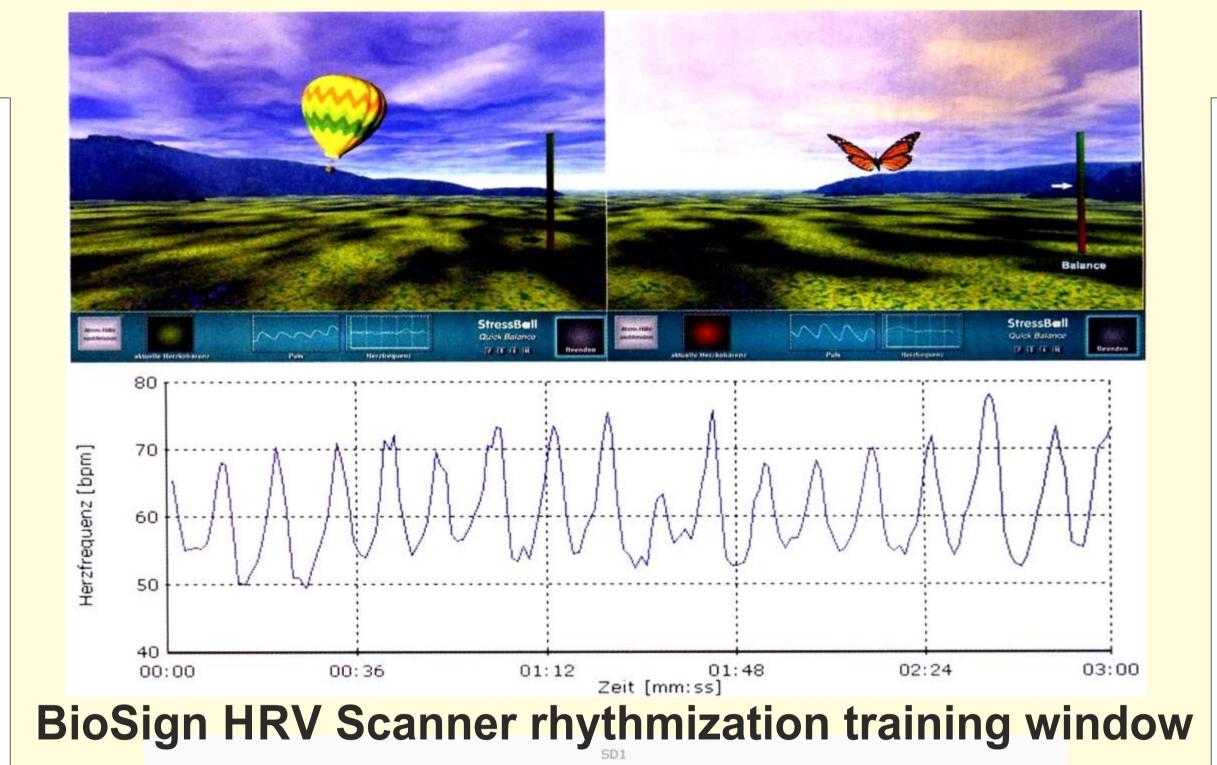# The improvement of the parasympathetic response through a personalized 9 weeks HRV biofeedback training versus individual biofeedback training without specific instructions in case of stress-exposed patients.
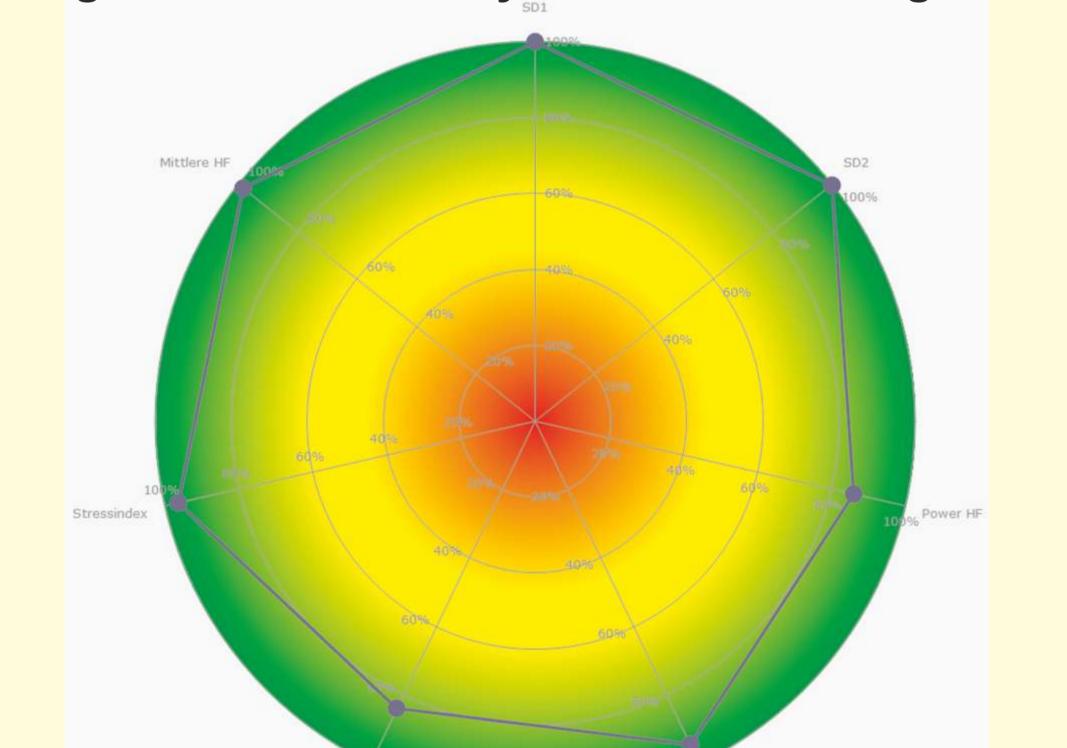
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Background and objective: People in stressful situations are looking at present time for ways to control their bodily reactions to stressful stimuli on their own. The HRV biofeedback training is gaining in importance in that field. Within a period of about 3 years, 21 patients of a somatic practice were selected, to conduct a 9 week, specially personalized HRV biofeedback training. It was explored in which areas the HRV biofeedback training was successful regarding the improvement of the parasympathetic response of the ANS.

