



INTERNATIONALE GESELLSCHAFT FÜR ELEKTROSMOG-FORSCHUNG IGEF LTD
INTERNATIONAL ASSOCIATION FOR ELECTROSMOG-RESEARCH IGEF LTD
IGEF CERTIFICATION

EXPERT OPINION

for the biophysical investigation of the

Omnia Radiation Balancer Sticker (ORB Sticker)

Omnia Radiation Balancer Pendant (ORB Pendant)

regarding the protective effect against electromagnetic radiation
exposure e.g. from mobile phone, tablets, WLAN,
DECT cordless phones and smartwatch

Client:

Omnia; 108a Panorama Road, Poole GB

Date of the report: October 14, 2021

1.0 Problem definition

The versatile use of modern technology is not possible without electric current and high-frequency electromagnetic radiation. Extensive facilities have been created for the generation and distribution of electrical energy; power plants, transformer stations, high and medium voltage lines, supply cables - all the way to our domestic installations. This low-frequency network for power supply generates electrical and magnetic fields and thus a substantial part of the electro-magnetic environmental pollution, generally referred to as electro-smog. Electrical and electronic products also generate electrosmog.

Powerful transmitters emit electromagnetic waves for mobile radio, radio and television, radar, military surveillance, data transmission, directional radio, etc.: high-frequency electrosmog that has become unavoidable. And we are only at the beginning of a development that will create more and more applications of wireless communication. In addition to cell phones and indoor antennas, there are notebooks and computer networks that transmit their information by radio waves.

And almost half of all houses use cordless telephones based on the DECT standard, which emit pulsed microwaves into surrounding apartments and buildings around the clock - even when no phone calls are made. The worldwide expansion of fifth generation telecommunications - the 5G network - will greatly increase exposure to electromagnetic fields in the high-frequency range everywhere.

At the end of May 2011, the World Health Organization WHO classified high-frequency radiation as "potentially carcinogenic". This was the conclusion reached by a group of experts from the International Agency for Research on Cancer (IARC) in Lyon. In Lyon, 31 experts from 14 countries had evaluated "almost all available scientific evidence".

Exposure to high-frequency electromagnetic radiation leads to insufficient sleep quality, loss of vitality, headaches, tinnitus, poor concentration, reduced mental and physical resilience, and increased stress on the cardiovascular system. According to the results of international research, the list ranges up to serious diseases such as increased risk of cancer, genetic changes and changes in the immune system and central nervous system.

The typical technical radiation level of communication radio in cities today exceeds the natural vital electromagnetic background radiation by ten million up to a billion times. This development has led to the fact that we are all constantly exposed to electromagnetic environmental pollution at every location, which has never been seen before in this type and intensity. The danger of this new type of environmental pollution is due to the fact that our body's own information system also works with natural electromagnetic signals - though at an energy level that is millions of times lower! The flood of technical electromagnetic fields and radiation therefore causes a variety of biological disturbances in nature as well as in animals and humans by introducing electromagnetic signals into the natural living environment as well as into the information system of our cells, body systems and organs.

The approximately 100 trillion cells of the human body communicate with each other by means of complex, low-frequency electromagnetic signals. In this way, information is transported that in turn leads to biochemical reactions in the cells. If a body is constantly exposed to artificial electrical, magnetic, or electromagnetic radiation, this cell communication can be severely impaired or interrupted, leading to a disrupted metabolism and ultimately to disease.

One only has to imagine the chaos that arises when the communication channels in a big city break down. In the body, a very similar chaos breaks out in cells, when the communication channels no longer function and thus biochemical processes are disturbed. The work of cells is impaired, the cell membrane hardens, nutrients can no longer get in, and toxins can no longer get out.

Every person reacts differently to the electro-magnetic stresses that occur in their environment. This depends on the intensity and duration of the frequencies and modulations that occur and the resulting individual combined effects. It also depends on their predispositions, previous illnesses, pre-existing health conditions, immune status, and the ability of the person's organism to compensate for any stress as well as their resistance to external influences.

In spite of the health risks of high-frequency electromagnetic radiation seen in extensive research results, one can no longer imagine our society without electronic and electro-technical products such as cell phones and the required mobile radio transmitters. It is therefore understandable that those affected think about how they can better protect themselves from the effects of electromagnetic radiation.

The aim of this study was to investigate whether and to what extent the >ORB Sticker< and the >ORB Pendant< are suitable for protecting against the harmful effects of high-frequency electromagnetic radiation.

2.0 Explanation of the choice of measurement method and analysis system

The vegetative nervous system dynamically controls the inner balance of the organism, depending on current external and internal stress. The heart reacts to consciously perceived stimuli as well as to stimuli that are not perceived consciously, such as those that emanate from surrounding electromagnetic radiation on the vegetative nervous system. The heart rate variability of healthy people is mainly based on the optimal interaction of the sympathetic and parasympathetic components of the autonomic nervous system.

All rhythms of life are reflected in the heartbeat. If these rhythms are in harmony, in coherence, then we feel well. The measurable main variable of this information chain is heart rate variability (HRV) as the most important parameter for the exact assessment of well-being and vitality.

Heart rate variability is the ability of an organism (human, mammal) to change the frequency of the heart rhythm. Even at rest, changes in the time interval between heartbeats occur spontaneously. A healthy organism uses autonomous physiological regulatory pathways to constantly adjust the heart rate to current requirements. It is well known that physical strain or psychological stress usually results in an increased heart rate, which usually decreases again when the body is relieved and relaxed. A higher adaptability to stress is shown by a greater variability of the heart rate. Under chronic stress load, however, both are more or less restricted and consequently reduced due to the constant high level of tension.

The nervous system usually recognizes weakening or damaging effects, such as mobile phone radiation and electrosmog, as a vital threat. If the organism is permanently exposed to disruptive fields, these stress parameters cannot normalize and thus lead to a reduction of heart rate variability; i.e. the adaptability of the organism to changing parameters of the environment is reduced. This relationship makes it possible to demonstrate the protective effect of a product or measure by measuring heart rate variability.

The spontaneous excitation of the vegetative nervous system by high-frequency electromagnetic radiation and electrosmog is usually far below the threshold value that can be physically perceived. However, the sensitive measuring technology of modern diagnostic systems detects even the smallest reactions of the control of the vegetative nervous system, in particular via the parameters of heart rate variability. Scientific research has confirmed the reproducibility of the results of modern measuring devices for heart rate variability even over short examination periods.

Therefore, the measurement of heart rate variability was chosen as a diagnostic system for analysing the vegetative nervous system in order to investigate whether the >ORB sticker< and the >ORB Pendant< leads to an improvement of heart rate variability in the test subjects, and thus can contribute to an increase in the individual adaptability of the biological system to increasing electromagnetic radiation loads.

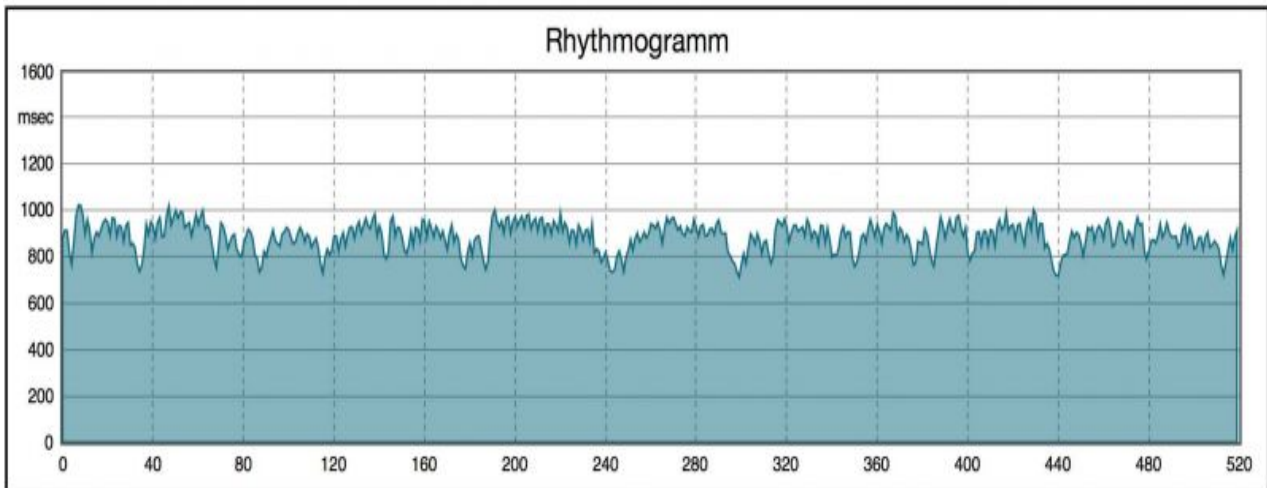
3.0 Testing of the >ORB sticker< and the >ORB Pendant< with regard to the protective effect against electromagnetic radiation exposure, e.g. from mobile phone, tablets, WLAN, DECT cordless phones and smartwatch using the VNS analysis system of COMMIT, D-38704 Liebenburg

For the study documented here, the >ORB sticker< and the >ORB Pendant< was tested on 12 subjects of both sexes aged between 17 and 85 years in different living and working situations. Measurements were first taken without the use of a >ORB sticker< and the >ORB Pendant< and then again a few days later using a >ORB sticker< and the >ORB Pendant<.

The present study recorded the change in physiological signals of the test subjects as feedback from the vegetative nervous system to the bioenergetic information of the

>ORB sticker< and the >ORB Pendant< by measuring the heart rate variability and analysed it using mathematical-statistical methods. The vegetative nervous system consists of two main nerves that control and regulate our entire body. The sympathetic nerve, the tension nerve, and the parasympathetic nerve, the relaxation nerve. These two nerves control our heartbeat, blood pressure, hormonal and immune system, digestive activity, sexual organs, muscle tone, etc.

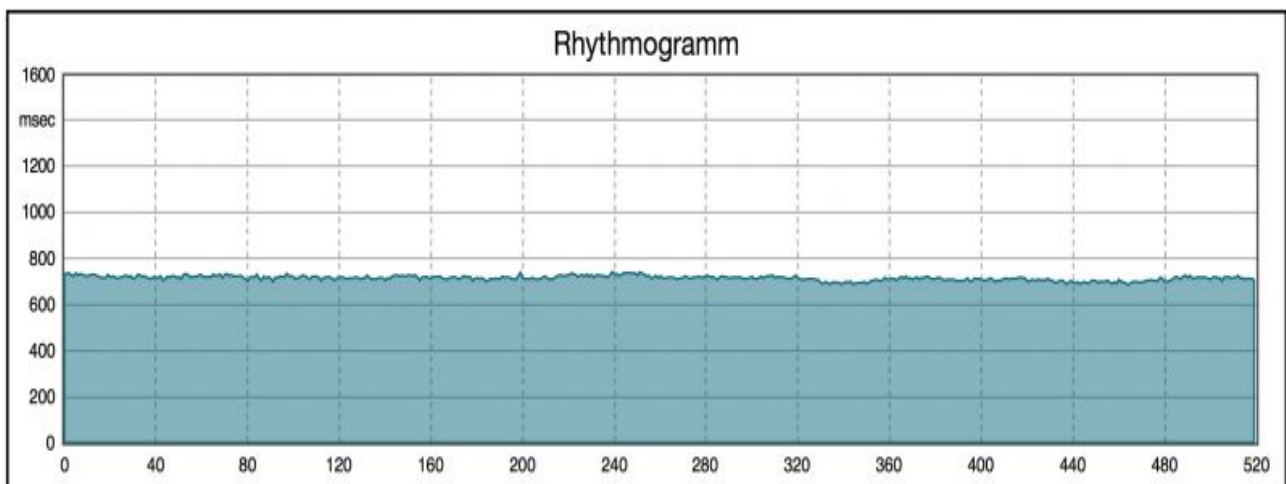
Optimal regulation of the heart rate Rhythmogram



The rhythmogram is the basis for measuring the vegetative nervous system.

It records heart rate variability. The more variable the individual distances are during the measurement, the more variability can be seen in the rhythmogram. This variability is a sign of adaptability. It shows that the vegetative nervous system is able to adapt to internal and external stimuli.

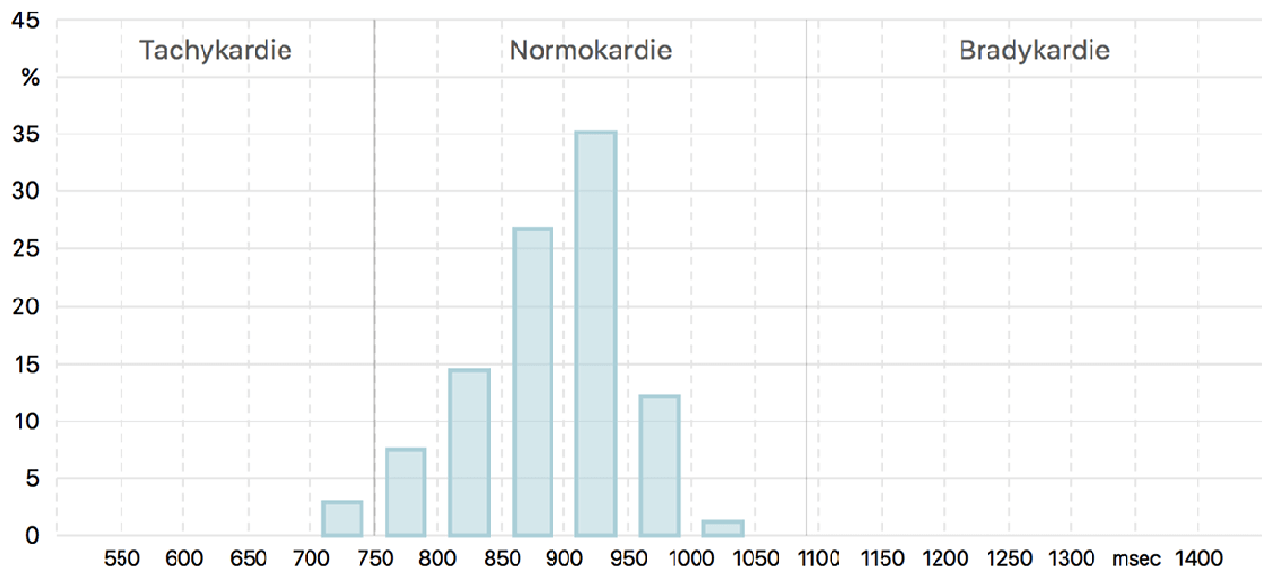
Restricted regulation of the heart rate



Disturbances of neurovegetative regulation are expressed in this measurement in a low or lacking adjustment of heart rate to respiration.

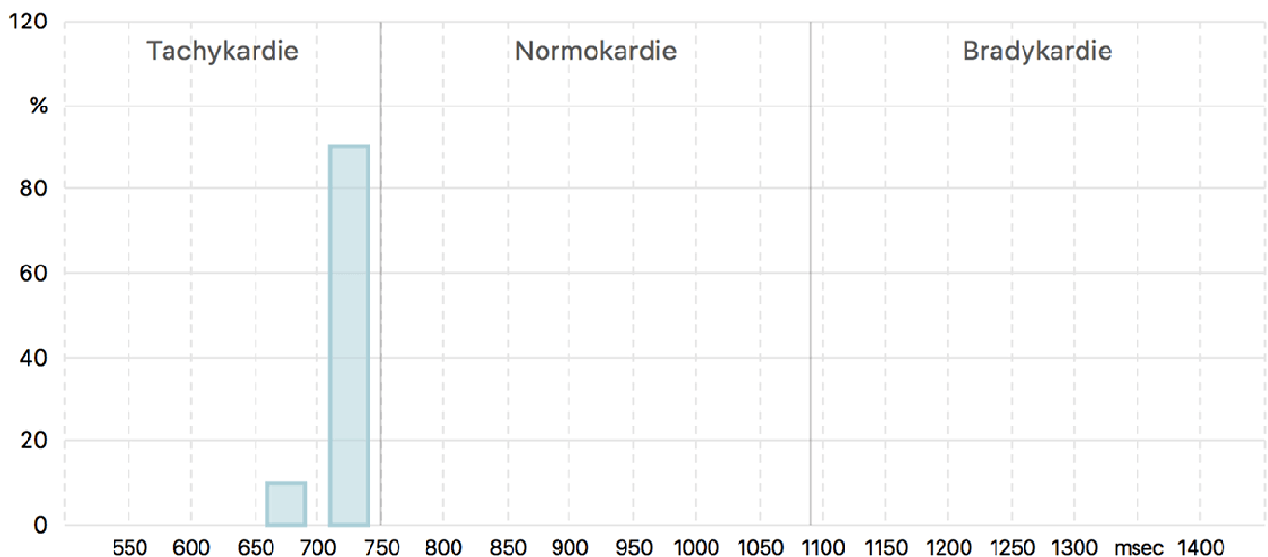
Good heart rate variability

Histogram



Poor heart rate variability

Histogram

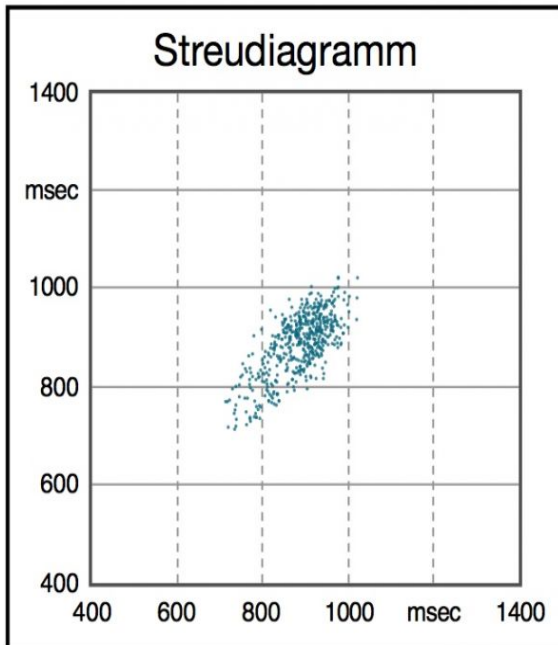


Histograms are another way of displaying the recorded heart rate variability.

