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HRV Health

Your heart is your personal pathologist

Resting heart rate and heart rate variability (HRV) are metrics that give consistent feedback on our health status and fitness.

As we get fitter, our resting heart rate drops. Elite athletes have a resting heart rate in the mid 30s.

Why HRV is important?

The heart beat forms one of the most important indicators of health. The simplest measure is the pulse rate, or the number of beats per minute. It is controlled by the autonomic nervous system (ANS), that part of our body that works automatically, making sure we breath, and our blood keeps pumping.

When our body experiences stress, the heart beats faster in response. As the stress alleviates, the pulse rate returns to normal. But even at a steady pulse rate, lets say 60 beats per minute (BPM) the time between each beat varies. Measured in milliseconds (ms), instead of being the expected 1000ms between each beat, the inter beat interval (IBI) varies:

An interval of 1140ms may be followed by an interval of 1283, then 1166, then 1247, and 1435.

A higher rate of variability is an indicator of a healthier ANS, and overall a healthier you.

HRV responds to both cognitive and physical stress. While we know that exercise is good, too much is not, and a drop in HRV will tell us that. HRV responds to cognitive stress too, and a drop in HRV provides that warning.

So whats a good HRV? The answer is one thats better than yesterdays. HRV is a relative measure, specific to each person.

Its important to take the measurement under the same conditions on a daily basis. After a few days, a pattern emerges, giving you an idea of where you are, and where youre heading.

Blood pressure (BP), another important measure of health, also requires consistent conditions of measurement, providing us with an additional indicator of cognitive stress.

We recommend that users measure HRV and BP simultaneously, usually first thing in the morning.

On days when BP is up, and HRV is down, we know that were under cognitive stress, and we can be prepared for it. Better yet, we can do something about it.

On days when HRV is up, we can take advantage, pushing a little harder while were exercising, or at work, knowing that were ready to perform at our best.

Its not a surprise that elite athletes have been using HRV for years. It helps them to win, and now it can do the same for you.

Scientists and specialists have been using HRV for decades having had access to the sophisticated (and very expensive) medical equipment required then.

In recent years commercial devices costing under $100, able to measure IBI in milliseconds, have become available. We use the Polar H10, a chest strap heart rate monitor that links to our iOS and Android apps

The apps collect the HRV readings from the Polar H10, allowing you to save your data, and giving you your HRV measurement for the day.

[Register](#) today, and start measuring your progress towards a fitter, healthier you.

The Healthcare Crises

Healthcare costs are rising at an unsustainable rate. In America they are already 17.9% of GDP. The other rich economies are on the same trajectory.

Yet even with their sophisticated healthcare systems, it is these same countries whose hospitals were overwhelmed during the Covid-19 pandemic. The data show us why.

The countries that suffered the highest mortality rates are those with the highest obesity rates. Conversely, Vietnam, the country with the lowest obesity rate also has one of the lowest Covid-19 mortality rates.

Of the people infected, 33% are asymptomatic. Many of the worlds leading athletes have had Covid-19: Novak Djokovic, Lewis Hamilton, Adam Yates, Egan Bernal. None needed medical treatment. All are still dominating their sports.

A physically active life-style is the route to solving the healthcare crises.

HRV Health's privacy policy

At HRV Health, we take our users' privacy seriously. It's not a simple task with the users wanting share their data with health insurers, medical professionals, and freinds and family.

App support

HRV Health has an app on both iOS and Android. The app is the interface with the Polard H10 heart rate monitor that collects the raw HRV data. If you require assistance, please contact us using the app support page.

You must be registered to submit a support request.

| HRV | Privacy policy | App support | Research | Services | Healthcare costs | The team | Benefits | Testimonials |

Andy Android

Support request

Submit

Instructions

You must be registered to submit a support request.
The Registration ID required to submit a support request is included in the details in the email sent to you on registration.

Troubleshooting Guide

HRV Health Basic

Research

The science behind the HRV Health platform is supported by a significant body of research. This page lists some of the more important papers about this amazing technololgy.

HRV Health

The vision

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ID	Title	Conclusion	Authors	Download
1	Heart rate variability Standards of measurement, physiological interpretation, and clinical use	The phenomenon that is the focus of this report is the oscillation in the interval between consecutive heart beats as well as the oscillations between consecutive instantaneous heart rates. 'Heart Rate Variability' has become the conventionally accepted term to describe variations of both instantaneous heart rate and RR intervals. In order to describe oscillation in consecutive cardiac cycles, other terms have been used in the litera- ture, for example cycle length variability, heart period variability, RR variability and RR interval tachogram, and they more appropriately emphasize the fact that it is the interval between consecutive beats that is being analysed rather than the heart rate per se. However, these terms have not gained as wide acceptance as HRV, thus we will use the term HRV in this document.	Task Force of The European Society of Cardiology, The North American Society of Pacing and Electrophysiology	Select

Services

The major service that HRV Health provides are listed here.

| HRV | Privacy policy | App support | Research | Services | Healthcare costs | The team | Benefit |

User: Services ▼

Heart rate variability (HRV) and resting heart rate (RHR) that are clinically proven metrics of health status and fitness. Using HRV Health's iOS and Android apps, allows users to measure their health every day.

The HRV Health free user services include:

- Measurement of HRV
- Measurement of RHR
- Measurement of physiological and cognitive stress
- HRSS Stress tests
- Data screens and and graphs showing trends
- User data downloads via email
- HRV status level to the user's insurers (only with the user's permission)
- Screen access for user's doctors and family (only with the user's permission)

Note:
The user's permission for data sharing with their insurer is only permitted once the user enters their insurance membership number onto the HRV platform.
Screen access to doctor and family is fully within the user's control, and once granted, can be instantly revoked by the user at any time.

Healthcare costs

Healthcare costs are growing at an unsustainable rate. The severity of the problem is clear from teh data on this page.

| HRV | Privacy policy | App support | Research | Services | Healthcare costs | The team | Benefits | Testimonials |

ID	Code	Country	% GDP 2019	Per cap 2019	% GDP 2018	Per cap 2018	% GDP 2017	Per cap 2017
1	US	United States	16.8	10,921.01	16.7	10,515.32	16.8	10,103.09
2	CH	Switzerland	11.3	9,666.34	11.4	9,870.66	11.5	9,606.35
3	NO	Norway	10.5	8,007.40	10.0	8,271.86	10.3	7,815.79
4	IS	Iceland	8.6	6,274.96	8.4	6,565.88	8.3	6,144.55
5	LU	Luxembourg	5.4	6,220.74	5.3	6,227.08	5.3	5,713.12
6	DK	Denmark	10.0	6,003.33	10.1	6,216.77	10.0	5,800.15
7	SE	Sweden	10.9	5,671.39	10.9	6,005.07	10.8	5,837.77
8	DE	Germany	11.7	5,440.25	11.5	5,481.99	11.3	5,055.82

The team

HRV Health is made up of a team of dedicated professionals. See who they are here.
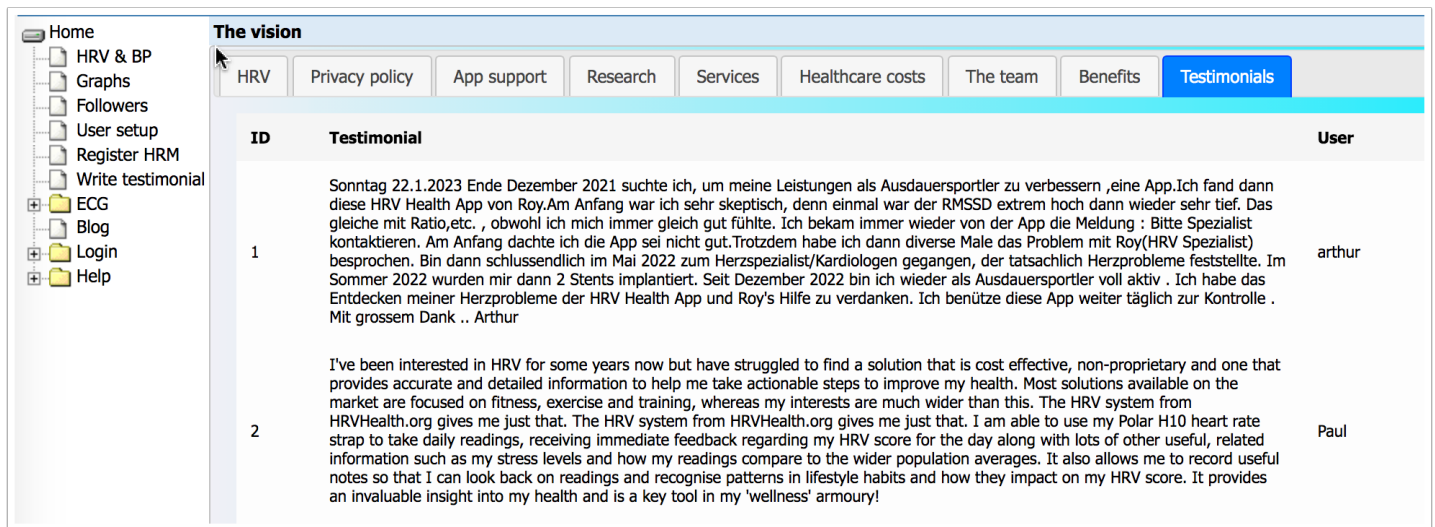
Benefits

Benefits list why it's worth using the platform. If you're logged in, clicking on the link will take you to the page where you can see and use the benefit. It's a great way of getting to know the system (perhaps better than reading the manual).

Testimonials

Our users round the worlds have given us great testimonials, sharing the benefits they et from the HRV Health apps and platform.

If you like the services that you are getting, please write a testimonial, using the Write testimonial menu option in the menu on the left hand side of the page.

Registration

After registering you will receive an email that provides the details required to activate the account. If the email address is incorrect, you will have difficulty activating the account.

Some of the details added on registration must be correct to ensure that you have a happy experience here. Please ensure that:

1. the email address is correct. The email address is used to activate your account. The email address is used to send you your HRV data when you click the email button on the HRV & BP screen. We do**not**share email addresses with anyone, nor are they be used for any form of advertising. Trust is the most important part of our business. If we compromise your personal information, we are compromising our business.
2. Use a userID that is easy to remember. The user ID must be at least 2 characters long. The system requires that the user ID is unique. You will be informed if the user ID is already in use. When that happens, please enter another user ID.
3. the password is secure. It must be at least 5 characters long. A complex password using characters and numbers is more secure. Try and combine that rule in a combination that is memorable. Or use a password system (We useLastpass).
4. HRV goes down with age. The birthdate is required to determine the relevance of the HRV reading in relation to age.

5. Only enter a group if you are a member of a registered group. If you are not a member of a group, please select NA.
6. Only enter a health insurer if you are a policy holder with a health insurer in Switzerland. If you are not insured in Switzerland, please select N/A.

