

1. DIGITAL PULSE WAVE ANALYSIS - DPA
2. HEART RATE VARIABILITY ANALYSIS - HRA

Fast, Inexpensive, Early Warning Tests for “Cardio & Vascular Disorder’s”!

Dr. Alan Miller, N.D., Technical Advisor, Thorne Research and Senior Editor, Alternative Medicine Review - “Evaluating Endothelial Function Using Pulse Wave Analysis.- Analyzing an individual's pulse wave can provide health care practitioners with valuable information that can be used for early detection of endothelial dysfunction. Poor endothelial function appears to be at the center of the atherosclerotic (arterial vessel hardening) process.” (S.N.: healthy endothelium creates the inner lining of the blood vessels).

The first test, the DPA, measures elasticity of small and large arteries and veins and provides critical information regarding arterial health, elasticity, vascular aging, weakness and stages of cardiovascular disorders. This FDA approved, non-invasive test, is a proven method of detecting whether a particular treatment option, such as pharmaceuticals, chelating therapy, supplementation, exercise, etc. for arterial and heart health, is effective. Americans spend more than \$10 billion annually on cardiovascular supplements; the use of this test can help find and reduce cardiovascular disease in the population through early detection and effective prevention therapies, and ultimately decrease the associated financial cost and human loss in relationship to vascular disorders.

Cardiovascular disease is the #1 killer in the United States with an estimated economic cost of approximately \$298 billion.

Early detection can save your life!

- Over 1,000,000 people die each year due to heart disease and related vascular illnesses.
- 60% of youth (under the age of 21) show risk factors for heart disease.
- Heart and vascular related attacks kill more people than the next 9 causes of death combined!

Digital Pulse-wave Analyzer - DPA

These evaluations are used for measurement and analysis of the vascular pulse waveform. The pulse wave is the vascular pressure change that originates from the heartbeat and transmits through out the bodies arterial supply. The wave is changed with the systolic (contraction) power of the heart beat and the vascular condition (the arterial elasticity, flow rate, resistance, etc.), followed by the pulse wave. These tests can also show blood hydration levels and left ventricular ejection pressure. The information reflects the general functional status of the cardiovascular circulation, the effectiveness of lifestyle changes and compliance with recommended treatment and therapies.

These tests uses infrared light to a fingertip and obtains arterial pulse wave information from the light absorbing characteristics of HbO₂ (oxygenated blood) flowing through the blood vessel. The terminology for this measurement method is Plethysmogram (PTG). Our DPA, performs the automatic analysis of the PTG, delivers secondary differentiated waveform (Accelerated Plethysmogram) APG analysis and heart EKG function.

The Analysis of PTG gives information of heart function, heart rate, arterial elasticity, dilations, resistance, etc. The latest update on the DPA adds analyzes of heart rate variability (HRV) from basic EKG data. The analysis of this information gives information of arterial aging, effectiveness of actual treatment therapy, development of arterial-sclerosis and hypertension, along with the adaptability of the arteries to stress.

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DPA cont.

Age related changes in the arteries are implicated in the development of cardiovascular disorders. These changes promote arterial stiffening and fatty deposits which contributes to hypertension and vascular damage. Those with the greatest amount of stiffening and thickening are at the highest risk.

The benefit of the DPA is the ability to provide early information and assessment of vascular disorders with respect to the overall cardiovascular health. Evidence shows that abnormalities in the pulsatile (pulse) characteristics of arteries occurs early in the vascular disorder process, and are associated with increased cardiovascular risk (heart attack/stroke), which can be favorably reduced by early intervention.

1,000,000 AMERICANS WILL DIE THIS YEAR OF HEART “DISEASE”. This is over seven 747's going down everyday, 7 days per week, 365 days a year, with no survivors. The estimated cost is approximately \$298 billion dollars in loss. 300,000 die per year with no prior symptoms. Thus the term heart attack is coined: “The Silent Killer”.

So what can be done to prevent this from happening?

