



## Evaluating Thermootherapy using the Amethyst BioBelt and the Infrared, Negative Ions, Amethyst BioMat in 12 subjects to reduce fat, pain and stress over 3 months

**By Dr. George Grant, Ph.D., IMD**

**Abstract:** The amethyst BioBelt was used by 12 subjects for one hour three times per week as well as using the Amethyst BioMat during sleep daily over 3 months period.

[CLARIFICATION from the author: the Infrared BioBelt was set at 122 °F.

The Professional BioMat was set at 131°F or 140 °F for those with pain.

The BioPillow was also used along with the BioMat to sleep at night.

OF NOTE: Future study will include 12 subjects over a 12 month period using the BioMat/BioPillow + BioBelt + Detoxi Bamboo salt – all RichWay Products.]

We used two different biofeedback devices to measure pain reduction, BMI [body mass index] to measure fat reduction and blood cortisol levels to measure stress reduction. The Amethyst BioBelt and the Amethyst BioMat reduced pain by 18% and reduced BMI by 10% and reduced Stress by 82% of 12 subjects in 3 months as validated by Pre and Post Biofeedback Brain Scans as well as fasting blood test to measure the stress hormone cortisol.

Thermootherapy was enhanced when the BioBelt was combined with the BioMat use during sleep to reduce stress, pain and abdominal fat.

The BioBelt made from the Amethyst and other crystals is a small BioMat wrapped around the abdomen to reduce abdominal fat and around the back to reduce pain and stress. The BioMat technology is a combination of Far Infrared Rays, Negative Ion effects and the conductive properties of Amethyst channels. These three powerful health stimulators are combined in a single, easy-to-use product with remarkable healing properties.

The BioMat delivers soothing, deep-penetrating heat while stimulating the regeneration of damaged cells in the body. It's a safe and natural way to achieve optimal health now and maintain a stronger, more resilient body in the future. The combination of the BioBelt and the BioMat is a highly effective thermootherapy available to medical professionals and home consumers who want to reduce pain, stress and abdominal fat. The BioMat is an approved medical device by FDA.

### **Objectives of the study:**

Examine the synergistic benefits of the BioBelt and the Amethyst BioMat for REDUCING stress, pain and abdominal body fat for 12 subjects over 3 months.

The study intends to examine the effect of using the BioBelt and the BioMat to increase serotonin the happy hormone responsible to reduce stress, reduce cortisol, the stress hormone responsible for increased abdominal fat and to measure pain reduction using biofeedback devices.

The main objective of the study is to measure the reduction of inflammation, joint pain and stiffness, and the reduction of abdominal fat and stress for 12 subjects over 3 months using biofeedback devices and blood cortisol tests that correlates with stress; BMI that correlates with abdominal fat.

### **Methods:**

12 subjects were tested before and after using the BioBelt for one hour 3 times per week and sleep on the Professional BioMat daily over 3 months. The biofeedback test for stress using ICAP Brain Scan, and the measurement for pain and BMI was done using the Bio resonance Magnetic analyzer biofeedback device. The results were reduction in stress by 82% among subjects tested and an increased sense of well-being. The pain was reduced by 18% and the BMI was reduced by 10%.

All 12 subjects were tested at our clinic in North York, ON Canada.

The psychometric properties of the Depression Anxiety Stress Scales (DASS) were evaluated in a normal sample of N = 12 who were also administered the Beck Depression Inventory (BDI) and the Beck Anxiety Inventory (BAI). The DASS was shown to possess satisfactory psychometric properties, and the factor structure was substantiated both by exploratory and confirmatory factor analysis. In comparison to the BDI and BAI, the DASS scales showed greater separation in factor loadings. The DASS Anxiety scale correlated 0.81 with the BAI, and the DASS Depression scale correlated 0.74 with the BDI. Factor analyses suggested that the BDI differs from the DASS Depression scale primarily in that the BDI includes items such as weight loss, insomnia, somatic preoccupation and irritability, which fail to discriminate between depression and other affective states.