Methods:

21 Persons (12m / 9f), which had presented themselves as clients in a somatic practice, subjected to a 9 week individualized HRV Biofeedback training process. This consisted of an initial and final HRV measurement, a questionnaire (FSvR-7 Mück Weymann) at the beginning and at the end, and a special questionnaire to individual stressors & resources, and 3 one-hour coaching sessions (in practice or via Skype) at the beginning, middle and end of the 9 week training. The subjects practiced at least 20 minutes a day and received instructions to the HRV Biofeedback every week for the following week plus a feedback form. The subjects used different HRV BF equipment (HRV Scanner, StressPilot, Qiu,Nexus4/10) and sent their exercises by e-mail. At the beginning and end they were measured with a HRV short-term analysis. Average HR, SD1, SD2, SDNN were determined. A control group (n = 19, 11 m / 8f) occasionally conducted HRV biofeedback training on their own without special instructions. The measurements were imported into BioSign HRV Scanner, artifact-adjusted and analyzed. The used statistics was a ANOVA with replication.
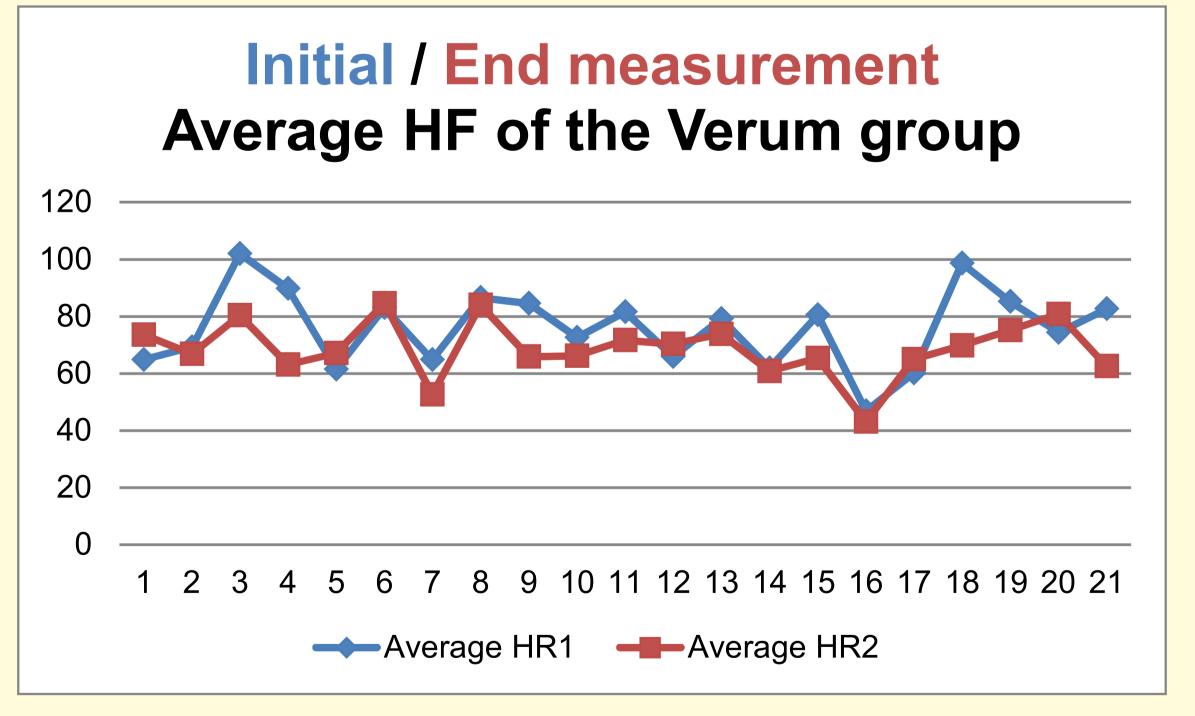