It is not really important that the name are correct. If you prefer anonymity - that's fine. The birth date is used to create a unique id and for the more advanced metrics.HRV and RHR change with age, and these measurements require the correct age for accuracy. Please enter your age correctly to within a few weeks, if not exactly.You will receive your unique id with you activation email. It will be used to enhance the security in the future.

hrvhealth.org login and registration

hrvhealth.org login
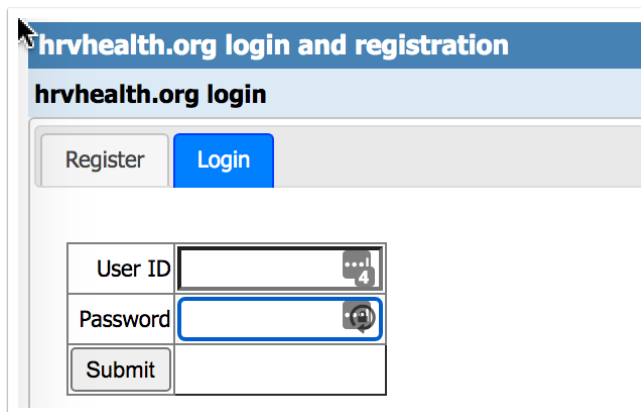
| Register | Login |

First name	
Last name	
User ID	
Password	
Confirm password	
Country:	Switzerland
Birth date	mm/dd/yyyy
Contact email	
Device ID	
Gender	◯ Female ◯ Male
Language:	English
Group:	NA
Health insurer:	N/A
Submit	

Login

Enter the details you supplied on registration. Please ensure that you have activated your registration by clicking the Activate button in the email you received after registration.

hrvhealth.ch

The hrvhealth.ch provides an alternative way to register, login, and access the HRV Health Platform. The menus at the top fo the page provide direct access to the relevant pages on the Platform. To register or login, click the Login/Register menu option.

Registration

After registering you will receive an email that provides the details required to activate the account. If the email address is incorrect, you will have difficulty activating the account.

Some of the details added on registration must be correct to ensure that you have a happy experience here. Please ensure that:

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1. the email address is correct. The email address is used to activate your account. The email address is used to send you your HRV data when you click the email button on the HRV & BP screen. We do**not**share email addresses with anyone, nor are they be used for any form of advertising. Trust is the most important part of our business. If we compromise your personal information, we are compromising our business.
2. Use a userID that is easy to remember. The user ID must be at least 2 characters long. The system requires that the user ID is unique. You will be informed if the user ID is already in use. When that happens, please enter another user ID.
3. the password is secure. It must be at least 5 characters long. A complex password using characters and numbers is more secure. Try and combine that rule in a combination that is memorable. Or use a password system (We use[Lastpass](#)).
4. HRV goes down with age. The birthdate is required to determine the relevance of the HRV reading in relation to age.
5. Only enter a group if you are a member of a registered group. If you are not a member of a group, please select NA.
6. Only enter a health insurer if you are a policy holder with a health insurer in Switzerland. If you are not insured in Switzerland, please select N/A.

It is not really important that the name are correct. If you prefer anonymity - that's fine. The birth date is used to create a unique id and for the more advanced metrics.HRV and RHR change with age, and these measurements require the correct age for accuracy. Please enter your age correctly to within a few weeks, if not exactly.You will receive your unique id with you activation email. It will be used to enhance the security in the future.

Login

Click the Login button at the top of the screen, and enter the details you supplied on registration. Please ensure that you have activated your registration by clicking the Activate button in the email you received after registration. Then press the Login button below the Password.

Please note: the login on this screen uses you email address NOT your user ID.
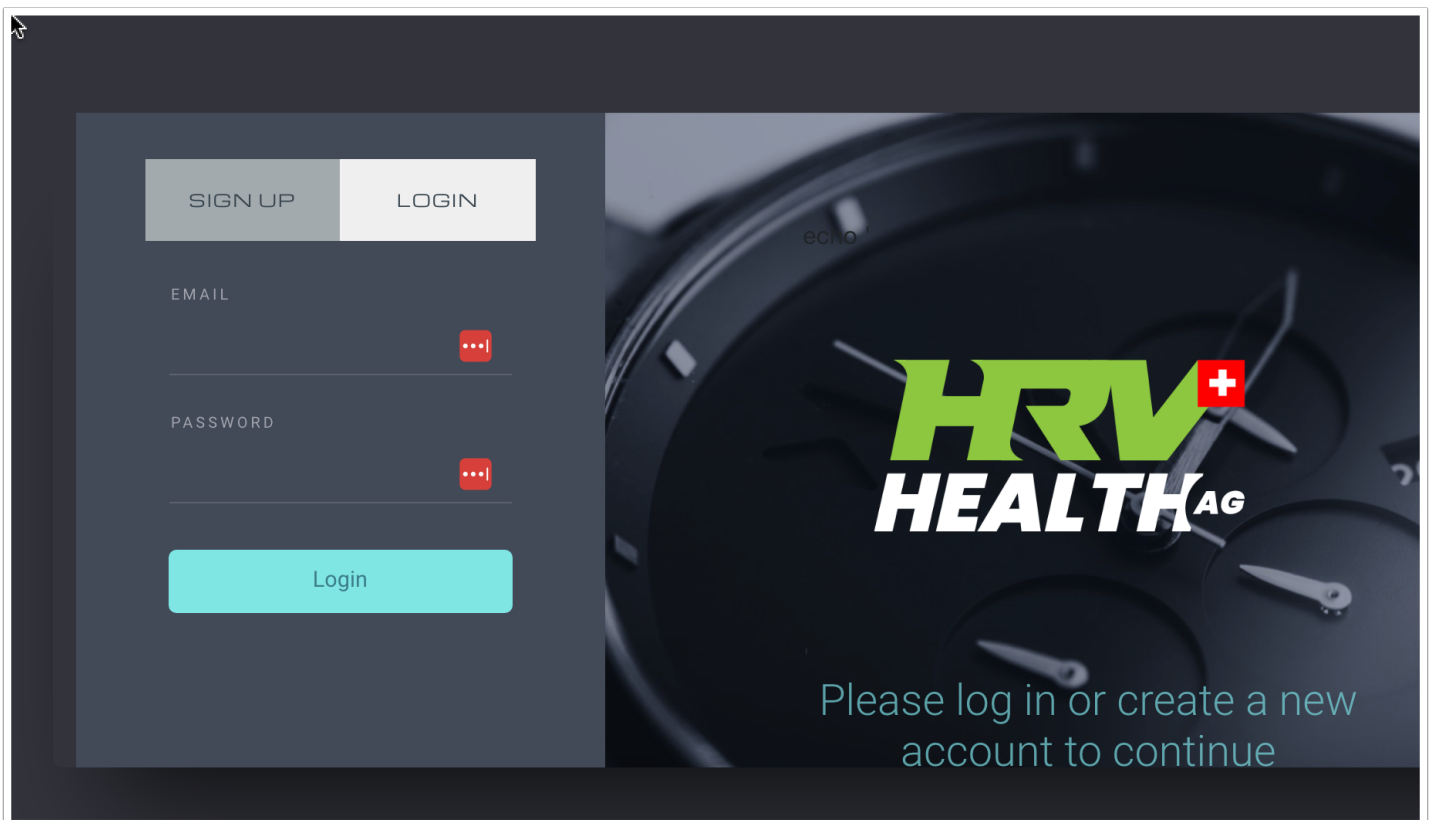
HRV & BP data

Overview

Humans continuously experience stimuli and stressors. Our long term health is dependent on our ability to deal with them. Chronic stress is often a result of stimuli, information and stress overload. How we self-regulate is experienced by the function of a primitive part of our brain, the Autonomic Nervous System (ANS). The ANS regulates bodily functions including heart rate, blood-pressure, and digestion. Comprising 3 parts: sympathetic, parasympathetic (and enteric). The sympathetic and parasympathetic act as a check and balance, with the Parasympathetic nervous systemdecreasing respiration and heart rate after heightened stress.

Measuring Heart Rate Variability (HRV), along with resting heart rate and blood pressure, on a regular basis, helps us to observe Sympathetic and Parasympathetic activity. With observation we

can remain proactive, and intervene where necessary, keeping your stress levels healthy, and strategize to enhance your performance and productivity.

Definitions

Heart rateis a measure of the average number of heartbeats per minute. Your resting heart rate (RHR) is a measure of your heart rate at rest, in a relaxed state. A low RHR is indicative of calm and composure, as well as good fitness. A high RHR is indication of a greater stress, or hyperactive state, poor fitness, or a possible underlying health issue.

Readings- The system is designed to take 120 data points per reading. When the system identifies a data anomaly, that datapoint is removed. Occasionally the reading figure will be a figure slightly below 120.

RMSSD- Root Mean Square of Successive Differences - the successive differences between consecutive heartbeats, is known as the R-R interval. The root mean square represents the strength of the ANS (Autonomic Nervous System). A higher score indicates a less stressed, more resilient system. A lower score indicates a need for improvement, to build resilience and bolster your health and performance.

Score- is an arithmetic value allowing you to observe and follow changes in the function of your ANS over time. A healthy ANShelps maintain normal body functions, conserve physical resources, slow your heart rate, and self-regulate.The Score provides you with a value that is easy to understand, reference, and compare your results, over time.

Coefficient of Variation (CoV)- is the variability of the RMSSD over time. A low CoV is an indication of high fitness levels in athletes.

% Change- change in current to previous HRV reading. A positive value indicates an increase in HRV from the previous reading, or day. A negative value indicates a decrease in HRV from the previous reading, or day. The objective is to build a positive/upward trend, indicating greater resilience, an improvement in stress, and better health/fitness levels. A consistent downward trend would require assessment and intervention.

HRV pulse rate- is ameasure of the average number of heartbeats per minute during your HRV test. The HRV measurement needs to be taken in a restful and quiet state. A high HRV pulse rate is an indication fo a compromised reading.

Stress index -is the measure of the using Baevskys stress index formula. The higher the SI, the higher the level of stress. A figure above 150 is unhealthy and is an alert to look out for stress related conditions. Taking blood pressure measurements at this level is advised

Stress- This is a measure of stress using thePoincar method. Figures above 10 are an alert. Figures below 5 a indicative of low stress levels.

Resting heart rate- resting heart rate indicates fitness level. The lower the RHR, the higher the level of fitness. It is important to ensure that the reading is taken in a calm rested state, preferably first thing in the morning, to obtain an accurate resting heart rate figure.

Blood pressure- systolic and diastolic - as your blood pumps from your heart, your blood pressure is a measure of blood pumping through your arteries. Systolic pressure, the top number, is a measure when the heart contracts. Chronic high systolic pressure increases yourisk of strokes, heart disease and chronic kidney disease. Low systolic blood pressure (hypotension) is rarely a concern.

The diastolicnumber, lower number, is a measure of arterial pressure between heart beats. A high diastolic number increases the risk for heart disease or stroke. If your diastolic blood pressure is chronically low, this can indicate that your heart lacks blood and oxygen, which can weaken the heart and lead to heart failure.

Blood pressure pulse rate- is a measure of your resting heart rate, taken at the same time as your blood pressure reading.

Instructions

Collecting and tracking your data regularly is key to observing consistency, fluctuations, and changes, over time.

Requirements

Polar H10 heart rate monitor.

