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### Psychometric Properties of the 0.1 Hz component of HRV as an Indicator of Mental Strain.

*Abstract.* Legal regulations in the EU concerning the evaluation of mental workload require that suitable and practical methods for the assessment of mental workload at the workplace are needed. Currently the 0.1 Hz component of heartrate variability (HRV) is considered an attractive and promising measure of mental strain. However, systematic and comprehensive studies investigating the psychometric properties of this cardiovascular measure are still missing. Therefore this problem has been addressed experimentally: If the 0.1 component of HRV is a valid measure of mental strain it should discriminate between mental load produced by different types of tasks (diagnosticity) and different levels of difficulty (sensitivity). Comparing psychophysiological, performance, and subjective data the results for the psychophysiological data cannot be interpreted as support for a sufficient sensitivity and diagnosticity of the 0.1 component of HRV as a measure of mental strain. This cardiovascular indicator does not meet conventional requirements to be used in mental and especially cognitive workload evaluation. However, there is evidence that the 0.1 component of HRV is more likely to indicate emotional strain (stress reactions) or general activation.

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