After a 2 ½ - Day-Meditation Program (www.thebrightpath.com)**

Journal of Consciousness Exploration & Research | September 2014 | Volume 5 | Issue 7 | pp. 617-633
Deshpande, P. B. & Korotkov, K., *Non-invasive Indicators of Stress and Bioenergy Disruption & Benefit of Meditation in Relieving Stress*

628

**Figure 3(b). Bioenergy Field Stress and Chakras of Alfonso before and after Meditation**

By now, a large number of papers in reputed journals have carried full-length articles reporting on the benefits of meditation in a variety of fields including health and wellness, improvements in individual and organizational performance including business performance, leadership decisions, and less discord and violence. These investigations studied the effect of meditation on brainwaves, heart rate synchronization, and other outcomes. A listing of select papers on meditation is shown in Table I.

## Table I. Articles on Meditation

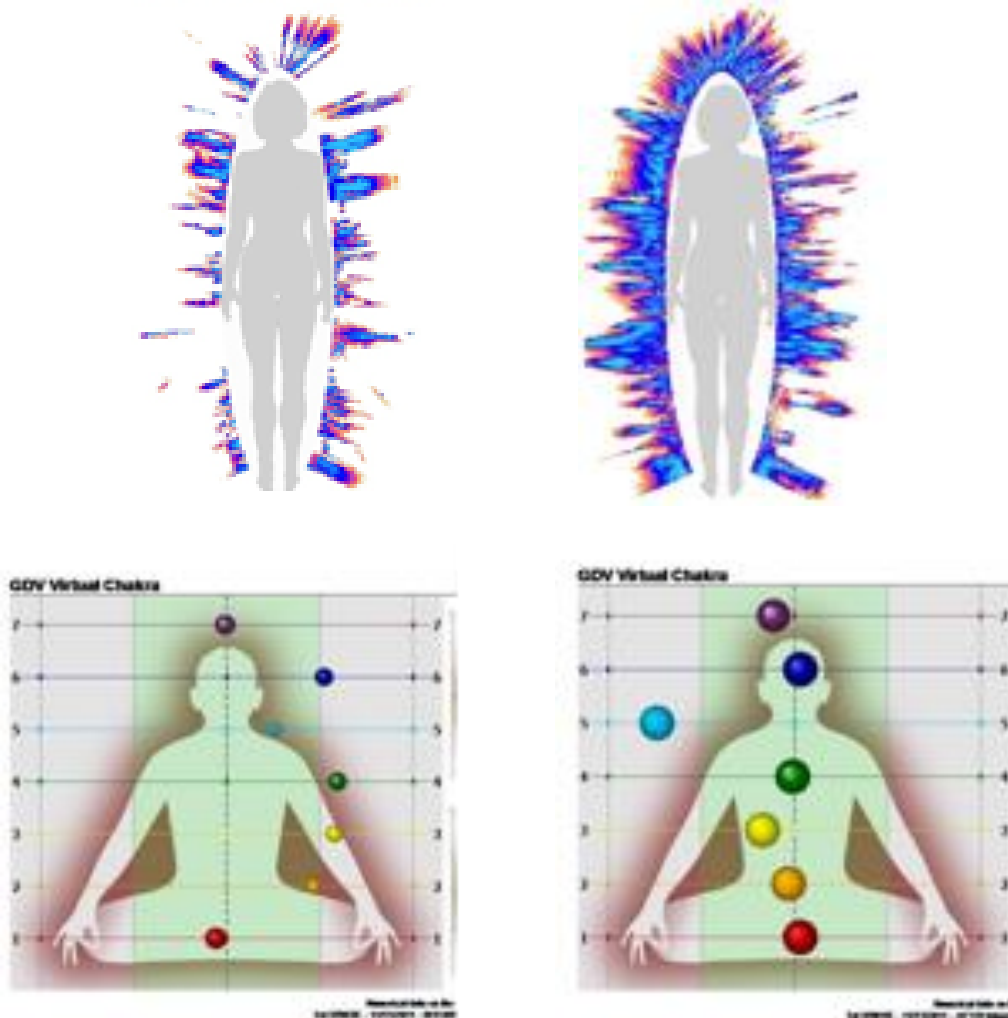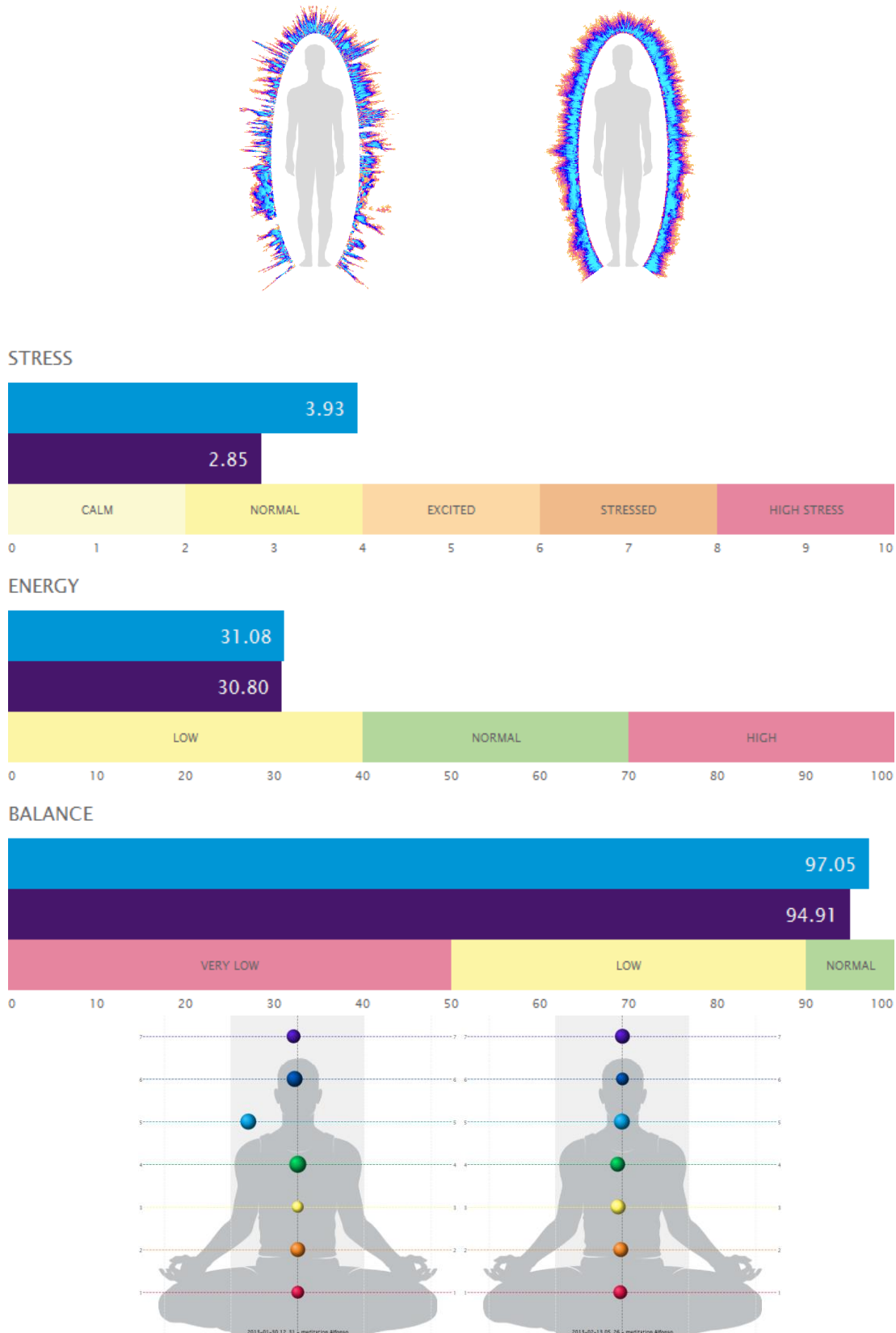| No. | Authors | Journal | Outcome Investigated |
|---|---|---|---|
| 1 | Benson, H., et al., | Nature, **295**, 234 – 236, 21 January 1982 | Body Temperature Changes |
| 2 | Bhasin, M. K. et al., | PLOS One, 8, 5, May 2013 | Metabolism, Insulin Secretion, Inflammatory pathways |
| 3 | Boyers, J. | Forbes, May 30, 2013 | Empathy |
| 4 | Condon, et al., | Psychological Science, August 21, 2013. | Compassionate Response to Suffering |