Blood pressure monitor (optional)

Instructions

HRV test

- Your Polar heart rate monitor is worn just below your chest. The strap fits around your thorax.
- In a reclining or seated position, take consecutive deep breaths for 30 seconds. This helps regulate your autonomic nervous system, which regulates your heart rate. HRV is then read over a two to three-minute period, while your body is in a relaxed state.
- After this 4-minute period your data will be captured and recorded.
- Your recorded data will be sent to the HRV platform.
- Your HRV and Blood Pressure graph provides a visual representation of the function of your autonomic nervous system, over time. This reflectsfluctuations, often indicating reactions to stressors, such as lack of sleep, or an unusually frenetic period of time in your life, and positively to holidays, meditation, high fitness levels, massages, quiet walks, and relaxing music.

Blood pressure test

- Blood pressure and resting heart rate should be taken first thing in the morning, before food, beverage or exercise.
- Body should be in a relaxed seated position, with cuff-attached arm resting on table.
- After test is completed, record your blood pressure and resting heart rate.
- You'll add these systolic and diastolic blood pressure, and blood pressure pulse rate metrics.

Menu items

Update: Updates the reading results fro the selected reading. This is only necessary after archiving readings.

Export: Extracts all of your data and emails it to your registered email address.

Archive: The system is designed for one reading per user per day. If you take additional readings, and want to retain them, tick them in the Select column, then click Archive.

Missing: When multiple reading are taken on a single day, some of the data does not appear. Select the readings and click the missing button to retrieve the missing data.

Email: Allows the user to email theinterpretationsummary for theselected readings to themself. Please note: You will receive a separate email for each selected reading.

Report: This option produces a PDF containing all the users results. This can be saved to the user's hard drive.

All of the colums are explained at the bottom of the page:

Definitions

 # data points- The system is designed to take 120 data points per reading. When the system identifies a data anomaly, that datapoint is removed. Occasionally the reading figure will be a figure slightly below 120.

RMSSD- Root Mean Square of Successive Differences - the successive differences between consecutive heartbeats, is known as the R-R interval. The root mean square represents the strength of the ANS (Autonomic Nervous System). A higher score indicates a less stressed, more resilient system. A lower score indicates a need for improvement, to build resilience and bolster your health and performance.

Score- is an arithmetic value allowing you to observe and follow changes in the function of your ANS over time. A healthy ANS helps maintain normal body functions, conserve physical resources, slow your heart rate, and self-regulate. The Score provides you with a value that is easy to understand, reference, and compare your results, over time.

Overall health- is a combined measure of the Poincar plot and the RMSSD. A high RMSSD is not alwasy a sign of good health. The overall health figure takes this into account and provides a better indication of health status.

RMSSD %- is a measure of the current reading relative to the 30 day moving average as a percentage. Small movements are to be expected. A decline of more that 20% is potentially an indicator of illness. Look for other symptoms that that may indicate the onset of illness. Avoid strenuous activity.

HRV Pulse rate- is a measure of the average number of heartbeats per minute during your HRV test. The HRV measurement needs to be taken in a restful and quiet state. A high HRV pulse rate is an indication fo a compromised reading.

Stress index- is the measure of the using Baevsky's stress index formula. The higher the SI, the higher the level of stress. A figure above 150 is unhealthy and is an alert to look out for stress related conditions. Taking blood pressure measurements at this level is advised.

Stress- This is a measure of stress using the Poincaré method. Figures above 10 are an alert. Figures below 5 a indicative of low stress levels.

Resting heart rate- resting heart rate indicates fitness level. The lower the RHR, the higher the level of fitness. It is important to ensure that the reading is taken in a calm rested state, preferably first thing in the morning, to obtain an accurate resting heart rate figure.

Health trend- This will be zero unless there is a negative health trend. If the figure is below zero, it indicates a negaitve health trend. Review the average HRV in the graph. A figure lower than -10 indicates a condition that may require a medical consultation.

Ratio- The ratio is a measure of the Poincar plot. The Poincar plot should be cigar shaped from bottom left to top right. A good plot will reflect in a high ratio. A ratio below 2 is cause for concern. Review the Poincar plot. If the Poincar plot is more circular than oblong, get advice from an HRV expert or a medical specialist.

Resp- is the respiration rate per minute. A slow respiration rate is a signal of good health and calmness while taking the reading. A figure of between 8 and 12 is normal.

Data- this is a link to the underlying data that resulted in the reading. Anomalies in the reading can be detected in viewing the data.

Interpret- this is a link to an interpretation of the daily reading.

Select- Click this column to select items that are to be modified via the menus.

| HRV result | HRV & BP graph | HRV & BP archive | HRV data | Poincaré result | Poincaré plot | HRV interpretation | Research | HRV & BP result |

Update | Export | Archive | Missing | Email | Report

ID	Date	# data points	RMSSD	Score	Overall health	RMSSD Δ %	HRV Pulse rate	Stress index	Stress	Resting heart rate	Health trend	Ratio	Resp	Data	Interpret	Select
1	2023-01-05 18:37:22	120	80	76.2	59.36	0.4	44.6	112.61	8.62	42	0.00	3.3	11.0	Select	Select	☐
2	2023-01-02 21:17:15	120	80	76.2	59.36	-0.6	44.6	112.61	8.62	42	0.00	3.3	11.0	Select	Select	☐
3	2023-01-01 15:19:21	120	80	76.2	59.36	-1.7	44.6	112.61	8.62	42	0.00	3.3	11.0	Select	Select	☐
4	2022-12-06 10:19:22	120	73	74.5	72.29	-4.7	46.9	98.50	6.04	45	0.00	4.2	9.0	Select	Select	☐

HRV & BP graph

A graphical representation of the HRV and blood pressure data wil allow the user to spot trends.

Instructions

To view a specific set of data, disable the graphs for the other datasets by clicking the Label block next to the dataset you wish to disable. So for example if you wish to see only the Average HRV, click the blocks alongside HRV, Health, Stress, Systolic and Diastolic to disable those datasets from displaying. Then only the Average HRV will be shown.

Please note:

the Average HRV is a 10 days moving average of the HRV score.

Stress is the 10 day moving average of the stress score.

Health is the 10 day moving average of the Health score
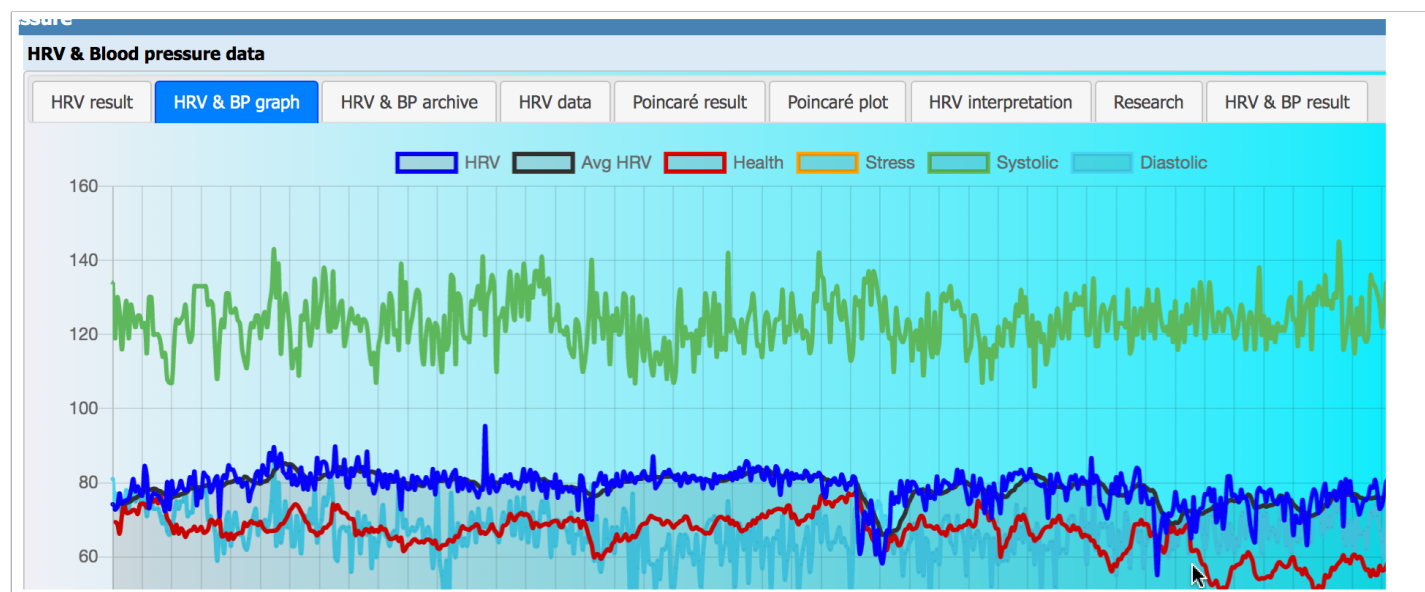
HRV & BP archive

This page displays the user's archived data. The restore button give the user the option to restore data that has been erroneously archived. Tick the reading(s) to be restored under the select column, and click the Restore button.

HRV & Blood pressure data

HRV result	HRV & BP graph	HRV & BP archive	HRV data	Poincaré result	Poincaré plot	HRV interpretation	Research	HRV & BP result

Restore

ID	Date	# Readings	RMSSD	Score	Coeff of Var	% change	HRV Pulse rate	Stress index	Stress	RMSSD	Resting heart rate	RHR	Resp	Stress	BP Sys	BP Dia	BP Pulse rate
1	2023-02-09 06:13:31	117	49	67.7	8.5	0.0	42.3	160.66	14.31	49.3	41	41	14.31		123	66	44
2	2023-01-31 06:08:50	120	76	75.1	8.3	0.0	47.5	66.67	2.86	75.5	41	41	2.86		132	69	44
3	2023-01-29 14:25:52	120	37	62.9	8.6	0.0	59.1	217.01	12.25	37.3	58	58	12.25		108	63	48

HRV Health manual

HRV raw data

Heart rate variability raw data

Heart rate variability is the measure of the time difference between adjacent hearth beats, also known as the inter-beat interval. (IBI).

Columns

Reading # 1- is the first reading of the adjacent pair.

Reading #2- is the second reading of the adjacent pair.

IBI- is the inter-beat interval, the difference between Reading #1and Reading #2.

NN20-are the inter-beat intervals that exceed 20 milliseconds.

NN50- are the inter-beat intervals that exceed 50 milliseconds.

BPM- is the inter-beat interval converted to beats per minute.

pressure

HRV & Blood pressure data

| HRV & BP data | HRV & BP graph | HRV data | HRM device list | HRM device add | HRV app | Research | HRV result |

Delete

ID	Reading #1	Reading #2	IBI	NN20	NN50	BPM
1	1,362	1,274	88	88	88	44
2	1,274	1,358	84	84	84	47
3	1,358	1,461	103	103	103	44
4	1,461	1,475	14	0	0	41
5	1,475	1,433	42	42	0	41

Poincaré result

The Poincaré result reflects the statistics that are commonly referred to as the fequency domain. These are based on the shape of the Poincaré plot which under ideal circumstances is cigar shaped, with longer and thinner being better. The ratio is the result of SD2/SD1, the length divided by the breadth, with higher numbers being better.