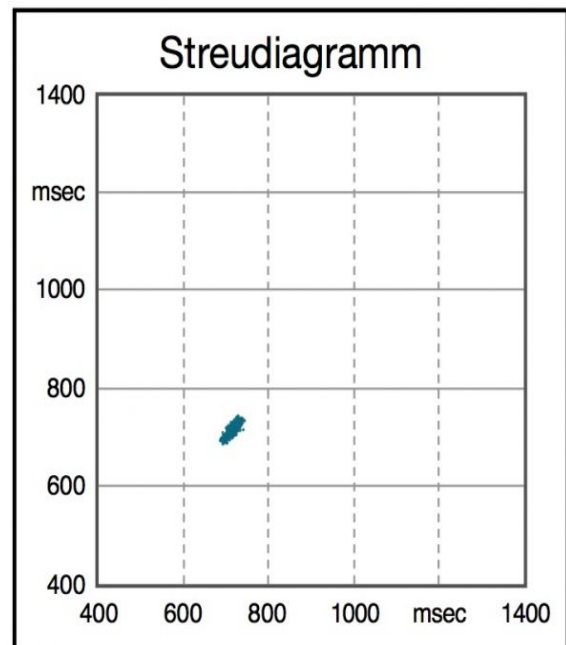
Histograms split the measured RR distances into fixed time ranges, e.g. 900 ms - 950 ms etc. The percentage frequency of the values in a time range is reflected in the height of the bar. The more bars there are over the width, the more variable the heart beats, the better the autonomic nervous system can regulate.

On the other hand, if only one or two bars are displayed, this means that the measured RR intervals are almost identical. Accordingly, the heart goes full throttle to be efficient. It does not adapt individually.

Good heart rate variability



Poor heart rate variability



Scatter plot can be used for a different representation of heart rate variability.

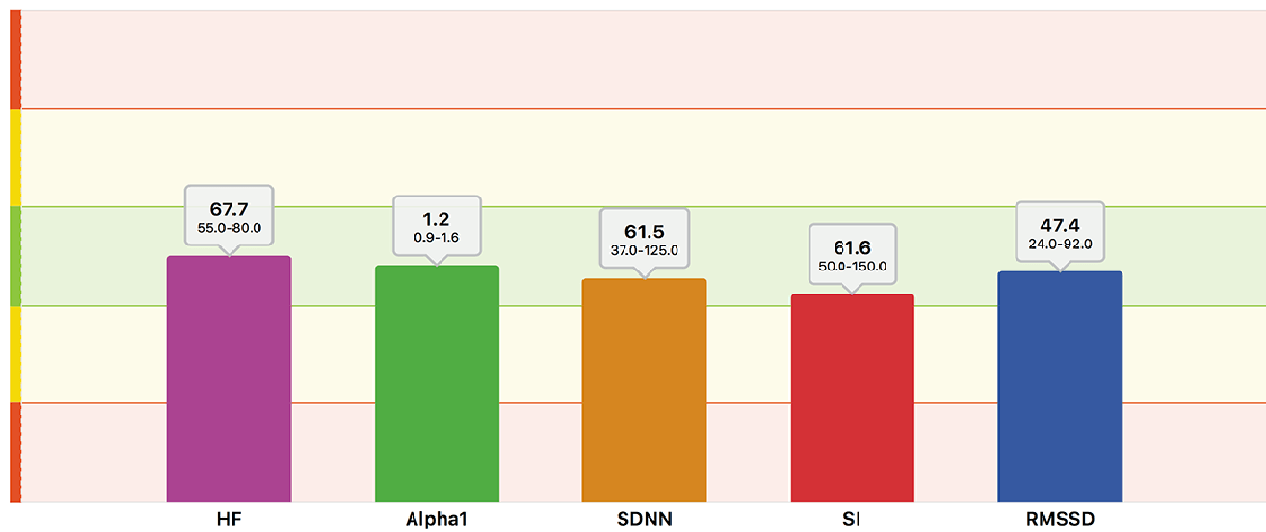
One point in the coordinate system results from two adjacent RR-intervals. The first value is plotted on the X axis and the second on the Y axis. Thus a point in the scatter diagram results from these two values.

The larger the scatter cloud is, the more variable the heart beats, the better the vegetative nervous system can regulate. A highly condensed cloud means that the heart always beats evenly and can no longer adapt individually.

Ideally, the scattered cloud resembles an ellipse. Other cloud shapes permit allow conclusions to be drawn about possible rhythm disturbances.

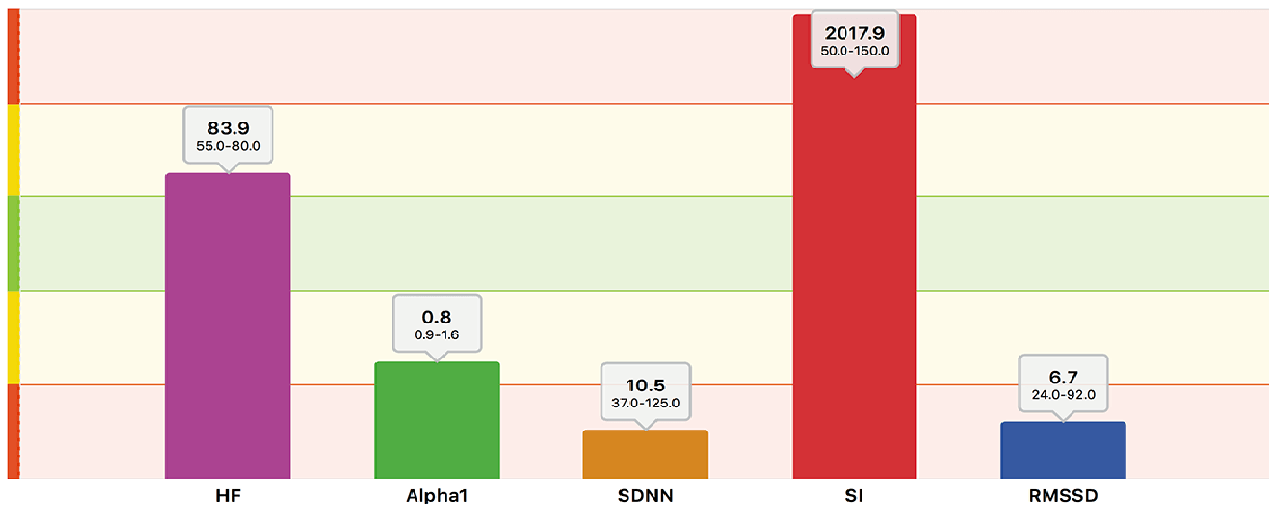
Good vegetative regulation

Main parameters of VNS analysis



Bad vegetative regulation

Main parameters of VNS analysis



Explanation of VNS parameters:

HF Heart rate

Rhythmograms form the basis for measuring the vegetative nervous system. It records heart rate variability. Rhythmograms record every single time interval from heartbeat to heartbeat in milliseconds (RR interval) and connect them with a line. A total of 520 RR intervals are recorded on the X-axis.

The duration of the respective heartbeat is displayed on the Y-axis. The more variable the individual RR intervals are during the measurement, the more variability can be seen in the rhythmogram.

This variability is a sign of adaptability. It shows that the autonomic nervous system is able to adapt to internal and external stimuli. The variable heartbeat is used to check whether the autonomic nervous system is able to change the heartbeat according to the situation.

Alpha 1

The alpha 1 value is an additional risk parameter and indicates the quality of regulation. At best, it should be in the green range. The higher it rises, the more compensation processes take place in the body.

SDNN

The SDNN is the standard deviation, i.e. the total variability. The higher the SDNN, the greater the variability, the better the adaptability of the autonomic nervous system. The lower the SDNN, the lower the variability and thus vegetative regulation is restricted.

SI

Stress index, tension nerve, sympathetic nervous system.

RMSSD

Parasympathetic / relaxation nerve. In the resting state, the blue bar should be activated and rise up to the green area. If this is not the case, and the body tension clearly predominates, we speak of a regulatory disorder depending on the result (light, medium, severe, regulatory blockage).

The traffic light colours in the background are backed with standard values from worldwide literature. The values in brackets indicate the normal range. The values above the bars are the values measured during the measurement.

Conclusion: The protective effect of a product against high-frequency electromagnetic radiation exposure can be recognized by whether its use leads to an improvement in heart rate variability (HRV). If possible, all parameters should be in the green normal range or approach the green range.

4.0 Measurement Results

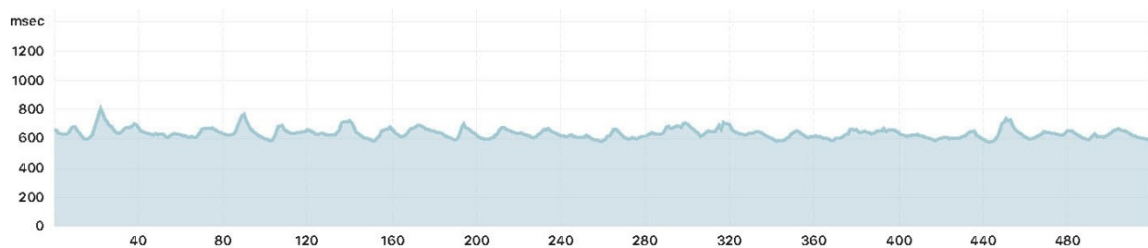
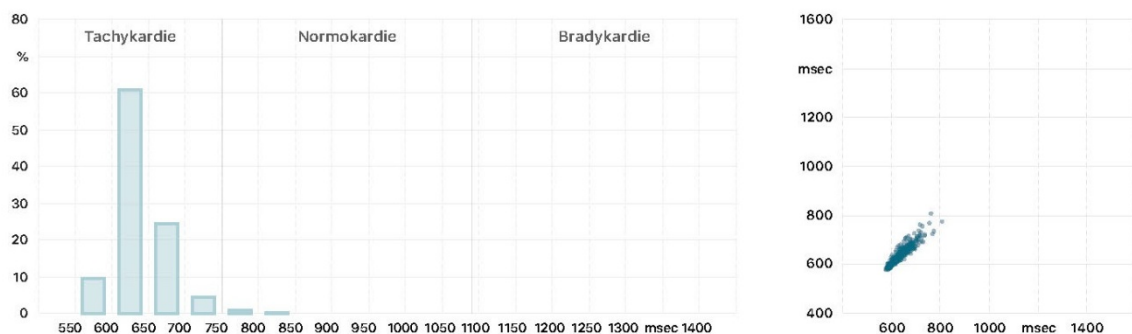
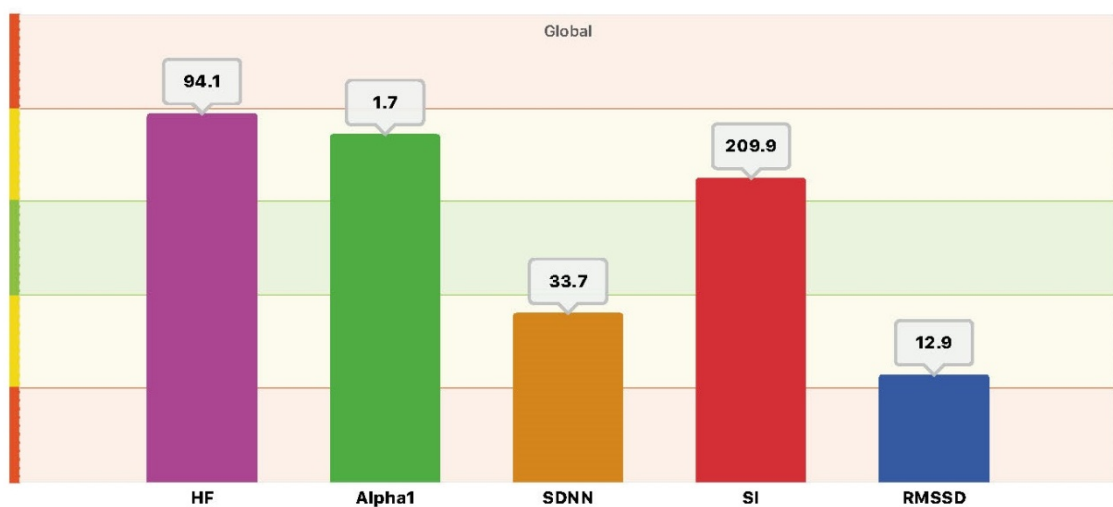
Test person 1

Regulation of the heart rate without using the >ORB Sticker<



Information about the test person: female, 44 years

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate is considerably limited before using the >ORB Sticker<.

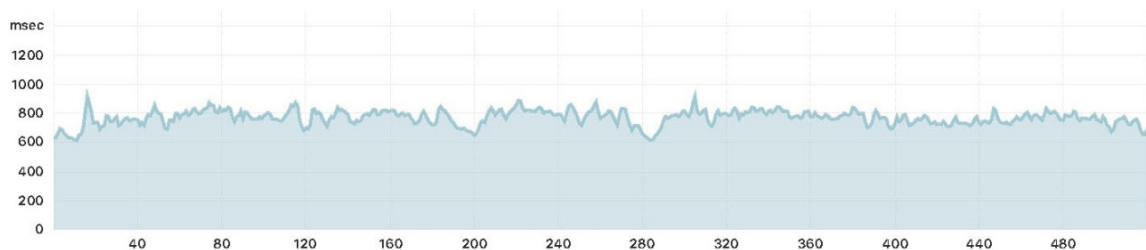
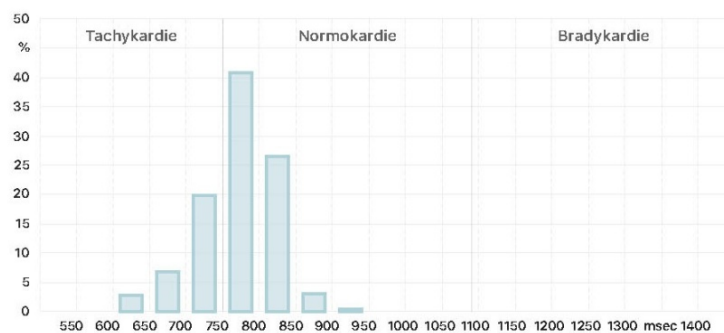
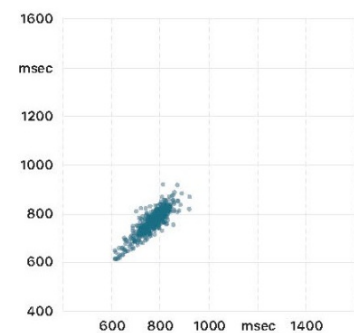
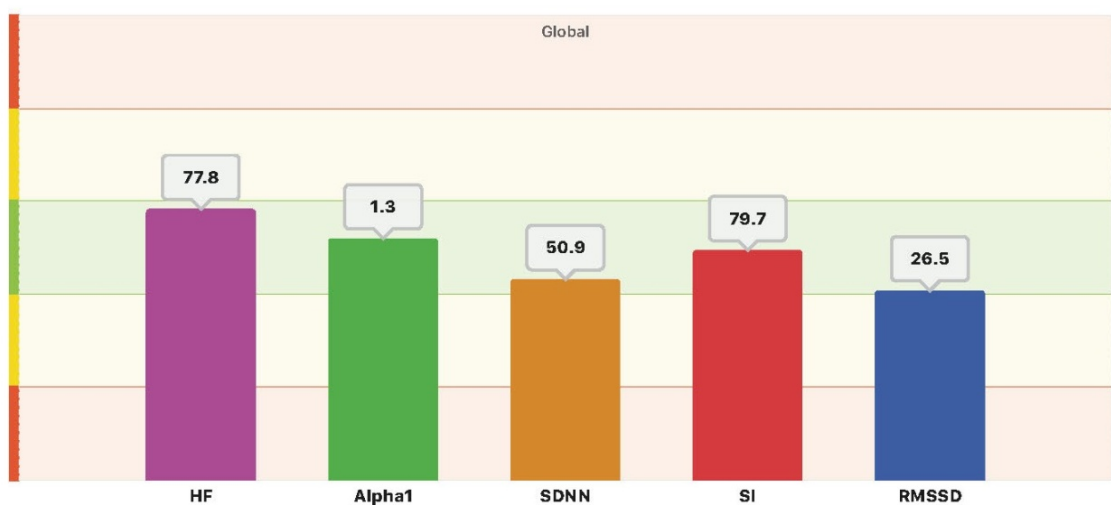
Test person 1

Regulation of the heart rate when using the >ORB Sticker< after 10 days



Information about the test person: female, 44 years

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate is already significantly improved after 10 days of using the >ORB Sticker<.