The factor structure of the combined BDI and BAI items was virtually identical to that reported by Beck for a sample of diagnosed depressed and anxious patients, supporting the view that these clinical states are more severe expressions of the same states that may be discerned in normal. Implications of the results for the conceptualization of depression, anxiety and tension/stress are considered, and the utility of the DASS scales in discriminating between these constructs is discussed.

The ICAP biofeedback device was used to measure stress reduction. The bio-resonance magnetic analyzer biofeedback device was used to measure pain and BMI to reflect the reduction in abdominal body fat. Blood cortisol test was used to measure stress which is inversely correlated with serotonin the happy hormone.

### **Conflict of interest disclosure:**

The author is not employed nor compensated by RichWay International or Fuji Bio Sciences the manufacturer and distributor of the BioMat and BioBelt. The company provided both the BioMat and BioBelt at no charge to conduct the case study for 12 subjects at our clinic in Toronto, ON Canada. The author has no financial interest in the company.

**Subject Selection Criteria:** 12 healthy subjects with mild to moderate stress/pain/obesity were selected to participate in this case study and signed an informed consent. Subjects with medical,

psychiatric conditions and those with heavy medications were excluded from the study. Subjects were tested using bio feedback devices before and after using the bio belt and bio mat every week and a blood test to measure cortisol levels was obtained from each subject before and after 3 months at the completion of the case study.



Figure 1. Infrared BioBelt

Research shows that serotonin, a neurotransmitter that exists in the brain also exists in the intestines; it is also well known that 90% of the serotonin exists in the small intestine. As such, our intestine uses the neurotransmitter serotonin to balance the active immune functions of our body.

There are over 500 different types and 100 trillion bacilli living inside our intestines. Among these, there exist beneficial bacteria such as bifidus and lactobacillus, and also harmful bacteria such as clostridium perfringens, bacillus and staphylococcus. Our level of immunity increases, while the increase of harmful bacteria leads to the decrease of immunity level.

By warming the abdominal region with smooth far infrared rays, the beneficial bacteria will become more active, producing Heat Shock Proteins and increasing our level of immunity.



Figure 2. The Amethyst Professional BioMat

The BioMat is a natural heating pad which lies on top of a massage table or your home mattress. It converts electricity through a computerized control panel, produced by Texas Instruments, into

Far Infrared Rays (FIR), nature's invisible light. FIR was discovered by NASA to be the safest, most beneficial light wave. This reduces pain, swelling, increases blood flow and reduce stress by increasing the secretion on serotonin.

The BioMat also produces Negative Ions, nature's energizer, which deliver a molecular level massage. This accelerates and deepens all healing and cleansing processes. It balances pH by decreasing acidity and is considered the "Master Power Switch" which activates the body's entire cellular communication system, making every body's function work better! Negative Ions alleviate allergies, migraines and sinus problems. These two components are transferred through Amethyst Quartz channels which cover the entire Professional BioMat's surface. Amethyst Quartz is nature's Super Conductor, scientifically found to offer the steadiest, most powerful delivery of healthy far infrared light waves and the highest vibrational frequencies into the body.

### **Technological devices used:**

The core of **BioMat** technology is a combination of far infrared rays [6-12 microns], negative ion effects and the conductive properties of Amethyst channels. These three powerful health stimulators are combined in a single, easy-to-use product with remarkable healing properties. The BioMat manufactured and distributed by RichWay International Inc. delivers soothing, deep-penetrating heat while stimulating the regeneration of damaged cells in the body. This highly effective therapy is now available to medical professionals and home consumers who want to improve health and well-being with products based on Nobel prize-winning scientific research pioneered by NASA and developed using pure, natural materials. The Professional BioMat is registered an FDA Medical Device #2954299.

### **Biofeedback devices** used to measure stress reduction:

**1. Quantum Resonance Magnetic Analyzer [QRMA]:** measures electromagnetic waves emitted by human bodies which represent condition of cells, tissues and organs. The data is compared with standard spectrum to detect imbalances and measure stress reduction. This biofeedback device provides the stress of vital key organs and systems. Test Results provides a range of mild [0-30], moderate [30-60] and severe stress [70-100]. This correlates with DASS [Depression Anxiety Stress Scale] the International Stress Scale.

