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Specialista HRV

Heart Rate Variability biomarcatore per il benessere

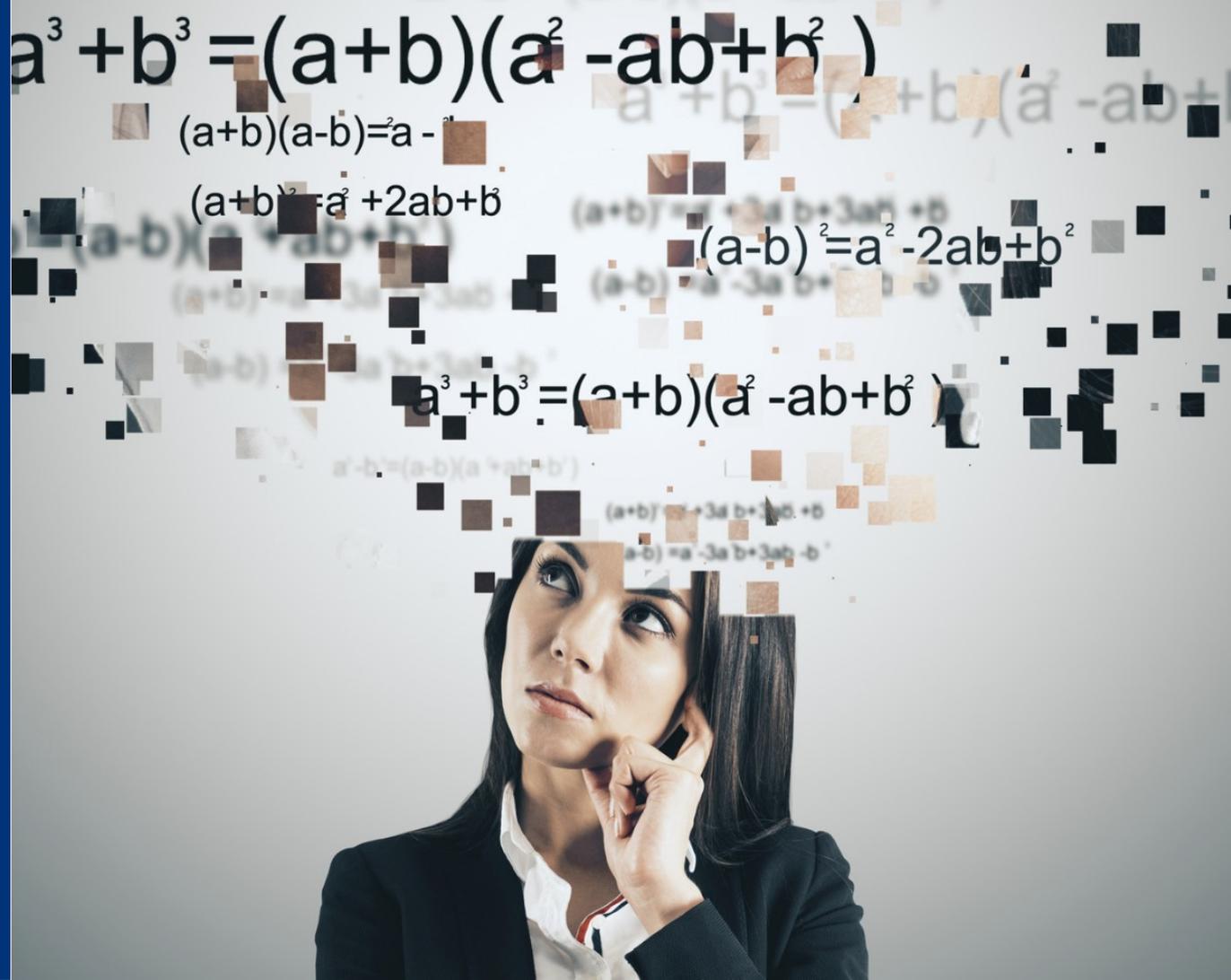
*Utilizzare i messaggi neurovegetativi
per ottimizzare lo stile di vita e modulare lo stress,
generando sinergia con i percorsi terapeutici termali*

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Mutamenti in corso nella
società hanno generato da
un lato maggior
consapevolezza,

dall'altro nuovi bisogni, di
benessere, salute e
longevità



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Come rispondervi?