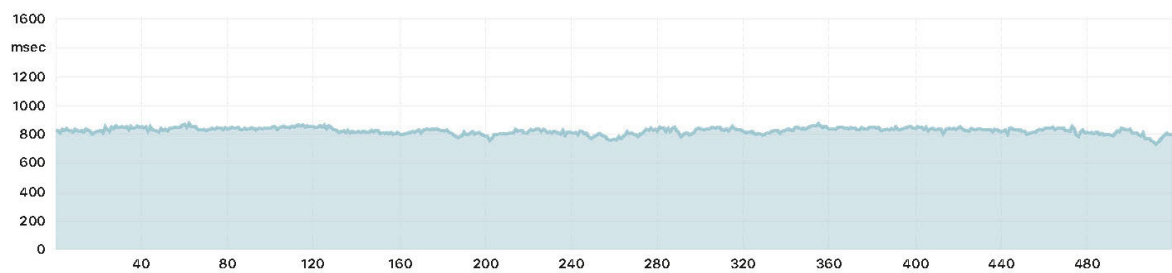
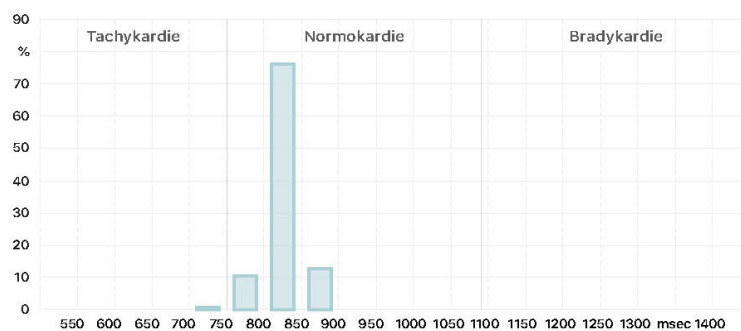
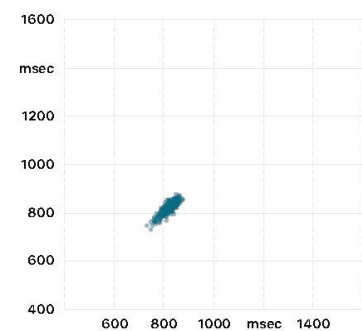
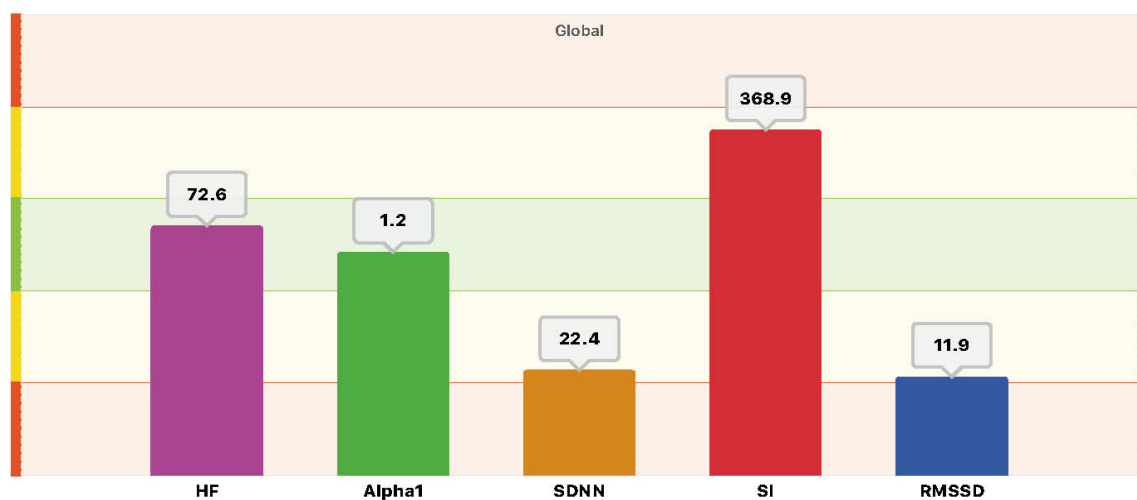
Test person 2

Regulation of the heart rate without using the >ORB Sticker<



Information about the test person: male, 38 years old

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate is considerably limited before using the >ORB Sticker<.

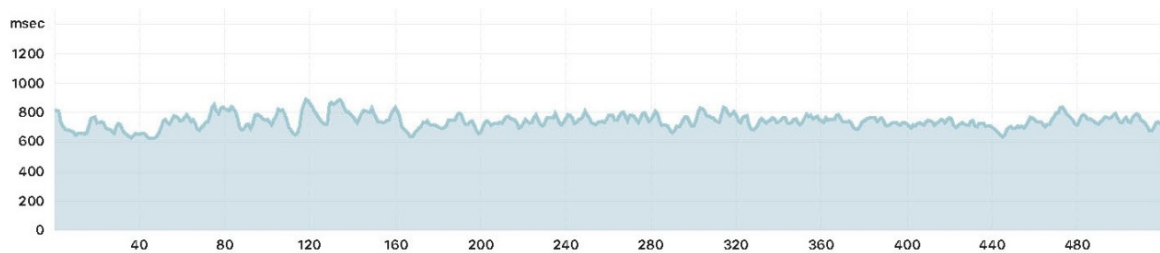
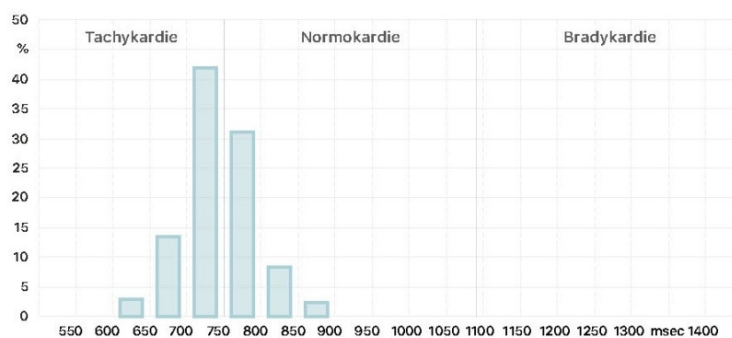
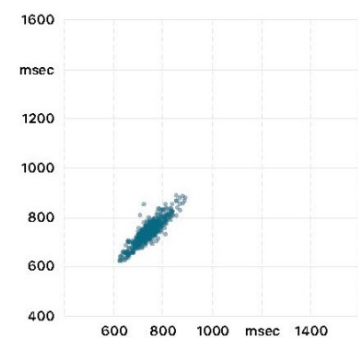
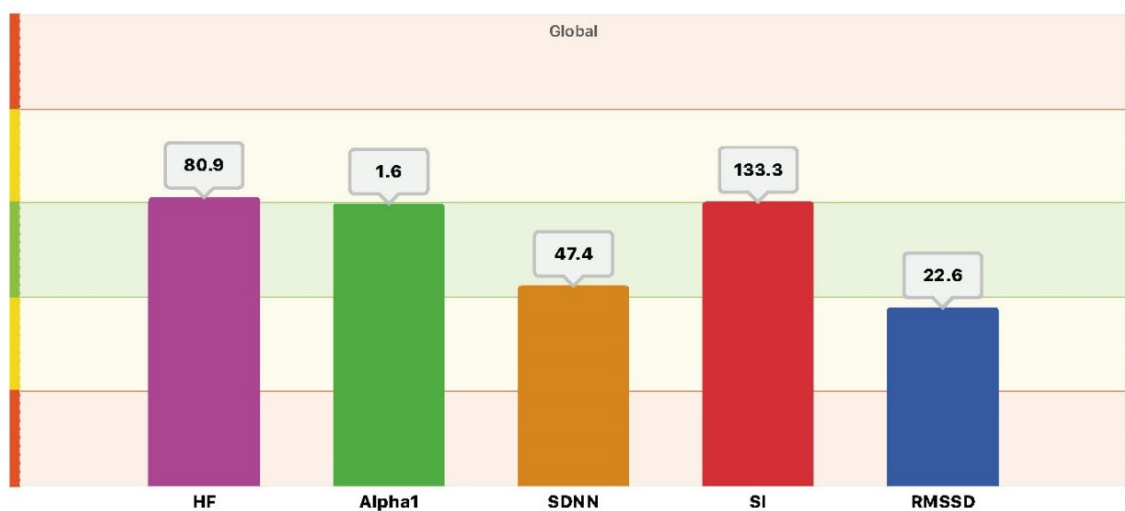
Test person 2

Regulation of the heart rate when using the >ORB Sticker< after 4 days



Information about the test person: male, 38 years old

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate improved significantly after using the >ORB Pendant< for 4 days.

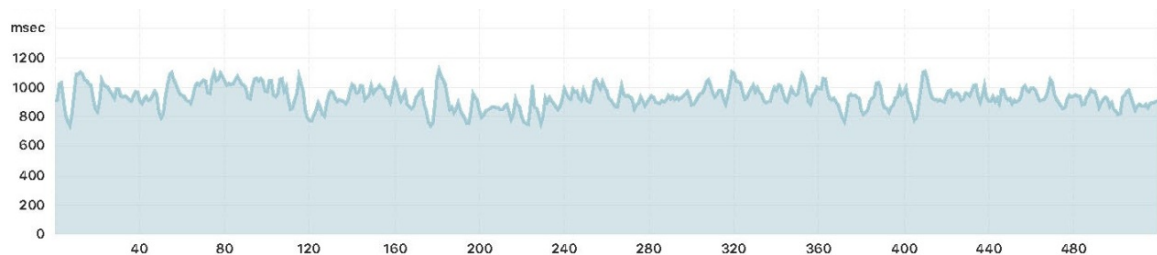
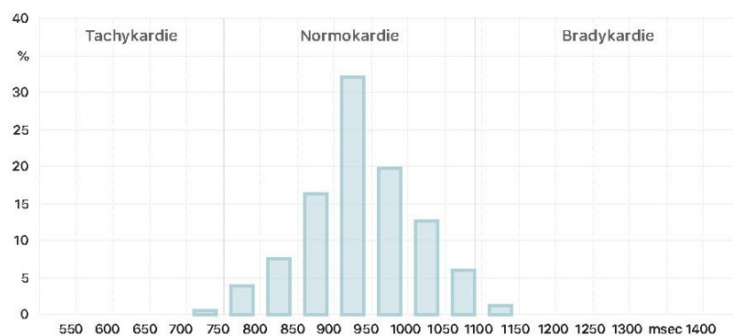
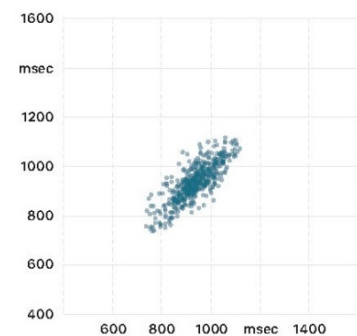
Test person 2

Regulation of the heart rate when using the >ORB Sticker< after 10 days



Information about the test person: male, 38 years old

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate was significantly improved after using the >ORB Sticker< for 10 days and is now within the green range for all parameters.

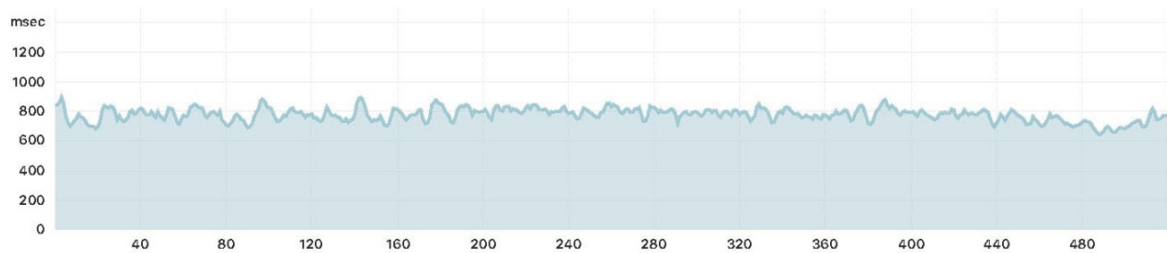
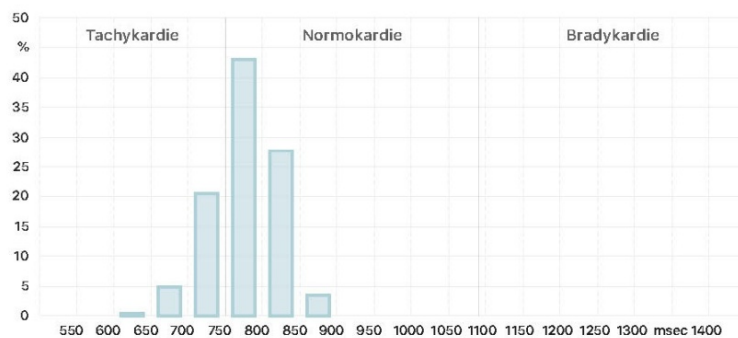
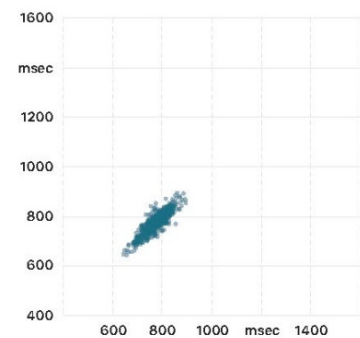
Test person 3

Regulation of the heart rate without using the >ORB Sticker<



Information about the test person: male, 85 years old

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate is somewhat limited before using the >ORB Sticker<.