A low SD2 figure is an indicator of possible overtraining, and a long term delcine in the SD2 figure is syptomatic of over-training syndrome (OTS).

Definitions

SD1- shows the standard deviation of the instantaneous beat-to-beat variability of the data. This measures the width of the Poincar plot. Narrower is better.

SD2- the standard deviation of the continuous long-term R-R intervals is measured along the horizontal axis. This measures the length of the Poincar plot. Longer is better.

Ratio- The ratio and the ellipse area work in conjunction with one another. The Poincare plot should be cigar shaped from bottom left to top right. A good plot will reflect in a high ratio. A ratio below 2 is cause for concern, and an ECG reading is recommended.

Ellipse area- The ratio is a measure of the Poincar plot. The Poincar plot should be cigar shaped from bottom left to top right. A good plot will reflect in a high ratio. A ratio below 2 is cause for concern. Review the Poincar plot. If the Poincar plot is more circular than oblong, get advice from an HRV expert or a medical specialist.

Score- is the RMSSD on an arithmetics scale.

Poincare score- is a measure of the shape of the Poincar plot. A higher number is better. A negative number is a signal to obtain guidance from an HRV expert.

Poincare deviation- measures the deviation from the axis of the Poincar plot. A lower number is better.

Plot- select the link to view the Poincar plot for the selected date.

HRV & Blood pressure data

HRV result	HRV & BP graph	HRV & BP archive	HRV data	Poincaré result	Poincaré plot	HRV interpretation	Research	HRV & BP result

ID	Date	SD1	SD2	Ratio	Ellipse area	Score	Poincaré score	Poincaré deviation
1	2023-02-18 06:09:53	40.2	128.0	3.2	5147.3	75.7	63.0	3.35
2	2023-02-17 06:10:52	49.1	165.1	3.4	8111.7	81.8	54.0	4.03
3	2023-02-16 06:06:31	29.5	95.5	3.2	2814.4	72.0	56.3	3.28
4	2023-02-15 06:13:08	49.0	171.5	3.5	8401.3	81.8	57.5	3.45
5	2023-02-14 06:05:08	38.1	134.2	3.5	5114.8	79.6	47.2	3.84
6	2023-02-13 06:11:39	23.0	87.0	3.8	2004.3	69.5	60.9	3.53

Poincaré plot

The Poincaré plot shows both the most recent reading (blue), and the user's best reading (green), for comparison. To see only the most recent reading, click the green box alongside the label.

HRV Health manual

The Poincaré plot hould be cigar shaped under ideal circumstances from bottom left to top right. The longer and thinner the better.

A tightly packed circular shape is an indicator of illness, and seeing a mefical specialist is advised.

HRV Interpretation

This screen provides a comprehensive analysis of your state of health. The summary at the top provides a brief overview. It is only necessary to review the details if there are warnings contained in the summary.

If the interpretation is missing, press the redo button. If the interpretation is for the incorrect date, go to the HRV result tab, and click select under the Interpret column. If the data is missing, press the redo button.

Research

There is a significatn body of research on the subject of heart rate variability. This page includes a selection of the leading papers on the subject, with links to the research documents.

This list inludes the standards on calculating HRV metrics.

Because the has become so long, we have created a paging system. To move though the list, use the arrow keys at the top and bottom of the page.

HRV & BP result

This page give users addional data, and the opportunity to keep a record of weight, blood pressure, notes about factors that have influenced the reading, and their carbon dioxide torerance metric.

There are two links at the bottom of the page advising user on what their results mean, and how to imrpover them.

The colmns displayed are:

Definitions

Score- the RDSSD is on a geometric scale. The score is the RMSSD on an arithmetic scale which is a far better representation of the proportion of change from one day to the next.

Avg score- is the 10 day moving average of the score. This figure is also shown on the graph, and provides a good indication of the trend in the score. An upward trend is a sign of improving health.

Percentile- this is the percentile of the population that the result shows. A figure of 65% means that you are 65% healthier than the your gender of the population in your age group.

Resting heart rate- resting heart rate indicates fitness level. The lower the RHR, the higher the level of fitness. It is important to ensure that the reading is taken in a calm rested state, preferably first thing in the morning, to obtain an accurate resting heart rate figure.

Avg RHR- the average resting heart rate is the 10 day moving average of RHR.

RHR percentile- this is the percentile of the population that the result shows. A figure of 65% means that you are 65% fitter than the your gender of the population in your age group.

Stress index- is the measure of the using Baevskys stress index formula. The higher the SI, the higher the level of stress. A figure above 150 is unhealthy and is an alert to look out for stress related conditions. Taking blood pressure measurements at this level is advised.

Avg SI- is the 10 day moving average of the stress index.

Days streak- this is the strak of unbroken days in the reading streak since the last missed day.

Weight (kg)- weight plays an important part in health. Monitoring the relationship between HRV and weight provides the user with valuable information about how they are responding to interventions.

Comment- Click in the comment section of the reading to provide information about the reading. Suggestions include stress factors, intense exercise, poor diet, or symptoms of poor health. The input will only be record by clicking somewhere else on the screen, other than on the menus.

BP Sys- as your blood pumps from your heart, your blood pressure is a measure of blood pumping through your arteries. Systolic pressure is a measure when the heart contracts. Chronic high systolic pressure increases yourisk of strokes, heart disease and chronic kidney disease. Low systolic blood pressure (hypotension) can lead to spells of dizziness. Normal is 120.

BP Dia- The diastolicpressure is a measure of arterial pressure between heart beats. A high diastolic number increases the risk for heart disease or stroke. If your diastolic blood pressure is chronically low, this can indicate that your heart lacks blood and oxygen, which can weaken the heart and lead to heart failure. Normal is 80.

BP Pulse rate- is the heart rate while taking the blood pressure reading. This should be close to resting heart rate as the reading needs to be taken in a calm state.

co2- is the measure of the carbon dioxide tolerance, an indicator of how well the user is recovered from intense exercise in the preceding days. Read the article: HRV and recovery on the blog.

HRV & Blood pressure data

| HRV result | HRV & BP graph | HRV & BP archive | HRV data | Poincaré result | Poincaré plot | HRV interpretation | Research | HRV & BP result |

ID	Date	Score	Avg score	Percentile	Resting heart rate	Avg RHR	RHR percentile	Stress index	Avg SI	Days streak	Weight (kg)	Comment	BP Sys	BP Dia	BP Pulse rate	co2
1	2023-02-18 06:09:53	75.7	75.1	100.0	40	40.8	98.4	91.58	115.7	633	64.9	slept well. woke early thinking about neighbour conflict	131	58	43	60.6
2	2023-02-17 06:10:52	81.8	75.5	100.0	38	41.0	98.9	78.32	114.6	632	64.9	slept well. not enough deep sleep.	126	59	41	55.7
3	2023-02-16 06:06:31	72.0	74.9	100.0	43	41.1	97.3	120.74	119.0	631	64.9	slept poorly according to watch. Feel like I slept well	121	62	47	54.0

HRV app

Using the App

The application collects heart rate variability (HRV) data for registered users of the HRV bike-search.com system (https://hrvhealth.org/).

The app updates the users HRV data, using the DeviceID from the Polar H10 heart rate monitor (HRM). The DeviceID is located along the top edge of the HRM.

The ID must be registered on the HRV system before using the app.

On the menus: Metrics -> HRV & Blood Pressure -> HRM device add. Multiple devices can be registered per user. For security reasons, an HRMs Device ID can only be registered for one user.

The first time the app is run, it will request permission to use Bluetooth. The app requires Bluetooth to connect to the heart rate monitor. Press Ok to allow Bluetooth.

The HRM needs to be registered for first time the app is used on the iOS device (iPhone of iPad). Enter the DeviceID in the DeviceID field, and press the Update button. On successful registration, the HRM ID will appear to the right of the Update button.

Restart the app.

The app requires that the iOS device is connected to the Internet to allow the data to be transmitted to the HRV system.

Collecting data is simple.

Put on the Polar HRM strap, and attach the Polar H10 HRM to the strap.

Start the app, and click the New reading button. You will receive haptic feedback from your iOS device confirming that a new reading has been registered. Click the Start reading button. The app

will start to display the readings, and show the data on the graph that appears at the bottom of the screen.

If no readings appear, the app is not connected to the HRM. Refer to the troubleshooting section below for assistance.

The app takes a default of 120 readings. This takes approximately 3 minutes. Once it has collected the readings, the app will automatically save the data to the HRV system.

Readings can be terminated before completion by clicking the End reading button. To save the data, click the Save data button.

To see the results, on the HRV system go to Metrics -> HRV & Blood Pressure -> HRV & BP data.

If you have also taken a Blood pressure measurement, enter the data in the relevant columns.

This page contains a troubleshooting guide.

Suggestions and comments: Please submit suggestions and comments to info@hrvhealth.org. or on the app support page.

Research

The science behind the HRV Health platform is supported by a significant body of research. This page is a more comprehensive list of some of the more important papers about this amazing technololgy.

HRV result

Definitions

RMSSD- Root Mean Square of Successive Differences - the successive differences between consecutive heartbeats, is known as the R-R interval. The root mean square represents the strength of the ANS (Autonomic Nervous System). A higher score indicates a less stressed, more resilient system. A lower score indicates a need for improvement, to build resilience and bolster your health and performance.

Avg RMSSD- is the 10 day moving average of the RMSSD. This figure is also shown on the graph, and provides a good indication of the trend in the RMSSD. An upward trend is a sign of improving health.

% change RMSSD- this is the percentage of deviation from the mean in the 10 day moving average.

Percentile- this is the percentile of the population that the result shows. A figure of 65% means that you are 65% healthier than the your gender of the population in your age group.

Resting heart rate- resting heart rate indicates fitness level. The lower the RHR, the higher the level of fitness. It is important to ensure that the reading is taken in a calm rested state, preferably first thing in the morning, to obtain an accurate resting heart rate figure.

Avg RHR- the average resting heart rate is the 10 day moving average of RHR.

% change RHR- is the % deviation from the 10 day moving average.

RHR percentile-this is the percentile of the population that the result shows. A figure of 65% means that you are 65% fitter than the your gender of the population in your age group.

Stress index -is the measure of the using Baevskys stress index formula. The higher the SI, the higher the level of stress. A figure above 150 is unhealthy and is an alert to look out for stress related conditions. Taking blood pressure measurements at this level is advised.

Avg SI- is the 10 day moving average of the stress index.

% change SI-is the % deviation from the 10 day moving average.

Kudos -This is the count of the number of people who have given kudos to the user for the reading result.

Comment-Click in the comment section of the reading to provide information about the reading. Suggestions include stress factors, intense exercise, poor diet, or symptoms of poor health.

HRV & Blood pressure data

| HRV & BP data | HRV & BP graph | HRV data | HRM device list | HRM device add | HRV app | Research | HRV result |

ID	Date	RMSSD	Avg RMSSD	% change RMSSD	Percentile	Resting heart rate	Avg RHR	% change RHR	RHR percentile	Stress index	Avg SI	% change SI	Kudos	Co
1	2021-09-27 06:16:56	102.6	102.973	-0.4	100.0	39	37.8182	-3.1	98.7	87.90	86.8	-1.2	0	
2	2021-09-26 06:04:51	111.1	102.508	8.4	100.0	37	37.9091	2.4	99.1	78.76	87.2	9.7	0	
3	2021-09-25 06:10:44	113.1	107.172	5.6	100.0	39	38	-2.6	98.7	72.07	85.5	15.7	0	
4	2021-09-24 06:22:23	91.5	107.024	-14.5	100.0	38	38	-0.0	98.9	111.16	87.3	-27.3	0	

Stress test

Only events that have taken place in the past year must be recorded.