### **2. ICAP [wireless Brain Scan EEG]**

ICAP Release Meter to measure stress zone to monitor brain imbalance & blockages & Stress. The results also correlate with DASS. The ICAP™ Release Meter System is made up of the EEG sensor, the signal transmitter, the USB base station that captures the signal, the proprietary algorithm that translates the raw data from the transmitter (Release Vector) and the visual representation of that data in the ICAP™ Release Meter software. The system also incorporates the Release® Technique, a method used to retrain the brain's responses. The device provides 3 distinct stress zones as well as an average stress score at the end of the measurement. A value of less than 500 indicates manageable stress, 500-700 medium stress and from 700 to 900 high stress. A value over 950 indicates extremely high stress.

**3. Blood Cortisol Test Results:** A cortisol test is done to measure the level of the cortisol in the blood. Normal results may vary from lab to lab. Cortisol Adult Morning = 5–23 mcg/dl; 3–13 mcg/dl evening.

**Results:**

**Table 1. Summary of Results:**

	<b>Pain Scale 0 to 100</b>	<b>Stress Scale 100 to 1000</b>	<b>Blood Cortisol level</b> [mcg/dcl]	<b>BMI</b> 15-50
Subject #1[Pre]	68	735	16	28
Subject #1[post]	48	565	12	24
Subject #2[pre]	69	834	18	31
Subject#2[post]	46	535	14	27
Subject#3[pre]	64	665	14	25
Subject#3[post]	33	465	11	22
Subject#4[pre]	57	670	16	35
Subject#4[post]	36	327	12	28
Subject#5[pre]	53	835	20	37
Subject#5[post]	37	564	13	31
Subject#6[pre]	57	565	18	28
Subject#6[post]	37	454	13	22
Subject#7[Pre]	75	650	15	27
Subject#7[post]	46	475	13	25
Subject#8[pre]	58	685	14	38
Subject#8[post]	46	470	12	31
Subject#9[pre]	82	745	16	28
Subject#9[post]	67	577	13	22
Subject#10[pre]	59	707	20	41
Subject#10[post]	45	610	14	37
Subject#11[pre]	74	725	18	35
Subject#11[post]	45	440	12	28
Subject#12[pre]	68	725	15	32
Subject#12[post]	52	512	11	24

## **Discussion:**

Subject #1 [LM] male executive mid-fifty who is on diabetes medication [metformin]. He has improved after using the BioMat/BioBelt for 3 months with noticeable improvement in his blood sugar and lower stress level as shown in his ICAP brain scan as well as his reduction in cortisol levels and BMI.

Subject#2 [MM] Male in his mid-sixty suffering from pain as a result of a car accident and taking 2 pain medications: Naproxen and Percocet (Oxycodone and Tylenol). He did notice a difference in pain reduction in the first 3 weeks and after 6 weeks, he reported better sleep and less pain and less stress. In his third month, he stopped his pain medication after using the BioMat/BioBelt. He also reported reduction in his weight and better sleep.

Subject#3 [SH] a mid-forty healthy female with no medication. She had mild knee and back pain which improved after the 3 months test on the BioMat/BioBelt. She also reported less pain and less stress as shown in her biofeedback scan, brain scan and her BMI improved.

Subject#4 [VK] healthy female mid forty with no medication but minor pain and moderate stress. She reported less stress and pain after only 4 weeks of using the BioMat/BioBelt as well as better sleep, increased libido and reduced BMI.

Subject#5 [RP] mid-life women in her early menopause who had a car accident and severe neck and back pain. Her stress was high but felt less stress after 6 weeks of using the BioMat/BioBelt. She reported less hot flashes, increased libido, less pain and better sleep. She has reduced her BMI.

Subject#6 [JK] young male in mid-thirty with mild stress and pain but no medications. He has reported better sleep and less stress after using the BioMat/BioBelt but his pain remained mild during the 3 month study.