As with all conditions: **prevention, early detection and early intervention is the key** to the best outcome. “An ounce of Prevention is worth more than a pound of the “cure” (drugs & surgery)”. Thus the more knowledge you have about your body, how it functions and how to improve it, the better the quality of your life will be.

Along with blood tests, EKG's and stress testing, the DPA/HRA which are two non-invasive tests that monitors the blood pressure wave and the strength of the blood volume that is reaching the cells that need the oxygen and nutrients, we are given another piece of critical information on the functioning of the vascular system.

How do these tests give information about the vascular system?

The tests measures blood flow wave patterns create by each of your heart contractions. These patterns are created every time your heart contracts, generating a pressure wave that helps move the blood to all cells of your body. These patterns show how strong, elastic and flexible your blood vessels are, and how well they move the blood inside the blood vessels. Ideally you want your blood vessels to have the strength of a body builder, the flexibility of a latex glove and smoothness of Teflon. Weakness, stiffness and congestion restricts the blood flow, increase the blood pressure, increase the possibility of leaks and rupture (stroke's), restrict oxygen and nutrients from getting to the cells cellular death), cause pressure problems in the kidneys (possible kidney failure), brain deterioration (Alzheimer's) and can effect the healing rate and results of all other conditions and healing therapies.

An easy explanation is the following: If the heart was a stone, the electrical activity is the arm throwing the stone into the lake, the wave that the stone makes, when it hit's the water, moves the water away from the stone in direct proportion to the power that threw the stone and the ability of the water (blood) to move. If the water is frozen (hardened blood vessels), or interfered with (arteriosclerosis) reduced, minimal or no wave is created, thus very little water (blood) movement and the harder you have to throw the stone (high heart rate/higher blood pressure) to get the water (blood) to move.

Fact: Nearly 80 million U.S. adults have CVD (cardio vascular disease). 1 in 3 Americans have one or more types of CVD. Every 36 seconds someone dies of CVD (over 2,400/day). 95% die before reaching the hospital. Heart attacks kill more people than the next 9 causes of death COMBINED.

The first test, the DPA test takes 1-3 minutes and is quick, painless and inexpensive!
Initial DPA consultation and Analysis session is: \$30, follow-ups: \$25 (Centre patients: \$25/20).
Can you spend 25 minutes out of your day that could save your life?

For additional information, see: www.greathealth-tour.com/drben

Heart Rate Variability Analysis

So what is this other second series of tests: Heart Rate Variability Analysis - HRV?

The DPA machine can also measure Heart Rate Variability (HRV). This evaluation shows the effect of the autonomic nervous system on heart rate and vascular adaptability to environmental stressors.

This evaluation takes 5 to 15 minutes, records and analyzes the heart rate and vascular changes over that time frame, as they are being influenced by the autonomic nervous system (sympathetic and parasympathetic).

The autonomic nervous system controls and regulates the automatic (involuntary) functions: heart, stomach, intestines, etc. This system is concerned with balance and maintaining homeostasis (response) control in the many organs of the body. The sympathetic part of the system speeds things up and the parasympathetic slows things down. The system prepares your body for emergencies and calms your body for sleep.

In relation to the blood and heart, the autonomic system, controls blood vessel size and pressure, heart electrical activity, and diameter of the bronchial tubes in the lungs. When it malfunctions it produces body adaptive malfunction, pre-mature aging and impairs the ability to adapt to stress.

Heart rate variability refers to the beat-to-beat alterations in heart rate. Under resting conditions, the ECG of healthy individuals exhibit periodic minimal adaptive variations in electrical activity.

Low HRV implies decreased ability to respond to changes in the environment and thus higher mortality rate in both healthy and unhealthy individuals. Thus too much consistency in heart rate (less variability) is often associated with dysfunction and disease (cardiac disease, diabetes, epilepsy, asthma, nutritional deficiencies, genetic pre-disposition, long-term alcoholism, chronic renal disease, hypertension, depression, anxiety/panic attacks, chronic pain and constipation).