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Biomarcatori, salute e
patologia



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Nuove esigenze:

Nuovi Biomarcatori per il
Benessere



[Journal List](#) > [Psychiatry Investig](#) > [v.15\(3\); 2018 Mar](#) > PMC5900369



[Psychiatry Investig](#). 2018 Mar; 15(3): 235–245.

PMCID: PMC5900369

Published online 2018 Feb 28. doi: [10.30773/pi.2017.08.17](#)

PMID: [29486547](#)

Stress and Heart Rate Variability: A Meta-Analysis and Review of the Literature

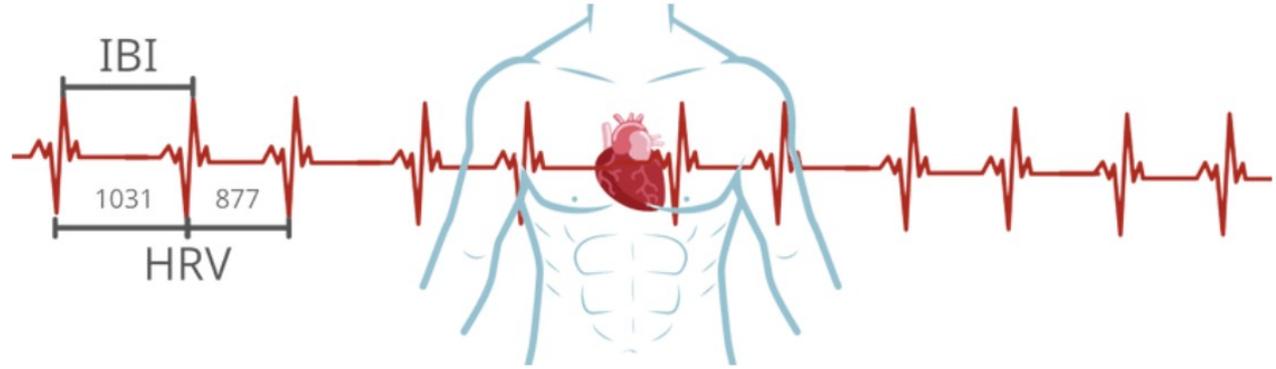
[Hye-Geum Kim](#),¹ [Eun-Jin Cheon](#),² [Dai-Seg Bai](#),³ [Young Hwan Lee](#),^{2,*} and [Bon-Hoon Koo](#)^{1,*}

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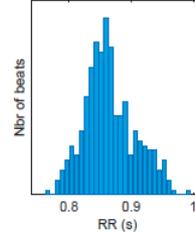
Heart Rate Variability:
Biomarcatore per il
benessere



Time-Domain Results

Variable	Units	Value
Mean RR*	(ms)	865
Mean HR*	(bpm)	69
Min HR	(bpm)	63
Max HR	(bpm)	76
SDNN	(ms)	40.5
RMSSD	(ms)	35.7
NN50	(beats)	45
pNN50	(%)	13.01
RR triangular index		9.64
TINN	(ms)	188.0
Stress Index (SI)		15.1
DC	(ms)	15.9
DCmod	(ms)	36.0

RR distribution

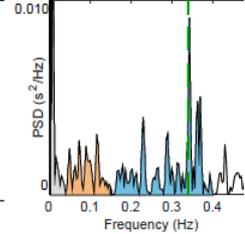


Frequency-Domain Results (FFT spectrum)

Variable	Units	VLF	LF	HF
Frequency band (Hz)		0.00-0.04	0.04-0.15	0.15-0.40
Peak frequency (Hz)		0.003	0.117	0.343
Power	(ms ²)	158	124	286
Power	(log)	5.063	4.817	5.657
Power	(%)	25.01	19.55	45.27
Power	(n.u.)		26.07	60.37

Total power	(ms ²)	632		
Total Power	(log)	6.449		
LF/HF ratio		0.432		
RESP	(Hz)	0.34		