BioSign HRV Scanner rhythmization training window
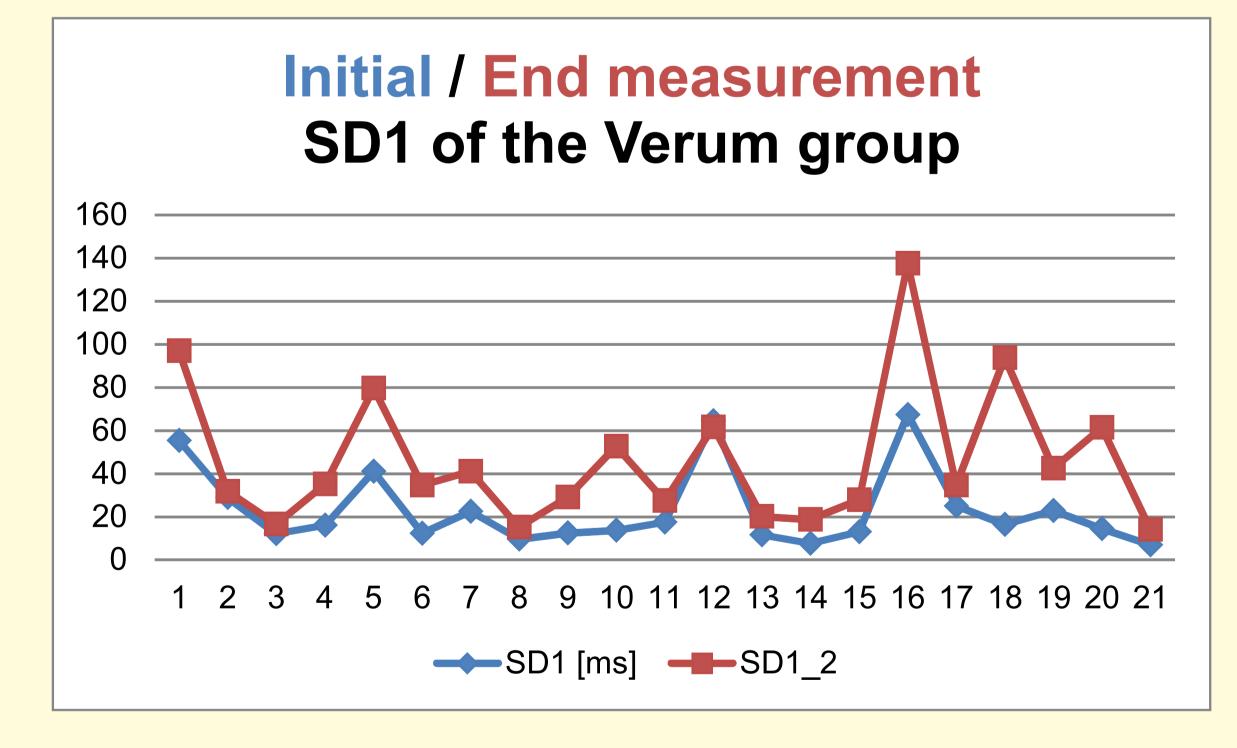

