30 years with Respiratory Sinus Arrhythmia – an exciting personal and clinical journey

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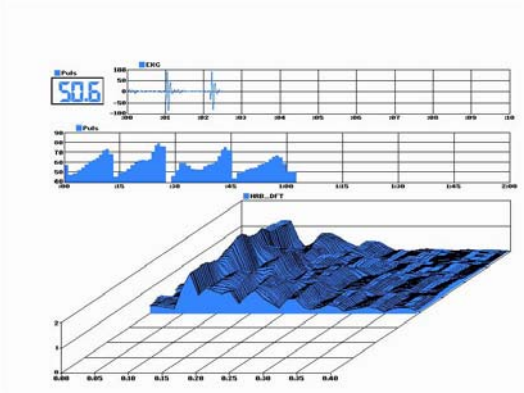
Background: 30 years ago I first observed the phenomenon of Respiratory Sinus Arrhythmia (RSA). Leaving music profession due to extreme stress, I started psychology studies. While in my first scientific study (1980) measuring wireless ECG during musical performance, I suddenly observed that one musician´s heart rate co-varied with musical phrasing. I consulted the literature and found Grossman´s and Porges´ work on RSA. Since then RSA has been a "close friend" in my clinical work.

Among consequences; All our patients (mandatory biopsychosocial education/training is part of the treatment) understand and have used RSA-biofeedback – and they love it. Four PhD dissertations in Artificial Intelligence Medicine (pattern analysis) and one in Psychology have been published by supervised coworkers during the years. I did not mention RSA as well as breathing training in my own PhD dissertation 1986, however, because I "wanted to pass the examination" without trouble.

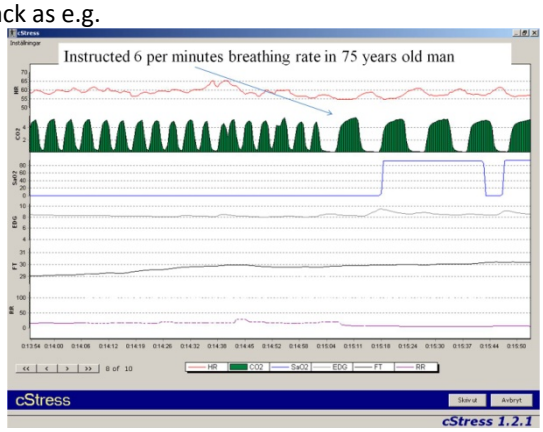
"RSA, a dynamic respiratory-cardiovascular interface which helps our understanding of basic biologic functioning. It can be used as on-line information and it could also be used as an outcome variable. It might also be used to diagnose and predict autonomic nervous system imbalance. Dysfunctional RSA should be used as information about *`something is wrong; look for the details`*. By incorporating analyses of metabolic variables including electrolytic systems, we may obtain a detailed picture of patient's dysfunctionality. We can then, collaborating with medical examination, find proper way to train patient to obtain functionality. I regard RSA as a key for better understanding and better practical clinical work and feedback for effective treatment, both on-line and over time. RSA is both the independent and dependent variable depending on where you are positioned - and so is the patient (Kelly, 1955)" (from von Schéele, 1995 – poster at AAPB).

Method: In clinical settings we use RSA as a multifaceted tool expressed below in headlines
RSA: As a diagnostic tool, RSA: For (bio)feedback including influence on pattern characteristics
RSA: As outcome measure, RSA: As pedagogical tool. Intake always content psychophysiological stress profiling where traditional parameters and exhalation CO2 and oxygen saturation is measured using stressors as individuals´ verbalization of their disease/stress problems as well as 6-per-minute reahting and capacity controlling autonomic nervous systems tests.

Case results: Different kinds of clinical use of finger temperature- and RSA-biofeedback are used and particularly also how RSA-pattern can be used for biofeedback as e.g.



Panic patient changing the RSA-slope by training



RSA in a 75 years old healthy man

Discussion: Using a multifaceted biopsychosocial treatment package based on education and individual tailoring of the provided toolbox is very effective, wnere the use of biofeedback especially increases the patients´ motivation to carry out needed training. As patients understand basic knowledge of the tool package and why they need to use it they become coworkers in the sense of George Kelly´s (1955) "man as a scientist" something which potentially can have impact on their health promotion in general as well as their life quality.

References;

Kelly, G. A. (1955). The psychology of personal construct, Vol.1. New York: Norton.
von Schéele, B.H.C. (1995). Respiratory Sinus Arrhythmia as a Diagnostic Tool, a Treatment Goal, a Rule for Treatment Planning, a Cool Biofeedback, and an Out-Come Variable. Biofeedback and Self-Regulation, 20, 3, 308-309
For "background references" see Steven Porges´ and Paul Grossman´s earlier publications

