HEART-RESPONSE AND THE VITAPLEX: THE CHRONOTROPIC MYOCARDIAL RESPONSE AS AN INDICATION OF THE HEALTH PROMOTING PROPERTIES OF DIMENSIONAL DESIGN'S SUBTLE ENERGY FIELD STORAGE TECHNOLOGY.

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SUMMARY

Dimensional Design LLC has developed a process for storing different types of non-Hertzian or subtle energy fields in a variety of forms which are promoted as having beneficial effects in the environment and in the human body. A particular form of stored subtle energy from Dimensional Design – the Vitaplex[*] – was found to stimulate a consistent pattern of improved cardiovascular response in a group of 23 individuals who were evaluated using heart rate variability (HRV) analysis.

The Dimensional Design literature states that: *"The Vitaplex is created with a[n]…imprinted holographic circuit which generates subtle energetic signals designed to balance the body-mind…"* To test this claim, baseline HRV measurements were compared to HRV measurements taken while individuals wore the Vitaplex. Because HRV analysis has great predictive power (discussed below), **improved HRV values would support the claim made by Dimensional Design regarding the balancing effects of their subtle energy field storage technology.**

HRV ANALYSIS

HRV analysis is based on measuring variability in heart rate; specifically variability in the intervals between R waves – "RR intervals." Two people could have exactly the same average heart rate, yet when the time period between each heartbeat is carefully measured, it can be seen that the variation of time between each beat is different for different individuals. A key advantage of HRV analysis is the method's ability to detect the early signs of development of pathological processes or the presence of a functional disorder which may not be revealed by the procedures of an ordinary physical examination.[1]

Numerous studies have now shown HRV to be an independent prognosticator of mortality. Diminished HRV predicts both death and arrhythmic events with greater sensitivity and specificity than conventional predictors.[2] Also, the reproducibility of HRV measurement is superior to those of other variables that are also known to predict mortality in survivors of myocardial dysfunction.[3] Thus, HRV is not only preferable for risk stratification studies, but also for the evaluation of the efficacy of various interventions.

[*] The Vitaplex is a "bioresonant energy pendant" which is worn around the neck.

For this study, the choice of HRV analysis to evaluate cardiovascular response while wearing the Vitaplex was significant for 3 additional reasons:

1. CONVENIENCE AND VALIDITY WITH A SHORT-TERM TEST

Recent advancements in HRV technology allow for simple experiments to be conducted objectively and in a relatively short period of time. Prior to the development of software programs which now provide HRV data in a few minutes, HRV analysis was based on 24-hour Holter recordings. The early 24-hour tests required trained technicians to complete complicated mathematical calculations in order to accurately conclude the results of the HRV recordings. Also, during 24-hour recordings, activity levels, psycho-physiological, environmental, circadian, and other factors can significantly alter HRV[4,5] and obscure comparison studies between baseline conditions and the effects of a single intervention.

Fei and Malik (1995) found a significant correlation in all the frequency components of spectral analysis of HRV between short-and long-term recordings.[6] At the time, these correlations were not strong enough for short-term HRV to replace 24-hour assessment. Presently, there is available a short-term test which demonstrates excellent agreement with the "gold standard" of 24-hour analysis;[7,8,9] CHRONOS (discussed later in this paper). This new short-term test allows for baseline and challenge tests to be performed within a few minutes of each other, avoiding the complicating factors discussed above.

2. HRV DATA NOT OBSCURED BY PLACEBO

It has been shown that there is no significant effect of placebo on HRV in normal subjects and in patients with and without cardiac failure.[10,11,12] Kleiger et al (1991) studied the whole spectrum of time-domain and frequency-domain HRV parameters in order to assess their reproducibility between baseline and placebo (i.e. when receiving placebo therapy) 24 hour electrocardiogram (ECG) recordings performed 3 to 65 days apart. The mean and standard deviations of HRV measurements were virtually identical between placebo and baseline measurements and within the studied time range.[13]

This "placebo-proof" characteristic of HRV analysis is unique in the realm of scientific experimentation. From simple "before and after" tests, a greater deal of robustness can be proclaimed regarding HRV data[14,15] as compared to other research methods which must account for the effects of placebo.