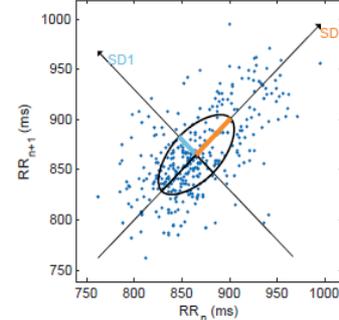
RR Spectrum



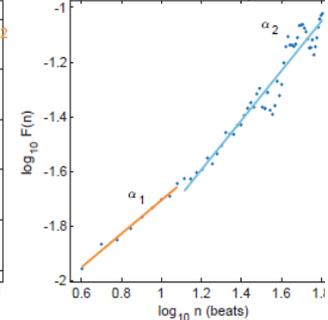
Nonlinear Results

Variable	Units	Value
Poincare Plot		
SD1	(ms)	25.3
SD2	(ms)	51.2
SD2/SD1		2.021
Approximate Entropy (ApEn)		1.166
Sample Entropy (SampEn)		1.620
Detrended Fluctuation Analysis (DFA)		
Short-term fluctuations, α_1		0.613
Long-term fluctuations, α_2		0.904
Correlation Dimension (D2)		1.172
Recurrence Plot Analysis (RPA)		
Mean line length (Lmean)	(beats)	15.81
Max line length (Lmax)	(beats)	103
Recurrence rate (REC)	(%)	39.35
Determinism (DET)	(%)	98.50
Shannon Entropy (ShanEn)		3.531
Multi-Scale Entropy (MSE)		0.477 - 1.620

Poincare Plot



Detrended fluctuations (DFA)



*Results are calculated from the non-detrended selected RR series.





REVIEW

The relationship between heart rate variability and inflammatory markers in cardiovascular diseases

Alexander Haensel^{a,b,*}, Paul J. Mills^b, Richard A. Nelesen^b,
 Michael G. Ziegler^c, Joel E. Dimsdale^{b,c}

^a Department of General Internal Medicine, University Hospital Bern, Switzerland

^b Department of Psychiatry, University of California, San Diego, USA

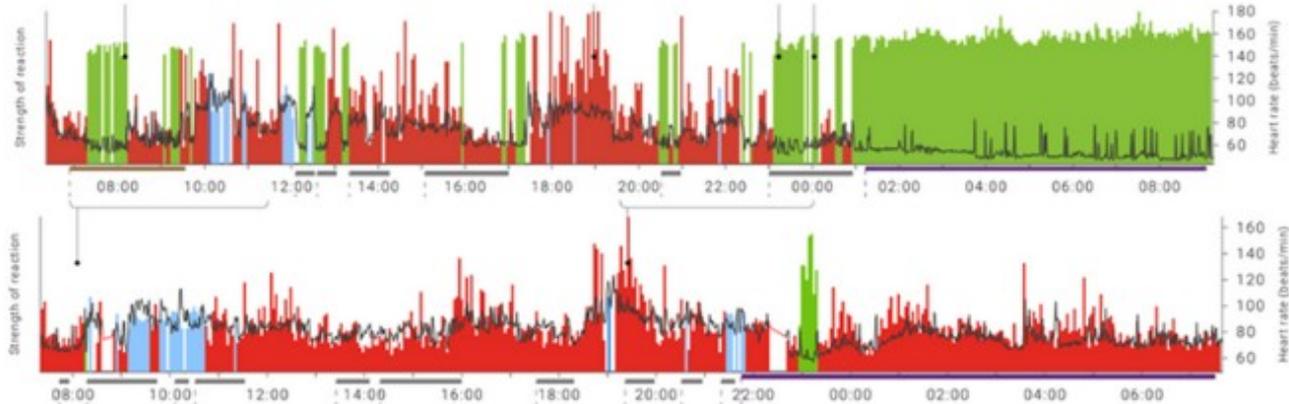
^c Department of Medicine, University of California, San Diego, CA, USA

Received 25 January 2008; received in revised form 16 July 2008; accepted 11 August 2008

3.1.2. CHD-free samples

Research in CHD-free subjects featured the biggest sample size with 2434 people (1227 male, 1207 female). Two investigations studied people between 55 and 75 years of age; participants in the other two studies were between 33 and 45 years old. All studies used a relatively short-time ECG reading for HRV evaluation (2–30 min). Findings differed across these studies. While two investigations reported a significant inverse relationship with the inflammatory markers CRP and IL-6, one study demonstrated higher CRP levels only in the group of the lowest HRV quartile (Kon et al., 2006). The remaining group tested inflammatory markers and HRV during and after a mental stress test and found no relationship between immune responses and heart rate variability (Owen and Steptoe, 2003).

Hamaad et al.	100 patients with acute CHD (n = 100), follow-up n = 51, healthy controls (n = 29)	Case-control	20 min, time and frequency	IL-6, CRP	Age, gender, smoking, hypertension, diabetes	IL-6 and CRP negative related to SDNN, SDNNindex, VLF, LF (r between -0.23 and -0.27, p < 0.05)
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Heart Rate Variability:
 Biomarcatore per il
 benessere



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Calibrazione del percorso:

Quali stimoli sono
“ormetici” e quali
disfunzionali?