| 5 | Deshpande, P. B., et al., | Journal of Consciousness Exploration & Research, 5, 2, February 2014. | Materialization of Intentions |
| 6 | DeSteno, D. | New York Times, July 5, 2013 | Compassionate Response to Suffering |
| 7 | George B. | HBR Blog, 10 March 10, 2014 | Leadership |
| 8 | Fryer, B. | HBR Blog Network, September 18, 2013. | Compassionate Management |
| 9 | Lutz, et al., | PNAS, 101, 46, November 16, 2004. | Gamma Wave Synchrony |
| 10 | Paul-Labrador, M., et al. | *Archives of Internal Medicine*, 166, 1218, 2006. | Metabolic Syndrome and Heart Disease |
| 11 | Paturel | NeurologyNow, August/September 2012. | Meditation as Medicine |
| 12 | Speca, M., et al., | Journal of Biobehavioral Medicine,, Vol. 62 No. 5, 613-622, September 1, 2000. | Stress Reduction in Cancer Patients |
| 13 | Tang, Yi-Yuang, et al., | PNAS, 110, 34, August 28, 2013. | Smoking Reduction |
| 14 | Tang, Yi-Yuang, et al., | PNAS, 109, 26, 10570-10574, 2012 | White Matter Changes |
| 15 | Tang, Yi-Yuang, et al., | PNAS, 106, 22, 8865-8870, 2009. | Central & Autonomic Nervous System |
| 16 | Tang, Yi-Yuang, et al., | PNAS 104, 43, 17152-17156, 2007. | Attention and Self-Regulation |
| 17 | Wallace, R. K. | Science, Vol. 167, No. 3926, 1970. | Physiological effects |
| 18 | Walton, A. G. | Forbes, July 24, 2013. | Healthcare Costs, Student Performance |