How does this Holmes and Rahe stress scale calculator work?

This health tool tries to explain the effects of stress on the immune system from a general point of view and can raise alarm signs whenever subjects are not responding to stress as they should in order to maintain their health.

The Social Readjustment Rating Scale (SRRS) has been developed in 1967 by psychiatrists Thomas Holmes and Richard Rahe as the method for assessing life stressors in the study patients.

The original 43 item life stress inventory aims to determine whether stressful life events carry causality in illnesses.

The subject is asked to choose the events that have happened in their lives during the previous year.

The study collected the answers of a considerable number of subjects which then had their health parameters monitored during the following six months.

As a result of the study, a positive correlation of 0.118 was found between the patient's reported life events and the presentation illnesses.

Subsequent validation tried to correlate the scores in the scale with subsequent onset of illness and although life stressors are not the main cause to health problems, there is significant causality involved, meaning that it cannot be concluded that stress causes illnesses but there is a correlation in the processes.

To this day the scale has been used in different populations in the American continents and was also tested cross-culturally, although the result was not favorable, due to the scale not accounting for cultural differences.

Every individual has a different ability to cope with life stressors, from major lifetime events to minor every day stressful situations. However, this ability to manage stress and psychological adjust to life seems to have an influence on health overall.

Score interpretation

Each of the items in the scale carries a number of Life Change Units, a relative value awarded in the first stages of the original study in order to quantify the said stressors and obtain the overall interpretable score.

The LCU values were added in the early phases of research when 394 subjects were shown the 43 item scale and told that marriage, as an item is given 500 points on the imaginary stress scale. The subjects were then asked to individually assign points over 500 to life stressors higher than marriage and points below 500 to life events that they perceive to be less stressful than marriage.

The average values of the points awarded were then used in the LCU of the SRRS. There are three categories of results, divided by the severity of risk for major health breakdown in the following 24 months after the stress assessment.

? Scores equal to or above 300 are considered high risk with 80% chances.

? Scores between 150 and 299 are moderate risk with 50% chances.

? Scores below 150 are considered low risk.

SRSS criticism

The main criticism received by this stress scale was that it doesn't account for inherent variation, meaning that each individual perceives certain life events more stressing than others. And although the scale was built on subject evaluation, there should be an extent to which the LCUs awarded can vary depending on individual preference.

The scale does involve both positive and negative life chances and doesn't make a provision to difference these, although both types can be considered stressors.
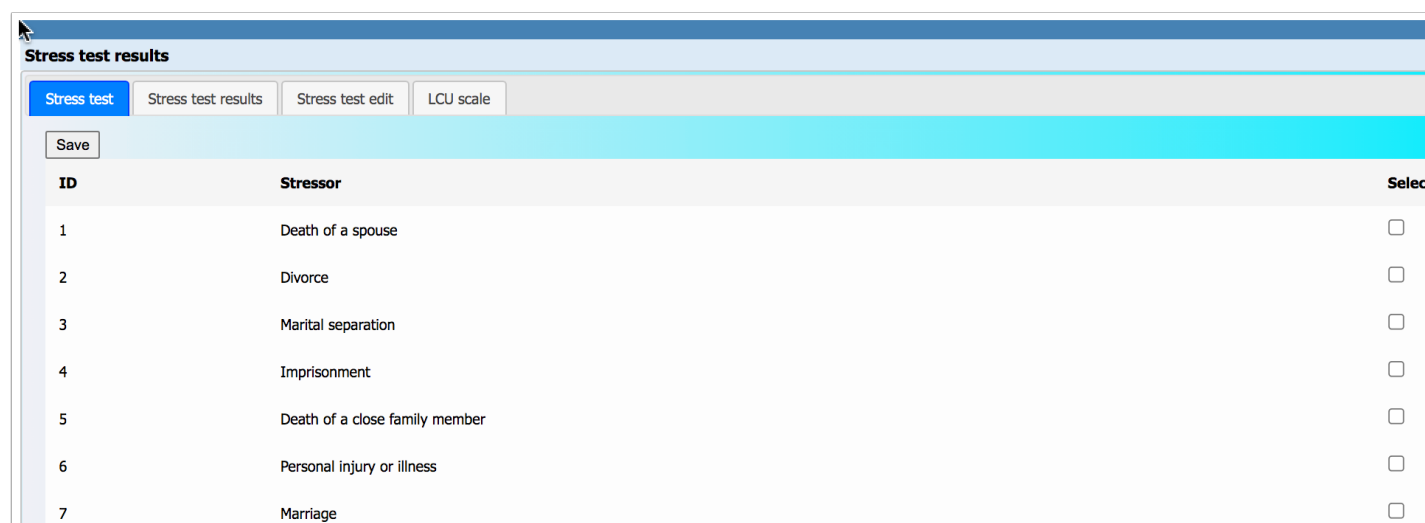
At the same time, it appears that the research conducted was focused on male response, therefore some critics say is it not entirely specific or adapted for female use.

Being a self report assessment, some patient answers might not be reliable enough, whether the patient doesn't recall certain events or doesn't accurately acknowledge the stressor effects of others.

Another point of view if that the criteria in the scale are outdated and that it should be updated to cover the current stressors in nowadays modern society.

References

1) Holmes TH, Rahe RH. (1967) The Social Readjustment Rating Scale. J Psychosom Res; 11(2):213-8.

2) Rahe RH, Arthur RJ. (1978) Life change and illness studies: past history and future directions. J Human Stress; 4(1):3-15.

3) Rahe RH, Mahan JL Jr, Arthur RJ. (1970) Prediction of near-future health change from subjects' preceding life changes. J Psychosom Res; 14(4):401-6.

4) Rahe RH, Biersner RJ, Ryman DH, Arthur RJ. (1972) Psychosocial predictors of illness behavior and failure in stressful training. J Health Soc Behav; 13(4):393-7.

	Stress test results		
Stress test	Stress test results	Stress test edit	LCU scale

Save

ID	Stressor	Select
1	Death of a spouse	☐
2	Divorce	☐
3	Marital separation	☐
4	Imprisonment	☐
5	Death of a close family member	☐
6	Personal injury or illness	☐
7	Marriage	☐

Stress test results

This is a list of the test that you have completed. It allows you to review how your stress levels using the SRSS test have changed over time.

Refer to the Stress test tab for a detailed explanation of how the SRSS test works.Click the select button if you feel that there are errors in the test that need changing.

Click on the comments column to register events in your life at the time that may have caused the stress that affected your life at the time.

Stress test edit

After selecting the test on the Stress test result page, the user is brought to this screen where they are able to make amendments to the original input.

This allows the user to fix errors that were made in the original entry of the test. It is the users record, and it will allow the user to get a better understanding of how life events have affected their health over time.

LCU scale

The SRSS scale

In 1967, psychiatrists Thomas Holmes and Richard Rahe decided to study whether or not stress contributes to illness. They surveyed more than 5,000 medical patients and asked them to say whether they had experience any of a series of 43 life events in the previous two years.

Each event, called a Life Change Unit (LCU), had a different "weight" for stress. The more events the patient added up, the higher the score. The higher the score, and the larger the weight of each event, the more likely the patient was to become ill.

Stress test results

| Stress test | Stress test results | Stress test edit | LCU scale |

ID	Stressor
1	Death of a spouse
2	Divorce
3	Marital separation
4	Imprisonment
5	Death of a close family member
6	Personal injury or illness
7	Marriage

Edit user

Some of the details added on registration must be correct to ensure that you have a happy experience here. Please ensure that:

1. the email address is correct. The email address is used to send you your HRV data when you click the email button on the HRV & BP screen. The email address is also used for notifications if you elect to receive alerts for highlights in your HRV and RHR data. We donotshare email addresses with anyone, nor are they be used for any form of advertising. Trust is the most important part of our business. If we compromise your personal information, we are compromising our business.
2. HRV goes down with age. The birthdate is required to determine the relevance of the HRV reading in relation to age.
3. HRV and heart rate differ by gender. HRV Health measures HRV and RHR relative to the population by gender.
4. Only enter a group if you are a member of a registered group. If you are not a member of a group, please select NA.

5. Only enter a health insurer if you are a policy holder with a health insurer in Switzerland. If you are not insured in Switzerland, please select N/A.
6. If you wish to receive alerts of highlights in your data, please select yes for notifications. The notifications are about you, not about us.
7. If you want to avoid seeing readings that are bad news, pick Yes. This will hide bad results allowing you to keep the data, without having to see it.
8. Target RHR (resting heart rate) lets you set a goal. Your RHR drops as you get fitter. Set yourself a fitness goal, and you will get Kudos on the interpretation page when you hit your goal.

It is not really important that the names are correct. If you prefer anonymity - that's fine. The birth date is used to create a unique id and for the more advanced metrics. HRV and RHR change with age, and these measurements require the correct age for accuracy. Please enter your age correctly to within a few weeks, if not exactly.

User setup

Edit user	Deregister user	Add user group	Policy number	Change

First name	Roy
Last name	Dalle Vedove
Country	Switzerland ▼
Birthdate	06/27/1958
Email address	roy@hrvhealth.org
Gender	○ Female ⦿ Male
Language:	English ▼
Group:	NA ▼
Health insurer:	Sanitas Grundversicherungen... ▼
Notifications	⦿ Yes ○ No
Hide	○ Yes ⦿ No
Target RHR	37
Submit	

Deregister

Deactivate:this button deactivates the user. It also removes the user's first and last names, and email address from the database. The account can be reactivated by clicking the Activate link on the Registration confirmation email sent to the user on registration.