La Heart Rate Variability o variabilità della frequenza cardiaca, identifica il naturale comportamento cardiaco, influenzato da micro variazioni temporali presenti tra una contrazione cardiaca e quella successiva.

Divergenza dalla Frequenza Cardiaca Media (FC media), che corrisponde al numero di contrazioni in un minuto, la variabilità della frequenza cardiaca (HRV) rivela, battito dopo battito, l'instabilità del sistema nervoso autonomo assente nell'uomo in aggrimento.

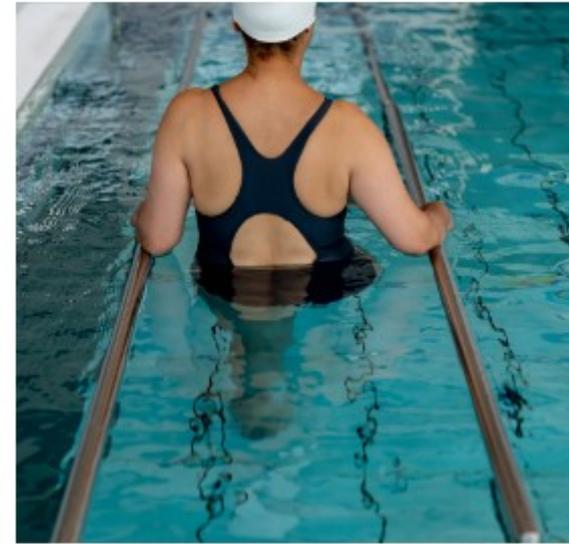
Il complesso degli indici e delle misure della HRV sono utilizzati come biomarcatori per comprendere l'attività del Sistema Nervoso Autonomo (simpatico, parasimpatico, enterico) e quella di sistemi con esso interagenti.

La HRV fornisce vili come informazioni sullo stato di salute, benessere ed equilibrio neurovegetativo della persona.

La HRV è un indicatore affidabile di salute, benessere, elevato prestazioni fisiche, mentali ed emotive, ma riflette anche un corretto stile di vita e longevità. Si prega tuttavia di notare come non tutte le condizioni si può andare incontro a iperglicemia o ipertensione si riflettono in modo rilevante sulla HRV.

Una HRV non ottimale viene generalmente associata a patologie, stress cronico, sedentarietà (in stile di vita non sano) ed invecchiamento, oltre a condizioni specifiche.

La tua HRV globale viene espressa in questo contesto dal punteggio (in verde) di COERENZA NEUROVEGETATIVA.



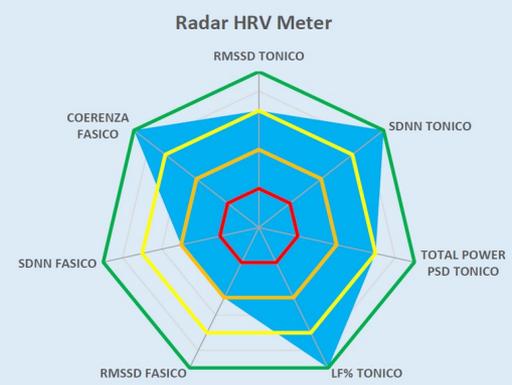
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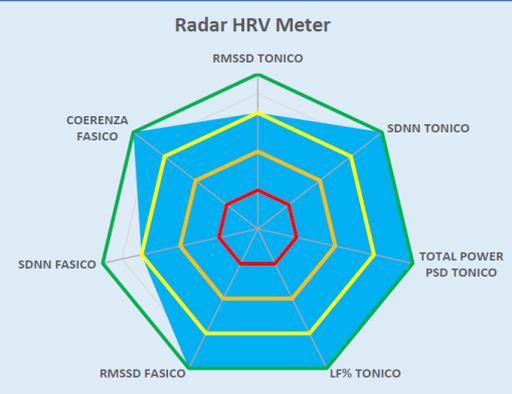
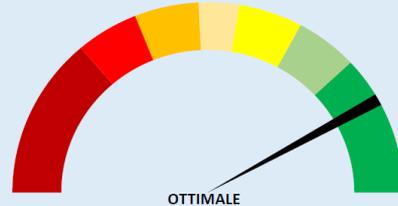
Valutazione e restituzione:

- sensibilità al cambiamento
- oggettività

ESITO TEST TONICO	STATO EQUILIBRATO
DOMINANZA SNA	NESSUNA DOMINANZA
ESITO TEST FASICO	DISREGOLAZIONE LIEVE
PUNTEGGIO COERENZA NEUROVEGETATIVA	72/100



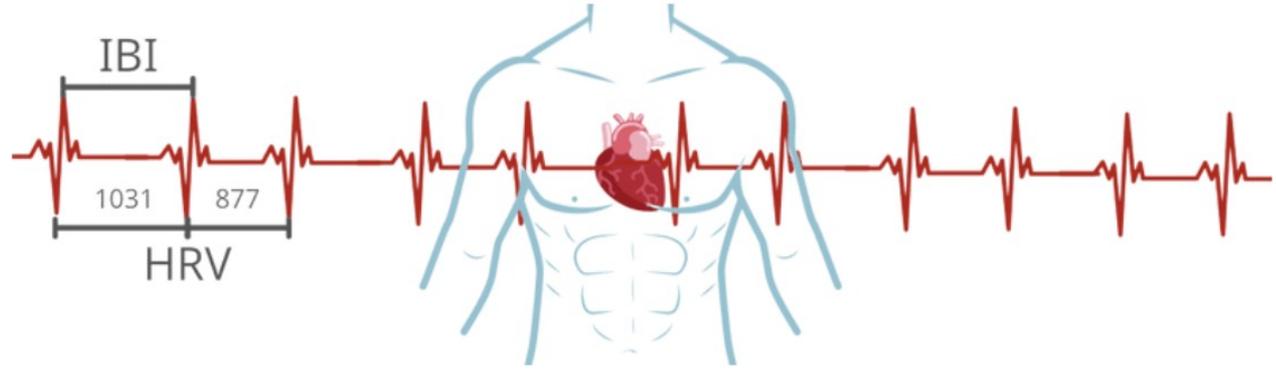
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DOMINANZA SNA	NESSUNA DOMINANZA
ESITO TEST FASICO	STATO EQUILIBRATO
PUNTEGGIO COERENZA NEUROVEGETATIVA	83/100



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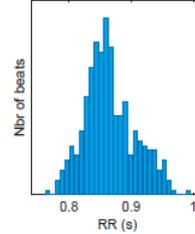
Sintetizzare la complessità



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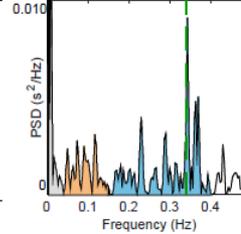


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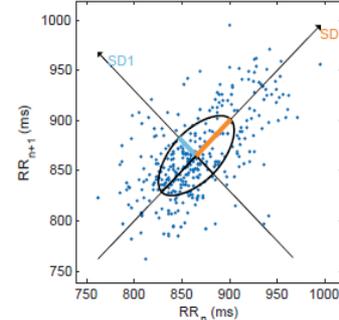
RR Spectrum



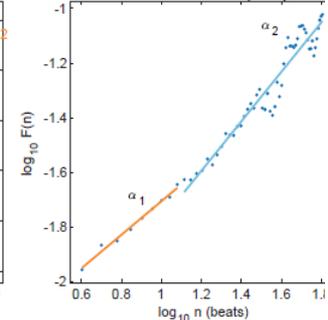
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Poincare Plot



Detrended fluctuations (DFA)