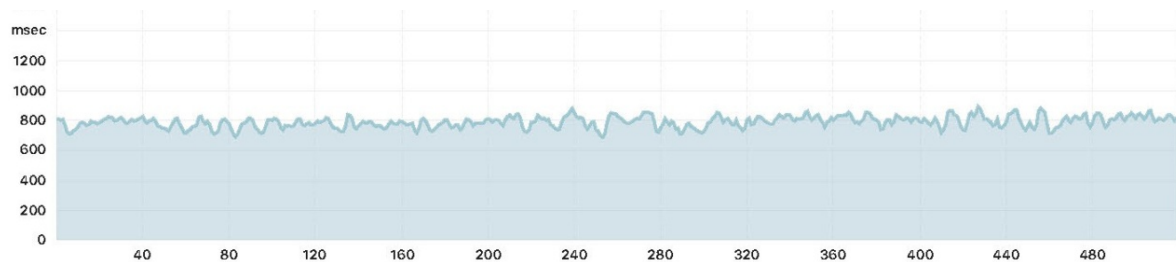
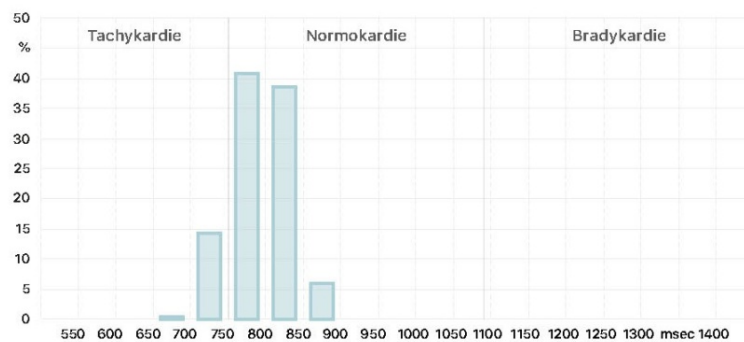
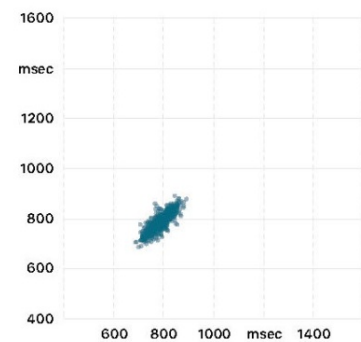
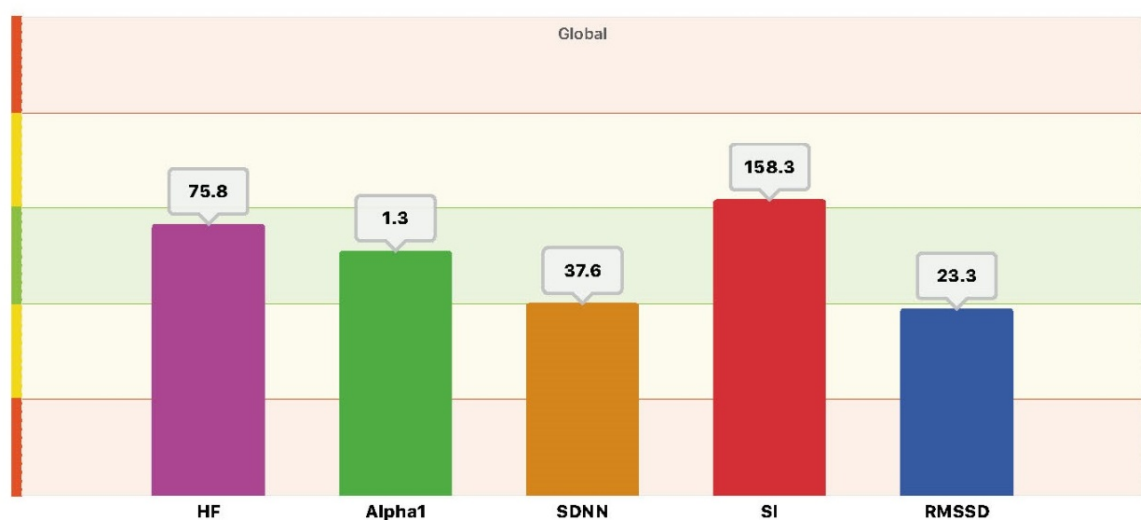
Test person 3

Regulation of the heart rate when using the >ORB Sticker< after 3 days



Information about the test person: male, 85 years

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate has hardly changed after using the >ORB Sticker< for 3 days.

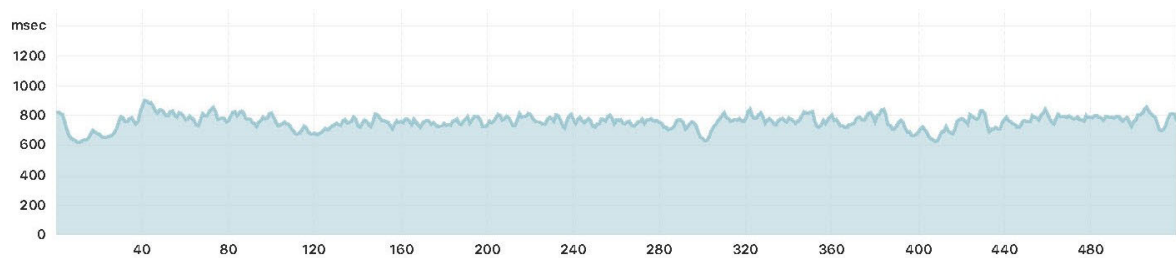
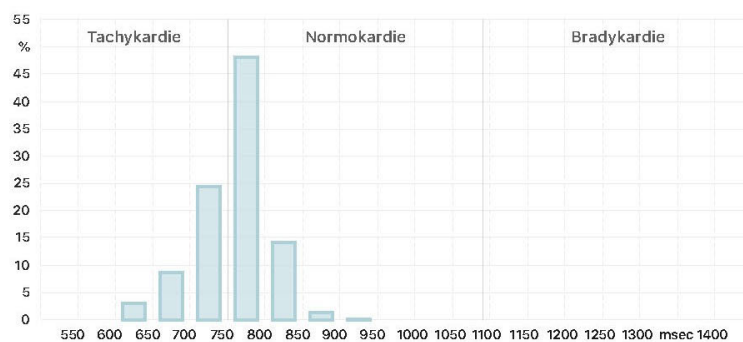
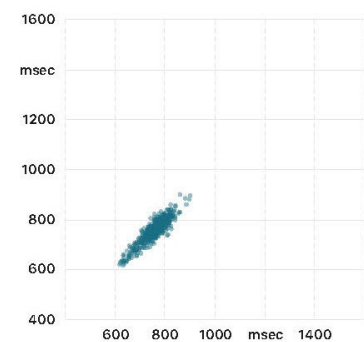
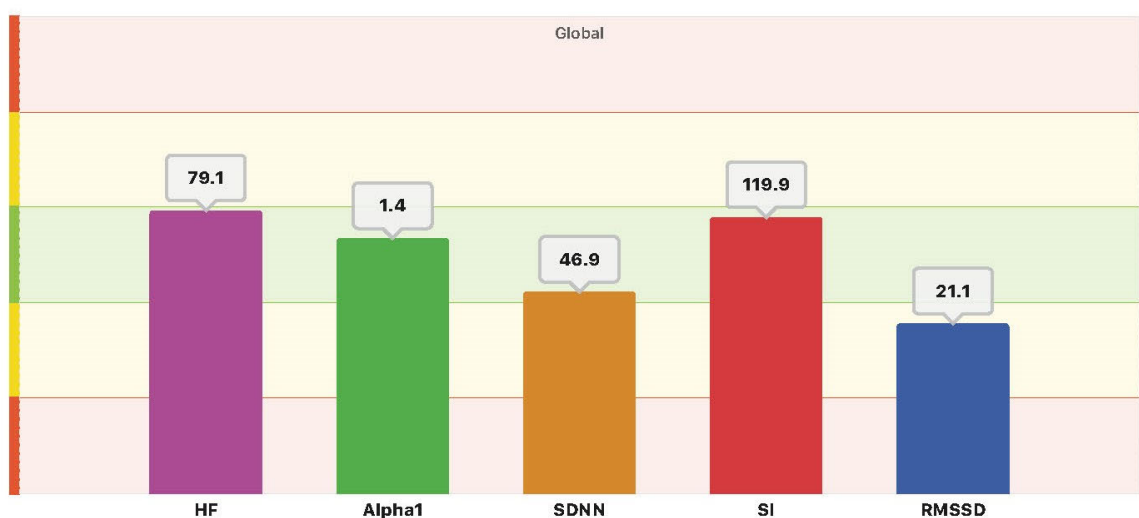
Test person 4

Regulation of the heart rate without using the >ORB Sticker<



Information about the test person: female, 72 years

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate is somewhat limited before using the >ORB Sticker<.

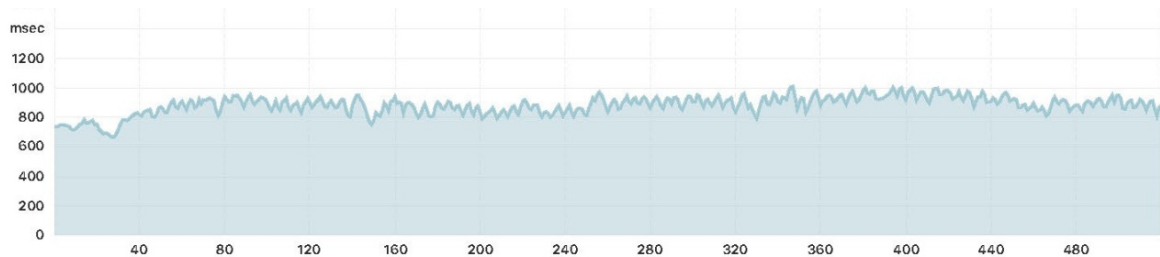
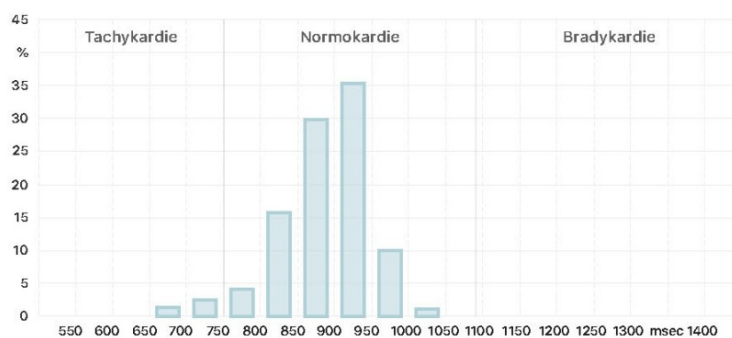
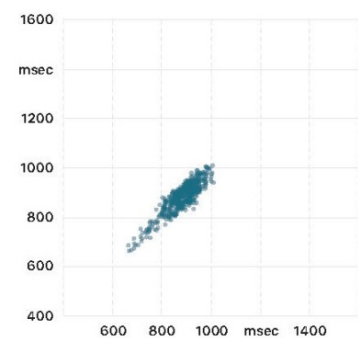
Test person 4

Regulation of the heart rate when using the >ORB Sticker< after 8 days



Information about the test person: female, 72 years

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate was improved after using the >ORB Sticker< for 8 days. All parameters are now in the green area.

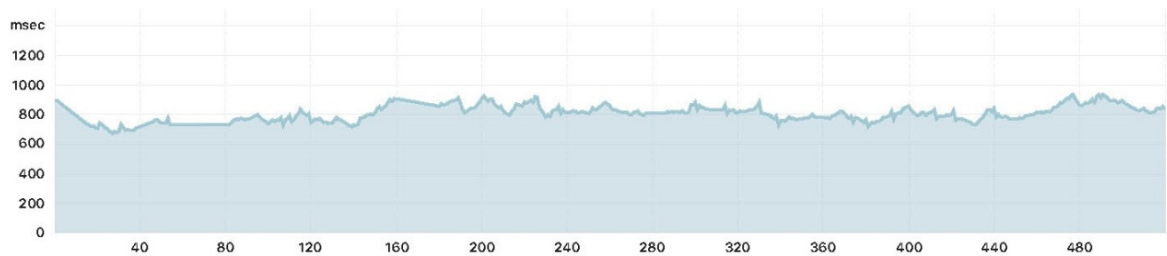
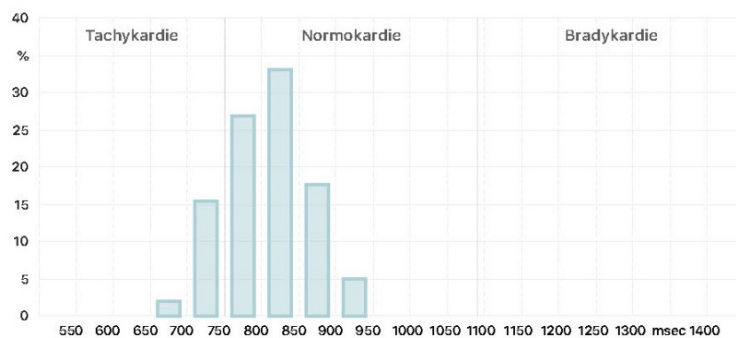
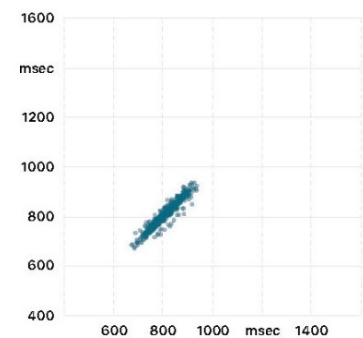
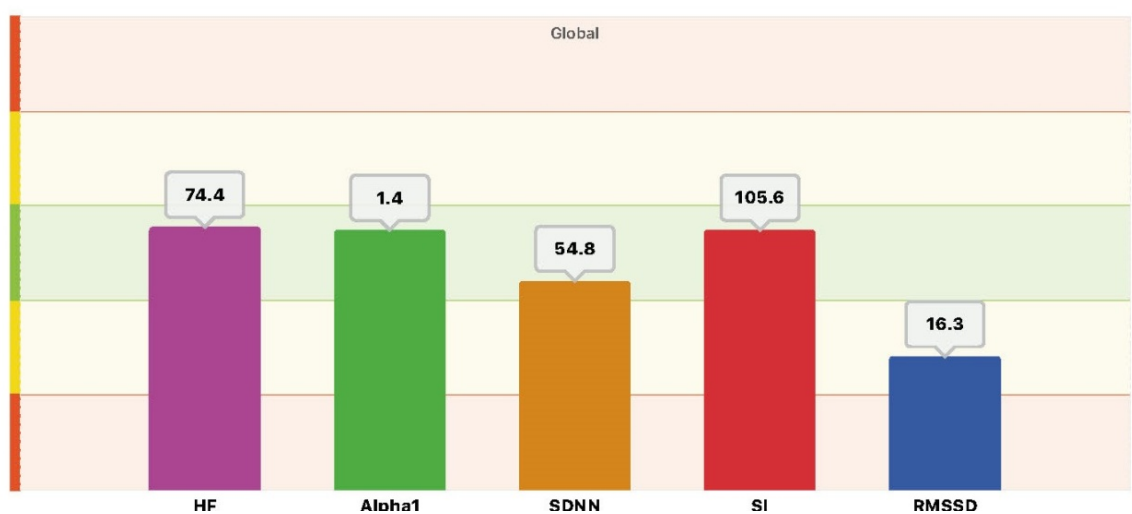
Test person 5

Regulation of the heart rate without using the >ORB Sticker<



Information on the test Person: female, 26 years

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate is clearly limited before using the >ORB Sticker<.