Subject#7 [SM] young female in mid-thirty with high stress that was ameliorated after using the BioMat/BioBelt. She was using mild pain killers but stopped taking medication after 5 weeks of using the BioMat/BioBelt. She lost 2 inches from her belly with a reduction in her BMI after 3 months.

Subject#8 [PD] healthy young women in her early forty with no medication but moderate pain & stress. Her stress and sleep habits improved dramatically in her first month of using the BioMat/BioBelt. Her libido increased while her weight was reduced dramatically after 3 months of using the BioMat/BioBelt.

Subject#9 [LY] young male in his early forty with high pain and high stress. He lost 10 lbs. and 3 inches from his waist after using the BioMat/BioBelt for 3 months. His stress level was reduced and he noticed better sleep pattern with no need for sleep medication.

Subject#10 [DA] female in her mid-sixty with lots of pain and stress. She was consuming 5 cups of coffee and 2 sodas daily. Her stress was high with poor sleeping habits. She experienced chest

pain, back pain and she had made remarkable improvement after 3 months on the BioMat/BioBelt and she was advised also to change her life style habits. She modified her life style habits. All chest pain/back pain was gone and her stress was much lower. She lost few pounds and few inches and she looked a few years younger only after using the BioMat/BioBelt for 3 months.

Subject #11[CR] healthy male in his early fifty with no medications and healthy life style but very high stress and poor sleeping habits. His stress was improved after using the BioMat/BioBelt for 3 month and doing frequent exercise. His sleeping habits improved and he reported increased libido and sexual function with reduction in pain, stress and BMI.

Subject#12 [PL] female in her late sixty who takes 2 medications for pain and sleep. After using the BioMat/BioBelt for 3 months and avoiding acid foods, she lost 10 lbs. and felt much better with no medications. Her own physician was pleased with her fast progress and positive outlook. She felt less pain, stress and increased a sense of well-being including increased libido to her husband's amazement.

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It appears from the above case study that the 12 subjects received above average improvement in pain reduction, stress reduction, better sleep, less cortisol, increased libido and overall improvement particularly when they changed also their lifestyle habits. The test results from the biofeedback devices correlated well with each other as well as with the cortisol blood test results. The cortisol level may show problems with the adrenal or pituitary glands. Cortisol is made by the adrenal gland. Cortisol levels go up when the pituitary gland releases another hormone called (ACTH). Cortisol has many functions. It helps the body use sugar (glucose) and fat for energy and it helps the body manage stress. Cortisol levels can be affected by many conditions, such as physical or emotional stress, strenuous activity, infection, or injury.

Normally, cortisol levels rise during the early morning hours and are highest about 7 a.m. They drop very low in the evening and during the early phase of sleep. But if you sleep during the day and are up at night, this pattern may be reversed. Cortisol regulates energy by selecting the right type and amount of substrate (carbohydrate, fat or protein) that is needed by the body to meet the physiological demands that is placed upon it. Cortisol mobilizes energy by tapping into the body's fat stores (in the form of triglycerides) and moving it from one location to another, or delivering it to hungry tissues such as working muscle.

Under stressful conditions, cortisol can provide the body with protein for energy production through gluconeogenesis, the process of converting amino acids into useable carbohydrate (glucose) in the liver. Additionally, it can move fat from storage depots and relocate it to fat cell deposits deep in the abdomen. Cortisol also aids adipocytes (baby fat cells) to grow up into mature fat cell. Finally, cortisol may act as an anti-inflammatory agent, suppressing the immune system during times of physical and psychological stress. Cortisol directly effects fat storage and weight gain in stressed individuals. Tissue cortisol concentrations are controlled by a specific enzyme that converts inactive cortisone to active cortisol. This particular enzyme is located in adipose (fat) tissues.

Studies with human visceral (fat surrounding the stomach and intestines) and subcutaneous fat tissue have demonstrated that the gene for this enzyme is expressed more by obese conditions. It has also been demonstrated in research that human visceral fat cells have more of these enzymes compared to subcutaneous fat cells. Thus, higher levels of these enzymes in these deep fat cells surrounding the abdomen may lead to obesity due to greater amounts of cortisol being produced at the tissue level. As well, deep abdominal fat has greater blood flow and four times more cortisol receptors compared to subcutaneous fat. This may also increase cortisol's fat accumulating and fat cell size enlarging effect.