In the following we present a Vedic-Yogic-Ayurvedic perspective on stress, health, and ailments. For a modern physics perspective on health, refer to Deshpande and Kowall (2014). It is heartwarming that the biochemical, modern physics, and Vedic-Yogic-Ayurvedic perspectives are strikingly resonant.

## Vedic-Yogic-Ayurvedic perspective

Veda-Yoga-Ayurveda say that we have five bodies, not one. The first is what we have come to recognize as the physical body while the rest are energy sheaths. They are: (1) Annamaya Kosha – physical body – food sheath, (2) Pranamaya Kosha – pranic energy sheath, (3) Manomaya Kosha - mind sheath, (4) Dyanamaya Kosha – knowledge sheath, and (5) Anandamaya Kosha – Blissful body. Each sheath controls all the lower sheaths. Physicists tell us that some 5% of the universe is matter such as planets, galaxies, stars, etc., 25% is dark matter such as black holes, and 70% is dark energy. In the Pranamaya Kosha there are seven major energy centers called chakras that tap the energy from the cosmos, and there is plenty of it out there, which yogis suggest can provide 70% of our energy requirements. Of the remaining, 10% can come from food, and 20% from the air we breathe provided we eat and breathe right. Blockages in the various sheaths disrupt the normal flow of energy to the physical body producing all kinds of ailments among the first manifestation of which is stress. The Dnyanamaya Kosha houses our past psychic impressions and unresolved issues. Negative impressions send a disruptive signal to the Manomaya Kosha which produces negative emotions (anger, hostility, jealousy, hatred, sorrow) leading to stress and disease. Yoga prescribes Pranayam - Pranic energy - breathing exercises for maximizing the Pranic energy in the Pranamaya Kosha which has a restorative effect on health and wellness. Yoga says that meditation works at the subtler levels by dissolving the karmic impressions in the Dnyanamaya Kosha. Additionally, meditation raises our S (Sattvic) component and that makes us better human beings, so it is like having our cake and eating it too.