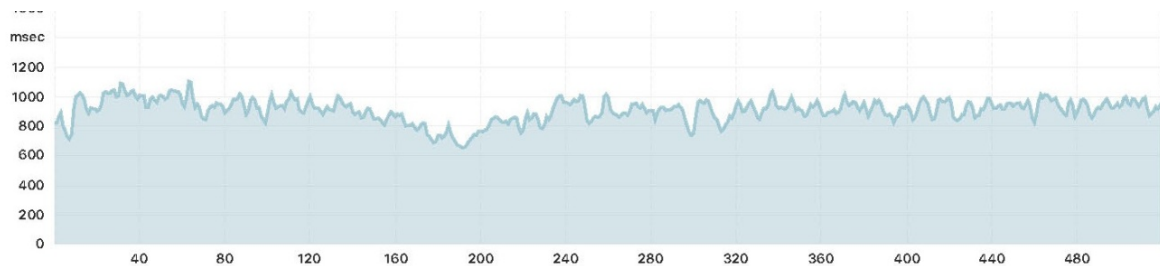
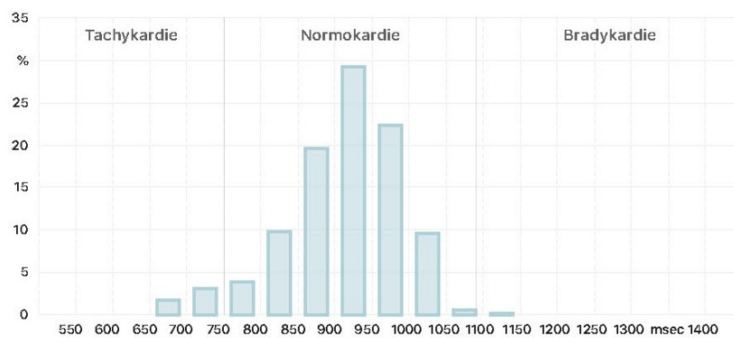
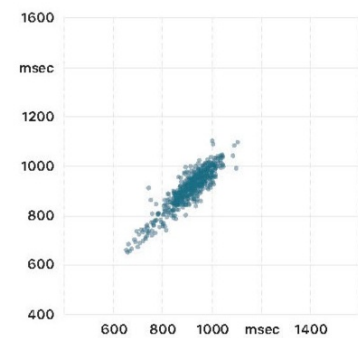
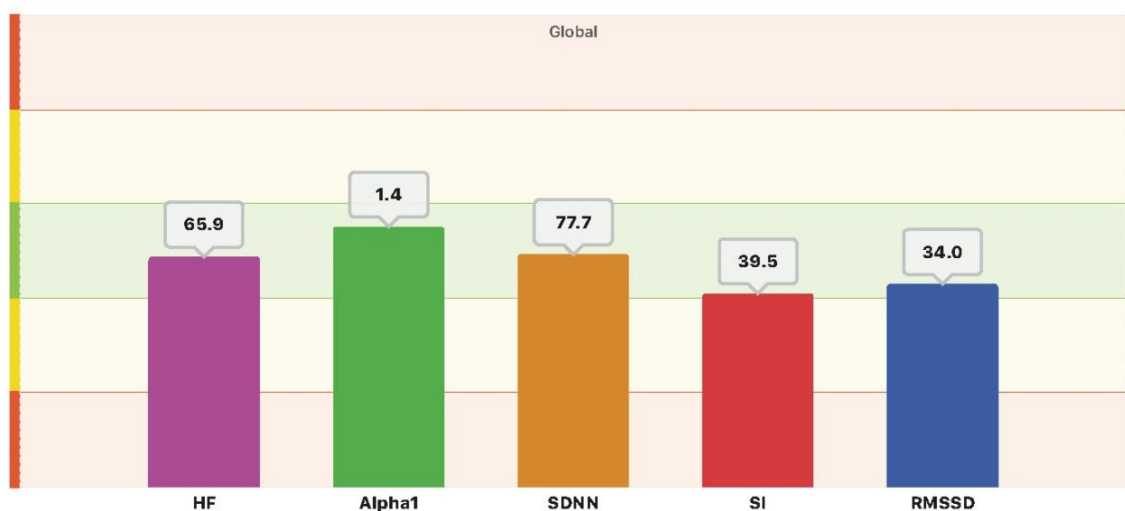
Test person 5

Regulation of the heart rate when using the >ORB Sticker< after 12 days



Information on the test Person: female, 26 years

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate was improved after using the >ORB Sticker< for 12 days. All parameters are now in the green area.

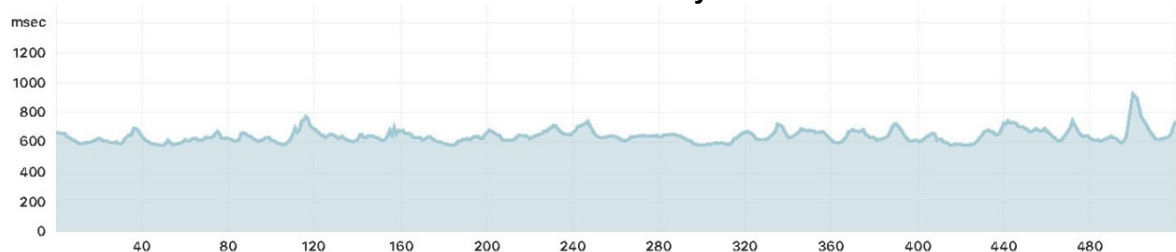
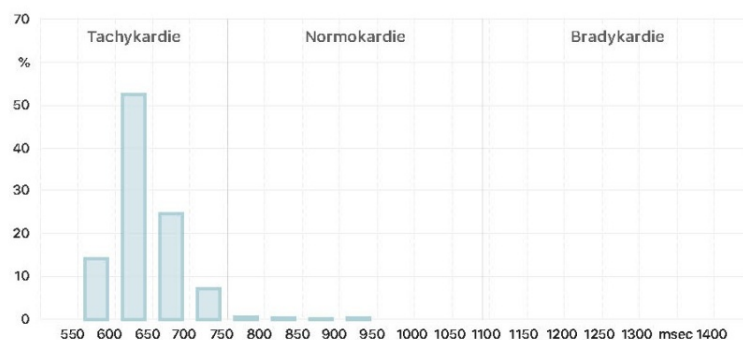
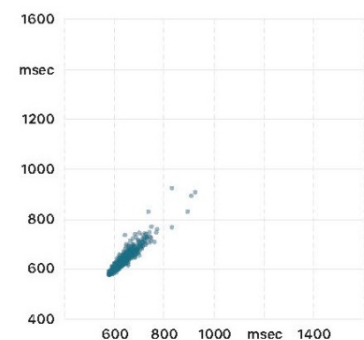
Test person 6

Regulation of the heart rate without using the >ORB Sticker<



Information about the test person: male, 46 years

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate is dangerously limited before using the >ORB Sticker<.

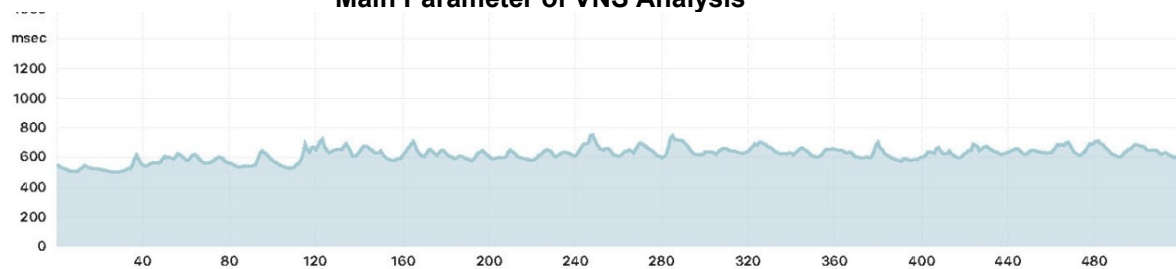
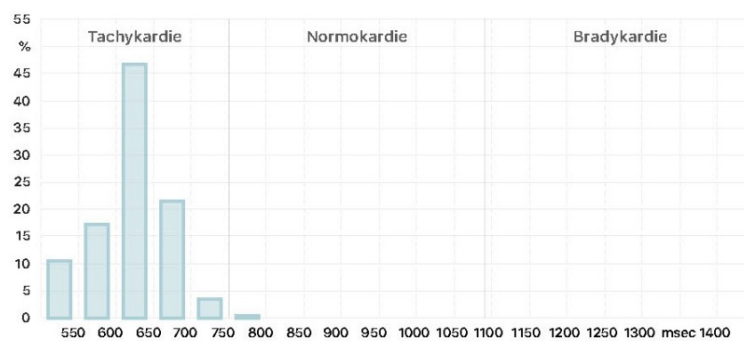
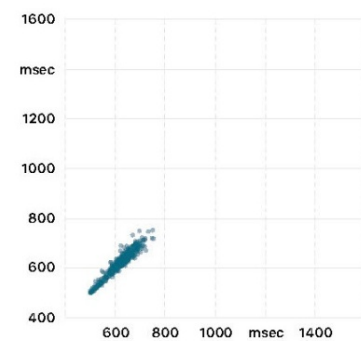
Test person 6

Regulation of the heart rate when using the >ORB Sticker< after 10 days



Information about the test person: male, 46 years

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate has hardly changed after using the >ORB Pendant< for 10 days.

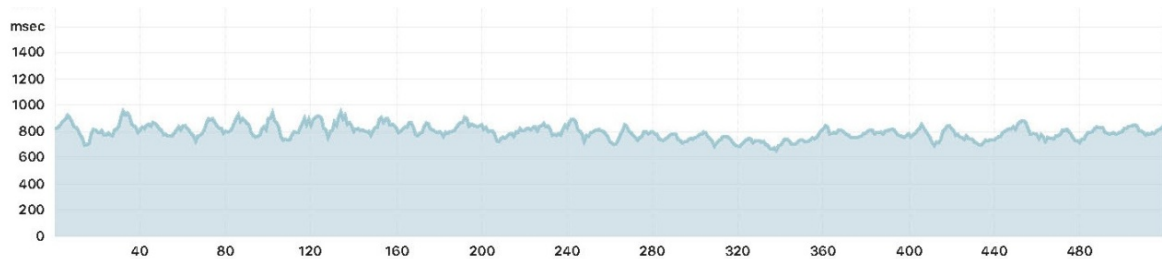
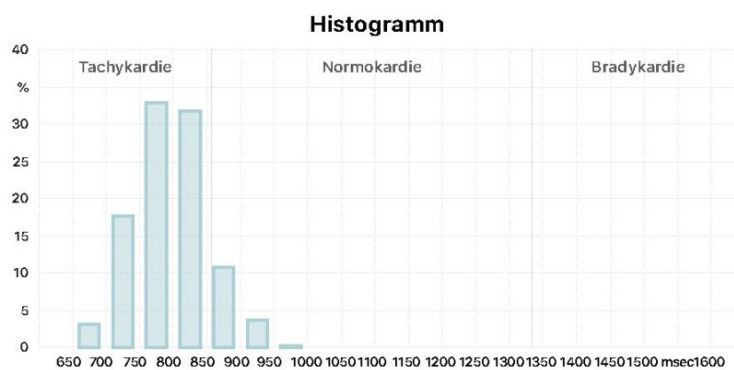
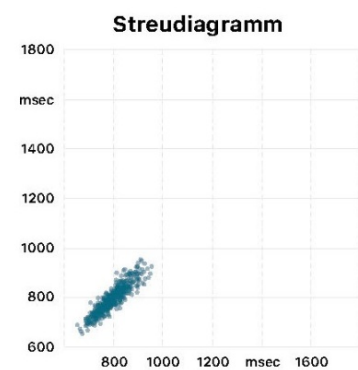
Test person 7

Regulation of the heart rate without using the >ORB Pendant<

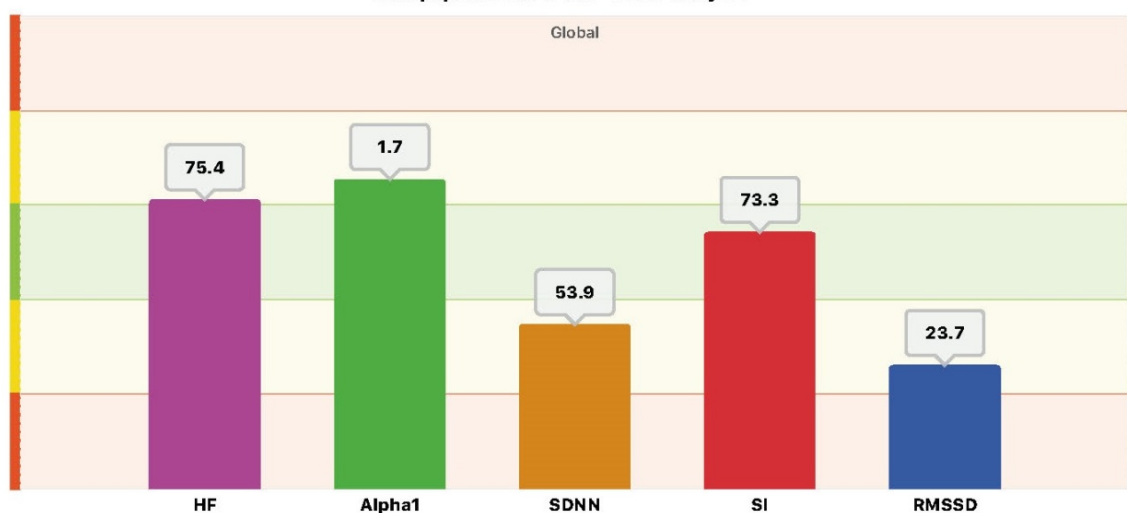


Information about the test person: female, 47 years old

Main Parameter of VNS Analysis



Hauptparameter der VNS Analyse



Evaluation of the measurement results: The ability of this test person to regulate the heart rate is somewhat limited before using the >ORB Pendant< .

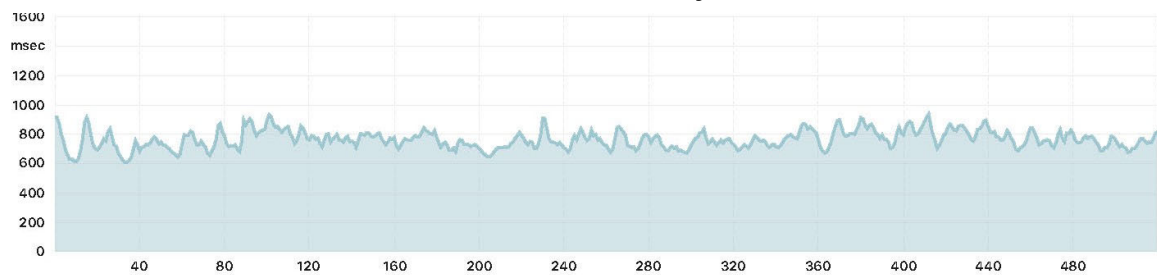
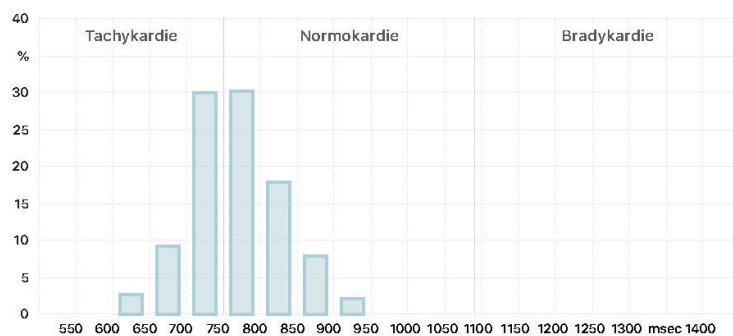
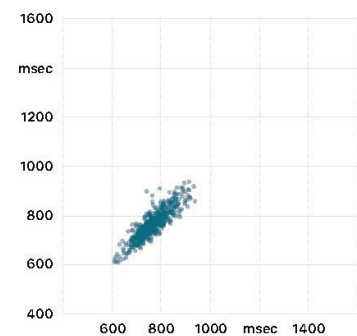
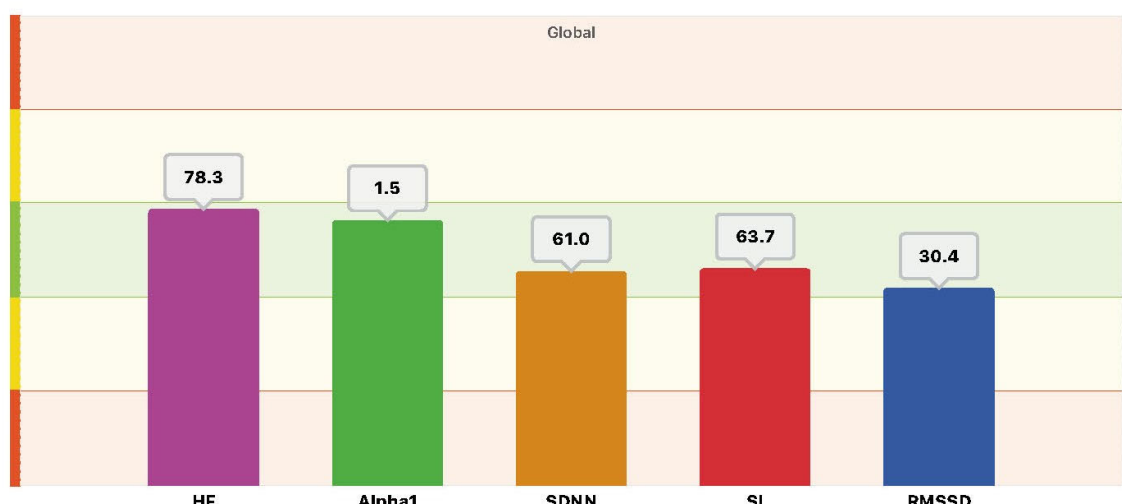
Test person 7

Regulation of the heart rate when using the >ORB Pendant< after 4 days



Information about the test person: female, 47 years old

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate has improved after using the >ORB Pendant< for 4 days and is now within the green range for almost all parameters.

