

Stress evaluation by Heart Rate Variability

Cortisol is a valid but difficult and uncertain measurement for a different number of reasons that we certainly well know. For objective evaluation of stress we need a psycho-physiological measurement. Among the different possibilities the presently more acceptable method is that one to estimate HRV or Heart Rate Variability. HRV is presently of large use also among psychologists that in fact use it also in HRV biofeedback. HRV relates also an analysis of autonomic neuroscience field and thus it is of large importance since not only evaluates autonomic nervous system (ANS) but also Central Nervous System (CNS) giving contribution to nervous modulation in R-R heart intervals and thus in Heart Rate (HR) and HRV. When properly used in frequency domain the HRV analysis gives a measurement in VLF, LF and HF bands respectively giving information about our sympathetic and parasympathetic -vagal normal condition or disfunction. . By this way, HRV becomes also a valid instrument to look in, (in an objective manner), to the psychological condition of the subject. Presently the literature relates studies on HRV about all psychological disorders from anxiety, to depression, to stress arriving to psychiatric pathologies. They involve a modification of HRV in VLF, LF and HF bands and particularly a disfunction of the BaroReflex Sensitivity (BRS). We have realized a new method for HRV analysis that is based on the evaluation of the VARIABILITY of the heart rhythm .

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When the subject has objective stress, the induced consequence is that his/her HRV and, basically, his /her Variability varies within certain limits that we have established after about one year of continuous estimation. The final step has been to arrange a final methodology and the software to evaluate the STRESS. The method runs as it follows. The first time it is measured the tachogram of the subject at rest, at calm, relaxation, spontaneous respiration and one performs the HRV analysis of the variability by our software. It gives automatically the values in the VLF, LF and HF bands obtaining sympathetic and parasympathetic evaluation at basal conditions. After an interval of about ten minutes the subject is submitted again to a recording of the tachogram but this time without speaking a question is posed. In substance we have prepared also a software where on the monitor figures appear containing the Stroop effect. In this manner, while recording the tachogram, the subject is submitted to a semantic conflict that obviously induces stress and the counterpart psychophysiological effect is measured in the tachogram. Again our software enables us to perform analysis of the performed HRV-tachogram and evaluation in the bands VLF, LF and HF. Comparison of VLF,LF,HF values obtained for the subject at rest and under Stroop effect –stress gives indication of the possible stress condition of the subject. Following the induced stress the subject will exhibit new VLF, LF and HF values that may be compared with the previous ones given at rest We have experienced on subjects for one year and thus we are able to furnish the values of ranges of variability to establish if the induced stress by Stroop effect is in the normal range or he/she is instead in the condition of actual stress as psychological disorder. We have also established tables to estimate the level of stress of the subject ranging from normal to low, medium serious, and very high conditions of stress. Download the free softwares for analysis of HRV variability, record two times the tachogram (at rest and under Stroop effect) and evaluate the differences obtained in the first and the second case. The software for using Stroop effect is also included. Don't hesitate to contact us to stmp@saistmp.com for questions and assistance.