Delete user:This action isirreversible. Itirrecoverablydeletes all user data from the database.
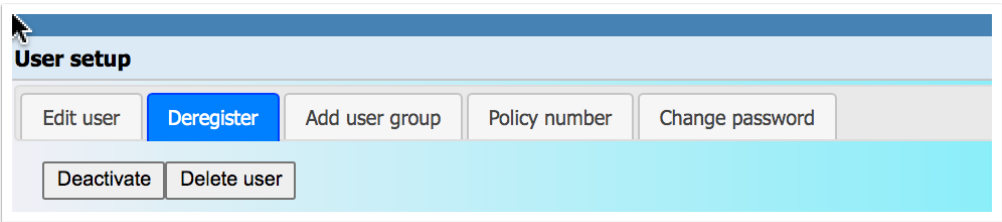
Add user group

1. Please do not add a group unless you are a member of that group;
2. When you add a group, you will automatically become a member of that group;
3. If you are already a member of a group, you will not be able to add a new group.
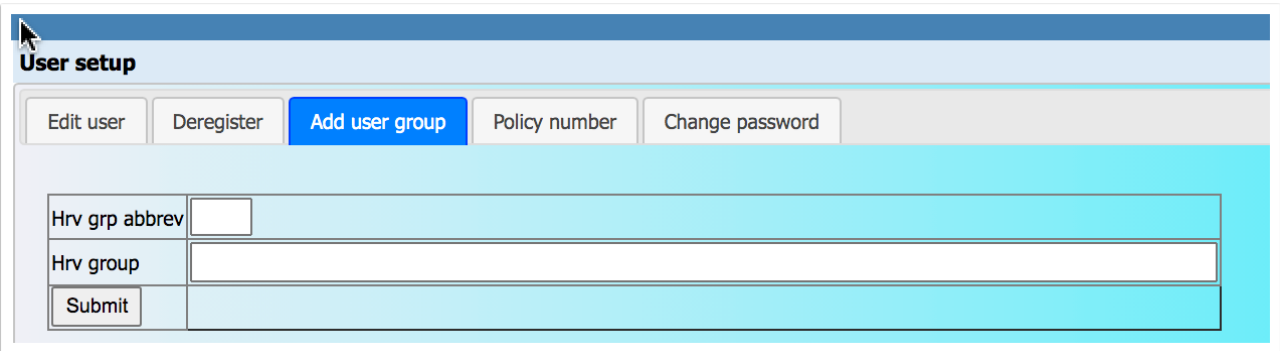
Policy number

These details should only be entered if you have a health insurance policy that rewards you for your health and fitness status, and it is a requirement of the policy that your HRV Health data are shared with them.

Select the name of the insurer from in the dropdown box, then enter your policy number with your insurer, and click yes to acknowledge that your HRV Health data is shared with your insurer, and then click Submit.

Change password

Changing your password is a four step process:

1. Enter your existing password. The system will validate that this is correct;
2. Enter your new password;
3. Re-enter your new password. The system will validate that it is the same as the New password you entered easlier;
4. Click the Submit button.

All passwords are encrypted to ensure that your data and password are secure.

Write testimonial

Please write an honest review about the platform. If it has helped you, and giving you the information you want and need, then please let everyone know. If the system is not working for you, then let us know, and publish your feeling about what you expected, and why you were disappointed. Thanks.

If you have issues with the app or the platform, please contact us using the App support on the HRV menu. We respond to all support requests.

Although the HRV Health Platform is still in English, we have users around the world. Please wrtie the testimonial in your language of choice.

HRM device list

1. To remove a device ID, click the Select tick box for the device ID, and click the Delete button. Please ensure that you are not using this device for automated login from your phone or your desktop;
2. To create a desktop link, click the Select tick box for the device ID, and click the Send URL button. You will receive the link as an attachment on your registered email address. Save the URL file to your desktop for automated login.

HRM device add

This screen allows the user to enterthe Polar H10 heart rate monitor device ID if it was not entered during registration.It can also be used if the user wants to use another H10 HRM.

The system does not permit more than one user to use the same HRM.

User groups

This screen allows the user to add all the groups which they belong to. Click the down arrow, of if you know the group, start typing the name. Click the checkbox for all the groups that you belong to, and click the Ok button below the list. Once you have listed all the groups that you belong to, click the Submit button.

Followers list

This screen lists the people whom you have granted rights to view your HRV and BP data.If you wish to remove view rights, check the Select column, and click the Remove button.To add view rights, click the Allow follower tab.

Allow follower

To grant rights for another user to view your HRV and BP data, you need to add enter the email address that the user has registered on this platform. Other email addresses for the user will work, even though they may be valid email addresses for that user.

Following

Click the link in the Data column to view the user's HRV & BP data.

Click the link in the Graph column to view the graph of the user's HRV & BP data.

Click the link in the Result column to view the results of the user's HRV data.

Click the Kudos button to give everyone in the list Kudos for today - they will only get Kudos if they've taken a reading.

Click the All button to alternate between viewing only following who have taken a reading today, and all following.

Followers list	Allow follower	Following	Following readings	Following graph	Following data	Following result	Poincaré plot	Follower avera

Kudos	All								
ID	**First name**	**Last name**	**Country**	**Read date**	**RMSSD**	**RHR**	**Stress**	**Data**	**Graph**
1	Roy	D	Switzerland	2023-02-19 06:09:38	69.5	40	8.3	Select	Select

Following readings

After clicking the select button in the Data column of this page will give the user insight into the subject's data.

The Report button allows the user to print the data out in the form of a PDF, which can be saved to the hard drive.

Definitions

Select- Click this column to select items that are to be modified via the menus.

 # Readings- The system is designed to take 120 data points per reading. When the system identifies a data anomaly, that datapoint is removed. Occasionally the reading figure will be a figure slightly below 120.

RMSSD- Root Mean Square of Successive Differences - the successive differences between consecutive heartbeats, is known as the R-R interval. The root mean square represents the strength of the ANS (Autonomic Nervous System). A higher score indicates a less stressed, more resilient system. A lower score indicates a need for improvement, to build resilience and bolster your health and performance.

Score- is an arithmetic value allowing you to observe and follow changes in the function of your ANS over time. A healthy ANS helps maintain normal body functions, conserve physical resources, slow your heart rate, and self-regulate. The Score provides you with a value that is easy to understand, reference, and compare your results, over time.

Overall health- is a combined measure of the Poincar plot and the RMSSD. A high RMSSD is not alwasy a sign of good health. The overall health figure takes this into account and provides a better indication of health status.

RMSSD %- is a measure of the current reading relative to the 30 day moving average as a percentage. Small movements are to be expected. A decline of more that 20% is potentially an indicator of illness. Look for other symptoms that that may indicate the onset of illness. Avoid strenuous activity.

Coeff of Var- is the variability of the RMSSD over time. A low CoV is an indication of high fitness levels in athletes.

HRV Pulse rate- is a measure of the average number of heartbeats per minute during your HRV test. The HRV measurement needs to be taken in a restful and quiet state. A high HRV pulse rate is an indication fo a compromised reading.

Stress index- is the measure of the using Baevsky's stress index formula. The higher the SI, the higher the level of stress. A figure above 150 is unhealthy and is an alert to look out for stress related conditions. Taking blood pressure measurements at this level is advised.

Stress- This is a measure of stress using the Poincaré method. Figures above 10 are an alert. Figures below 5 a indicative of low stress levels.

Resting heart rate- resting heart rate indicates fitness level. The lower the RHR, the higher the level of fitness. It is important to ensure that the reading is taken in a calm rested state, preferably first thing in the morning, to obtain an accurate resting heart rate figure.

Resp- is the respiration rate per minute. A slow respiration rate is a signal of good health and calmness while taking the reading. A figure of between 8 and 12 is normal.

Poincar score- is a measure of the shape of the Poincar plot. A higher number is better. A negative number is a signal to obtain guidance from an HRV expert.

Poincar deviation- measures the deviation from the axis of the Poincar plot. A lower number is better.

SD1- shows the standard deviation of the instantaneous beat-to-beat variability of the data. This measures the width of the Poincar plot. Narrower is better.

SD2- the standard deviation of the continuous long-term R-R intervals is measured along the horizontal axis. This measures the length of the Poincar plot. Longer is better.

Ratio- The ratio is a measure of the Poincar plot. The Poincar plot should be cigar shaped from bottom left to top right. A good plot will reflect in a high ratio. A ratio below 2 is cause for concern. Review the Poincar plot. If the Poincar plot is more circular than oblong, get advice from an HRV expert or a medical specialist.

Data- Click the link to view the underlying data for the reading.

Plot- Click the link to view the Poincar plot for the reading.

Personal best- this column will reflect when a personal best reading has been achieved with the ellipse area, RMSSD, or resting heart rate.

View user data

| Followers list | Allow follower | Following | **Following readings** | Following graph | Following data | Following result | Poincaré plot | Follower averages |

Report

Roy D

ID	Date	Select	# Readings	RMSSD	Score	Overall health	RMSSD Δ %	Coeff of Var	HRV Pulse rate	Stress index	Stress	Resting heart rate	Resp	Poincaré score	Poincaré deviation	Ratio
1	2023-02-19 06:09:38	☐	120	70	72	49.2	-2.4	8.4	42	116.06	8.26	40	8.0	54.5	3.68	2.9
2	2023-02-18 06:09:53	☐	120	78	74	57.0	0.5	8.4	42	91.58	6.34	40	8.3	63.0	3.35	3.2

Following graph

Allows the user to view a graph of the subjects data.

To view a specific set of data, disable the graphs for the other datasets by clicking the Label block next to the dataset you wish to disable. So for example if you wish to see only the Average HRV, click the blocks alongside HRV, Health, Stress, Systolic and Diastolic to disable those datasets from displaying. Then only the Average HRV will be shown.

Note:

the Average HRV is a 10 days moving average of the HRV score.

Stress is the 10 day moving average of the stress score.

Health is the 10 day moving average of the Health score
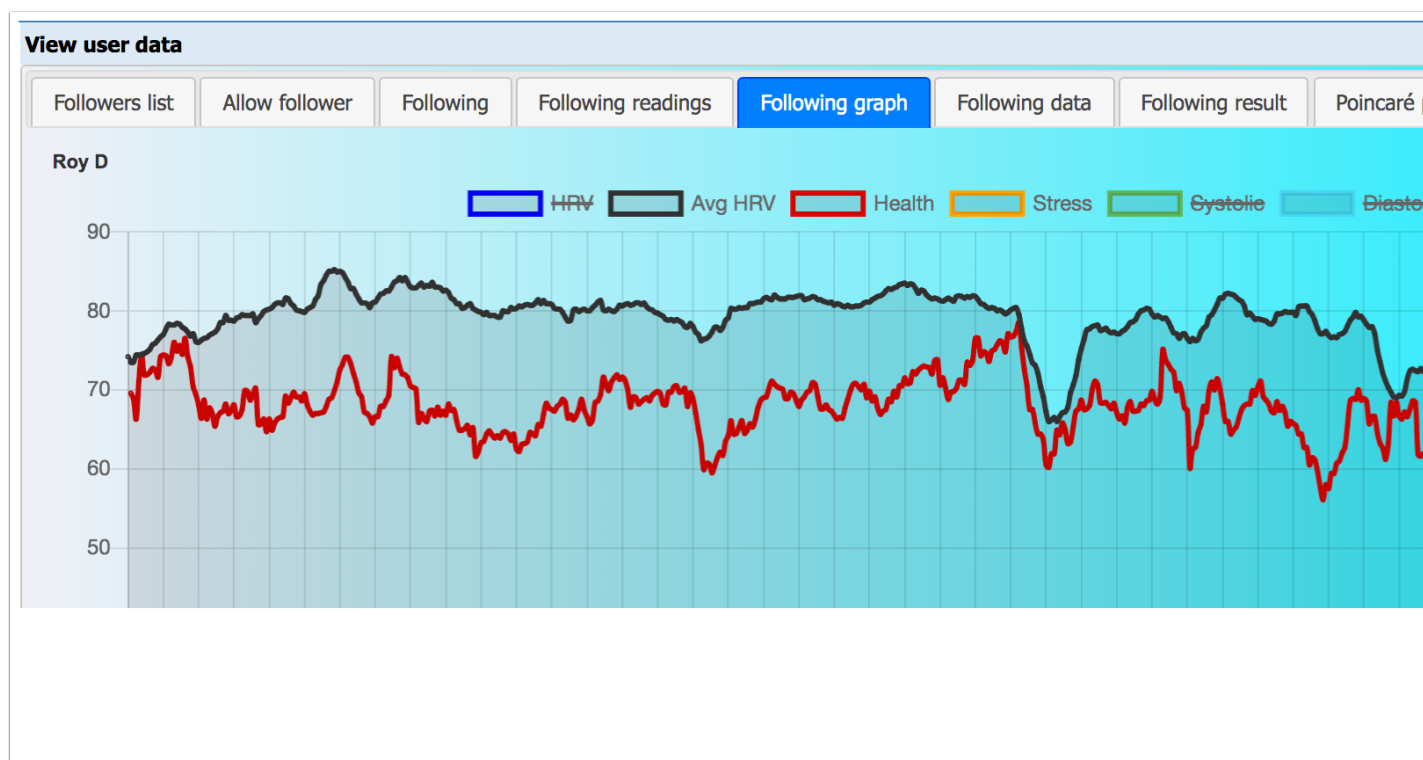
Following data

Heart rate variability raw data

Heart rate variability is the measure of the time difference between adjacent hearth beats, also known as the inter-beat interval. (IBI).