Hans Selye, a foremost stress physiologist of the 20th century defined stress as "...the nonspecific response of the body to any demand made upon it..."

Richard Lazarus, another highly regarded psychologist adds that stress is "...any event in which environmental demands, internal demands, or both tax or exceed the adaptive resources of an individual, social system, or tissue system."

In many different societies, stress is a common term that is often associated with negative situations and settings. Yet, a stress-free life may also be harmful, because an individual will lose his/her ability to react to the different challenges of life.

Every person has an optimal positive stress level referred to as eustress, while stress that is harmful is noted to be distress. People can react to a stressor in different ways. For instance, if an individual perceives the stressor as a challenge to his/her control of a situation, norepinephrine, the "fight" hormone is predominantly released. And, if the stress arousal increases and a possible loss of control are felt by the individual, then epinephrine, another "flight/anxiety" hormone is released. When the stress is prolonged and seen as hopeless, the individual becomes more distressed and feels defeated. This activates the hypothalamus in the brain. What follows is a cascade of hormonal pathways resulting in the final release of cortisol from the adrenal cortex (of the kidney).

The brain has the ability to selectively activate the fight, flight, or defeat responses. This usually occurs in day to day living when an individual perceives his/her hassles as a challenge to control or a loss of control. Although the stress pathways work together, they each can uniquely affect the function of bodily processes. For instance, the "fight" or "flight" stress responses cause the heart to beat faster and harder as well as release more free fatty acids (disassembled triglycerides) into the blood. The "defeat" response stress pathway can lead to enhanced lipogenesis (fat creation), visceral obesity (deep abdominal obesity), breakdown of tissues, and suppression of the immune system. As shown from the results of this case study, the BioMat/BioBelt has shown synergistic effect and has resulted in the stress reduction, pain reduction.

Weight reduction for the 12 subjects occurred by reducing cortisol (the stress hormone) and increasing serotonin and endorphins known as the happy chemicals in our brain. Far Infrared BioMat/BioBelt increases blood circulation and oxygen supply to damaged tissues (aiding reduction of chronic joint and muscle pain or sport injuries), promotes relaxation and comfort, induces sleep and relieves stress as shown in this case study.



Recently there have been reports detailing the hazards of exposure to certain kinds of electromagnetic fields, such as those from high-tension power lines, cell phones, or from computer display terminals. Far Infrared heating systems have been tested in Japan and found free of toxic electromagnetic fields. The Swedish National Institute of Radiation Protection has also concluded that infrared heaters are not dangerous. Instead, Japanese researchers have reported that far infrared radiant heat antidotes the negative effects of toxic electromagnetic sources.

Further research is needed to elucidate the synergistic effect of using the BioMat/BioBelt in several biological functions including the reduction of pain, stress, weight and increased libido; overall sense of well-being due to increased serotonin as well as GABA (gamma-Aminobutyric acid) and other essential neurotransmitters responsible for better sleep and reducing depression and overall stress.

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## **Biography:**

Prof. Dr. George Grant is the Canadian Pioneer of Quantum Integrative Medicine. His 36 years in the academia, government and private practice makes him a peerless expert in Stress, pain and Biofeedback. He has published in the areas of Pharmacy, Chemistry, Microbiology, Toxicology, Nutrition, Biofeedback, Stress and Natural Pain Management. Dr. Grant is an Integrative Medical Specialist, world-class professional speaker, corporate trainer, and author.

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Founder of the Academy of Wellness, 1982.

Author of 7 best-selling books, former Scientist at U of Sask. Faculty of Pharmacy/Nutrition & Professor at Seneca College in Toronto, senior consultant for Health Canada.

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Dr. Grant completed his doctorate degree from the university of Toronto, ON; Obtained a doctorate in Integrative Medicine from the Board of Orthomolecular and Integrative Medicine [BOIM].

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