Our present bioenergy status is predictive of future health while out current health status is reflective of the cumulative past bioenergy status. Disturbances in our bioenergy field are the first signs of impending health issues well before the symptoms of the diseases are manifested in the physical body. And this may provide a path forward for healthier life by adopting better diet, exercises, yoga, Pranayam, meditation, etc.

## Conclusions

The applicability of gas discharge visualization device in the measurement of stress levels is illustrated. The methodology is cost-effective, noninvasive, painless, and takes only a couple of minutes to complete. Since meditation has been shown to provide a wide variety of benefits including reversing the negative effect of stress, the information reported nicely supplements and complements traditional medical approaches to illnesses.

The work reported here may have profound ramifications. Blackburn and Epel recently wrote a column in Nature urging World Governments to heed the warning on stress. The first author is in the process of publishing a book, *The Ultimate Reality and How it can Transform Our World: Evidence from Modern Physics; Wisdom of Yoda*, coauthored with James Kowall, which will show how the path-breaking work of Blackburn and Epel is a subset of the scientific framework for world transformation.

The GDV method has advantages over other methods such as testing for telomerase levels and telomere lengths in that it is completely noninvasive, painless, cost-effective, and takes only a few minutes to complete and this offers prospects for large-scale applications.

# References

[1]    Chez, Ronald, A., Ed., Proceedings: Measuring the Human Energy Field – State of the Science, The gerontology research Center, National Institute on Aging, National Institute of Health, Baltimore, MD April 17 - 18, 2002.

[2]    Deshpande. P. B., Kowall, J. P., the Ultimate Reality and How it Can Transform our World: Evidence from Modern Physics; Wisdom of Yoda, Six Sigma and Advanced Controls, Inc., January 2015 (estimated)

[3]    Deshpande, P. B. and Kowall, J. P., Yogic Perspective on Health, Six Sigma Assessment, and Quantum Physics Approach, Journal of Consciousness Exploration & Research, 5, 3, April 2014.

[4]    Blackburn, Elizabeth and Epel, Elissa, Telomere and Adversity - Too Toxic to Ignore, Nature, 490, 11 October 2012 pp. 169-171.

[5]    Epel, Elissa, et al., Accelerated Telomere Shortening in Response to Life Stress, Proceedings of the National Academy of Sciences, 101, 49, December 2004. pp. 17312-17315.

[6]    Jakovleva E., Korotkov K., Electrophotonic Analysis in Medicine. GDV Bioelectrography research. 2013. 160 p. Amazon.com.

[7]    Korotkov K.G., Matravers P, Orlov D.V., Williams B.O. Application of Electrophoton Capture (EPC) Analysis Based on Gas Discharge Visualization (GDV) Technique in Medicine: A Systematic Review. The J of Alternative and Complementary Medicine. January 2010, 16, 1, pp.13-25.

[8]    Korotkov K.G., Energy fields Electrophotonic analysis in humans and nature, 2012. 240 p. e-book: Amazon.com.

[9]    Korotkov K. and Orlov D., Analysis of Stimulated Electrophotonic Glow of Liquids. www.WaterJournal.org   V 2, 2010.

[10]   Korotkov, K., Madappa, K., Orlov, D., New Approach for Remote Detection of Human Emotions; *Subtle Energies & Energy Medicine • Volume 19 • Number 3 • Page 2; July* 2010.

[11]   Korotkov K., Korotkin D. Concentration dependence of gas discharge around drops of inorganic electrolytes. J of Applied Physics, 2001, 89, 9, 4732-4737.

[12]   Pehek J. O., Kyler, H. J., and Foust, D. L., Image Modulation in Corona Discharge Photography, Science, Vol. 194, 263 – 270, October 1976.