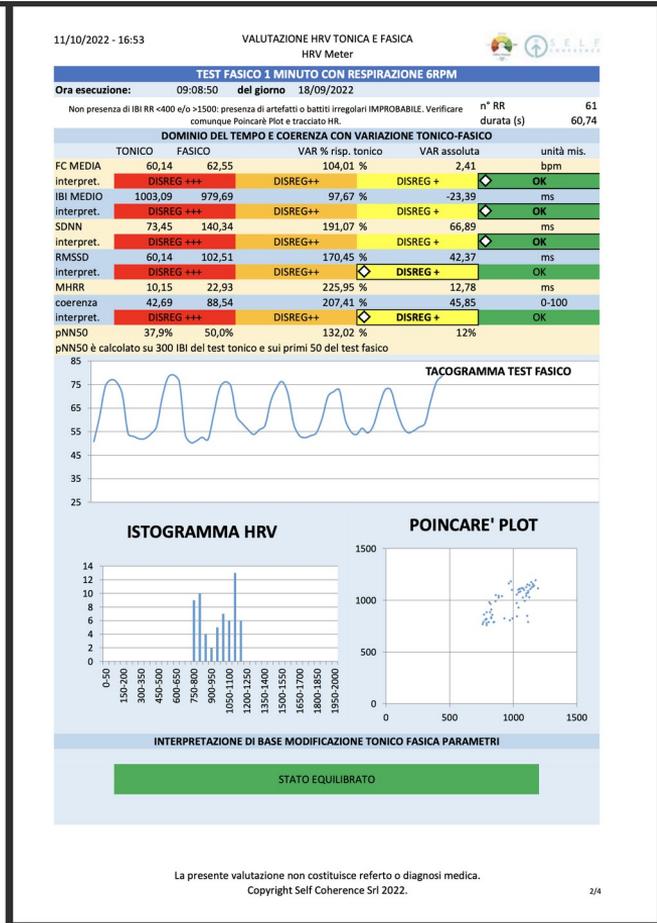
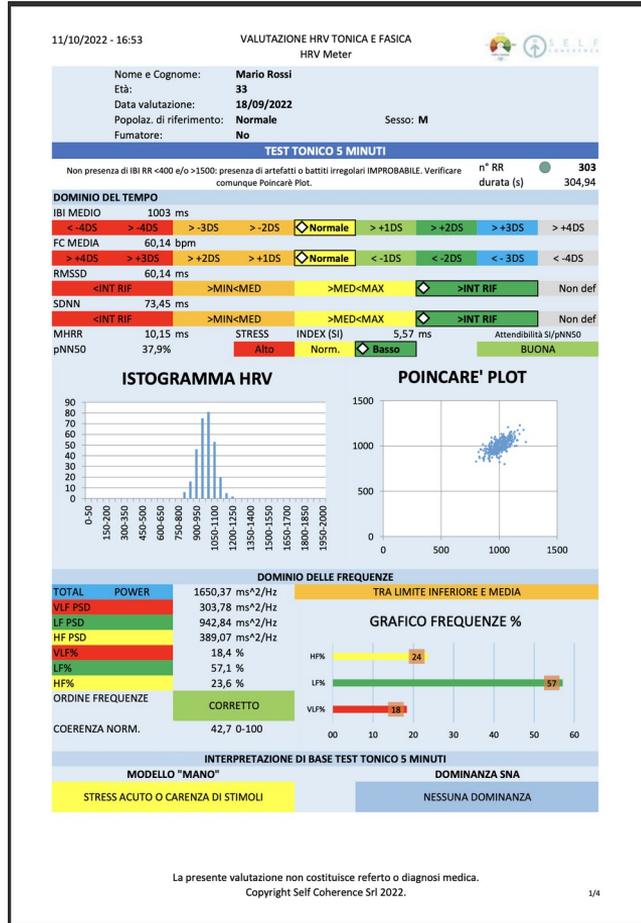


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VALUTAZIONI HEART RATE VARIABILITY