3. HRV MEASURES OVERALL HEALTH

The pattern of variability in heart rate is unique to each individual and represents a superposition of all fluctuating neurological, immunological, hormonal, and other processes that occur in a human body.[16] Subsequently, the value of HRV analysis extends to matters beyond cardiovascular function. In fact, HRV analysis may be the best indicator of the functional integrity of all physiological processes in the body, and also, the best quantifiable indicator of an individual's well-being.[17]

EXPERIMENTAL EQUIPMENT

The method of HRV analysis used in this study was developed by Hearth Rhythm Instruments, Inc. called "Nerve-Express." Nerve-Express is a PC-based system that uses proprietary power spectral technology developed and tested for over 20 years from a database of more than 20,000 patients.

Nerve-Express was compared to the "gold standard" of HRV analysis; CHRONOS. The CHRONOS algorithms were developed jointly by the Research Holter Laboratory at Columbia University and Dr. Jeffrey N. Rottman, and are the best documented algorithms for predicting cardiac death in patients with coronary artery disease.[7] The purpose of this comparison to CHRONOS (a 24-hour test) was to confirm whether Nerve-Express (a short-term test) could provide reliable data regarding autonomic tone, cardiovascular function, physical fitness, and functional capacity, in the convenience of a stand-alone, portable office system.

In the comparison report from the College of Physicians and Surgeons of Columbia University, Thomas Bigger Jr., M.D., of the Department of Medicine, Cardiology Division wrote:

> *"The results of our comparison of the Nerve-Express algorithms with the CHRONOS algorithms indicate that the values obtained with the two algorithms show excellent agreement at rest and during the postural stress of standing… [The Nerve-Express algorithms] constitute a reliable office system useful for many purposes: assessment of risk in cardiovascular disorders; assessment of physical fitness; documentation of benefit for cardiac, chiropractic, or orthopedic rehabilitation; and quantification of drug effects on the autonomic nervous system."*

THE CHRONOTROPIC MYOCARDIAL RESPONSE

Included in the Nerve-Express System is an evaluation of the transition period of the orthostatic test, called Health-Express. Health-Express provides cardiovascular response measurements, critical to general health evaluation for determining physical fitness, wellness and functional capacity. A major component of cardiovascular response is due to the chronotropic reaction of the myocardium.[18] The chronotropic myocardial reaction (ChMR) estimates the level of cardiac adaptation reserves; **or available energy for the heart muscle to perform work or to respond to habitual activities.**

According to the developer of the Nerve-Express/Health-Express system, Alexander Riftine, Ph.D., the ChMR index is the most significant portion of the data derived from the orthostatic test.[19,20] The primacy of the ChMR index has been echoed by Jeffrey Marrongelle, D.C.,[21,22] who has conducted perhaps the largest number of HRV tests in a clinical setting to date.

Many possible interpretations can be made from the data provided by the Nerve-Express/Health-Express program. Values are given for low-frequency, high-frequency and total spectral power analysis, tension index, parameters of optimal variability, heart rate, vascular compensation, and chronotropic myocardial reaction, to name a few. **When all of these values were inspected, it was the ChMR index - amongst all other HRV values - which "signaled" physiological response to the subtle energy field being transmitted by the Vitaplex.**

EXPERIMENTAL APPROACH AND RESULTS

Twenty-three (23) individuals of varying age and health status were evaluated by using 2 different test methods to determine patterns of autonomic and cardiovascular response.

The first method – already discussed in the paper – was heart rate variability analysis. For each test subject, the HRV tests were performed under 4 different circumstances; supine baseline, upright baseline, supine wearing the Vitaplex, upright wearing the Vitaplex.

Figure 1 shows the range of ChMR values graded by the Nerve-Express/ Health-Express program. As can be seen, the lower the numerical value, the greater the myocardial reaction. A higher numerical value indicates a less functional myocardium; in other words, a decrease in the heart's capacity for responding to challenge. Lower numbers are "better"; higher numbers are "worse."