High HRV is associated with over work (constant stop and go) of the heart muscle and blood vessels with resultant damage and fatigue. The DPA software analyzes changes in the heart rate waveforms, provides indices and evaluates the current body condition, activities and balances of the autonomic nervous system.

Initial HRA consultation and analysis session: \$45, re-exam/follow-up: \$35 (Centre patients: \$35/25).

For additional information, see: www.greathealth-tour.com/dr/benn

For those who want a complete analysis, DPA (\$30) & HRA (\$45), our fee is: \$75
(local area average fee => \$90-\$100).

Plan 30 minutes for the two evaluations and an additional 45 minutes, a couple days later,
to go over the results and any recommendations.

Our follow-up re-exam/consult for both tests is: \$60 (\$25+\$35), (local area fee's => \$75).

For those who are patients of the Centre, there is a \$15 multi-procedural discount when both tests are done on the same visit, making the initial fee: \$60 and \$45 for follow-up evaluations.

The Doctor will review the results and make recommendations and
an Centre assistant will present the test results and recommendations to you.

We recommend a follow-up evaluation after the first month interval, to make sure our recommendations are working, then every 3 months for the first year,
or until your results are holding at the level you want, then re-evaluation once a year.

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CARDIO-VASCULAR HISTORY

Case #: _____

This short questionnaire is designed to help determine pre-existing circulation factors. Scientific research has proven that prevention is the best “medicine” when it comes to reducing health problems. By doing screening and early intervention you can reduce the cost of a possible CVD “Cardio Vascular Disorders”. Our care deals with structural care, but without proper blood supply, the structure will not repair well and the condition will become more chronic and debilitating, circulation is extremely important!

Name: _____ Date: _____

Birth date: _____ Age: _____ Height: _____ Weight: _____ Resting Blood pressure: _____.

Do you have any Heart or Circulation problems, that you know of?: Yes No. If Yes, please explain:

_____.

Have you had any chest pains or tightness, shortness of breath without reason, exertion pain, sharp pain into the left arm, neck or chest? Yes No. If Yes, please explain: _____

_____.

If yes, have you reported or had this checked out by a physician? Yes No

Is there a family history of Heart or Circulation trouble? Yes No

Are your parents still alive? Yes No. If no, how old were they when they passed? F _____ M _____.

Did they have heart problems? Yes No.

Do you have any brothers or sisters whom have had circulation related problems? Yes No.

If yes, at what age? _____.

Do you smoke? Yes No. If yes, how much and how often? _____.

Do you drink more than 4 mixed drinks/week? Yes No. If yes, how much? _____.

Do you drink Beer or wine? Yes No. If yes, how much and how often? _____.

Do you exercise routinely? Yes No. If yes, how often and how long? _____.

What exercises do you do? _____.

Are you on blood pressure medicine? Yes No.

If yes, what is your blood pressure before the medication? _____.

What is your blood pressure after the medication? _____ What is your heart rate? _____

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DPA cont

Do you eat more than 3 ounces of meat/day, or more than 12 ounces of milk/day? Yes, No.

Do you have kidney problems? Yes, No. If yes, are you on dialysis? Yes, No.

Do you carry a lot of fat around your chest or abdomen? Yes, No. Over weight? Yes, No.

If you are over weight, are you on a diet? Yes, No. If yes, describe: _____

_____.

If not on a diet, would you be willing to start one? Yes, No. How much & where do you want to lose?:

_____.

Do you take any vitamins? Yes, No. If yes, what: _____.

How much water do you drink daily?: _____

Do you walk at least 2 miles/day? Yes, No.

Can you do 20 minutes of an exercise program daily/ 2 hours per week? Yes, No.

Are you under a lot of stress at home, work, family life, social life? Yes, no.

Do you have a family physician? Yes, No. Can we share your results with him/her? Yes, No.

If yes, Name: _____ Fax #: _____.

Have you ever had a month infection needing antibiotics? Yes No If yes, when:

_____.

Patients Signature: _____ Date: _____.

_____ **For office use only**

Consultation Notes: _____

Interviewer: _____ Date of exam: _____.