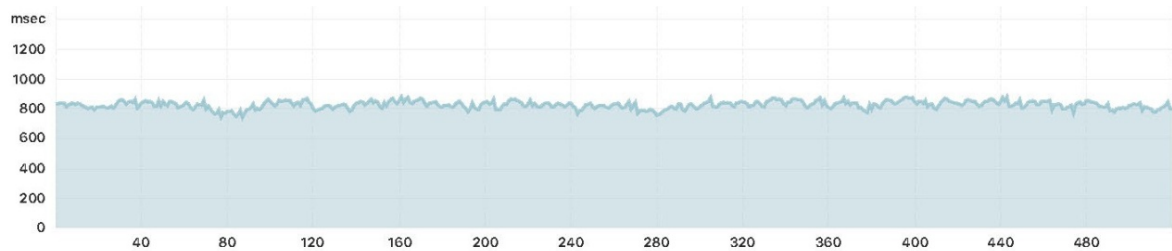
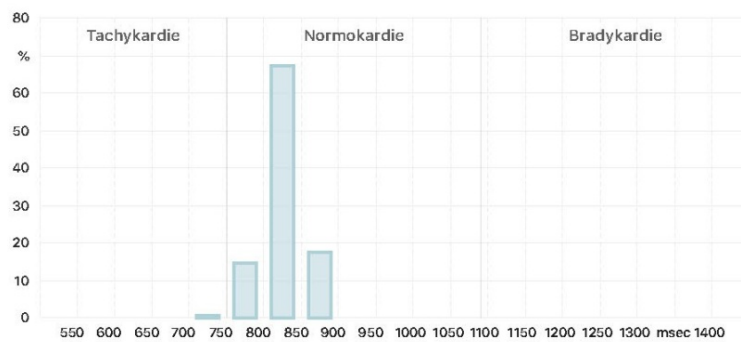
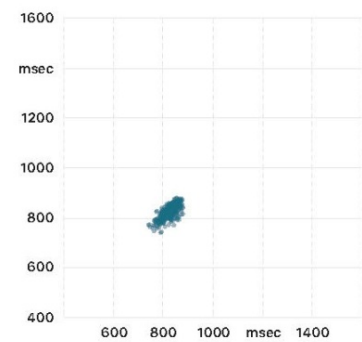
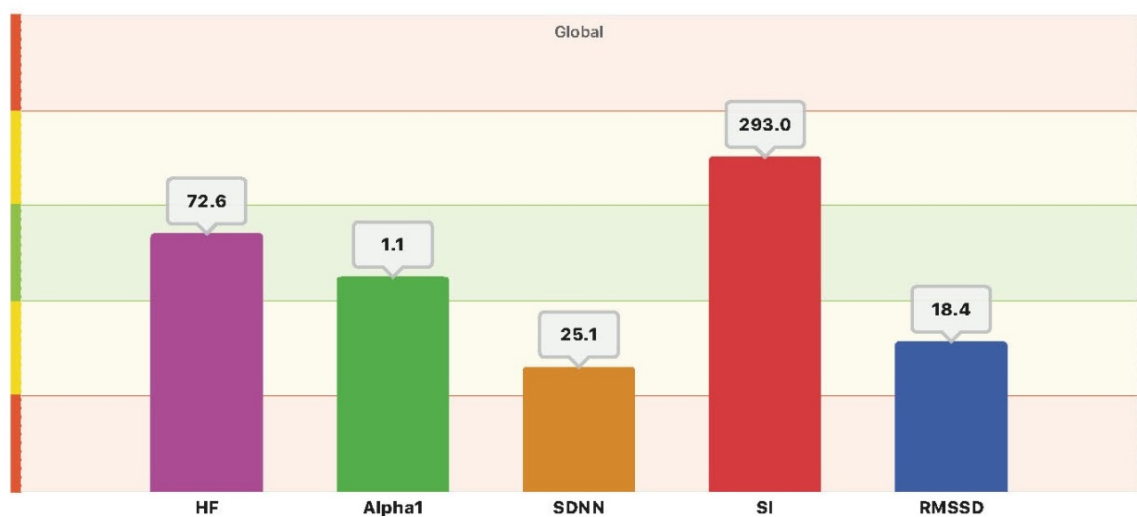
Test person 8

Regulation of the heart rate without using the >ORB Pendant<



Information about the test person: female, 15 years old

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate is considerably limited before using the ORB Pendant<.

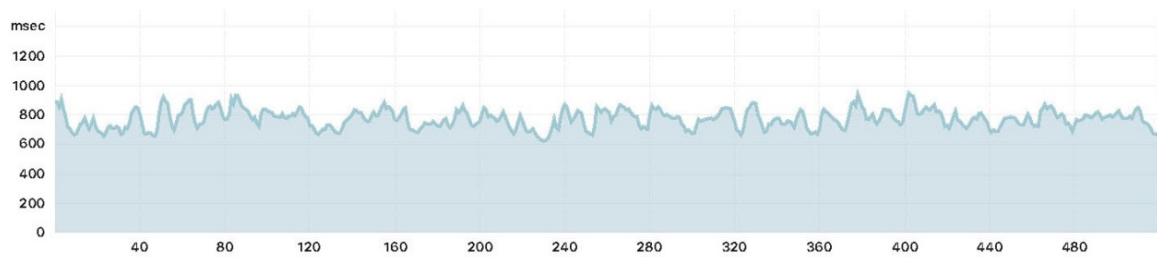
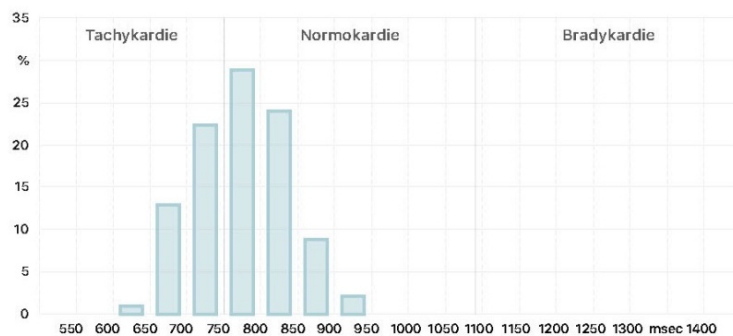
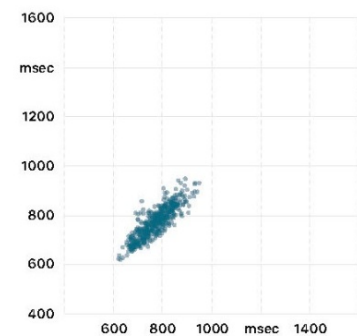
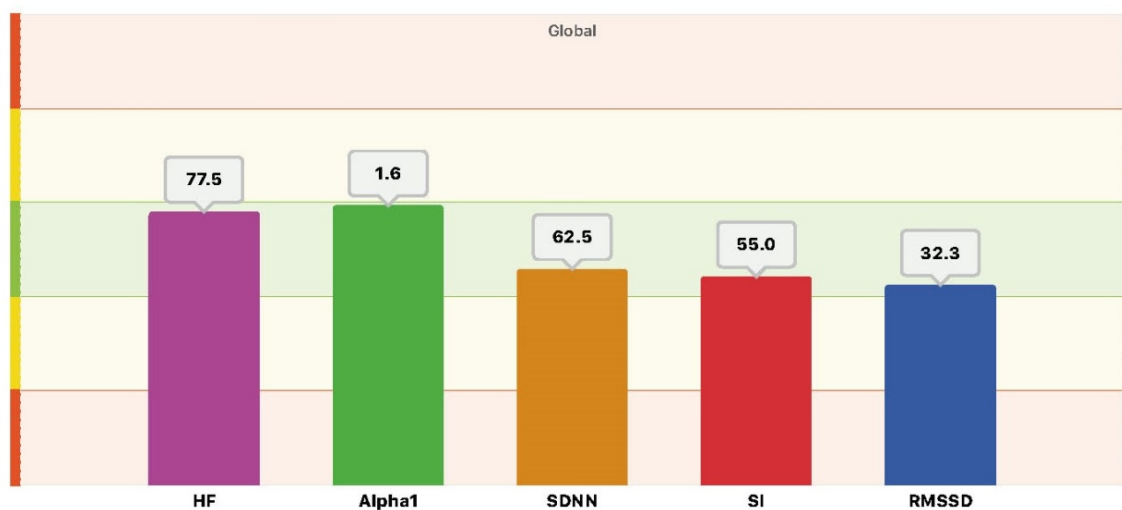
Test person 8

Regulation of the heart rate when using the >ORB Pendant< after 3 days



Information about the test person: female, 15 years old

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate has improved after using the >ORB Pendant< for 3 days and is now within the green range for all parameters.

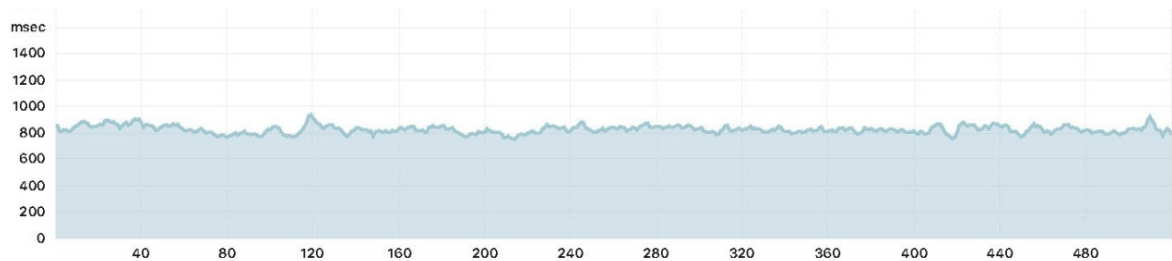
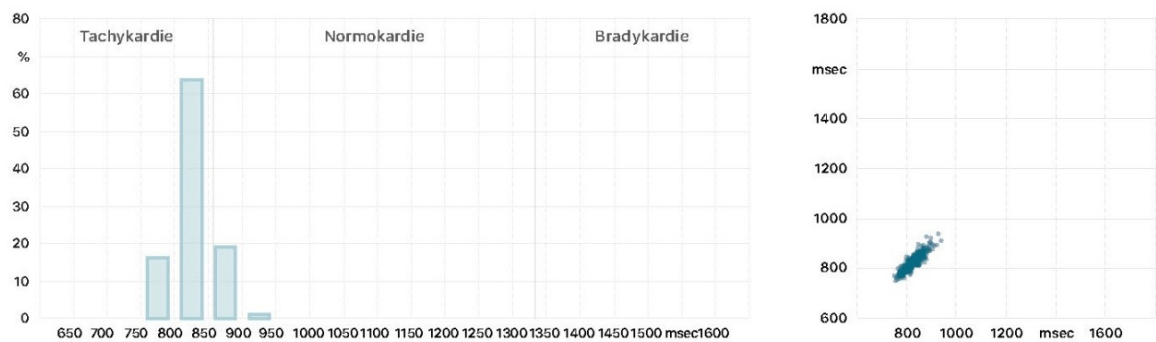
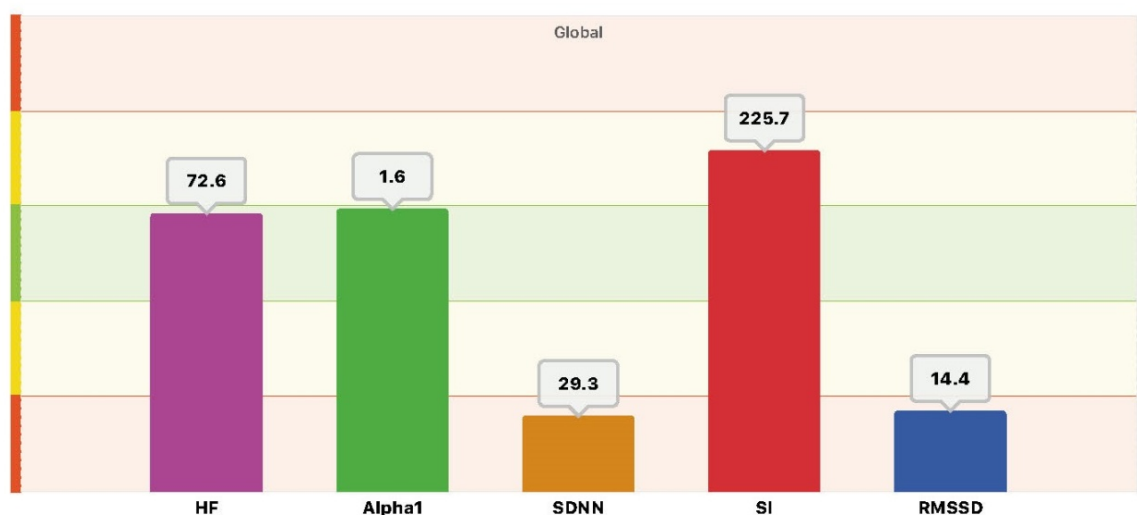
Test person 9

Regulation of the heart rate without using the >ORB Pendant<



Information about the test person: male, 37 years old

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate is considerably limited before using the ORB Pendant<.

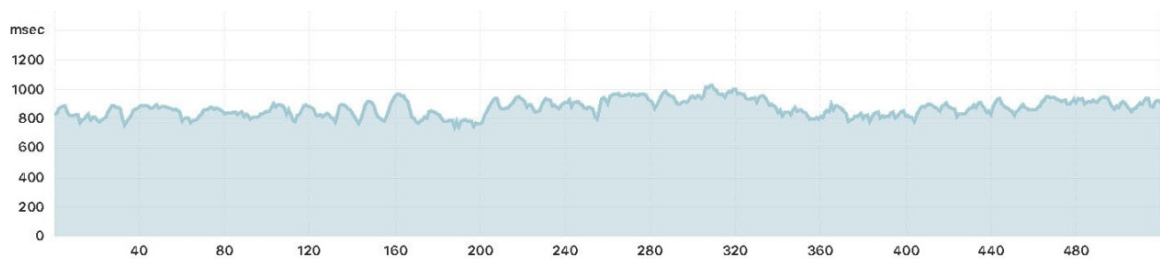
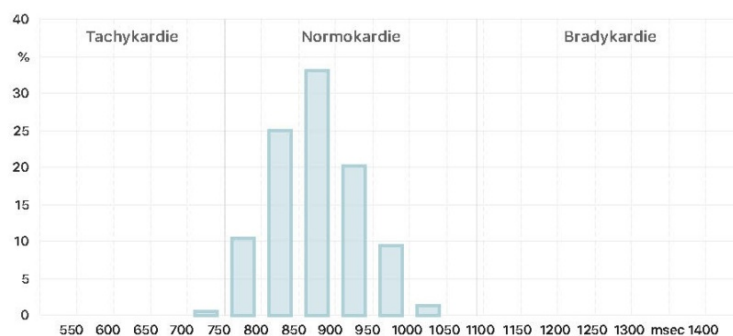
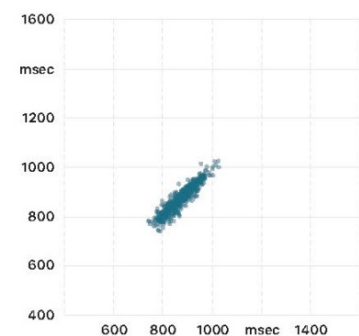
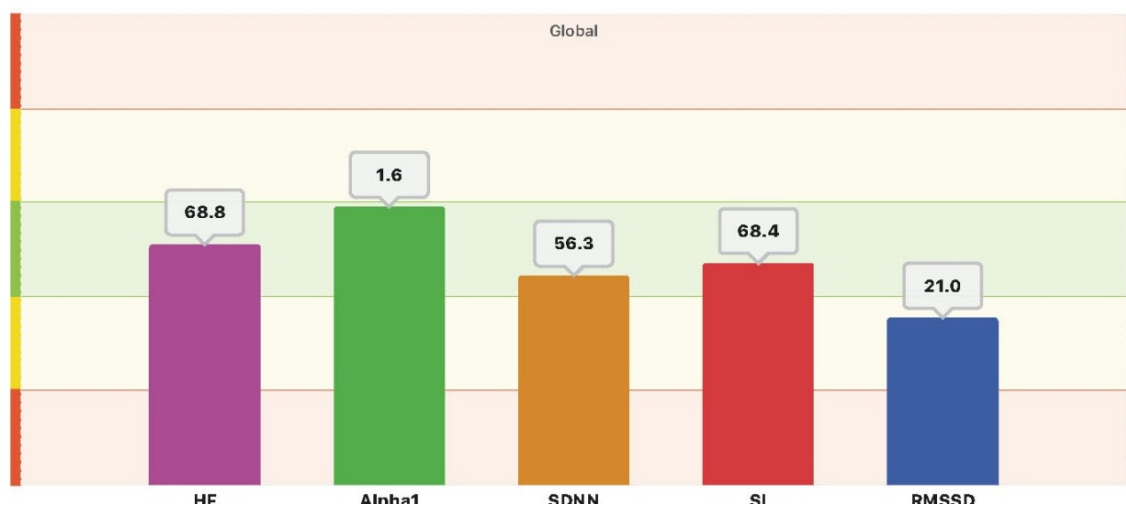
Test person 9

Regulation of the heart rate when using the >ORB Pendant< after 4 days



Information about the test person: male, 37 years old

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate was considerably improved after using the >ORB Pendant< for 4 days.