Columns

Reading # 1- is the first reading of the adjacent pair.

Reading #2- is the second reading of the adjacent pair.

IBI- is the inter-beat interval, the difference between Reading #1and Reading #2.

NN20-are the inter-beat intervals that exceed 20 milliseconds.

NN50- are the inter-beat intervals that exceed 50 milliseconds.

BPM- is the inter-beat interval converted to beats per minute.

View user data

| Followers list | Allow follower | Following | Following readings | Following graph | Following data | Following result | Poincaré plot | Follower averages |

Roy D 2023-02-19 06:09:38

ID	Reading #1	Reading #2	IBI	NN20	NN50
1	1,373	1,468	95	95	95
2	1,468	1,554	86	86	86
3	1,554	1,483	71	71	71
4	1,483	1,462	21	21	0
5	1,462	1,417	45	45	0

Following result

Score- the RDSSD is on a geometric scale. The score is the RMSSD on an arithmetic scale which is a far better representation of the proportion of change from one day to the next.

Avg score- is the 10 day moving average of the score. This figure is also shown on the graph, and provides a good indication of the trend in the score. An upward trend is a sign of improving health.

Percentile- this is the percentile of the population that the result shows. A figure of 65% means that you are 65% healthier than the your gender of the population in your age group.

Resting heart rate- resting heart rate indicates fitness level. The lower the RHR, the higher the level of fitness. It is important to ensure that the reading is taken in a calm rested state, preferably first thing in the morning, to obtain an accurate resting heart rate figure.

Avg RHR- the average resting heart rate is the 10 day moving average of RHR.

RHR percentile- The fitness level relative to the population for the users age and gender.

Stress index- is the measure of the using Baevsky's stress index formula. The higher the SI, the higher the level of stress. A figure above 150 is unhealthy and is an alert to look out for stress related conditions. Taking blood pressure measurements at this level is advised.

Avg SI- is the 10 day moving average of the stress index.

Days streak- this is the strak of unbroken days in the reading streak since the last missed day.

Weight (kg)- A record of the users daily weight.

Kudos- The number of kudos given to the member for improved health results.

Add kudos- Give the user kudos for improved health results.

Comment- a field that allows the user to make comments about externalities that may have impacted the reading. Poor sleep. Too much alcohol. Feeling ill.

View user data

Followers list	Allow follower	Following	Following readings	Following graph	Following data	Following result	Poincaré plot	Follower av

Roy D

ID	Date	Score	Avg score	Percentile	Resting heart rate	Avg RHR	RHR percentile	Stress index	Avg SI	Days streak	Weight (kg)	Kudos	Add kudos	Comment
1	2023-02-19 06:09:38	73.7	75.2	100.0	40	40.4	98.4	116.06	113.3	634	64.9	0	Select	slept ok, no yesterday?
2	2023-02-18 06:09:53	75.7	75.1	100.0	40	40.8	98.4	91.58	115.7	633	64.9	0	Select	slept well. v neighbour c

Poincaré plot

The Poincaré plot shows both the most recent reading (blue), and the user's best reading (green), for comparison. To see only the most recent reading, click the green box alongside the label.

The Poincaré plot hould be cigar shaped under ideal circumstances from bottom left to top right. The longer and thinner the better.

A tightly packed circular shape is an indicator of illness, and seeing a mefical specialist is advised. If you are the subject's medical specialist, this plot is a powerful tool toward understanding the person health status.

HRV Health manual

The Poincaré plot is also an indicator of the subject's revovery status if they are an athlete. A shortened longitudal axis indicates that the subject of not fully recovered from previous exertions - however this shoudl be seen in the context of theri exercise, and the long terms trends in their data.

Follower averages

This page provides the 10 day moving averages of the most important HRV metrics:

RMSSD- Root Mean Square of Successive Differences - the successive differences between consecutive heartbeats, is known as the R-R interval. The root mean square represents the strength of the ANS (Autonomic Nervous System). A higher score indicates a less stressed, more resilient system. A lower score indicates a need for improvement, to build resilience and bolster your health and performance.

Score- the RDSSD is on a geometric scale. The score is the RMSSD on an arithmetic scale which is a far better representation of the proportion of change from one day to the next.

SDNN- is the standard deviation of the IBI variation from the mean of the IBIs. The SDNN is frequently used as a measure of HRV in long period measurements. RMSSD is better suited to the short term measurements that HRV Health uses.

Resting heart rate- resting heart rate indicates fitness level. The lower the RHR, the higher the level of fitness. It is important to ensure that the reading is taken in a calm rested state, preferably first thing in the morning, to obtain an accurate resting heart rate figure.

Ellipse area- The ellipse area and the ratio work in conjunction with one another. The Poincar plot should be cigar shaped from bottom left to top right. A good plot will reflect in a high ellipse area and a low ratio. A ratio below 2 is cause for concern, and an ECG reading is recommended.

Stress index- is the measure of the using Baevsky's stress index formula. The higher the SI, the higher the level of stress. A figure above 150 is unhealthy and is an alert to look out for stress related conditions. Taking blood pressure measurements at this level is advised.

Stress- This is a measure of stress using the Poincaré method. Figures above 10 are an alert. Figures below 5 a indicative of low stress levels.

Ratio- The ratio is a measure of the Poincar plot. The Poincar plot should be cigar shaped from bottom left to top right. A good plot will reflect in a high ratio. A ratio below 2 is cause for concern. Review the Poincar plot. If the Poincar plot is more circular than oblong, get advice from an HRV expert or a medical specialist.

Health- is a combined measure of the Poincar plot and the RMSSD. A high RMSSD is not alwasy a sign of good health. The overall health figure takes this into account and provides a better indication of health status.

View user data

Followers list	Allow follower	Following	Following readings	Following graph	Following data	Following result	Poincaré plot	Follower averages

Roy D

ID	Date	RMSSD	Score	SDNN	Resting heart rate	Ellipse area	Stress index	Stress	Ratio	Health
1	2023-02-19	79.6	75.5	77.4	42.1	3,815	119.5	8.5	3.3	59.4
2	2023-02-18	79.0	75.3	76.6	42.2	3,760	120.9	8.6	3.3	59.1
3	2023-02-17	80.0	75.5	79.8	42.4	4,140	119.3	8.5	3.3	60.1
4	2023-02-16	77.4	74.8	77.0	42.7	3,892	124.4	8.9	3.3	59.0
5	2023-02-15	76.7	74.6	76.1	42.7	3,832	127.6	9.1	3.3	58.7
6	2023-02-14	74.3	74.0	73.3	42.9	3,584	132.0	9.4	3.3	57.5

ECG readings

One of the powerfu features of the HRV Health apps are their ability take ECG readings using the Polar H10 heart rate monitor. After taking the reading, the user's results are avaible for viewing. The readings screen list the readings, the date of the reading, and the number of data points. This figure should be 2,555 if the data is complete.

When a data set is incomplete, is should be deleted. The ECG data requires is made up of a considerable amount of data - and this can take as much as 30 seconds to upload to the HRV Health
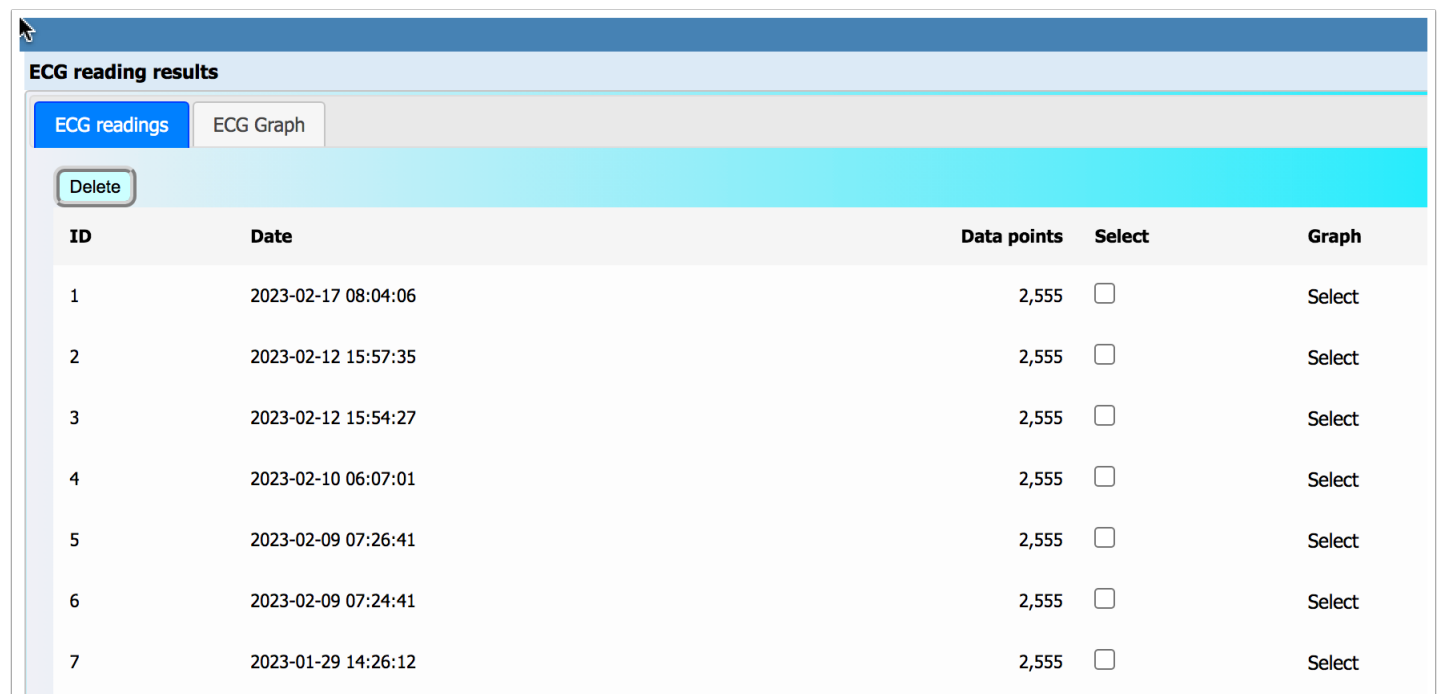
platform. Please do not delete the reading until sifficient time has passed for it to upload. The screen needs to be manually refreshed to see whether all the data have been uploaded.