Sintetizzare la complessità

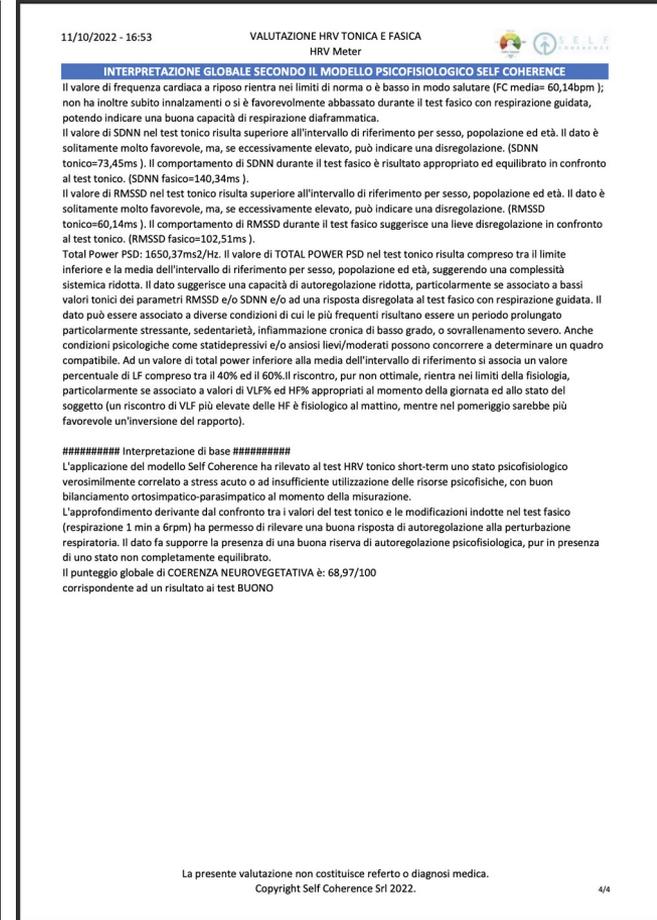
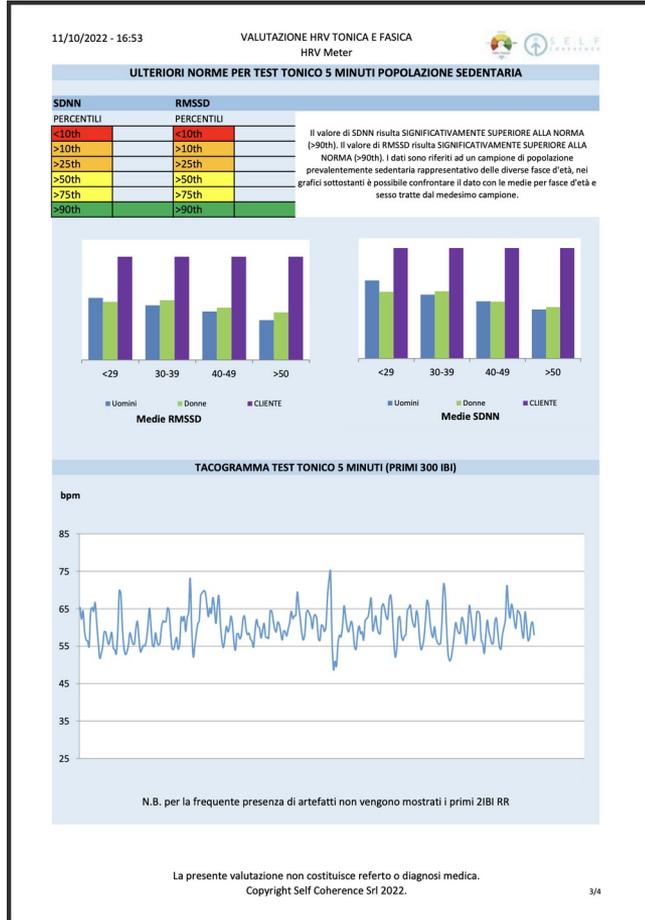
- senza sacrificare precisione e scientificità



VALUTAZIONI HEART RATE VARIABILITY

Sintetizzare la complessità

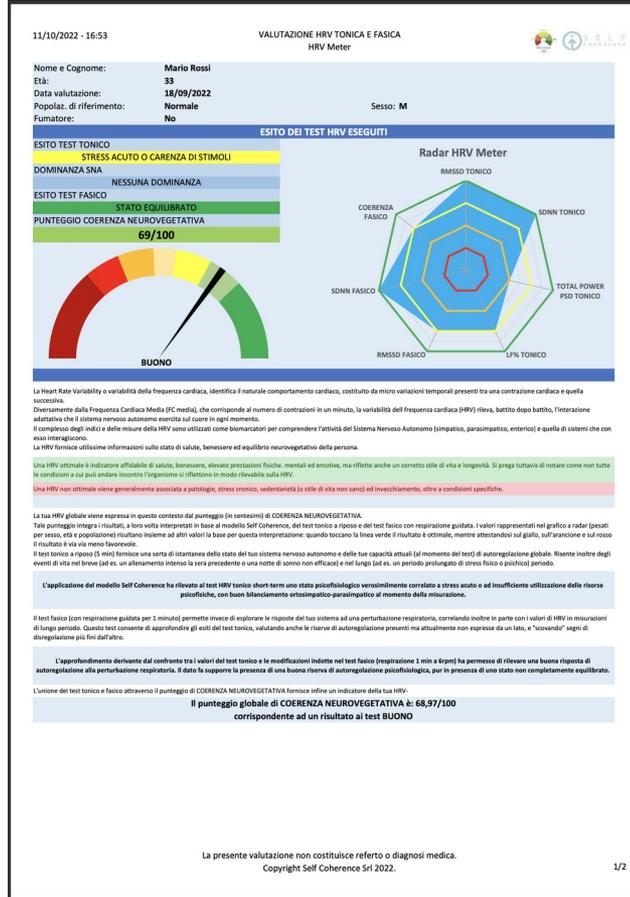
- senza sacrificare precisione e scientificità