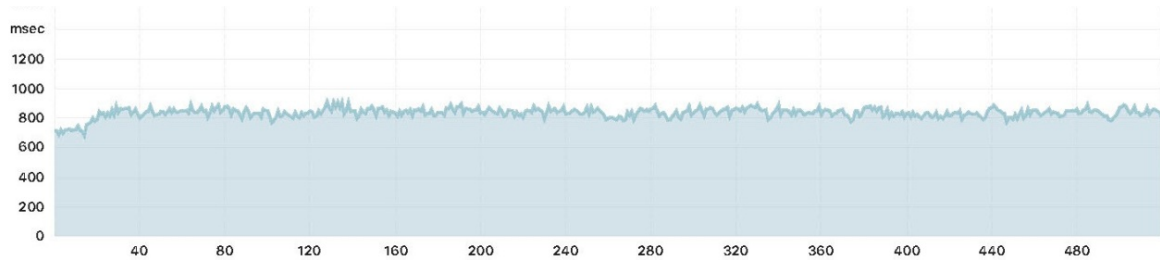
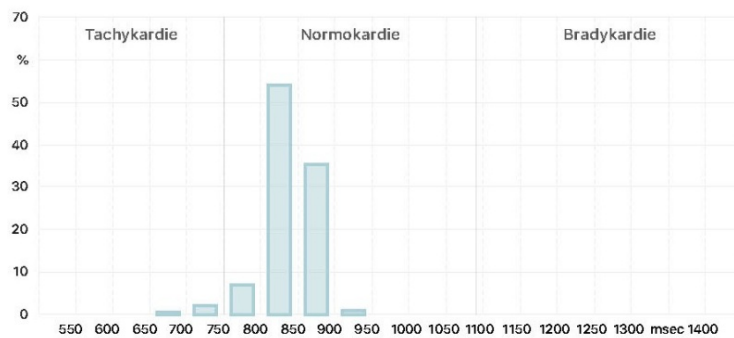
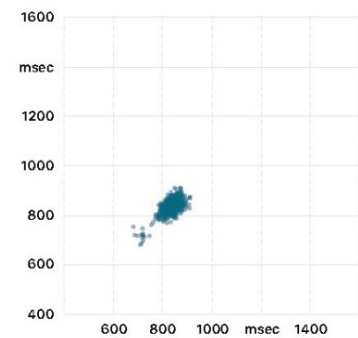
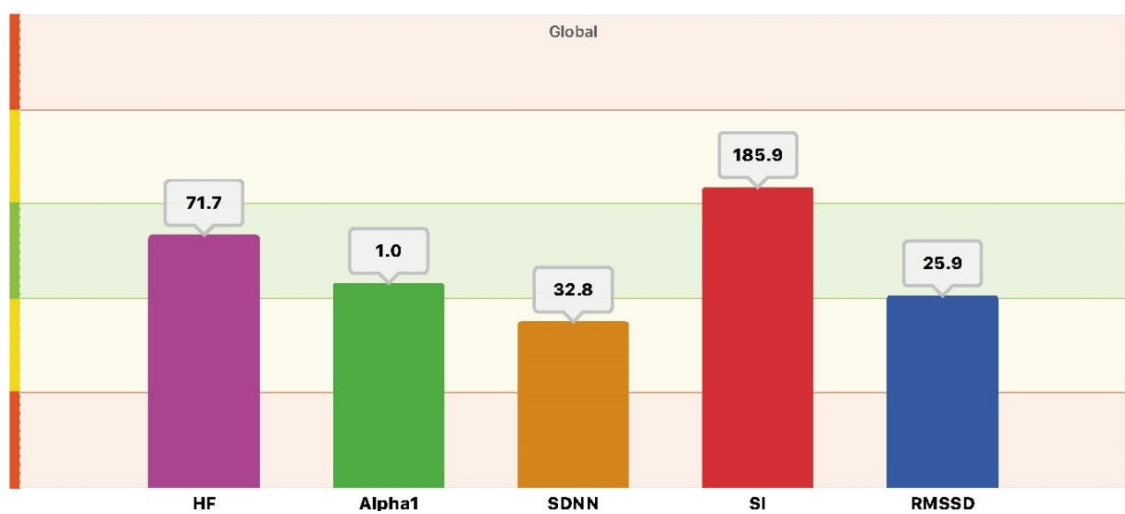
Test person 10

Regulation of the heart rate without using the >ORB Pendant<



Information about the test person: female, 39 years old

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate is somewhat limited before using the >ORB Pendant<.

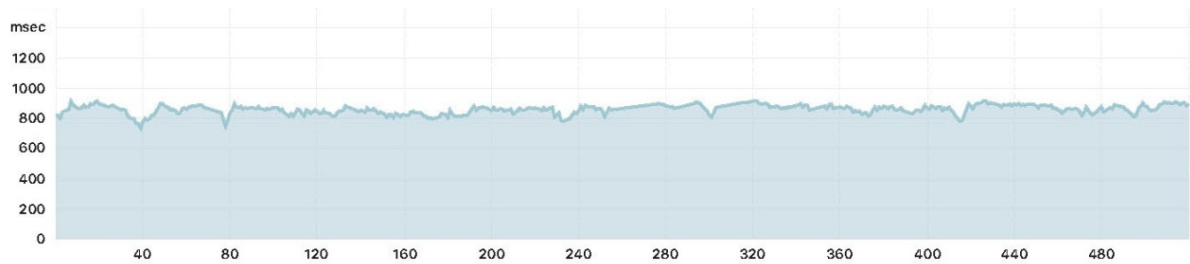
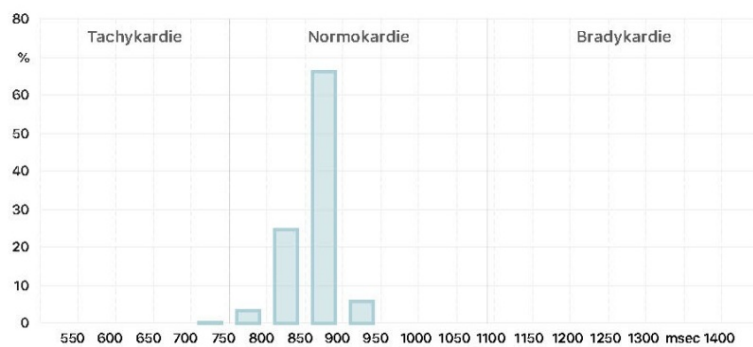
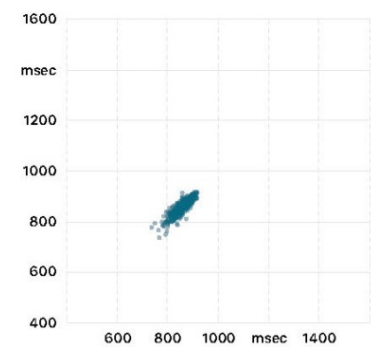
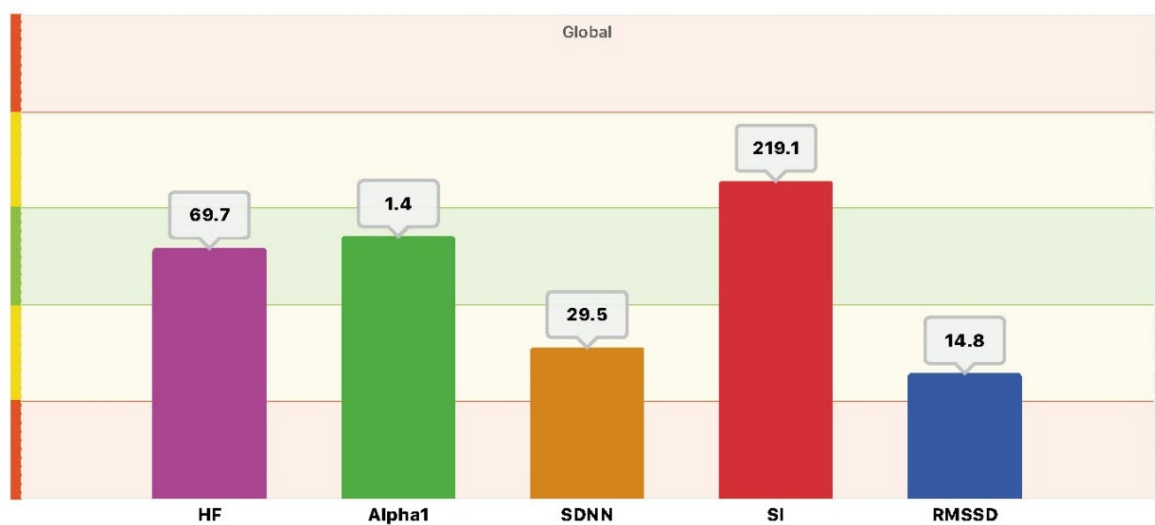
Test person 10

Regulation of the heart rate when using the >ORB Pendant< after 2 days



Information about the test person: female, 39 years old

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate has hardly changed after using the >ORB Pendant< for 2 days.

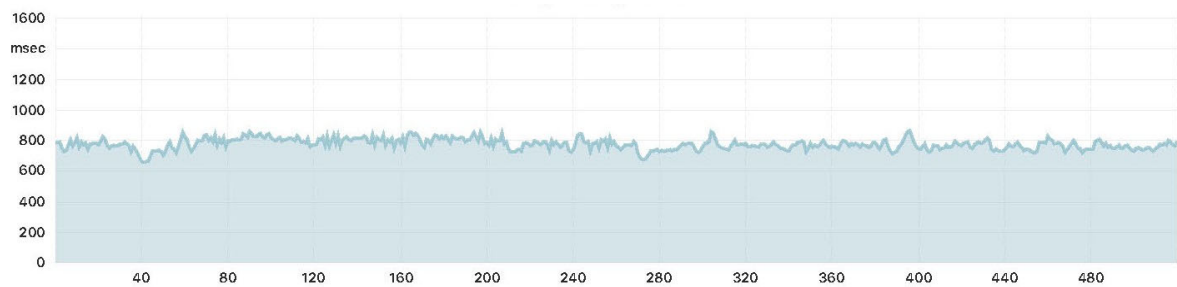
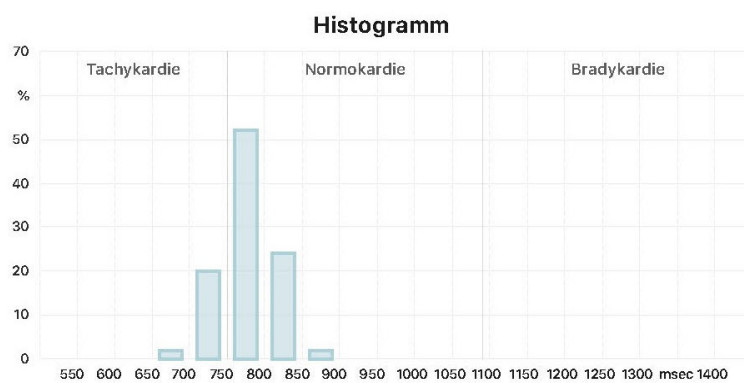
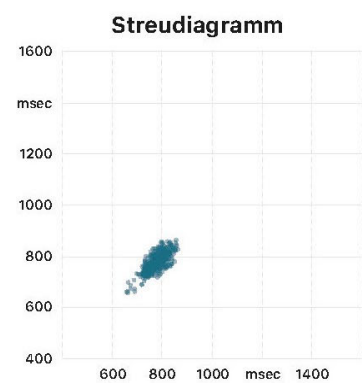
Test person 10

Regulation of the heart rate when using the >ORB Pendant< after 6 days

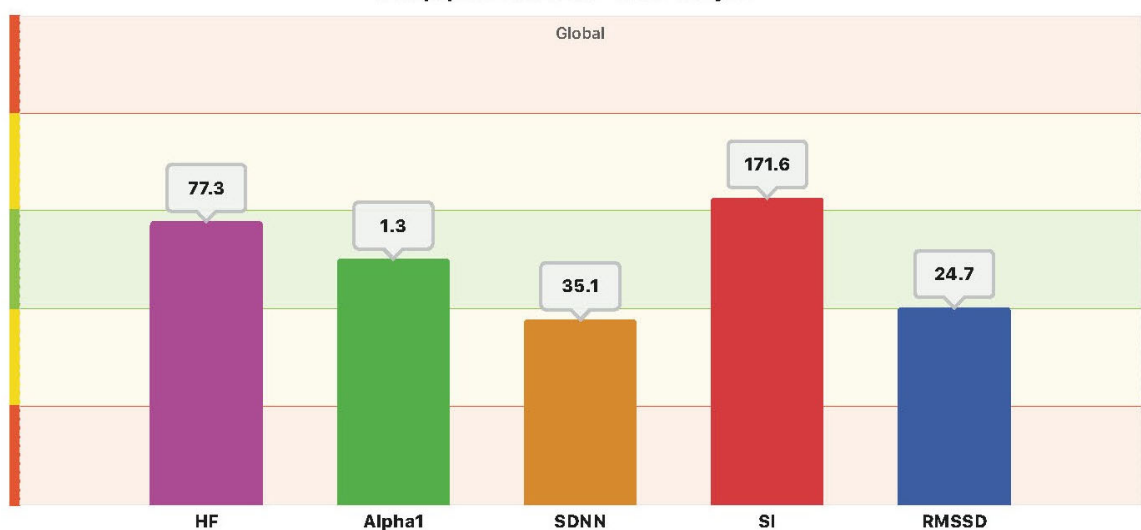


Information about the test person: female, 39 years old

Main Parameter of VNS Analysis



Hauptparameter der VNS Analyse



Evaluation of the measurement results: The ability of this test person to regulate the heart rate improved significantly after using the >ORB Pendant< for 6 days.