If you wish to delete a reading, click the checkbox in the select colum, and click the Delete button.

If you wish to view the ECG graph, click Select in the Graph column.

HRV Health does not provide an interpretation of the eCG reading. This requires a professional cardiologist.

To obtain a better understanding of the ECG graph, read the literature provided in the links at the botton of this page.

ECG reading results

ECG readings	ECG Graph

Delete

ID	Date	Data points	Select	Graph
1	2023-02-17 08:04:06	2,555	☐	Select
2	2023-02-12 15:57:35	2,555	☐	Select
3	2023-02-12 15:54:27	2,555	☐	Select
4	2023-02-10 06:07:01	2,555	☐	Select
5	2023-02-09 07:26:41	2,555	☐	Select
6	2023-02-09 07:24:41	2,555	☐	Select
7	2023-01-29 14:26:12	2,555	☐	Select

ECG graph

HRV Health does not provide interpretations of the results of ECG readings. In order to obtain a better understanding ot the ECG graph, read the literature provided in the links at the bottom of the ECG reading page.

Allow follower

To grant rights for another user to view your HRV and BP data, you need to add enter the email address that the user has registered on this platform. Other email addresses for the user will work, even though they may be valid email addresses for that user.

Following

This screen displays a list of the users who have provided access to their data. The date is that of the user's most recent ECG reading.

The sample button allows the user to add the data of the sample user to the list so that this data can be viewed.

Following reading

This screen lists all of the ECG readings for the slected user. To view the ECG graph for a reading, click the select button in the Graph column.

Followers ECG list

| Highlight HRV | Allow follower | Following | **Following reading** | ECG graph |

Delete

Roy D

| ID	Read date	Data points	Graph
1	2023-02-17 08:04:06	2,555	Select
2	2023-02-12 15:57:35	2,555	Select
3	2023-02-12 15:54:27	2,555	Select
4	2023-02-10 06:07:01	2,555	Select
5	2023-02-09 07:26:41	2,555	Select
6	2023-02-09 07:24:41	2,555	Select

ECG graph

HRV Health does not provide interpretations of the results of ECG readings. In order to obtain a better understanding ot the ECG graph, read the literature provided in the links at the bottom of the ECG reading page. Hopefully you are the cardiologist looking at your patient's ECG graph.

HRV graph

This is the graph of the 10 day moving average of all the users HRV readings. Gaps will appear in the graph when readings are not taken regularly.
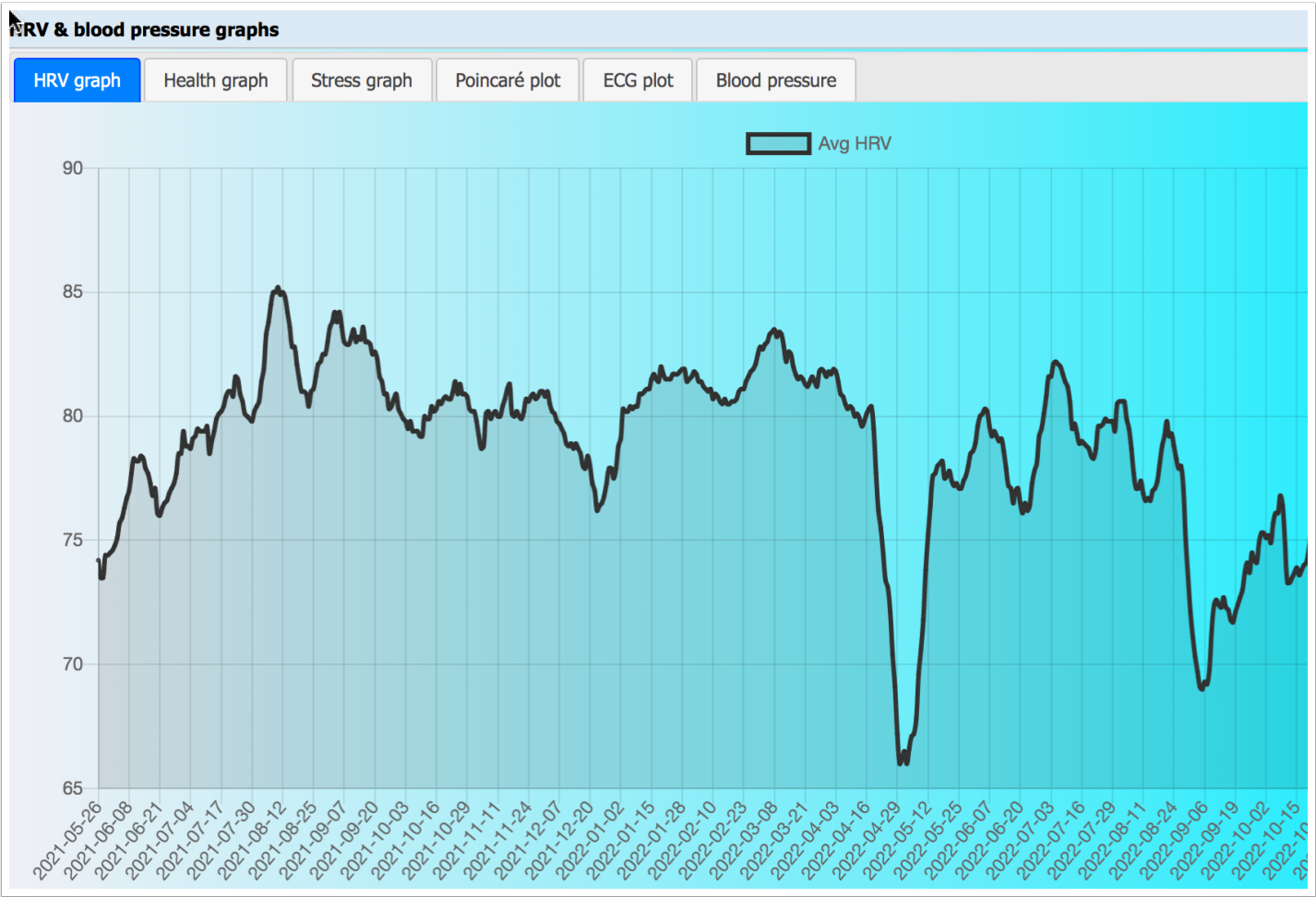
Helath graph

This is the graph of the 10 day moving average of all the users HRV health readings. Gaps will appear in the graph when readings are not taken regularly.

Stress graph

This is the graph of the 10 day moving average of all the users stress results.

Gaps will appear in the graph when readings are not taken regularly.

Poincaré plot

This is the users most recent Poincaré plot.

The Poincaré plot shows both the most recent reading (blue), and the user's best reading (green), for comparison. To see only the most recent reading, click the green box alongside the label.

The Poincaré plot hould be cigar shaped under ideal circumstances from bottom left to top right. The longer and thinner the better.

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ECG plot

This is the user's most recent ECG graph.
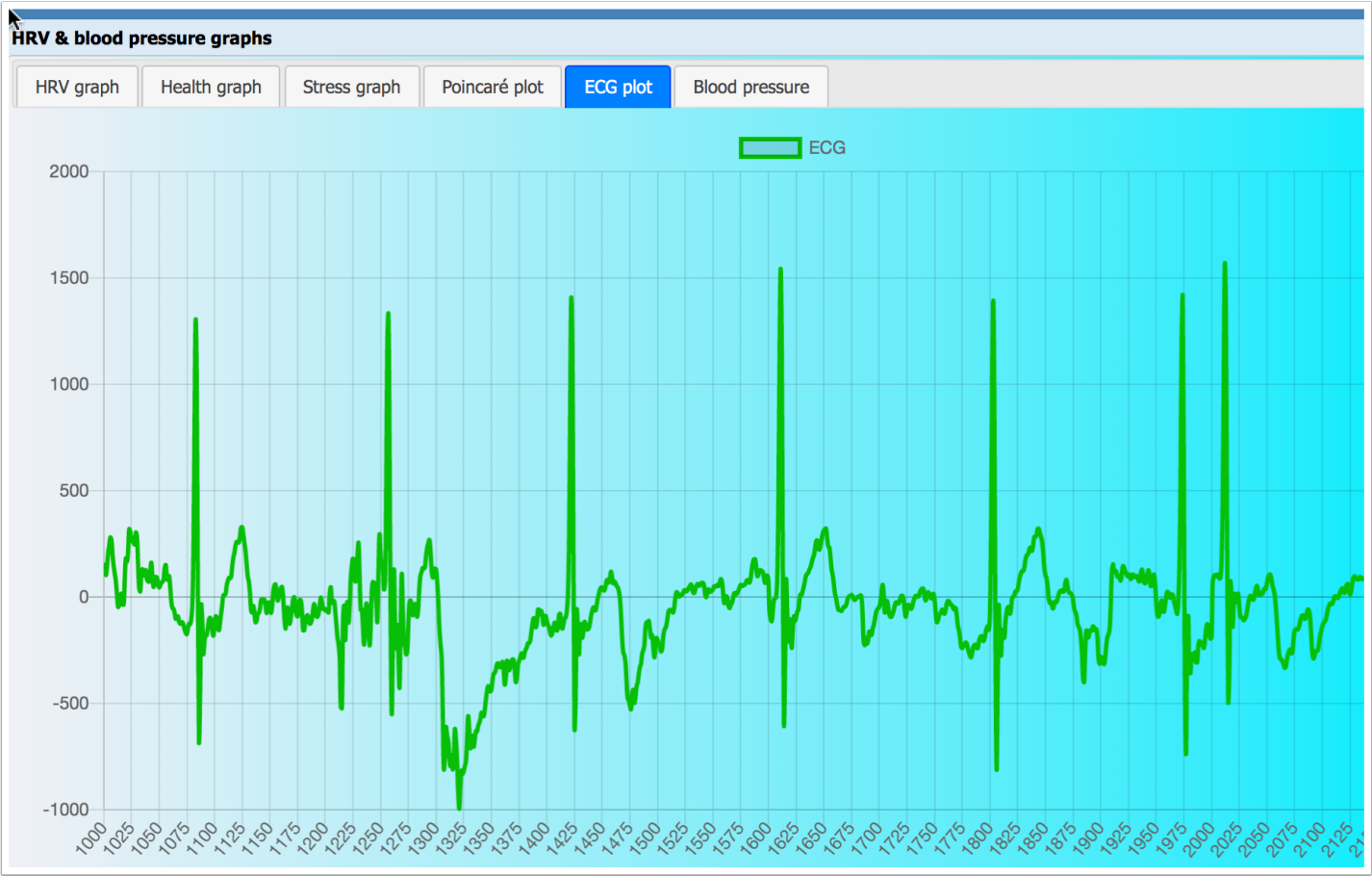
Blood pressure

This graph displays the user's systolic and diasystic blood pressure results for the entrie period for which data have been entered.