# Appendix

In the mid-nineties Konstantin Korotkov developed a scientific device based on the ancient Chinese system of energy meridians for measuring the bio-energy of living organisms and the environment. The device provides non-invasive, painless and almost immediate evaluation which can highlight potential health abnormalities prior to even the earliest symptoms of an underlying condition, and suggests courses of action (9).

GDV utilizes a weak, completely painless electrical current applied to the fingertips for less than a millisecond. The body's response to this stimulus is the formation of a variation of an "electron cloud" composed of light energy photons. The electronic "glow" of this discharge (invisible to the human eye) is captured by an optical CCD camera system and then translated into a digital computer file. The data from each test is converted to a unique "Photonic Profile", which is compared to the database of hundreds of thousands of data records using 55 distinct parametric discriminates, and charted so that it is available for discussion and analysis. A graph of the findings is presented as a two-dimensional image. To study these images, fractal, matrix, and various algorithmic techniques are linked and analyzed. In addition, the system provides instant graphic representations of the data to provide easy reference and interpretation. To enhance the data in an understandable and meaningful manner, a further graphic representation is generated, placing the indicators within the outline of the human form, for ease of explanation and discussion. For a more in-depth understanding of GDV, the reader is referred to the papers 8 to 12 under References. GDV has been in the market for over fifteen years and has received registration as a routine medical diagnostic device by the Russian Ministry of Health upon recommendation of the Russian Academy of Sciences.

The GDV device has numerous applications the field of medicine and sports. It can determine the physiological and psycho-emotional state of a human being. The parameters that the GDV provides indicative of physiological and psycho-emotional state are: (1) Stress level, (2) Bioenergy intensity, (3) Normality of various organs and systems, and (4) Sate of the Chakras. These parameters will allow aspirants to gage the extent of progress they are making with their practices such as Yoga, Pranayam, meditation, medical interventions, etc.

A special software environment was developed for processing and analyzing BIO-grams, oriented towards the work in different problem domains. Adaptation for particular assessment is performed through a combination of optimal operations from the library for the given problem domain, selection of corresponding procedures, and (or) selection of optimal threshold values. The following main algorithms are included in the library:

**Pseudo-coloring**. For visual estimation of the image, there are several algorithms of pseudo-coloring, oriented towards marking out several peculiarities of BIO -grams. The following **Intensity palette** is most commonly used. In this processing, image points are colored in one of eight colors. The brightest glow points are colored in the shades of blue, less bright points are colored in the shades of red. Points are colored in yellow when the intensity is higher than the noise level, but lower than the base noise level for the given frame. All image points removed by noise filtration are shown as white background. Special programs are designed for the calculation

of the following BIO-gram parameters: ***Total image area (S): the number of pixels in the image having brightness above the threshold***. ***Average Intensity (I)*** is an evaluation of the Intensity spectrum for the particular BIO-gram. **Entropy (Entr)** of the image is calculated in accordance with non-linear algorithm, presented in (13). **Energy (E)** of light emitted by the subject is equal to:

$$E = k \, S*I \text{ (Joules)} \tag{1}$$

Where k is a numerical coefficient depending on spectral parameters of the particular CCD camera. For the GDV instruments $k = 2*10^{-4}$.

The primary outputs of the GDV connected to the eco-sensor are the energy intensity and entropy of the space. We may state that bias current in the electrical chain depends on the capacitance of space between antenna and environmental-grounded and electro-conductive subjects. Both geophysical parameters of the particular environment and man-made electromagnetic field and constructions would influence this capacitance. This process is being modeled both experimentally and theoretically (9). Emotions are related to the activity of the parasympathetic division of the autonomic nervous system, which changes blood microcirculation, perspiration, sweating, and other functions of the body, resulting in the changes of the overall conductivity of the body and the conductivity of acupuncture points in particular. Therefore, the presence of the emotional people in the vicinity of the instrument may change the conductivity of space and, hence, the signals of the sensor. This may be related to the formation of areas of decreased entropy in space, or, as Dr. W. A. "Bill" Tiller, Professor Emeritus and former Chair of the Material Science and Engineering Department at Stanford suggests, "Associated with the buildup of a negative magnetic charge manifesting in the environment". Some quantum effects may be involved as well.