BioSign HRV Scanner short time HRV analysis
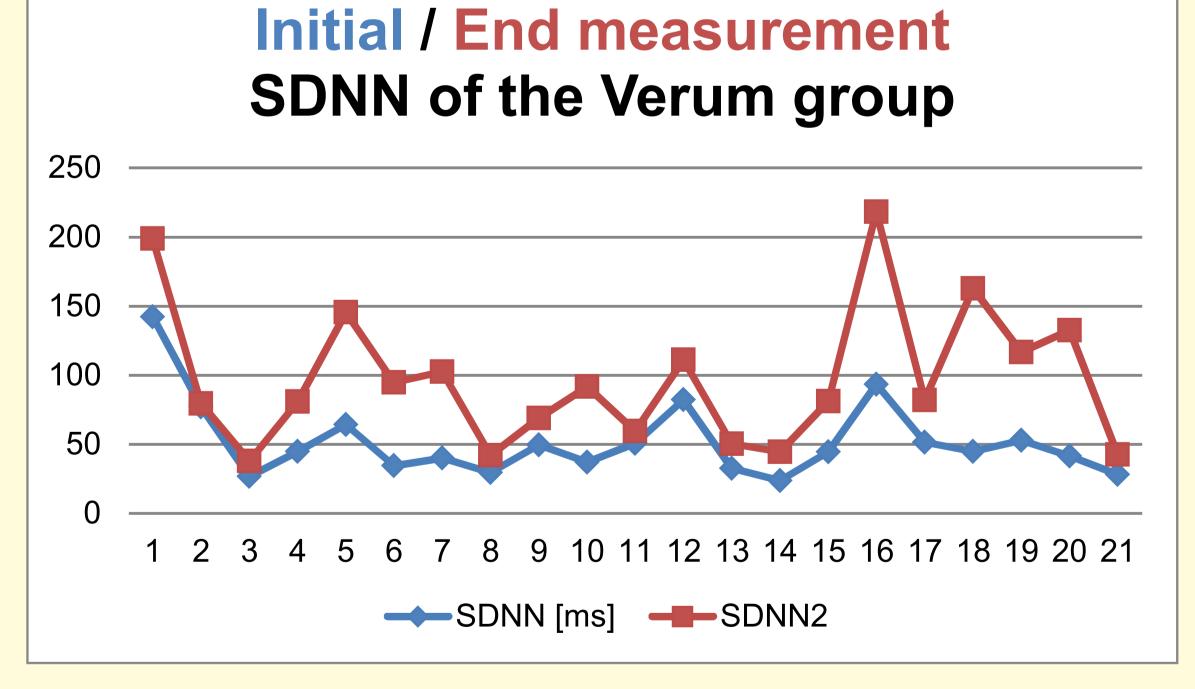
Results:

The Verum group has improved significantly in all investigated HRV parameters after the 9 week personalized HRV biofeedback training compared with the control group. The Verum group showed a significant difference between input & final measurement for the examined parameters Average HR, SD1, SD2, SDNN:
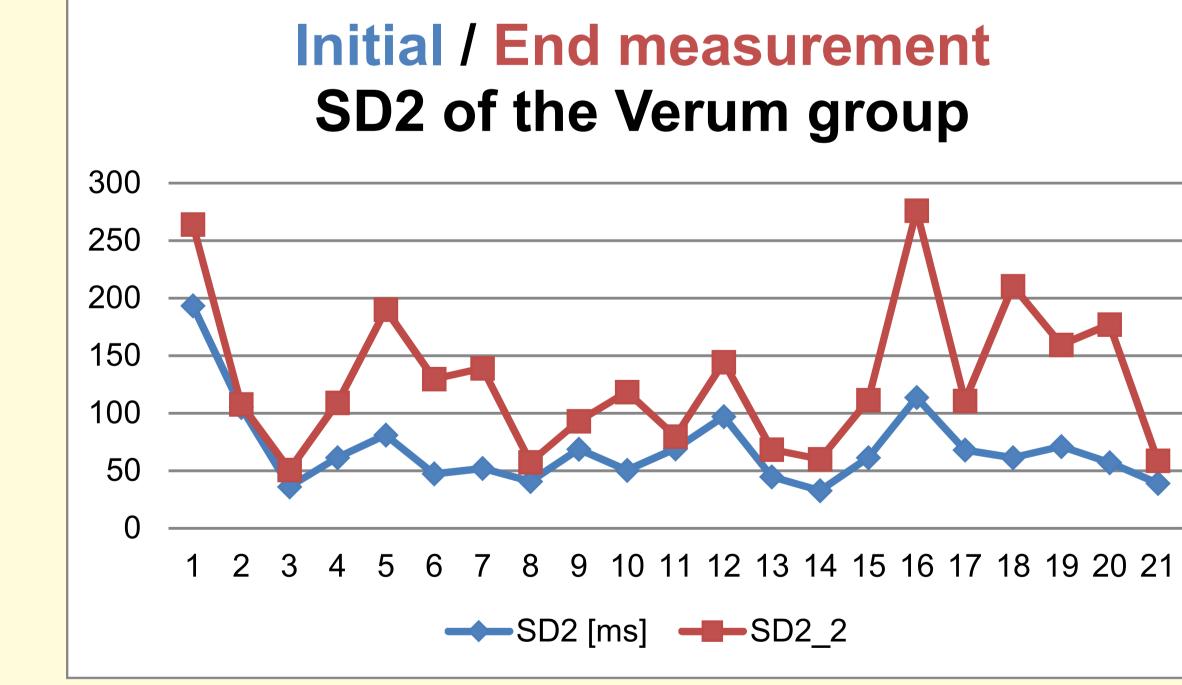
Av.HR: from 75,97 / min to 68,67/min; p < 0.017
SD1 from 23,34ms to 46,26ms. p < 0,00008
SDNN from 51,99 to 97.30 Ms; p < 0,00006
SD2 from 69,15 to 129,25 MS; p < 0,00006

The control group showed no significant change of the above HRV parameters. (Wilcoxon test for paired samples).

Initial / End measurement — Average HF of the Verum group

Initial / End measurement — SD1 of the Verum group

Initial / End measurement — SDNN of the Verum group

Initial / End measurement — SD2 of the Verum group

R1*Gruppe; KQ-Mitt.
Aktueller Effekt: F(1, 37)=8,4024, p=,00627
Typ VI Dekomposition (Effektive Hypothese)
Vertikale Balken zeigen 0,95 Konfidenzintervalle

R1*Gruppe; KQ-Mitt.
Aktueller Effekt: F(1, 37)=23,151, p=,00003
Typ VI Dekomposition (Effektive Hypothese)
Vertikale Balken zeigen 0,95 Konfidenzintervalle

R1*Gruppe; KQ-Mitt.
Aktueller Effekt: F(1, 37)=22,841, p=,00003
Typ VI Dekomposition (Effektive Hypothese)
Vertikale Balken zeigen 0,95 Konfidenzintervalle

R1*Gruppe; KQ-Mitt.
Aktueller Effekt: F(1, 37)=22,685, p=,00003
Typ VI Dekomposition (Effektive Hypothese)
Vertikale Balken zeigen 0,95 Konfidenzintervalle

Conclusions:

A personalized 9 week HRV biofeedback training of at least 20 min. daily duration coupled with a personalized Coaching concept significantly improves the parasympathetic response of the ANS of a large number of clients and has proven superior to a self steered biofeedback practice without specific instruction. Further measurements would allow information about a long term effect after 6 and 12 months, respectively.

Practical application in therapeutic practice:

The personalized 9 week HRV biofeedback training coupled with a personalized Coaching concept develops a high level of client motivation and compliance and lets a therapist steer the process on a daily base as the clients send their meaurements by email. With inexpensive and/or easy-to-use client eqipment and multiple import channels into HRV analysis software it shows to be a valuable extension to the biofeedbacl practice.