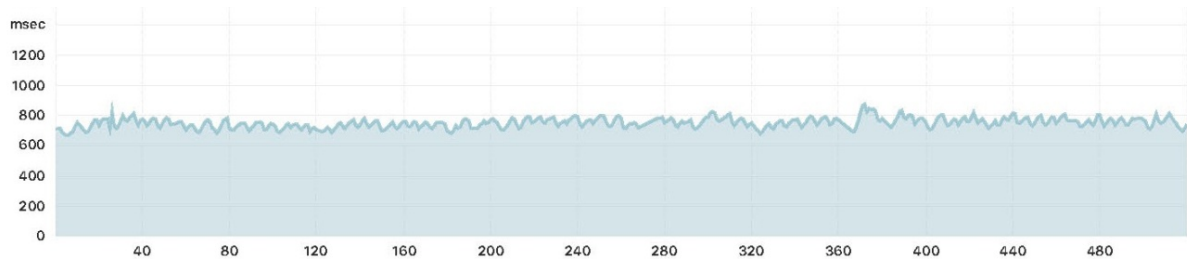
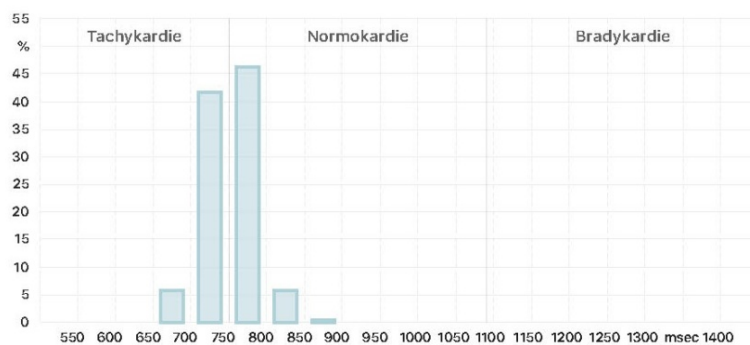
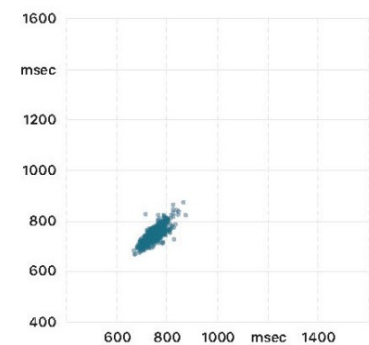
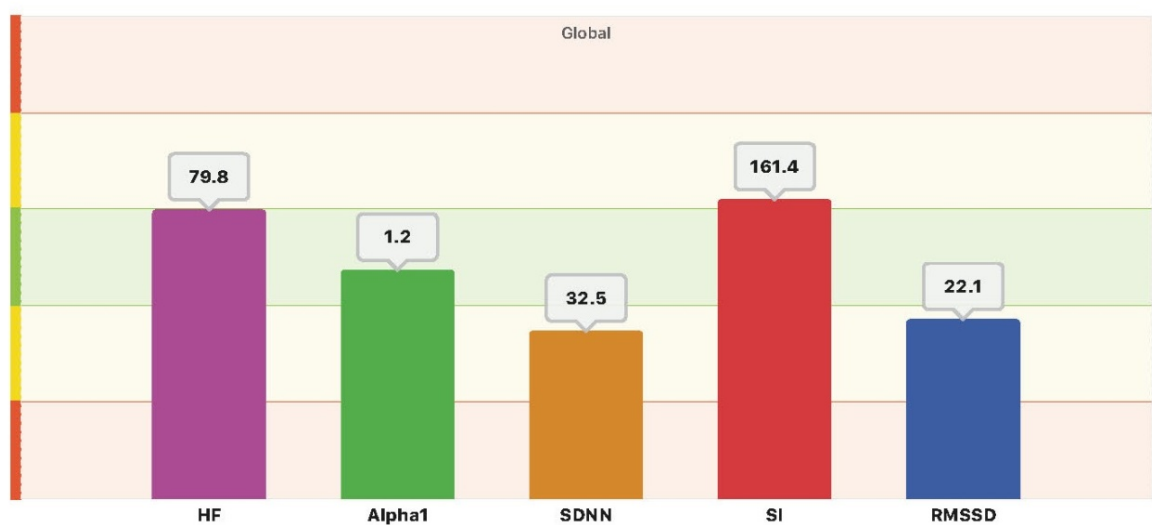
Test person 11

Regulation of the heart rate without using the >ORB Pendant<



Information about the test person: male, 25 years

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate is somewhat limited before using the >ORB Pendant< .

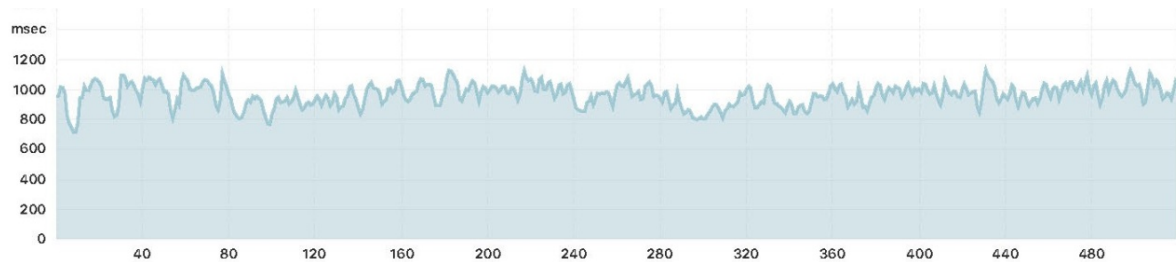
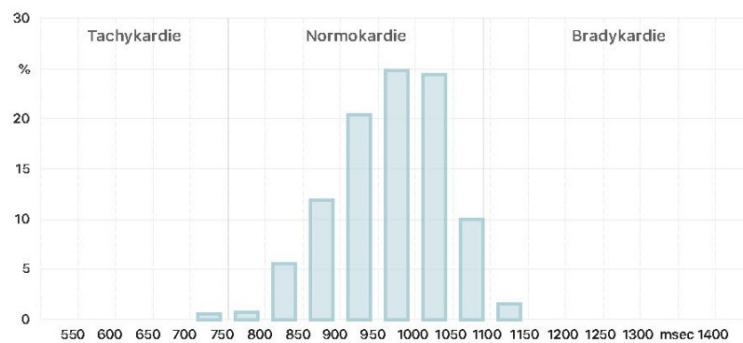
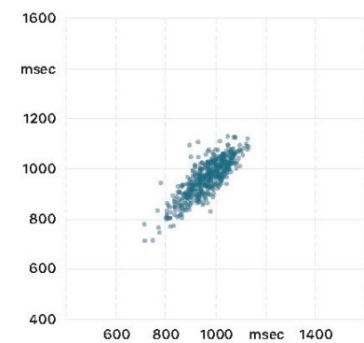
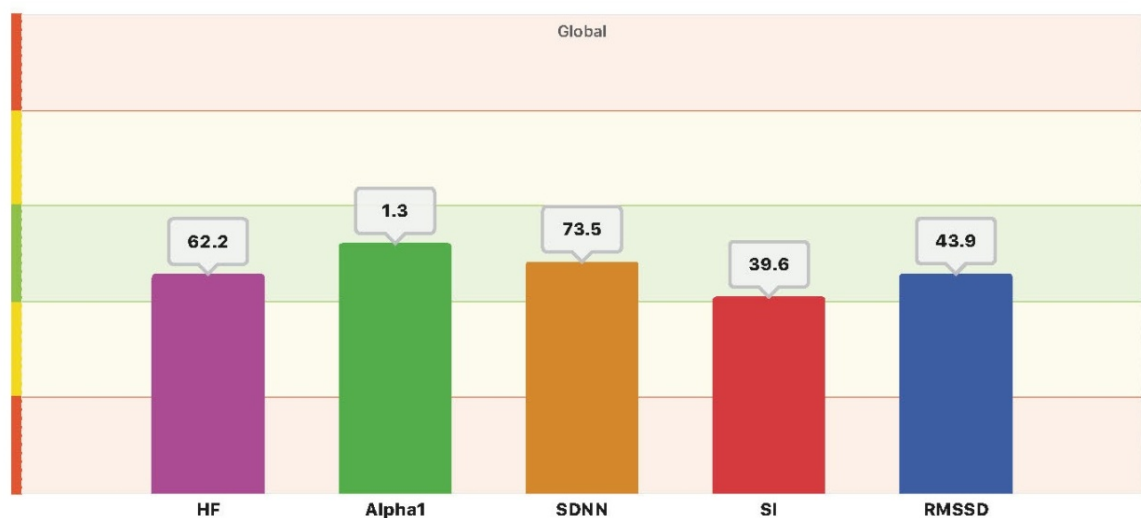
Test person 11

Regulation of the heart rate when using the >ORB Pendant< after 4 days



Information about the test person: male, 25 years

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate has improved after using the >ORB Pendant< for 4 days and is now within the green range for all parameters.

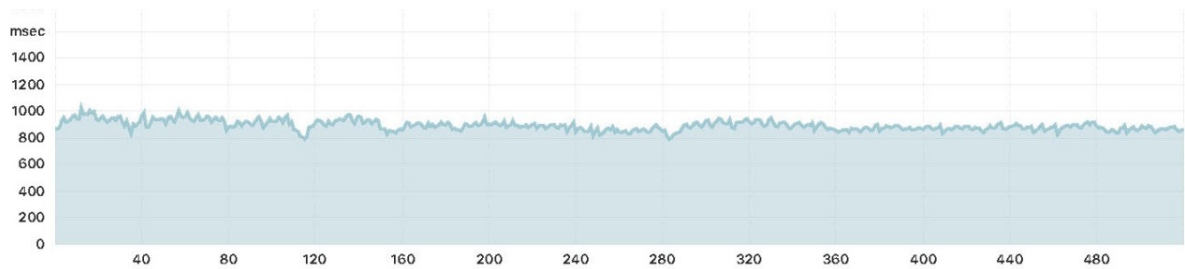
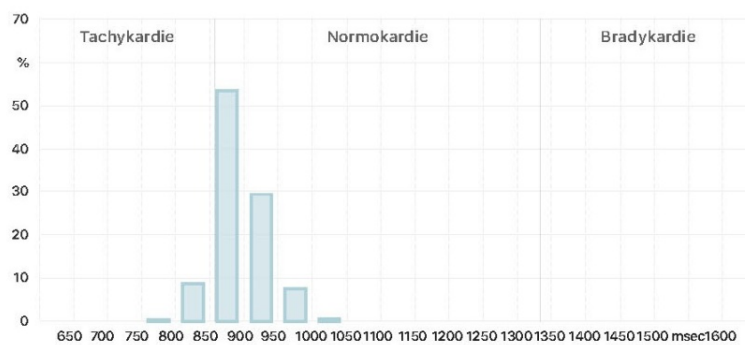
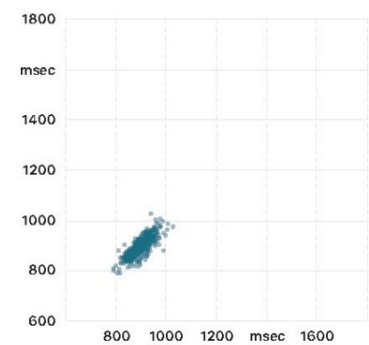
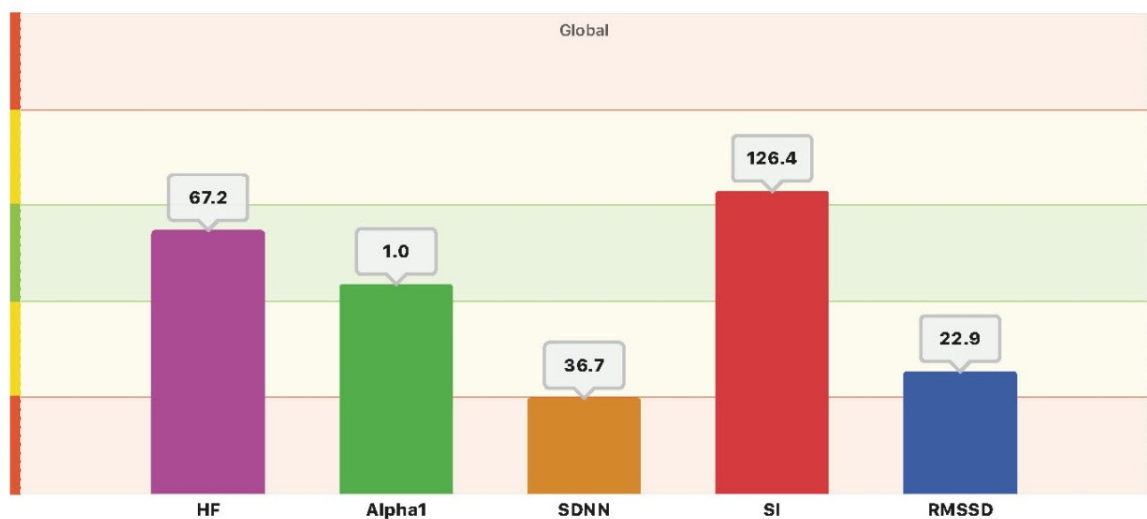
Test person 12

Regulation of the heart rate without using the >ORB Pendant<



Information about the test person: male, 17 years

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate is clearly limited before using the >ORB Pendant<.

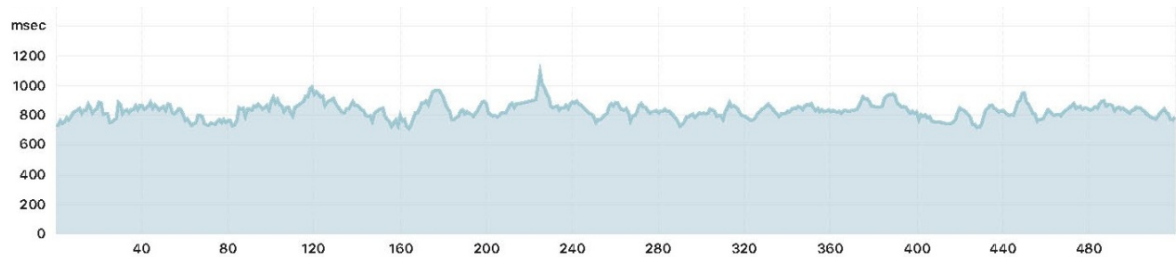
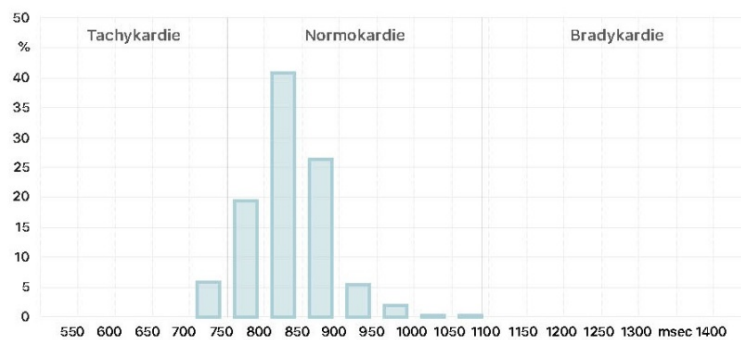
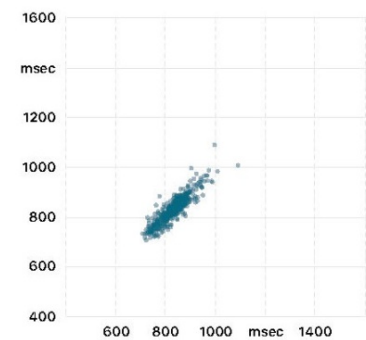
Test person 12

Regulation of the heart rate when using the >ORB Pendant< after 4 days



Information about the test person: male, 17 years

Main Parameter of VNS Analysis



Evaluation of the measurement results: The ability of this test person to regulate the heart rate improved significantly after using the >ORB Pendant< for 4 days.

5.0 Summary assessment of the results of the biophysical investigation of the >ORB Sticker< and >ORB Pendant< with regard to the identical protective effect of both products against electromagnetic radiation exposure, e.g. from cell phones, tablets, WLAN, DECT cordless phones and smartwatches.

For the study documented here, the >ORB Sticker< and the >ORB Pendant< was tested on twelve test persons of both genders between the ages of 12 and 85 years.

The test person's ability to regulate the heart rate was measured, initially without using the >ORB Sticker< or the >ORB Pendant< and then again after using the >ORB Sticker< or the >ORB Pendant< for several days under otherwise identical conditions.

In nine of the twelve test persons, the ability to regulate the heart rate and adapt the autonomic nervous system to electromagnetic environmental pollution improved significantly to significantly after just a few days after using the >ORB sticker< or the >ORB Pendant<. The positive effect was clearly dependent on the duration of use.

In three of the twelve test persons, the ability to regulate the heart rate and to adapt the vegetative nervous system to the electromagnetic environmental pollution only improved very little or not at all during the test phase.

Negative effects of the use of the >ORB Sticker< and the >ORB Pendant< were not observed during the test phase and were not reported by the test persons.

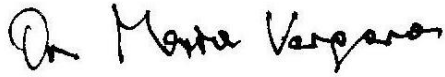
6.0 Granting of the IGEF seal of approval to the >ORB Sticker< and the >ORB Pendant<

The results of the biophysical investigation of the IGEF test and research laboratory confirm that the >ORB Sticker< and the >ORB Pendant< are suitable for protecting against health hazards caused by electromagnetic radiation, e.g. from cell phones, tablets, WLAN, DECT cordless phones and smartwatches.

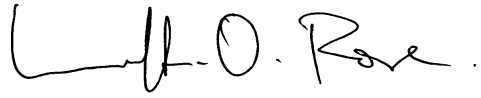
The requirements of the International Association for Electrosmog Research IGEF for being granted the IGEF seal of approval are met.



The >ORB Sticker< and the >ORB Pendant< was granted the IGEF seal of approval on the basis of an agreement on the commercial use of the IGEF seal of approval with the International Association for Electrosmog Research IGEF, which regulates the conditions of use of the IGEF seal of approval.



Dr. Sofia Maria Vergara
IGEF Testing and Research Laboratory



Dipl.-BW Wulf-Dietrich Rose
IGEF Certification

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