# ChMR gradations	Range of Definitions
1. high chronotropic reaction	<0.53
2. normal chronotropic reaction	0.53 – 0.58
3. conditionally normal chronotropic reaction	0.59 - 0.63
4. slight decrease	0.64 - 0.69
5. moderate decrease	0.70 – 0.75
6. significant decrease	0.76 – 0.81
7. sharp decrease	> 0.81

Figure 1

From: HRI, Inc., Quantitative Assessment of the Autonomic Nervous System Based on Heart Rate Variability, (1997) p. 21

NOTE:
The actual ChMR values in the test group ranged from the "best" value of 0.52 to the "worst" value of 0.86. The percentage of change in ChMR was calculated in relationship to this range (see figure 2).

Subject number	Baseline ChMR	Vitaplex ChMR	% change
1	0.56	0.54	5.90%
2	0.52	0.54	5.90%
3	0.62	0.63	2.94%
4	0.78	0.74	11.76%
5	0.71	0.63	23.53%
6	0.70	0.73	8.82%
7	0.58	0.58	No change
8	0.53	0.50	8.82%
9	0.59	0.76	50.00%
10	0.86	0.84	5.90%
11	0.82	0.78	11.76%
12	0.74	0.67	20.60%
13	0.85	0.82	8.82%
14	0.74	0.71	8.82%
15	0.71	0.66	14.71%
16	0.70	0.66	11.76%
17	0.73	0.72	2.94%
18	0.72	0.69	8.82%
19	0.57	0.55	5.90%
20	0.69	0.62	20.60%
21	0.59	0.60	2.94%
22	0.72	0.65	20.60%
23	0.68	0.58	29.41%

Figure 2

As figure 2 shows, the improvement of the ChMR index while wearing the Vitaplex occurred in 17 of the 23; or approximately 74% of the cases. The extent to which the ChMR index improved amongst the test group on average was by more than 13%. **These findings are evidence of a primary pattern emerging via the function of heart-response, and they demonstrate the tangible nature of a beneficial energy field being transmitted by the Vitaplex.**

The second method of autonomic and cardiovascular response testing involved biofield and substance challenges via a novel clinical algorithm developed by the author. Performing this second test method allowed for particular physiological characteristics to be defined amongst the test subjects,[23] and for a more detailed interpretation of the HRV results (see comment). The description of the biofield and substance challenge testing is beyond the scope of this paper.

COMMENT

In order to confirm the effectiveness of an intervention using HRV as the tool of measurement, one would expect improved HRV values to be demonstrated over time. However, simple "before and after" HRV tests can indicate the effectiveness of an intervention if the particular physiology governing HRV is understood in greater detail and on an individual basis.

The biofield and substance challenge tests helped to determine whether individual physiology as a whole was tending toward a process of purification (detoxification), rebalancing (self-regulation), or regeneration (repair-rejuvenation). Understanding which of these physiological life cycles was occurring during the testing added meaning to the test results. The early stages in the cycle of detoxification, for example, can cause HRV values to decrease as physiology "strains" to mobilize stored toxins out of the body. This is demonstrated in the 5 test subjects whose ChMR index did not improve, even though biofield and substance challenge testing demonstrated beneficial responses in all 23 test subjects when they wore the Vitaplex.

The different results from the 2 test methods are not contradictory. The difference is merely due to some limitations which are inherent when using instrumentation to quantify a living process. (Consider how blood sugar levels, measured during the initial stages of a fast, may not indicate the benefits gained from completing the fast).

Interpreting the HRV results in the context of the physiological life cycles harnesses the complementary nature of the 2 different testing methods. The HRV tests quantified the extent to which physiology was being affected, and also revealed a predominant theme to this effect: the pattern of improved chronotropic myocardial response. In turn, the biofield and substance challenge test results were bolstered by the HRV data. In this manner, the HRV testing served as a control for the biofield and substance challenge testing, while the biofield and substance challenge testing served as a control for the HRV testing. Naturally, both tests were also controlled by their baseline readings.

This intra-test control gives additional value to the HRV results. Furthermore, improved chronotropic myocardial response in a majority of the test group warrants further research by individuals or groups who are interested in the health benefits of Dimensional Design's subtle energy field storage technology.

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