VALUTAZIONI HEART RATE VARIABILITY

Sintetizzare la complessità

- senza sacrificare precisione e scientificità
- promuovendo una comunicazione semplice ed efficace



VALUTAZIONI HEART RATE VARIABILITY

Sintetizzare la complessità

- promozione della consapevolezza
- fidelizzazione a lungo termine

16:06

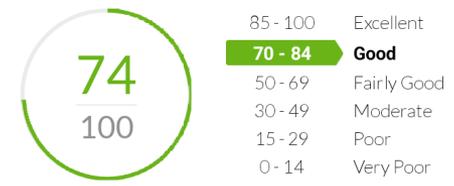
4G 85%

BODY RESOURCES

Measurement 1

SUMMARY STRESS SLEEP EXERCISE

Good total score

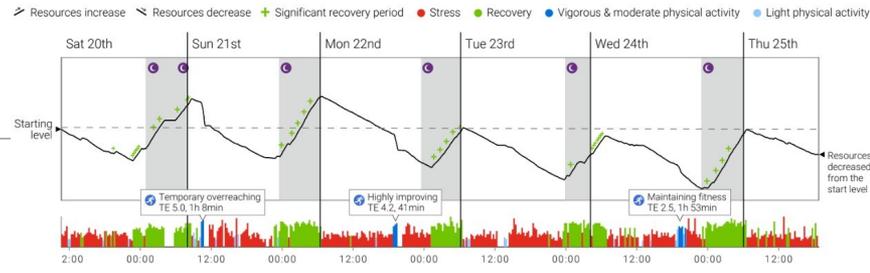


Stress: 56/100 | Sleep: 74/100 | Exercise: 92/100

Your overall score was good and your measurement included many actions that support your health and well-being. Keep up the good work!

Body resources

Your body resources **decreased** from the starting level. Recovery was not sufficient considering the amount of stress or other load. Be sure to allow enough time for recovery.



LIFESTYLE ASSESSMENT SCORE

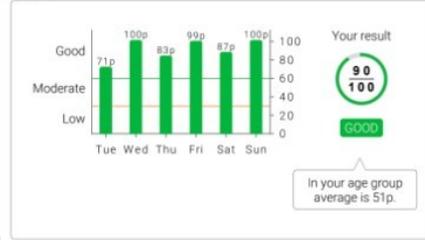
The score is based on your combined stress and recovery, sleep and physical activity result. By improving these areas, you can promote your well-being and improve your Lifestyle Assessment score.



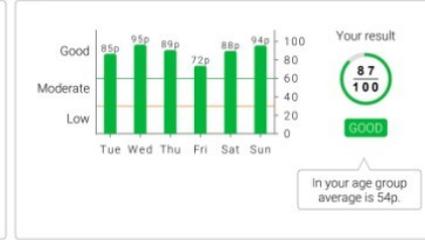
85 - 100p Excellent
60 - 84p Good
30 - 59p Moderate
15 - 29p Low
0 - 14p Very low

The average score of all Lifestyle Assessment participants is 55p.

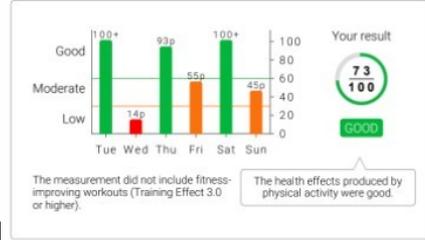
STRESS AND RECOVERY BALANCE



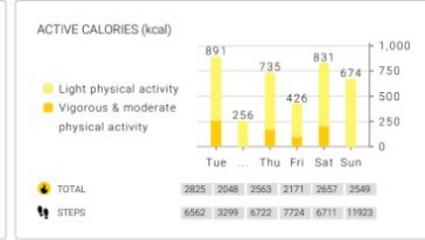
RESTORATIVE EFFECT OF SLEEP



HEALTH EFFECTS OF PHYSICAL ACTIVITY



ENERGY EXPENDITURE



Preserva la tua complessità
Allenati al cambiamento
Vivi in equilibrio

Grazie per l'attenzione

